State of Colorado
Status Report on the Health Facility-Acquired Infections Disclosure Initiative

January 15, 2010

Submitted to the Colorado General Assembly
By the Health Facilities and Emergency Medical Services Division of the Colorado Department of Public Health and Environment

Colorado Department of Public Health and Environment

Title:	Report to the Legislature Concerning the Status of the Health Facility-Acquired Infections Disclosure Initiative.
Principal Author:	Allison Daniels Wheeler, Patient Safety Initiatives Program Coordinator, Health Facility and Emergency Medical Services Division
Contributing Authors:	Wendy Griffin, Public Health Nurse Consultant in the Patient Safety Program, Health Facility and Emergency Medical Services Division
	Kirk Bol, Statistician in the Health Statistics Section, Center for Health and Environmental Information and Statistics Division
	Colorado Health Facility-Acquired Infections Advisory Committee
Subject:	Report on Colorado's health facility-acquired infections disclosure initiative.
Statute:	25-3-601, C.R.S (HB 06 1045)
Date:	January 15, 2010
Number of pages:	101
For additional information or copies	Patient Safety Initiatives Health Facility and Emergency Medical Services Division Colorado Department of Public Health and Environment 4300 Cherry Creek Drive South Denver, CO 80246-1530 303-692-2800 cdphe.hfpatientsafety@state.co.us http://www.cdphe.state.co.us/hf/PatientSafety/HFAI/index.html

Executive Summary

This report presents data from hospitals, long-term acute care hospitals and ambulatory surgery centers concerning certain infections reported as "health facility-acquired infections". These include surgical site infections and central line-associated bloodstream infections.

The facilities report this data through the National Healthcare Safety Network (NHSN). Each facility's infection rate is compared to the national rate for that procedure or device and through statistical analysis is determined to be better, worse, or the same as the national rate. Almost all facilities in Colorado report rates that are the same as the national rate.

This is only the second year of data reporting for hospitals, the first year for long-term acute care hospitals, and the first seven months of reporting for ambulatory surgery centers. It takes time for facilities to learn the system and begin reporting. There is also potential for inconsistencies in the manner in which facilities report their data. As such, conclusions should not be drawn using this data or the comparisons alone but rather in conjunction with other factors. Consumers should always consult with their doctor, healthcare facility, health insurance carrier, family and friends before deciding where to receive care. Consumers should consider the experience of the facility, staff and other quality of care indicators in addition to the data included in this report. In 2010, the department will begin data validation and greater outreach to reporting facilities that should result in more consistent reporting and data that is more useful for facilities to use in taking action to reduce health facility-acquired infections, as well as for consumers to consider in making decisions about health care providers.

Table of Contents

Introduction

This report is being written to fulfill the reporting requirements set forth in Colorado Revised Statute title 25, article 3, part 6, the Hospital-Acquired Infections Disclosure Act. The Colorado General Assembly passed the Hospital-Acquired Infections Disclosure Act (House Bill 06-1045), in May 2006. Representative Bob McClusky and Senator Maryanne Keller sponsored this bill.

Note: This report uses the term "health facility-acquired infections" since the scope of the Colorado mandatory reporting law includes hospitals, hospital units, ambulatory surgery centers and dialysis treatment centers.

This bill requires hospitals, including long-term acute care hospitals; hospital units; ambulatory surgery centers; and dialysis treatment centers to report health facility-acquired infections data as a condition of their state licensure. The Colorado Department of Public Health and Environment (the department) is the lead state agency administering the initiative. The department is responsible for program implementation, oversight and reporting. The legislation required the department's executive director to appoint an eleven–member, volunteer, health facility-acquired infections advisory committee to assist with these responsibilities.

The bill also requires that the department produce an annual report disclosing the results of the data submitted. This report serves as the third annual report, which is due to the Health and Human Services Committees of the House of Representatives and the Senate of the Colorado General Assembly by January 15, 2010.

This report describes

- The disclosure initiative as described in the Act;
- The phased approach taken in implementation;
- The reporting requirements and web-based reporting system;
- The limitations in implementing the initiative;
- The data for Surgical Site Infections (SSIs) in hospitals and ambulatory surgery centers; and
- The data for Adult Critical Care Units (CCU), Neonatal Critical Care Units (NCCU) and Long-Term Acute Care Hospitals.

This report includes data from device-associated infections and procedure-associated infections. The procedure–associated data includes surgical site infections from the following procedures: coronary artery bypass grafts with both chest and donor site incisions (CBGB), coronary artery bypass grafts with chest incision only (CBGC), hip prosthesis total and partial (HPRO), knee prosthesis total and partial (KPRO) and herniorrhaphies (HER).

Data from device-associated infections includes central line-associated bloodstream infections from adult and neonate critical care units. Adult units include adult medical/surgical critical care, medical cardiac critical care, surgical cardiothoracic critical care, medical critical care, surgical critical care, and long-term acute care hospitals. For neonatal critical care units, the report includes central line and umbilical catheter data for level II/III and level III hospital care settings.

Health Facility-Acquired Infections Disclosure Initiative

Health facility-acquired infections are infections that occur during or after treatment for a separate medical condition in a health facility. The occurrence of health facility-acquired infections is a growing concern among healthcare consumers, purchasers and workers. While the public is increasingly seeking information about health facility-acquired infections, most hospitals and other healthcare facilities currently do not publicly report this data.

As consumer demand for public reporting of healthcare quality data continues to increase, policymakers across the nation have recognized this demand and the need for this information in consumer focused healthcare quality reports. This recognition has led 28 states to pass laws requiring mandatory public reporting of health facility-acquired infections since 2004. Colorado's Hospital-Acquired Infections Disclosure Act (House Bill 06-1045) was approved in May 2006. Federal legislation mandating public reporting of healthcare-associated infections is expected in the near future.

This law requires hospitals, including long-term acute care hospitals; hospital units; ambulatory surgery centers; and dialysis treatment centers to report health facility-acquired infections data as a condition of their state licensure. The law also calls for physicians to close the loop and ensure infections diagnosed during follow-up care visits are reported back to the facilities where the procedures were performed.

Many of these health facilities have collected and tracked health facility-acquired infections data for decades, but this information was not released to the public. The intent of the law is to have all the targeted health facilities report infection data to one web-based system. The system will help to ensure facilities are using the same definitions and data constraints, so that the information collected can be easily understood by the public and compared to national rates.

The Colorado Department of Public Health and Environment (the department) is the lead state agency administering the disclosure initiative. In accordance with the legislation, the department appointed an advisory committee to assist with initiative oversight, selecting the clinical

procedures, assuring the quality and accuracy of the data, and developing and distributing the reports. The department is ultimately responsible for program implementation, oversight and reporting.

Implementing the Disclosure Initiative

Implementing the health facility-acquired infections disclosure initiative is an in-depth process that included five main phases:

1. Appointing an advisory committee
2. Selecting clinical metrics
3. Providing technical assistance
4. Evaluating the initiative
5. Reporting results

Extensive work has gone into each phase of the implementation as described below.

Phase 1: Appointing an Advisory Committee

The legislation required the executive director of the department to appoint an eleven-member health facility-acquired infections advisory committee. The Colorado Health Facility-Acquired Infection Advisory Committee make-up is detailed in Appendix A.
Many of the initiative elements were decided on through the committee. The legislation mandated that the committee assist the department with initiative oversight, selecting clinical procedures, assuring quality and accuracy of the data and developing and distributing the reports. The selected committee members were notified in March 2007. The committee first met on April 23, 2007. The legislation requires the committee to meet at least four times per year; however, the members opted for monthly meetings in 2007, 2008, 2009 and 2010.

The committee has provided the department invaluable expertise. The caliber of members that sit on the advisory committee will continue to play a pivotal role in evaluating the quality and accuracy of the reported data and future projects of the Patient Safety program.

Phase 2: Selecting Clinical Metrics

Phase Two of the mandatory health facility-acquired infection reporting initiative was to select the metrics health facilities would report. The department and the advisory committee were limited in selecting metrics by the following factors:

- The legislation required health facilities to collect data on health facility-acquired infection rates for specific clinical procedures, including a cardiac (heart) surgery, an orthopedic (skeletal) surgery, an abdominal surgery and infections related to central line (tube in vein) devices.
- Metrics had to be supported by the web-based reporting system specified in the legislation.

The department also recognized the federal Healthcare Infection Control Practices Advisory Committee's (HICPAC) recommendation to gradually implement any new public reporting system by incrementally introducing new reporting requirements. HICPAC is the nation's expert in infection control and serves as the advisory committee to the Centers for Disease Control (CDC) and the Secretary of the Department of Health and Human Services (HHS). The HICPAC recommendation was important because it indicated that implementing a reporting system too quickly could contribute to poor data quality and data misinterpretation.

The following table shows how the reporting requirements were implemented in Colorado by year.

Table 1: Implementation of Reporting Requirements

2007 Began reporting August 1, 2007	2008	2009	2010
Central lines in select CCUs	All 2007 metrics	All 2007 and 2008 metrics	All 2007, 2008 and 2009 metrics
Hip prosthesis (partial and total)	Central lines in long-term acute care hospitals (August 2008)	Abdominal Hysterectomies (August 2009)	
Knee prosthesis (partial and total)	Hernia repair (October 2008)	Vaginal Hysterectomies (August 2009)	
Coronary artery bypass grafts with chest and donor site incisions	Ambulatory surgery centers (October 2008)		Dialysis Centers will begin reporting in March 2010
Coronary artery bypass grafts with chest incisions only			

Surgical Site Infections

Surgical site infections (SSIs) are infections that are directly related to an operative procedure. The procedures monitored for SSIs that are included in this report are cardiac, orthopedic, and abdominal operative procedures. SSI rates are adjusted to take into account differences in patient risk factors for infection due to length of the surgery, type of surgical wound and the patient's physical condition. Surgical procedures selected for SSI reporting are performed in a variety of facilities and tend to be associated with health facility-acquired infections.

Most SSIs from these types of surgeries can

- Be prevented by following established prevention techniques;
- Easily be detected and reported accurately; and
- Have a devastating impact on the patient’s quality of life.

The decision to report on the specific SSI types was evidence-based. These procedures were chosen because they are

- High volume procedures;
- Expensive for healthcare payers; and
- Performed at a number of health facilities in Colorado, often allowing consumers to choose where to receive treatment.

Central Line-Associated Bloodstream Infections

Central line-associated bloodstream infections (CLABSIs) are primary bloodstream infections that is associated with the presence of a central line or an umbilical catheter (tube in umbilical cord) in neonates at the time of or before the onset of the infection. A central line is an intravascular catheter (tube in a vein) that terminates at or close to the heart or in one of the great vessels. An example of a great vessel is the aorta or superior vena cava. A central line can be used to infuse fluids or withdraw blood in a patient. Central lines can be either temporary or permanent.

Central line surveillance can occur in

1. Critical care units
2. Specialty care units
3. Neonatal critical care units
4. Long-term acute care hospitals
5. Any other patient care location in the institution

Reporting CLABSIs by unit type allows for a fairer comparison between hospitals. It takes into account differences in the type of patients in the critical care units (CCUs) and Long-Term Acute Care Hospitals (LTACHs), how they are treated and the different risks for infection. The department chose to report data from adult and neonatal critical care units as well as long-term acute care hospitals.

Patient Safety Enhancement: Example 1

An Infection Control Preventionist from a reporting hospital provided an example of how collecting NHSN data hasimproved patient safety at their hospital.

"In disclosing & reporting data related to Surgical Site Infections, as an organization we have had the opportunity to look at our processes and evaluate for completeness and minimize redundancy.

Additionally, we are now mapping this quality measure and will work to select an electronic health record for inpatient services that will capture data for infection control reporting."

Most CLABSIs occurring in these facility locations can

- Be prevented by following established prevention techniques;
- Easily be detected and reported accurately; and
- Have a devastating impact on the patient's quality of life.

Like the SSI metrics the decision to report on CLABSIs acquired in specific health facility locations was evidence-based. CLABSIs often lead to additional days in the health facility, which can be expensive for healthcare payers, health facilities and patients. Evidence suggests that tracking CLABSIs acquired in CCUs and LTACHs may lead to better adherence to preventive practices and decrease medical complications or death.

The law does not require health facilities to report on specific types of infection (e.g. Methicillin-Resistant *Staphylococcus aureus*; MRSA) or to report an overall facility infection rate, but requires facilities to report infections that can be acquired based on specific procedures or while being cared for using specific devices. This report presents infection information grouped by procedure rather than infection type.

Experts in the field of infection control, including the CDC (Centers for Disease Control and Prevention), have found that many procedures are performed in facility locations that have low infection rates. These experts recommend health facilities not attempt to collect an overall facility infection rate, as this would divert resources from working to prevent infections in higher risk facility locations. As recommended, Colorado is requiring specific location unit and surgical procedure reporting, which will produce data elements that can be utilized by health facilities to target infection prevention and quality of care process improvements.

Patient Safety Enhancement: Example 2

An infection preventionist at another reporting hospital commented on their experience with Colorado's HAI public reporting law.

"HB-1045 has given our hospitals the opportunity to share the great outcomes that happen at our facility everyday, and the ability to see how we compare to other facilities in Colorado. Even before the enactment of HB-1045 our hospitals always utilized the best practice guidelines for prevention of surgical site infections, central line-associated blood stream infections and the prevention of all healthcare-associated infections. Patient safety is and will always be a top priority."

Phase 3: Providing Technical Assistance

The third phase of implementation began during phase one and is ongoing. For three years, the department and the advisory committee members have been working with health facilities across the state to educate them on the legislative requirements. This initiative is new ground for many stakeholders and has required that the department provide information to health facilities on their roles and responsibilities

and the reporting system. This education includes disclosure initiative explanation, system training, coaching and compliance monitoring details. In 2010, the department will begin to validate the data that is entered into the reporting system.

The department has partnered with a number of professional organizations to help implement the disclosure initiative. The Colorado Hospital Association, the Colorado Mile High Chapter of the Association for Professionals in Infection Control and Epidemiology, the Colorado Ambulatory Surgery Center Association and the End Stage Renal Disease Network 15 have helped the department recruit committee members, train health facilities and disseminate important information to their membership base.

The department also has developed a patient safety initiatives section[1] on the department Web site. The department uses the Web site to disseminate information to health facilities and the public regarding the initiative, the advisory committee and general health facility-acquired infections educational resources.

Reporting System

The National Healthcare Safety Network (NHSN) is a secure, internet-based surveillance system developed, administered and maintained by the CDC. The health facility-acquired infections disclosure initiative in Colorado requires participating facilities use the NHSN system for reporting.

CDC initially opened NHSN enrollment to a limited number of facilities in 2005, followed by a national open enrollment for hospitals and outpatient hemodialysis centers in 2007. Beginning in August 2008, LTACHs began reporting to NHSN and in October of 2008 ambulatory surgery centers were able to submit data to NHSN.

In Colorado, health facilities must enroll with and submit data to NHSN for public disclosure. Health facilities must grant the department access to their data so the department can monitor, analyze and produce public reports. According to the legislation, individuals who collect the surveillance data must have a Certification in Infection Control and Epidemiology[2] or become certified within six months of becoming eligible to take the certification test. Certification requirements do not apply to individuals collecting the data in hospitals with 50 beds or less, dialysis centers or ambulatory surgery centers. However, these facilities are required to complete pre-requisite NHSN educational programs

[1] http:// http://www.cdphe.state.co.us/hf/PatientSafety/HFAI/index.html

[2] The Certification Board of Infection Control and Epidemiology is an organization that certifies infection preventionists based on their educational background and professional experience, in conjunction with testing their knowledge base through a standardized exam. The credential awarded is CIC, Certification in Infection Control and Epidemiology. One must have two years of infection control experience in order to sit for the boards. Certification must be renewed every five years.

prior to joining NHSN, complete 10 hours of infection prevention education annually that is specific to the facility specialty and keep a log of the education completed.

NHSN is used nationally by many healthcare facilities to manage their infection data. The system integrates patient and healthcare personnel safety surveillance information from facilities across the nation. One of the enhanced features of this surveillance system is that while maintaining data security, integrity, and confidentiality, NHSN has the capacity for healthcare facilities to share data in a timely manner

- Between a facility and public health agencies; and
- Between facilities (e.g., multi-hospital system).

While there is no charge for participation in NHSN, participation requires a significant commitment by each health facility. There is a lengthy, time-sensitive, five-step process to gain access to NHSN and each month participating health facilities must complete a NHSN reporting plan. To obtain infection rate information facilities must gather data on all the currently targeted procedures whether or not the procedure led to an infection.

Participating Facilities

This bill requires hospitals, including long-term acute care hospitals; hospital units; ambulatory surgery centers (ASCs); and dialysis treatment centers (DTC) to report health facility-acquired infections data to NHSN as a condition of their state licensure. As of November 2009, Colorado holds licenses for 87 hospitals, 3 hospital units, 111 ASCs and 61 DTCs, totaling 262 facilities targeted for reporting. Dialysis Treatment Centers were not selected to begin reporting for the first two years, however are expected to report in 2010. Of the 90 hospitals and hospital units, 79 have indicated they perform procedures selected for reporting. Of the 111 ASCs, only 44 have indicated they perform any of the procedures selected for reporting. Although not all facilities are currently reporting, the department must still monitor and educate all 262 facilities regarding the initiative.

Long-term acute care hospitals (LTACHs) began reporting in August of 2008. LTACHs are facilities that provide acute care services to patients suffering medically complex conditions, or patients who have suffered recent catastrophic illness or injury and require an extended stay in an acute care environment.

Ambulatory Surgery Centers (ASCs) began to report through NHSN in October 2008. An ASC is a healthcare facility that specializes in providing surgery in an outpatient setting. Usually, procedures performed in ASCs are procedures that are more extensive than those done in a doctor's office but do not require a hospital stay. Due to challenges with initial enrollment and data entry, the committee chose to begin reporting for ASCs in January 2009. This report will include data from January 1, 2009 through July 31, 2009.

Phase 4: Evaluating the Initiative

The evaluation process helped the department identify the following four challenges:

1. Committee participation
    - The department has aggressively sought committee membership. Currently all positions are filled.
    - The department has recognized the need to develop processes to ensure committee involvement and satisfaction to maintain the level of dedication the inaugural committee has shown.
2. Reporting system
    - Colorado's mandatory reporting law requires health facilities report infections to the NHSN Web-based database. The netowrk's training and enrollment process can take up to two months. Any mistakes made during the enrollment process can result in having to re-enroll, thus beginning the lengthy enrollment process again. Although constrained by resource limitations, the Colorado Hospital Association, the Colorado Ambulatory Surgery Center Association and the Centers for Disease Control have provided some assistance to the department in training health facilities.
    - The NHSN is a federally managed and funded reporting system. The addition of any reporting element in its system is determined by the availability of federal funds.
3. Limited resources
    - Many of the difficulties health facilities have experienced with the NHSN reporting system were due to limited time and resources. The department and the advisory committee have attempted to assist the facilities, but struggle with the same time and resource constraints.
    - Another difficulty health facilities have faced with NHSN is facility staff turnover. Since digital certificates (used to gain access to the database) are specific to the individual reporting and not the facility, this has caused delays in reporting when a staff member leaves the facility without assigning another person to fill the reporting role.
4. Data validation
    - The issue of data validation has been a concern for the department and many stakeholder groups throughout Colorado. For this reason, funding was sought to provide personnel resources to carry out a data validation project in 2010. More information about plans for data validation can be found in the "Future Plans" section toward the end of the report.
        - Other states with mandatory health facility-acquired infections reporting laws have designated money and resources to implement, oversee and validate the facility data collection processes.
            - For example, New York has a program director, program manager, data manager, data analyst, program operations director, administrative assistant and five regionally based infection control professionals. New York also receives additional support from its Department of Health division directors and the CDC staff responsible for the NHSN reporting database.

        - The total number of reporting facilities in New York's 2008 report is 186, which is comparable to the 181 targeted for reporting in Colorado (including outpatient dialysis centers).
    - Until November 2009, Colorado primarily relied on one project manager to oversee the disclosure initiative with support from the volunteer advisory committee, department and division staff and the CDC staff responsible for the NHSN reporting database. With American Recovery and Reinvestment Act funds, the program has grown to two full-time employees, a program coordinator and a public health nurse consultant. The program is in the process of hiring a epidemiologist and quality improvement specialist.

The department and the advisory committee will continue to evaluate the health facility-acquired infections disclosure initiative to identify areas for process and data quality improvements and to increase public awareness.

Phase 5: Reporting Results

The final phase of implementation is the development of a public report. Although this is the third annual report, it is the second report that contains data. This report contains two years of data from hospitals, one year of data from LTACHs and seven months of data for ASCs. Trend data will be presented in future reports when there is more data to compare. The issue of data validation is a concern for the department and many stakeholder groups throughout Colorado. If facility specific data are entered incorrectly or are not complete the data may be skewed. For example, some of the procedures, such as hip or knee replacements, require ongoing monitoring for a full year to verify if a procedure related infection has occurred. Results in this report have not been validated. The department will begin validating data in 2010.

Hospitals have chosen to independently give their data to the Colorado Hospital Association (CHA) to compile and distribute to the hospitals in advance of the release of this report. The department appreciates that CHA has shared its report with the department so that a cross check of the data can be performed. NHSN released new national infection rates in December 2009, but will not update its systems with the new rates until the end of January. However, since the department is tasked with providing the most current data from facilities and NHSN, the department was able to compare each facility's infection rate to the new national rate. Thus, the comparison with the new national rate is reported here.

Health Facility-Acquired Infections Report

Data

Disclosure

All of the data in this report was submitted to National Healthcare Safety Network (NHSN) by Colorado healthcare facilities, which perform these procedures. The department depends on accurate information from reporting facilities and NHSN to produce these reports. The department has not been performing data validation or auditing facilities to ensure the data are complete, however data validation will begin in 2010.

The national unit rate is the average rate for all hospitals reporting to NHSN from 2006-2008. The comparison is based on statistical significance. Statistical significance is the likelihood that a result did not happen by chance alone. In other words, there is a scientific reason why some hospitals have better or worse rates. For example, two hospitals may have zero infections, but if one hospital has a much greater number of central line days that hospital may actually have a better infection rate than the national infection rate because of the large number of central line days without any infections.

Experts in the field of infection control find many procedures are performed in facility locations that have low infection rates. These experts recommend health facilities not attempt to collect an overall facility infection rate, as this would divert resources from working to prevent infections in higher risk facility locations. Many types of infections often lead to additional days in the hospital, which can be expensive for healthcare payers and healthcare organizations. Evidence suggests that tracking infections may lead to better adherence to preventive practices and decrease medical complications or death.

A resource consumers can utilize, along with this report, is the Hospital Report Card released by The Colorado Hospital Association. These reports are vital consumer tools that should be utilized along with other resources such as doctor referrals, insurance companies, friends, family and facilities located within their geographical location. The Hospital Report Card can be viewed at the following link www.cha.com. As infections are not the only adverse event that may happen to a consumer, it is important to weigh all factors in judging the quality of healthcare. Consumers should always consult with their doctor, hospital, family and friends before deciding where to receive care. Consumers should consider the experience of the facility, staff and other quality of care indicators in addition to the infection data below. These reports should be used as one of many quality evaluation tools and cannot, on its own, paint a complete picture of hospital care in Colorado.

This report is based on the national average received from the *National Healthcare Safety Network (NHSN) Report, data summary for 2006 through 2008, issued December 2009.*

Surgical Site Infections

Surgical site infections (SSIs) are infections that are directly related to an operative procedure. Facilities providing certain cardiac, orthopedic and abdominal procedures are required to report these procedures and any surgical site infection associated with the procedure to NHSN. The decision to report on specific SSI types was evidence-based. Some of the reasons to target these types of surgeries are because they are

- High volume procedures;
- Expensive for healthcare payers; and
- Performed at a number of health facilities in Colorado, often allowing consumers to choose where to receive treatment.

The procedures included in this report will be cardiac, orthopedic and abdominal surgeries.

Cardiac Surgeries

- Heart Bypass or Coronary Artery Bypass Graft is a surgery used to bypass blocked heart arteries by creating new passages for blood to flow to the heart muscle. Arteries or veins from other parts of the body are used as grafts to create alternative blood-flow pathways. The two types are coronary artery bypass graft with **both** chest and donor site incisions (CBGB) and coronary artery bypass with chest incision only (CBGC).

Orthopedic Surgeries

- Total or partial hip replacement is a hip replacement surgery for people with severe hip damage or pain related to chronic osteoarthritis, rheumatoid arthritis or other degenerative processes involving the hip joint. The surgical procedure for a hip replacement involves removing the damaged cartilage and bone from the hip joint and replacing them with new, man-made parts.

- Total or partial knee replacement is a knee replacement surgery (arthroplasty) that is considered an elective procedure for people with severe knee damage and pain related to osteoarthritis, rheumatoid arthritis, and traumatic arthritis. A total knee replacement involves removing the damaged cartilage and bone from the surface of the knee joint and replacing them with a man-made surface of metal and plastic. A partial knee replacement involves replacing only part of the knee joint.

Abdominal Surgeries

- Herniorrhaphy is the repair of an inguinal, femoral, umbilical, or anterior abdominal wall hernia. Repair of a diaphragmatic or hiatal hernia or hernias at other body sites do not meet NHSN operative procedure definition and are not reported.

Surgical procedures selected for SSI reporting are performed in a variety of facilities and tend to be associated with health facility-acquired infections. SSI rates are adjusted to take into account differences in patient risk factors for infection, such as length of the surgery, type of surgical wound and the patient's physical condition. These adjusted SSI rates (not displayed in the tables) are used to compute the Standardized Infection Ratio.

The Standardized Infection Ratio (SIR) is a risk adjusted summary measure that accounts for the type of procedure and risk category. The SIR provides an overall score for a procedure at each health facility based on the expected number of infections after adjusting for the risk category. It is the ratio of the observed to expected number of SSIs. The SIR can be used as a comparison measure between facilities. However, overall crude rates for SSIs (not risk adjusted) should never be compared between facilities due to inherent differences in the patient risk distribution in each facility.

Interpretation of the SIR is straightforward: A hospital's SIR value is compared to 1.0 (observed and expected number of SSIs are the same). If the SIR value is greater than 1.0, there are more infections than expected. If the SIR value is less than 1.0, then fewer infections occurred than expected. A statistical test (Poisson test) is used to determine if the difference is statistically significant. It is important to note that it is possible for a facility's SIR to be higher or lower than 1.0, but, due to statistical comparison and the total number of procedures and infections, not be significantly better or worse than the national rate. Also, it is possible for an SIR to be statistically high or low, even when a different facility has an even higher or lower (respectively) SIR that is not statistical significant; again, this is due to the numbers of procedures, infections, and the statistical testing process. For an example of how this calculation works please refer to Appendix D.

Cardiac Operative Procedures

Introduction

This section focuses on surgical site infections in cardiac operative procedures. These procedures are coronary artery bypass grafts with both chest and donor site incisions and coronary artery bypass grafts with chest incision only. The two tables show the results of data collected for surgical site infection by each cardiac operative procedure. The reporting period is from August 1, 2007 through July 31, 2008 and August 1, 2008 to July 31, 2009 for hospitals.

List of Tables

Surgical site infections in cardiac operative procedures

Surgical site infections (SSIs) are infections that are directly related to an operative procedure. Cardiac operative procedures include coronary artery bypass grafts with both chest and donor site incisions (CBGB) as well as coronary artery bypass grafts with chest incision only (CBGC). A CBGB is a chest procedure to perform direct revascularization of the heart, which includes obtaining a suitable vein from the donor site for grafting. A CBGC is a chest procedure to perform direct vascularization of the heart using an artery, for example the internal mammary artery (thoracic).

The department requested facilities report surgical site infections for cardiac operative procedures by NHSN definitions and will show data for the coronary artery bypass grafts with both chest and donor site incisions (CBGB) and coronary artery bypass grafts with chest incision only (CBGC).

Not every hospital will report CBGB and CBGC as only certain facilities perform these procedures. All hospitals that do report will follow up with the patient for one year to track infections with all implant procedures. Reporting CBGB and CBGC procedures separately will allow for fairer comparisons between hospitals, as they are two separate procedures. Many of the SSIs that occur in these procedures can

- Be prevented by following established prevention techniques:
- Easily be detected and reported accurately; and
- Have a devastating impact on the patient's quality of life.

Evidence suggests that reporting of infections may lead to better adherence to preventive practices and decreases medical complications.

Results

The two tables below show facility specific data for SSIs attributed to the two different procedures performed, as described above. The tables contain data from August 1, 2007 through July 31, 2008 and August 1, 2008 through July 31, 2009 for hospitals.

Each table lists all the hospitals in Colorado that performed the procedure, the city where the hospital is located, the number of infections, the number of procedures performed, the standardized infection ratio (SIR) and comparison to the national infection rate. For the definition of SIR please refer back to page 22 or see appendix D. The surgical infection rate is per 100 procedures. The three categories summarizing how a Colorado hospital compares to the national infection rate for procedure performed are

1. Facilities can have a statistically lower (**better**) infection rate than the national rate;
2. Facilities can have an infection rate that is statistically the **same** as the national rate; or
3. Facilities can have a statistically higher (**worse**) rate than the national rate.

Table 2: Coronary Artery Bypass Grafts with Chest and Donor Site Infections (CBGB), Inpatient Procedures for Hospitals, 2007-2009

Surgical Site Infections (SSIs) in
Coronary Artery Bypass Grafts with Chest and Donor Site Infections (CBGB), Hospital Inpatient
Reporting Period: August 1, 2007-July 31, 2008 and August 1, 2008-July 31, 2009

Health Facility and Region		Time Period							
		2007-2008				2008-2009			
		Procedure Count	Infection Count	Standardized Infection Ratio (SIR)	National Comparison	Procedure Count	Infection Count	Standardized Infection Ratio (SIR)	National Comparison
Boulder Community Hospital	**Boulder**	102	2	0.5	Same	77	4	1.4	Same
Centura Penrose St Francis Health	**Colorado Springs**	120	4	1	Same	81	1	0.4	Same
Centura Porter Adventist Hospital	**Denver**	80	2	0.9	Same	85	4	1.6	Same
Centura St Anthony Central Hospital	**Denver**	55	1	0.5	Same	74	1	0.4	Same
Exempla Lutheran Medical Center	**Wheat Ridge**	67	0	0	Same	94	1	0.3	Same
Exempla St Joseph Hospital	**Denver**	274	1	0.1	Better	244	1	0.1	Better
Longmont United Hospital	**Longmont**	62	4	1.6	Same	34	1	0.7	Same
Medical Center of Aurora	**Aurora**	51	2	1.1	Same	89	3	0.9	Same
Medical Center of the Rockies	**Loveland**	220	2	0.2	Better	181	3	0.5	Same
Memorial Hospital Central	**Colorado Springs**	216	3	0.5	Same	215	4	0.7	Same
North Colorado Medical Center	**Greeley**	78	1	0.4	Same	52	3	1.6	Same
Parkview Medical Center	**Pueblo**	102	1	0.3	Same	79	5	2.2	Same
Presbyterian St Lukes Medical Center	**Denver**	40	0	0	Same	38	1	1	Same
Rose Medical Center	**Denver**	25	1	1.6	Same	18	***	***	***
Sky Ridge Medical Center	**Lone Tree**	32	1	1	Same	34	0	0	Same
St Marys Hospital	**Grand Junction**	160	0	0	Better	156	1	0.2	Same
Swedish Medical Center	**Englewood**	60	0	0	Same	89	2	0.8	Same
University of Colorado Hospital	**Aurora**	64	2	0.9	Same	62	2	1	Same

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.
See "National Healthcare Safety Network (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

The standardized infection ration (SIR) is the ratio of observed to expected infections, and is adjusted for procedure risk. See page 15 for more details on the interpretation of the SIR.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for hospitals with fewer than 20 procedures performed in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.

Source: National Healthcare Safety Network (NHSN) Database.

Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 3: Coronary Artery Bypass Grafts with Chest Incision Only (CBGC), Inpatient Procedures for Hospitals, 2007-2009

Surgical Site Infections (SSIs) in Coronary Artery Bypass Grafts with Chest Incision Only (CBGC), Hospital Inpatient Reporting Period: August 1, 2007-July 31, 2008 and August 1, 2008-July 31, 2009

Health Facility and Region		Time Period							
		2007-2008				2008-2009			
		Procedure Count	Infection Count	Standardized Infection Ratio (SIR)	National Comparison	Procedure Count	Infection Count	Standardized Infection Ratio (SIR)	National Comparison
Boulder Community Hospital	**Boulder**	6	***	***	***	5	***	***	***
Centura Penrose St Francis Health	**Colorado Springs**	17	***	***	***	19	***	***	***
Centura Porter Adventist Hospital	**Denver**	20	0	0.0	Same	10	***	***	***
Centura St Anthony Central Hospital	**Denver**	70	0	0.0	Same	30	0	0.0	Same
Exempla Lutheran Medical Center	**Wheat Ridge**	7	***	***	***	3	***	***	***
Exempla St Joseph Hospital	**Denver**	8	***	***	***	4	***	***	***
Longmont United Hospital	**Longmont**	8	***	***	***	13	***	***	***
Medical Center of Aurora	**Aurora**	28	0	0.0	Same	4	***	***	***
Medical Center of the Rockies	**Loveland**	*	*	*	*	2	***	***	***
Memorial Hospital Central	**Colorado Springs**	29	1	2.4	Same	30	1	2.2	Same
North Colorado Medical Center	**Greeley**	4	***	***	***	10	***	***	***
Parkview Medical Center	**Pueblo**	3	***	***	***	2	***	***	***
Presbyterian St Lukes Medical Center	**Denver**	47	0	0.0	Same	43	0	0.0	Same
Rose Medical Center	**Denver**	1	***	***	***	5	***	***	***
Sky Ridge Medical Center	**Lone Tree**	2	***	***	***	*	*	*	*

St Marys Hospital	**Grand Junction**	*	*	*	*	1	***	***	***
Swedish Medical Center	**Englewood**	*	*	*	*	11	***	***	***
University of Colorado Hospital	**Aurora**	5	***	***	***	13	***	***	***

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.

See "National Healthcare Safety Network (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

The standardized infection ration (SIR) is the ratio of observed to expected infections, and is adjusted for procedure risk. See page 15 for more details on the interpretation of the SIR.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for hospitals with fewer than 20 procedures performed in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.

Source: National Healthcare Safety Network (NHSN) Database.

Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Orthopedic Operative Procedures

Introduction

This section focuses on surgical site infections in orthopedic operative procedures. These procedures are hip replacement (total or partial) and knee replacement (total or partial). The four tables show the results of data collected for surgical site infection by each orthopedic operative procedure. The reporting period is from August 1, 2007 through July 31, 2008 and August 1, 2008 through July 31, 2009 for hospitals. The reporting period for ambulatory surgery centers is from January 1, 2009-July 31, 2009.

List of Tables

Surgical site infections in orthopedic operative procedures

Surgical site infections (SSIs) are infections that are directly related to an operative procedure. Orthopedic operative procedures include hip prosthesis (total or partial) and knee prosthesis (total or partial). A hip prosthesis is hip joint replacement surgery that replaces all or part of the hip joint with an artificial device. The procedure consists of a cup, which is typically plastic, ceramic or metal that will replace the hip socket, a metal or ceramic ball that replaces the head of the thighbone and finally a metal stem that attaches to the bone. Knee prosthesis is a knee joint replacement that replaces all or part of the knee joint with an artificial device. In this procedure the patella (kneecap) is removed, the femur (thigh bone) and tibia (shin bone) are cut down and a metal, ceramic or plastic prosthesis is put in place. Infections can occur at the site of the incision typically within the first 30 days of the procedure. Symptoms of an infection can include drainage from the incision, pain, tenderness, swelling or redness.

The department requested facilities report surgical site infections for orthopedic operative procedures by NHSN definitions and show data for the hip prosthesis (total or partial) and knee prosthesis (total or partial).

Not every healthcare facility will report hip and knee prosthesis as only certain facilities perform these procedures. All healthcare facilities that do report will follow up with the patient for one year to track infections with all implant procedures. Reporting hip and knee procedures separately will allow for fairer comparisons between facilities, as they are two separate procedures. Many of the SSIs that occur in these procedures can

- Be prevented by following established prevention techniques;
- Easily be detected and reported accurately; and
- Have a devastating impact on the patient's quality of life.

Evidence suggests that reporting of infections may lead to better adherence to preventive practices and decrease medical complications.

Results

The four tables below show facility specific data for SSIs attributed to the two different procedures performed, as described above. The tables contain data from August 1, 2007 through July 31, 2008 and August 1, 2008 to July 31, 2009 for hospitals and from January 1, 2009 through July 31, 2009 for ambulatory surgery centers.

Each table lists all of the facilities in Colorado that performed the procedure, the city where the facility is located, the number of infections, the number of procedures performed, the standardized infection ratio (SIR) and the national infection rate for the procedure. The surgical

infection rate is per 100 procedures. The three categories summarizing how a Colorado healthcare facility compares to the national infection rate for procedure performed are

1. Facilities can have a statistically lower (**better**) infection rate than the national rate;
2. Facilities can have an infection rate that is statistically the **same** as the national rate; or
3. Facilities can have a statistically higher (**worse**) rate than the national rate.

Table 4: Hip Replacement (total or partial) (HPRO), Inpatient Procedures for Hospitals, 2007-2009

Surgical Site Infections (SSIs) in Hip Replacement Procedures (total or partial) (HPRO), Hospital Inpatient Reporting Period: August 1, 2007-July 31, 2008 and August 1, 2008-July 31, 2009

Health Facility and Region		Time Period							
		2007-2008				2008-2009			
		Procedure Count	Infection Count	Standardized Infection Ratio (SIR)	National Comparison	Procedure Count	Infection Count	Standardized Infection Ratio (SIR)	National Comparison
Animas Surgical Hospital	**Durango**	21	0	0.0	Same	20	0	0.0	Same
Aspen Valley Hospital	**Aspen**	13	***	***	***	9	***	***	***
Boulder Community Hospital	**Boulder**	258	2	0.7	Same	285	1	0.4	Same
Centura Avista Adventist Hospital	**Louisville**	110	3	2.6	Same	99	1	1.0	Same
Centura Littleton Adventist Hospital	**Littleton**	79	1	1.0	Same	63	0	0.0	Same
Centura Penrose St Francis Health	**Colorado Springs**	423	3	0.6	Same	371	5	1.1	Same
Centura Porter Adventist Hospital	**Denver**	523	5	0.9	Same	536	10	1.8	Same
Centura St Anthony Central Hospital	**Denver**	234	3	1.1	Same	273	2	0.7	Same
Centura St Anthony North Hospital	**Westminster**	54	1	1.3	Same	44	1	1.7	Same
Centura St Mary Corwin Medical Center	**Pueblo**	64	0	0.0	Same	154	0	0.0	Same
Centura St Thomas More Hospital	**Canon City**	35	0	0.0	Same	53	0	0.0	Same
Centura St. Francis Medical Center	**Colorado Springs**	*	*	*	*	135	3	2.0	Same
Colorado Mental Health Institute at Pueblo	**Pueblo**	1	***	***	***	2	***	***	***
Colorado Plains Medical Center	**Fort Morgan**	12	***	***	***	25	0	0.0	Same
Community Hospital	**Grand Junction**	79	2	2.0	Same	76	3	3.2	Same
Delta County Memorial Hospital	**Delta**	52	3	5.5	Worse	53	1	1.7	Same
Denver Health Medical Center	**Denver**	69	3	3.6	Same	74	2	2.0	Same
East Morgan County Hospital	**Brush**	8	***	***	***	8	***	***	***

Exempla Good Samaritan Medical Center	**Lafayette**	225	2	0.8	Same	235	1	0.4	Same
Exempla Lutheran Medical Center	**Wheat Ridge**	412	2	0.5	Same	360	0	0.0	Same
Exempla St Joseph Hospital	**Denver**	499	2	0.2	Better	460	2	0.3	Better
Grand River Medical Center	**Rifle**	2	***	***	***	4	***	***	***
Gunnison Valley Hospital	**Gunnison**	*	*	*	*	6	***	***	***
Heart of the Rockies Regional Medical Center	**Salida**	*	*	*	*	1	***	***	***
Longmont United Hospital	**Longmont**	99	2	1.2	Same	112	1	0.6	Same
McKee Medical Center	**Loveland**	113	0	0.0	Same	128	0	0.0	Same
Medical Center of Aurora	**Aurora**	245	3	1.2	Same	266	5	1.9	Same
Medical Center of the Rockies	**Loveland**	37	0	0.0	Same	70	2	1.9	Same
Memorial Hospital Central	**Colorado Springs**	381	5	0.9	Same	420	6	0.9	Same
Memorial Hospital North	**Colorado Springs**	82	3	3.9	Same	88	1	1.1	Same
Mercy Regional Medical Center	**Durango**	81	0	0.0	Same	68	0	0.0	Same
Montrose Memorial Hospital	**Montrose**	58	0	0.0	Same	50	1	1.3	Same
North Colorado Medical Center	**Greeley**	134	3	1.6	Same	127	2	1.1	Same
North Suburban Medical Center	**Thornton**	44	0	0.0	Same	43	1	1.7	Same
Parker Adventist Hospital	**Parker**	32	0	0.0	Same	26	0	0.0	Same
Parkview Medical Center	**Pueblo**	141	1	0.5	Same	145	3	1.4	Same
Pikes Peak Regional Hospital	**Woodland Park**	1	***	***	***	1	***	***	***
Platte Valley Medical Center	**Brighton**	15	***	***	***	16	***	***	***
Poudre Valley Hospital	**Fort Collins**	401	2	0.4	Same	403	6	1.2	Same
Presbyterian St Lukes Medical Center	**Denver**	242	2	0.7	Same	187	0	0.0	Same
Rose Medical Center	**Denver**	328	1	0.3	Same	307	2	0.6	Same
San Luis Valley Regional Medical Center	**Alamosa**	29	0	0.0	Same	30	0	0.0	Same
Sky Ridge Medical Center	**Lone Tree**	137	2	1.4	Same	188	4	2.0	Same
Southwest Memorial Hospital	**Cortez**	30	1	2.4	Same	29	0	0.0	Same
St Anthony Summit Medical Center	**Frisco**	8	***	***	***	18	***	***	***
St Marys Hospital	**Grand Junction**	223	1	0.4	Same	225	2	0.8	Same
Sterling Regional Medical Center	**Sterling**	28	4	10.7	Worse	42	1	1.7	Same
Swedish Medical Center	**Englewood**	159	1	0.6	Same	247	5	1.7	Same
The Childrens Hospital	**Aurora**	14	***	***	***	16	***	***	***
The Memorial Hospital	**Craig**	14	***	***	***	6	***	***	***
University of Colorado Hospital	**Aurora**	260	3	0.9	Same	208	3	1.2	Same
Vail Valley Medical Center	**Vail**	40	1	2.3	Same	47	0	0.0	Same
Valley View Hospital	**Glenwood Springs**	54	0	0.0	Same	48	1	2.0	Same
Wray Community Hospital	**Wray**	1	***	***	***	2	***	***	***
Yampa Valley Medical Center	**Steamboat**	47	1	1.7	Same	41	0	0.0	Same

	Springs								

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.

See "National Healthcare Safety Network (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

The standardized infection ration (SIR) is the ratio of observed to expected infections, and is adjusted for procedure risk. See page 15 for more details on the interpretation of the SIR.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for hospitals with fewer than 20 procedures performed in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.

Source: National Healthcare Safety Network (NHSN) Database.

Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 5: Knee Replacement (total or partial) (KPRO), Inpatient Procedures for Hospitals, 2007-2009

Surgical Site Infections (SSIs) in Knee Replacement Procedures (total or partial) (KPRO), Hospital Inpatient Reporting Period: August 1, 2007-July 31, 2008 and August 1, 2008-July 31, 2009

Health Facility and Region		Time Period							
		2007-2008				2008-2009			
		Procedure Count	Infection Count	Standardized Infection Ratio (SIR)	National Comparison	Procedure Count	Infection Count	Standardized Infection Ratio (SIR)	National Comparison
Animas Surgical Hospital	**Durango**	53	0	0.0	Same	50	0	0.0	Same
Aspen Valley Hospital	**Aspen**	12	***	***	***	12	***	***	***
Boulder Community Hospital	**Boulder**	177	0	0.0	Same	242	3	1.4	Same
Centura Avista Adventist Hospital	**Louisville**	187	6	3.8	Worse	149	2	1.6	Same
Centura Littleton Adventist Hospital	**Littleton**	92	4	5.2	Worse	85	0	0.0	Same
Centura Penrose St Francis Health	**Colorado Springs**	574	3	0.6	Same	453	5	1.3	Same
Centura Porter Adventist Hospital	**Denver**	979	9	1.2	Same	1,034	11	1.4	Same
Centura St Anthony Central Hospital	**Denver**	271	5	2.3	Same	378	5	1.6	Same
Centura St Anthony North Hospital	**Westminster**	74	0	0.0	Same	71	0	0.0	Same
Centura St Mary Corwin Medical Center	**Pueblo**	115	1	0.8	Same	232	0	0.0	Same
Centura St Thomas More Hospital	**Canon City**	84	0	0.0	Same	64	0	0.0	Same
Centura St. Francis Medical Center	**Colorado Springs**	*	*	*	*	341	2	0.7	Same
Colorado Mental Health Institute at Pueblo	**Pueblo**	1	***	***	***	2	***	***	***
Colorado Plains Medical Center	**Fort Morgan**	33	1	2.7	Same	35	0	0.0	Same
Community Hospital	**Grand Junction**	110	1	0.9	Same	162	1	0.7	Same

Delta County Memorial Hospital	**Delta**	92	0	0.0	Same	92	1	1.4	Same
Denver Health Medical Center	**Denver**	75	2	3.0	Same	93	1	1.3	Same
East Morgan County Hospital	**Brush**	10	***	***	***	12	***	***	***
Exempla Good Samaritan Medical Center	**Lafayette**	362	0	0.0	Same	389	2	0.7	Same
Exempla Lutheran Medical Center	**Wheat Ridge**	775	6	1.1	Same	671	7	1.5	Same
Exempla St Joseph Hospital	**Denver**	701	7	0.8	Same	684	1	0.1	Better
Grand River Medical Center	**Rifle**	*	*	*	*	10	***	***	***
Gunnison Valley Hospital	**Gunnison**	*	*	*	*	2	***	***	***
Heart of the Rockies Regional Medical Center	**Salida**	4	***	***	***	10	***	***	***
Longmont United Hospital	**Longmont**	171	1	0.6	Same	191	0	0.0	Same
McKee Medical Center	**Loveland**	182	4	2.5	Same	195	0	0.0	Same
Medical Center of Aurora	**Aurora**	390	4	1.3	Same	375	10	3.5	Worse
Medical Center of the Rockies	**Loveland**	50	0	0.0	Same	71	1	1.2	Same
Memorial Hospital Central	**Colorado Springs**	707	7	1.0	Same	641	8	1.3	Same
Memorial Hospital North	**Colorado Springs**	282	1	0.5	Same	213	0	0.0	Same
Mercy Regional Medical Center	**Durango**	82	0	0.0	Same	129	0	0.0	Same
Montrose Memorial Hospital	**Montrose**	89	2	2.4	Same	111	2	2.0	Same
North Colorado Medical Center	**Greeley**	283	7	2.5	Worse	285	0	0.0	Same
North Suburban Medical Center	**Thornton**	80	1	1.5	Same	105	0	0.0	Same
Parker Adventist Hospital	**Parker**	27	0	0.0	Same	20	0	0.0	Same
Parkview Medical Center	**Pueblo**	308	4	1.4	Same	342	2	0.7	Same
Pikes Peak Regional Hospital	**Woodland Park**	5	***	***	***	7	***	***	***
Platte Valley Medical Center	**Brighton**	48	2	3.9	Same	62	6	11.9	Worse
Poudre Valley Hospital	**Fort Collins**	733	7	1.1	Same	755	3	0.5	Same
Presbyterian St Lukes Medical Center	**Denver**	316	2	0.8	Same	267	0	0.0	Same
Rose Medical Center	**Denver**	533	3	0.7	Same	522	2	0.5	Same
San Luis Valley Regional Medical Center	**Alamosa**	38	1	2.7	Same	65	1	1.6	Same
Sky Ridge Medical Center	**Lone Tree**	217	3	1.6	Same	295	3	1.2	Same
Southwest Memorial Hospital	**Cortez**	36	0	0.0	Same	47	1	2.0	Same
St Anthony Summit Medical Center	**Frisco**	15	***	***	***	16	***	***	***
St Marys Hospital	**Grand Junction**	295	2	0.8	Same	298	3	1.2	Same
Sterling Regional Medical Center	**Sterling**	32	2	5.8	Same	38	2	5.0	Same
Swedish Medical Center	**Englewood**	337	8	3.1	Worse	316	7	2.8	Worse
The Childrens Hospital	**Aurora**	6	***	***	***	4	***	***	***
The Memorial Hospital	**Craig**	14	***	***	***	20	0	0.0	Same
University of Colorado Hospital	**Aurora**	290	2	0.8	Same	286	6	2.4	Same
Vail Valley Medical Center	**Vail**	117	0	0.0	Same	147	0	0.0	Same
Valley View Hospital	**Glenwood**	97	0	0.0	Same	100	0	0.0	Same

	Springs								
Wray Community Hospital	**Wray**	6	***	***	***	9	***	***	***
Yampa Valley Medical Center	**Steamboat Springs**	82	2	2.8	Same	82	0	0.0	Same

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.

See "National Healthcare Safety Network (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

The standardized infection ration (SIR) is the ratio of observed to expected infections, and is adjusted for procedure risk. See page 15 for more details on the interpretation of the SIR.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for hospitals with fewer than 20 procedures performed in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.

Source: National Healthcare Safety Network (NHSN) Database.

Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 6: Hip Replacement (total or partial) (HPRO), Outpatient Procedures for Ambulatory Surgical Centers, 2009

Surgical Site Infections (SSIs) in Hip Replacement Procedures (total or partial) (HPRO) in Ambulatory Surgical Centers (ASCs), Outpatient Reporting Period: January 1, 2009-July 31, 2009

Health Facility and Region		2009			
		Procedure Count	Infection Count	Standardized Infection Ratio (SIR)	National Comparison
Orthopaedic Center of the Rockies	**Ft Collins**	49	0	0.0	Same

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.

See "National Healthcare Safety Network (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

The standardized infection ration (SIR) is the ratio of observed to expected infections, and is adjusted for procedure risk. See page 15 for more details on the interpretation of the SIR.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for ASCs with fewer than 12 procedures performed in a seven-month period are suppressed to protect confidential health information. These ASCs have met the reporting requirements.

Source: National Healthcare Safety Network (NHSN) Database.

Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 7: Knee Replacement (total or partial) (HPRO), Outpatient Procedures for Ambulatory Surgical Centers, 2009

Surgical Site Infections (SSIs) in Knee Replacement Procedures (total or partial) (HPRO) in Ambulatory Surgical Centers (ASCs), Outpatient Reporting Period: January 1, 2009-July 31, 2009

Health Facility and Region		2009			
		Procedure Count	Infection Count	Standardized Infection Ratio (SIR)	National Comparison
Orthopaedic Center of the Rockies	**Ft Collins**	128	0	0.0	Same
Pueblo Surgery Center	**Pueblo**	1	***	***	***
Rocky Mountain Surgery Center	**Englewood**	3	***	***	***
Skyline Surgery Center	**Loveland**	4	***	***	***

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.

See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

The standardized infection ration (SIR) is the ratio of observed to expected infections, and is adjusted for procedure risk.

See page 15 for more details on the interpretation of the SIR.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for ASCs with fewer than 12 procedures performed in a seven-month period are suppressed to protect confidential health information. These ASCs have met the reporting requirements.

Source: National Healthcare Safety Network (NHSN) Database.

Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Abdominal Operative Procedures

Introduction

This section focuses on surgical site infections in abdominal operative procedures. The procedure included in this report is herrniorraphy or hernia repair. This procedure can be performed as an in- or outpatient procedure. The three tables show the results of data collected for surgical site infections associated with herniorraphies by inpatient or outpatient status. Inpatient as defined by NHSN is a patient whose date of admission to the healthcare facility and the date of discharge are different calendar days. Outpatient is defined as a patient whose date of

admission to the healthcare facility and the date of discharge are the same calendar day. The reporting period is from August 1, 2008 through July 31, 2009 for hospitals. The reporting period for ambulatory surgery centers is January 1, 2009 through July 31, 2009.

List of Tables

Surgical site infections in abdominal operative procedures

Surgical site infections (SSIs) are infections that are directly related to an operative procedure. Herniorrhaphies are one of the NHSN operative procedures the Colorado Health Facility-Acquired Infections Advisory Committee (CHFAIAC) recommended as a reporting requirement for hospitals and ambulatory surgical centers to report. A brief description of the types of operations contained in this NHSN operative procedure category include repair of an inguinal, femoral, umbilical, or anterior abdominal wall hernia. Repair of a diaphragmatic or hiatal hernia or hernias at other body sites do not meet NHSN operative procedure definition and are not reported.

The department requested facilities report surgical site infections for abdominal operative procedures by NHSN definitions and show data for herniorrhaphy procedures in inpatient and outpatient settings.

Not every facility will report herniorrhapies as only certain facilities perform these procedures. Reporting herniorrhaphy procedures by facility type and setting will allow for fairer comparisons between healthcare facilities, as they serve different patient populations and have differing levels of infection prevention experience.

Many of the SSIs that occur in these procedures can

- Be prevented by following established prevention techniques:
- Easily be detected and reported accurately; and
- Have a devastating impact on the patient's quality of life.

Evidence suggests that reporting of infections may lead to better adherence to preventive practices and decrease medical complications.

Results

The three tables below show facility specific data for SSIs attributed to herniorrhaphies as described above. The tables contain data for inpatient and outpatient procedures in hospitals for August 1, 2008 through July 31, 2009 and January 1, 2009 through July 31, 2009 for ambulatory surgery centers.

Each table lists all the facilities in Colorado that performed the procedure, the city where the facility is located, the number of infections, the number of procedures preformed, the standardized infection ratio (SIR) and the national infection rate for the procedure. The surgical infection rate is per 100 procedures. The three categories summarizing how a Colorado healthcare facility compares to the national infection rate for procedure performed are

1. Facilities can have a statistically lower (**better**) infection rate than the national rate:
2. Facilities can have an infection rate that is statistically the **same** as the national rate; or
3. Facilities can have a statistically higher (**worse**) rate than the national rate.

Table 8: Herniorrhaphy, Inpatient Procedures for Hospitals, 2008-2009

Surgical Site Infections (SSIs) in Herniorrhaphy Procedures in Hospitals, Inpatient Reporting Period: August 1, 2008-July 31, 2009

Health Facility and Region		Time Period: 2008-2009			
		Procedure Count	Infection Count	Standardized Infection Ratio (SIR)	National Comparison
Animas Surgical Hospital	Durango	5	***	***	***
Arkansas Valley Regional Medical Center	La Junta	7	***	***	***
Aspen Valley Hospital	Aspen	8	***	***	***
Boulder Community Hospital	Boulder	76	0	0	Same
Boulder Community Hospital-Foothills	Boulder	24	0	0	Same
Centura Avista Adventist Hospital	Louisville	40	2	2.9	Same
Centura Littleton Adventist Hospital	Littleton	58	1	1.2	Same
Centura Penrose St Francis Health	Colorado Springs	85	6	3.3	Worse
Centura Porter Adventist Hospital	Denver	79	1	0.6	Same
Centura St Anthony Central Hospital	Denver	133	0	0	Same
Centura St Anthony North Hospital	Westminster	51	0	0	Same
Centura St Mary Corwin Medical Center	Pueblo	60	0	0	Same

Centura St Thomas More Hospital	**Canon City**	17	***	***	***
Centura St. Francis Medical Center	**Colorado Springs**	28	1	1.8	Same
Colorado Mental Health Institute at Pueblo	**Pueblo**	29	0	0	Same
Colorado Plains Medical Center	**Fort Morgan**	2	***	***	***
Community Hospital	**Grand Junction**	23	1	1.8	Same
Delta County Memorial Hospital	**Delta**	41	1	1.4	Same
Denver Health Medical Center	**Denver**	76	3	1.8	Same
East Morgan County Hospital	**Brush**	3	***	***	***
Estes Park Medical Center	**Estes Park**	1	***	***	***
Exempla Good Samaritan Medical Center	**Lafayette**	33	0	0	Same
Exempla Lutheran Medical Center	**Wheat Ridge**	247	4	1	Same
Exempla St Joseph Hospital	**Denver**	406	1	0.1	Better
Grand River Medical Center	**Rifle**	9	***	***	***
Gunnison Valley Hospital	**Gunnison**	9	***	***	***
Heart of the Rockies Regional Medical Center	**Salida**	27	1	1.6	Same
Longmont United Hospital	**Longmont**	57	1	0.9	Same
McKee Medical Center	**Loveland**	45	1	1.2	Same
Medical Center of Aurora	**Aurora**	68	1	0.9	Same
Medical Center of the Rockies	**Loveland**	150	1	0.4	Same
Memorial Hospital Central	**Colorado Springs**	164	3	0.8	Same
Memorial Hospital North	**Colorado Springs**	45	3	3.7	Same
Mercy Regional Medical Center	**Durango**	12	***	***	***
Montrose Memorial Hospital	**Montrose**	18	***	***	***
Mt San Rafael Hospital	**Trinidad**	9	***	***	***
North Colorado Medical Center	**Greeley**	49	0	0	Same
North Suburban Medical Center	**Thornton**	42	1	1.3	Same
Parker Adventist Hospital	**Parker**	91	0	0	Same
Parkview Medical Center	**Pueblo**	110	2	0.9	Same
Pikes Peak Regional Hospital	**Woodland Park**	2	***	***	***
Platte Valley Medical Center	**Brighton**	13	***	***	***
Poudre Valley Hospital	**Fort Collins**	212	3	0.7	Same
Presbyterian St Lukes Medical Center	**Denver**	69	3	1.7	Same
Prowers Medical Center	**Lamar**	2	***	***	***
Rose Medical Center	**Denver**	99	0	0	Same
San Luis Valley Regional Medical Center	**Alamosa**	22	0	0	Same
Sky Ridge Medical Center	**Lone Tree**	89	0	0	Same
Southwest Memorial Hospital	**Cortez**	24	0	0	Same
Spanish Peaks Regional Health Center	**Walsenburg**	2	***	***	***
St Anthony Summit Medical Center	**Frisco**	15	***	***	***

St Marys Hospital	**Grand Junction**	65	1	0.8	Same
Sterling Regional Medical Center	**Sterling**	30	1	1.4	Same
Swedish Medical Center	**Englewood**	127	1	0.3	Same
The Childrens Hospital	**Aurora**	41	1	1.6	Same
The Memorial Hospital	**Craig**	3	***	***	***
University of Colorado Hospital	**Aurora**	48	4	3.1	Same
Vail Valley Medical Center	**Vail**	10	***	***	***
Valley View Hospital	**Glenwood Springs**	15	***	***	***
Wray Community Hospital	**Wray**	1	***	***	***
Yampa Valley Medical Center	**Steamboat Springs**	6	***	***	***

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.
See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).
The standardized infection ration (SIR) is the ratio of observed to expected infections, and is adjusted for procedure risk. See page 15 for more details on the interpretation of the SIR.
* Indicates value not computed/available.
--- Indicates no National rate to which to compare facility rate.
*** Infections data for hospitals with fewer than 20 procedures performed in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.
Source: National Healthcare Safety Network (NHSN) Database.
Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 9: Herniorrhaphy, Outpatient Procedures for Hospitals, 2008-2009

Surgical Site Infections (SSIs) in Herniorrhaphy Procedures in Hospitals, Outpatient
Reporting Period: August 1, 2008-July 31, 2009

Health Facility and Region		Time Period 2008-2009			
		Procedure Count	Infection Count	Standardized Infection Ratio (SIR)	National Comparison
Arkansas Valley Regional Medical Center	**La Junta**	57	0	0.0	Same
Aspen Valley Hospital	**Aspen**	64	0	0.0	Same
Boulder Community Hospital	**Boulder**	309	0	0.0	Same
Boulder Community Hospital-Foothills	**Boulder**	72	0	0.0	Same
Centura Avista Adventist Hospital	**Louisville**	179	0	0.0	Same
Centura Littleton Adventist Hospital	**Littleton**	113	0	0.0	Same

Centura Penrose St Francis Health	**Colorado Springs**	206	0	0.0	Same
Centura Porter Adventist Hospital	**Denver**	164	0	0.0	Same
Centura St Anthony Central Hospital	**Denver**	218	0	0.0	Same
Centura St Anthony North Hospital	**Westminster**	154	1	1.3	Same
Centura St Mary Corwin Medical Center	**Pueblo**	136	0	0.0	Same
Centura St Thomas More Hospital	**Canon City**	34	0	0.0	Same
Centura St. Francis Medical Center	**Colorado Springs**	44	0	0.0	Same
Colorado Plains Medical Center	**Fort Morgan**	17	***	***	***
Community Hospital	**Grand Junction**	246	3	2.5	Same
Delta County Memorial Hospital	**Delta**	64	0	0.0	Same
Denver Health Medical Center	**Denver**	205	1	0.9	Same
East Morgan County Hospital	**Brush**	58	0	0.0	Same
Estes Park Medical Center	**Estes Park**	28	0	0.0	Same
Exempla Good Samaritan Medical Center	**Lafayette**	558	1	0.4	Same
Exempla Lutheran Medical Center	**Wheat Ridge**	154	0	0.0	Same
Exempla St Joseph Hospital	**Denver**	21	0	0.0	Same
Grand River Medical Center	**Rifle**	35	0	0.0	Same
Gunnison Valley Hospital	**Gunnison**	27	0	0.0	Same
Heart of the Rockies Regional Medical Center	**Salida**	72	1	2.3	Same
Kit Carson Memorial Hospital	**Burlington**	18	***	***	***
Kremmling Memorial Hospital	**Kremmling**	16	***	***	***
Lincoln Community Hospital	**Hugo**	8	***	***	***
Longmont United Hospital	**Longmont**	66	0	0.0	Same
McKee Medical Center	**Loveland**	70	0	0.0	Same
Medical Center of Aurora	**Aurora**	373	1	0.6	Same
Medical Center of the Rockies	**Loveland**	80	0	0.0	Same
Memorial Hospital Central	**Colorado Springs**	624	11	3.2	Worse
Memorial Hospital North	**Colorado Springs**	124	0	0.0	Same
Mercy Regional Medical Center	**Durango**	54	0	0.0	Same
Montrose Memorial Hospital	**Montrose**	108	0	0.0	Same
Mt San Rafael Hospital	**Trinidad**	33	0	0.0	Same
North Colorado Medical Center	**Greeley**	160	1	1.2	Same
North Suburban Medical Center	**Thornton**	85	0	0.0	Same
Parker Adventist Hospital	**Parker**	205	0	0.0	Same
Parkview Medical Center	**Pueblo**	280	0	0.0	Same
Pikes Peak Regional Hospital	**Woodland Park**	32	0	0.0	Same
Platte Valley Medical Center	**Brighton**	126	0	0.0	Same
Poudre Valley Hospital	**Fort Collins**	69	0	0.0	Same
Presbyterian St Lukes Medical Center	**Denver**	426	1	0.5	Same

Prowers Medical Center	**Lamar**	24	0	0.0	Same
Rose Medical Center	**Denver**	122	0	0.0	Same
San Luis Valley Regional Medical Center	**Alamosa**	104	3	5.3	Worse
Sky Ridge Medical Center	**Lone Tree**	265	1	0.8	Same
Southeast Colorado Hospital	**Springfield**	6	***	***	***
Southwest Memorial Hospital	**Cortez**	58	0	0.0	Same
Spanish Peaks Regional Health Center	**Walsenburg**	13	***	***	***
St Anthony Summit Medical Center	**Frisco**	21	0	0.0	Same
St Marys Hospital	**Grand Junction**	85	0	0.0	Same
St Vincent General Hospital District	**Leadville**	16	***	***	***
Sterling Regional Medical Center	**Sterling**	48	0	0.0	Same
Swedish Medical Center	**Englewood**	81	0	0.0	Same
The Childrens Hospital	**Aurora**	615	0	0.0	Same
The Memorial Hospital	**Craig**	27	0	0.0	Same
University of Colorado Hospital	**Aurora**	237	5	3.7	Worse
Vail Valley Medical Center	**Vail**	87	0	0.0	Same
Valley View Hospital	**Glenwood Springs**	198	0	0.0	Same
Wray Community Hospital	**Wray**	27	0	0.0	Same
Yampa Valley Medical Center	**Steamboat Springs**	80	0	0.0	Same
Yuma District Hospital	**Yuma**	27	0	0.0	Same

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.

See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

The standardized infection ration (SIR) is the ratio of observed to expected infections, and is adjusted for procedure risk. See page 15 for more details on the interpretation of the SIR.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for hospitals with fewer than 20 procedures performed in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.

Source: National Healthcare Safety Network (NHSN) Database.

Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 10: Herniorrhaphy Procedures in Ambulatory Surgical Centers, 2009

Surgical Site Infections (SSIs) in Herniorrhaphy Procedures in Ambulatory Surgical Centers (ASCs) Reporting Period: January 1, 2009-July 31, 2009					
Health Facility and Region		2009			
		Procedure Count	Infection Count	Standardized Infection Ratio (SIR)	National Comparison
ASC Durango at Mercy Medical Center	Durango	81	0	0	Same
Aberdeen Ambulatory Surgical Center	Pueblo	2	***	***	***
Arkansas Valley Surgery Center	Canon City	45	0	0	Same
Audubon Ambulatory Surgery Center	Colorado Springs	52	0	0	Same
Audubon Ambulatory Surgery Center at St. Francis	Colorado Springs	271	1	0.8	Same
Aurora Surgery Center	Aurora	37	0	0	Same
Black Canyon Surgical Center	Montrose	41	0	0	Same
Boulder Medical Center	Boulder	21	0	0	Same
Centrum Surgical Center	Greenwood Village	2	***	***	***
Clear Creek Surgery Center	Wheat Ridge	263	0	0	Same
Colorado Springs Surgery Center	Colorado Springs	6	***	***	***
Crown Point Surgery Center	Parker	134	0	0	Same
Denver Midtown Surgery Center	Denver	130	0	0	Same
Denver West Surgery Center	Golden	2	***	***	***
First Choice Outpatient Surgery Center at Community Hospital	Grand Junction	95	0	0	Same
Grand Valley Surgical Center	Grand Junction	140	2	2.9	Same
Harmony Ambulatory Surgery Center	Ft Collins	253	1	0.8	Same
Kaiser Permanente Ambulatory Surgery Center	Denver	414	1	0.5	Same
Lakewood Surgical Center	Lakewood	37	0	0	Same
Lincoln Surgery Center	Parker	1	***	***	***
Longmont Surgery Center	Longmont	91	0	0	Same
MCR Surgery Center	Loveland	9	***	***	***
North Colorado Surgery Center	Greeley	93	0	0	Same
North Suburban Surgery Center	Thornton	70	0	0	Same
Park Ridge Surgery Center of Sky Ridge	Lone Tree	6	***	***	***
Parkwest Surgery Center	Pueblo	15	0	0	Same
Peak One Surgery Center	Frisco	3	***	***	***
Pueblo Surgery Center	Pueblo	13	0	0	Same
Rocky Mountain Surgery Center	Englewood	225	0	0	Same

Rose Surgical Center	**Denver**	205	0	0	Same
Sky Ridge Surgical Center	**Lone Tree**	114	0	0	Same
Skyline Surgery Center	**Loveland**	77	0	0	Same
Summit View Surgery Center	**Littleton**	183	2	2.3	Same
Surgery Center At Lutheran	**Wheat Ridge**	90	0	0	Same
Surgery Center At Printers Park	**Colorado Springs**	41	0	0	Same
Surgical Center At Premier	**Colorado Springs**	33	0	0	Same

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.

See "National Healthcare Safety Network (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

The standardized infection ration (SIR) is the ratio of observed to expected infections, and is adjusted for procedure risk. See page 15 for more details on the interpretation of the SIR.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for ASCs with fewer than 12 procedures performed in a seven-month period are suppressed to protect confidential health information. These ASCs have met the reporting requirements.

Source: National Healthcare Safety Network (NHSN) Database.

Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Catheter-Associated Bloodstream Infection Rates

Adult Critical Care Units

Introduction

This section of the report focuses on central line-associated bloodstream infections acquired in five adult critical care units (CCUs). The five tables in this bulletin show the results of data collected in each critical care unit and contain data from August 1, 2007 through July 31, 2008 and August 1, 2008 through July 31, 2009.

List of Tables

Central line-associated bloodstream infections

Central line-associated bloodstream infections (CLABSIs) are primary bloodstream infections that are associated with the presence of a central line at the time of or before the onset of an infection. A central line is an intravascular catheter (tube in a vein) that terminates at or close to the heart or in one of the great vessels. An example of a great vessel is the aorta or superior vena cava. A central line can be used to infuse fluids or withdraw blood in patients. Central lines can be either temporary or permanent.

The department requested facilities report CLABSIs by NHSN defined units. The information in this bulletin will cover central lines in the following units

- Adult Medical/Surgical Critical Care;
- Adult Medical Cardiac Critical Care;
- Adult Surgical Cardiothoracic Critical Care;
- Adult Medical Critical Care; and
- Adult Surgical Critical Care

Not every hospital will have all five critical care units. Hospitals decide which type of CCU they have by measuring the type of patients that are cared for in that area and applying what is called the 80/20 rule. For instance, the medical CCU serves non-surgical patients, so if a facility finds that 80 percent of their critical care patients are non-surgical that facility would have a medical CCU, according to NHSN definitions. Facilities that handle 80 percent or more trauma patients in a particular CCU are not required to report for that CCU. The department is not reporting trauma information as patients in these areas have unique risk factors and complications are often less preventable.

Reporting CLABSIs by unit type allows for fairer comparisons between hospitals. It takes into account differences in the type of patients CCUs treat and the different risks for infection. Most CLABSIs that occur in these facility locations can

- Be prevented by following established prevention techniques:
- Easily be detected and reported accurately; and
- Have a devastating impact on the patient's quality of life.

Results

The five tables below show facility specific data for CLABSIs attributed to the five CCU types discussed above. Results are presented separately for each type of CCU. The tables contain data from August 1, 2007 through July 31, 2008 and August 1, 2008 through July 31, 2009.

Each table lists all the hospitals in Colorado with that type of critical care unit, the city where the hospital is located, the number of central line days in the unit, the number of infections in the unit, the infection rate for the unit and a comparison to the national infection rate for that unit. The number of central line days is the total number of days a central line was used in the CCU during the reporting period. The central line-associated bloodstream infection rate is the number of infections per 1,000 central line days. The three categories summarizing how a Colorado hospital compares to the national infection rate for that CCU are

1. Hospitals can have a statistically lower (**better**) infection rate than the national unit rate;
2. Hospitals can have an infection rate that is statistically the **same** as the national unit rate; or
3. Hospitals can have a statistically higher (**worse**) infection rate than the national unit rate.

Table 11: Adult Medical Cardiac Critical Care Unit CLABSI Rates, 2007-2009

The adult medical cardiac critical care location is a critical care unit (CCU) that specializes in care of patients with serious heart problems that do not require heart surgery.

Central Line-Associated Bloodstream Infections (CLABSIs) in Adult Medical Cardiac Critical Care Units Reporting Period: August 1, 2007-July 31, 2008 and August 1, 2008-July 31, 2009

Health Facility and Region		Time Period							
		2007-2008				2008-2009			
		National Rate=2.0							
		Central Line Days	CLABSI	CLABSI Rate	National Comparison	Central Line Days	CLABSI	CLABSI Rate	National Comparison
Exempla Lutheran Medical Center	**Wheat Ridge**	1,605	1	0.6	Same	2,057	1	0.5	Same
Memorial Hospital Central	**Colorado Springs**	1,832	0	0.0	Same	1,572	2	1.3	Same
North Colorado Medical Center	**Greeley**	2,332	1	0.4	Same	1,957	0	0.0	Better
University of Colorado Hospital	**Aurora**	1,143	4	3.5	Same	1,288	6	4.7	Same

Facility CLABSI rates are per 1,000 central line-days.

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.

See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

Statistical comparison to the national rate performed using the Poisson test.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for hospitals with fewer than 50 central line-days in a twelve-month period are suppressed

to protect confidential health information. These hospitals have met the reporting requirements.
Source: National Healthcare Safety Network (NHSN) Database.
Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 12: Adult Surgical Cardiothoracic Critical Care Unit CLABSI Rates, 2007-2009

The adult medical cardiothoracic critical care location is a critical care unit (CCU) that specializes in care of patients following cardiac and thoracic surgery (i.e., surgeries on the organs within the chest-like the heart or lungs).

Central Line-Associated Bloodstream Infections (CLABSIs) in Adult Surgical Cardiothoracic Critical Care Units
Reporting Period: August 1, 2007-July 31, 2008 and August 1, 2008-July 31, 2009.

Health Facility and Region		Time Period							
		2007-2008				2008-2009			
		National Rate=1.4							
		Central Line Days	CLABSI	CLABSI Rate	National Comparison	Central Line Days	CLABSI	CLABSI Rate	National Comparison
Centura St Anthony Central Hospital	**Denver**	1,868	1	0.5	Same	1,876	0	0.0	Same
St Marys Hospital	**Grand Junction**	1,361	0	0.0	Same	1,348	2	1.5	Same

Facility CLABSI rates are per 1,000 central line-days.
National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.
See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).
Statistical comparison to the national rate performed using the Poisson test.
* Indicates value not computed/available.
--- Indicates no National rate to which to compare facility rate.
*** Infections data for hospitals with fewer than 50 central line-days in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.
Source: National Healthcare Safety Network (NHSN) Database.
Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 13: Adult Medical/Surgical Critical Care Unit CLABSI Rates, 2007-2009

The adult medical/surgical critical care location is a critical care unit (CCU) for critically ill patients who are being treated for medical conditions, surgical conditions or both.

Central Line-Associated Bloodstream Infections (CLABSIs) in Adult Medical/Surgical Critical Care Units
Reporting Period: August 1, 2007-July 31, 2008 and August 1, 2008-July 31, 2009

Health Facility and Region		Time Period							
		2007-2008				2008-2009			
		National Rate=1.5							
		Central Line Days	CLABSI	CLABSI Rate	National Comparison	Central Line Days	CLABSI	CLABSI Rate	National Comparison
Arkansas Valley Regional Medical Center	**La Junta**	129	0	0.0	Same	161	0	0.0	Same
Aspen Valley Hospital	**Aspen**	43	***	***	***	78	0	0.0	Same
Boulder Community Hospital	**Boulder**	2,042	3	1.5	Same	1,891	3	1.6	Same
Centura Avista Adventist Hospital	**Louisville**	803	2	2.5	Same	470	0	0.0	Same
Centura Littleton Adventist Hospital	**Littleton**	186	0	0.0	Same	2,976	0	0.0	Better
Centura Penrose St Francis Health	**Colorado Springs**	4,148	4	1.0	Same	3,440	6	1.7	Same
Centura Porter Adventist Hospital	**Denver**	4,658	6	1.3	Same	3,987	9	2.3	Same
Centura St Francis Medical Center	**Colorado Springs**	*	*	*	*	342	1	2.9	Same
Centura St Mary Corwin Medical Center	**Pueblo**	2,341	3	1.3	Same	2,548	2	0.8	Same
Centura St Thomas More Hospital	**Canon City**	130	0	0.0	Same	20	***	***	***
Colorado Plains Medical Center	**Fort Morgan**	132	0	0.0	Same	38	***	***	***
Community Hospital	**Grand Junction**	525	1	1.9	Same	364	0	0.0	Same
Delta County Memorial Hospital	**Delta**	233	0	0.0	Same	375	0	0.0	Same
Exempla Good Samaritan Medical Center	**Lafayette**	2,171	3	1.4	Same	2,368	2	0.8	Same
Exempla Lutheran Medical Center	**Wheat Ridge**	2,733	2	0.7	Same	3,792	2	0.5	Same
Exempla St Joseph Hospital	**Denver**	5,421	2	0.4	Better	3,734	1	0.3	Better
Gunnison Valley Hospital	**Gunnison**	4	***	***	***	0	***	***	***
Heart of the Rockies Regional Medical Center	**Salida**	45	***	***	***	27	***	***	***
Longmont United Hospital	**Longmont**	2,551	1	0.4	Same	2,782	2	0.7	Same
McKee Medical Center	**Loveland**	608	3	4.9	Same	628	0	0.0	Same
Medical Center of Aurora	**Aurora**	6,345	9	1.4	Same	5,292	11	2.1	Same
Medical Center of the Rockies-North Wing	**Loveland**	1,181	0	0.0	Same	2,200	1	0.6	Same
Medical Center of the Rockies-South Wing	**Loveland**	1,711	2	1.2	Same	*	*	*	*
Memorial Hospital Central	**Colorado Springs**	4,853	1	0.2	Better	4,381	7	1.6	Same
Memorial Hospital North	**Colorado Springs**	*	*	*	*	316	1	3.2	Same

Mercy Regional Medical Center	**Durango**	1,153	0	0.0	Same	1,007	1	1.0	Same
Montrose Memorial Hospital	**Montrose**	266	0	0.0	Same	428	0	0.0	Same
North Colorado Medical Center	**Greeley**	2,460	1	0.4	Same	2,201	2	0.9	Same
North Suburban Medical Center	**Thornton**	1,760	1	0.6	Same	1,504	1	0.7	Same
Parker Adventist Hospital	**Parker**	214	1	4.7	Same	988	4	4.0	Same
Parkview Medical Center	**Pueblo**	1,885	1	0.5	Same	1,677	0	0.0	Same
Poudre Valley Hospital	**Fort Collins**	1,602	2	1.2	Same	1,746	1	0.6	Same
Presbyterian St Lukes Medical Center	**Denver**	2,781	9	3.2	Same	2,568	1	0.4	Same
Rose Medical Center	**Denver**	2,786	4	1.4	Same	2,507	6	2.4	Same
San Luis Valley Regional Medical Center	**Alamosa**	274	0	0.0	Same	381	0	0.0	Same
Sky Ridge Medical Center	**Lone Tree**	2,658	7	2.6	Same	2,281	1	0.4	Same
Southwest Memorial Hospital	**Cortez**	138	0	0.0	Same	139	0	0.0	Same
St Anthony Summit Medical Center	**Frisco**	124	0	0.0	Same	137	1	7.3	Same
St Marys Hospital	**Grand Junction**	1,287	2	1.6	Same	1,093	2	1.8	Same
Sterling Regional Medical Center	**Sterling**	131	0	0.0	Same	97	0	0.0	Same
Swedish Medical Center	**Englewood**	8,910	15	1.7	Same	8,828	30	3.4	Worse
Vail Valley Medical Center	**Vail**	160	0	0.0	Same	267	0	0.0	Same
Valley View Hospital	**Glenwood Springs**	309	0	0.0	Same	432	0	0.0	Same
Yampa Valley Medical Center	**Steamboat Springs**	41	***	***	***	43	***	***	***

Facility CLABSI rates are per 1,000 central line-days.

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.

See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

Statistical comparison to the national rate performed using the Poisson test.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for hospitals with fewer than 50 central line-days in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.

Source: National Healthcare Safety Network (NHSN) Database.

Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 14: Adult Medical Critical Care Unit CLABSI Rates, 2007-2009

The adult medical critical care location is a critical care unit (CCU) for patients who are being treated for non-surgical conditions.

Central Line-Associated Bloodstream Infections (CLABSIs) in Adult Medical Critical Care Units
Reporting Period: August 1, 2007-July 31, 2008 and August 1, 2008-July 31, 2009

Health Facility and Region		Time Period							
		2007-2008				2008-2009			
		National Rate=1.9							
		Central Line Days	CLABSI	CLABSI Rate	National Comparison	Central Line Days	CLABSI	CLABSI Rate	National Comparison
Boulder Community Hospital-Foothills	**Boulder**	60	0	0.0	Same	64	0	0.0	Same
Centura Littleton Adventist Hospital	**Littleton**	2,561	1	0.4	Same	*	*	*	*
Centura St Anthony Central Hospital	**Denver**	2,684	0	0.0	Better	3,045	4	1.3	Same
Centura St Anthony North Hospital	**Westminster**	3,067	5	1.6	Same	3,520	2	0.6	Same
Denver Health Medical Center	**Denver**	3,601	3	0.8	Same	3,077	3	1.0	Same
Platte Valley Medical Center	**Brighton**	361	1	2.8	Same	390	1	2.6	Same
University of Colorado Hospital	**Aurora**	3,625	13	3.6	Worse	3,655	11	3.0	Same

Facility CLABSI rates are per 1,000 central line-days.
National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.
See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).
Statistical comparison to the national rate performed using the Poisson test.
* Indicates value not computed/available.
--- Indicates no National rate to which to compare facility rate.
*** Infections data for hospitals with fewer than 50 central line-days in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.
Source: National Healthcare Safety Network (NHSN) Database.
Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 15: Adult Surgical Critical Care Unit CLABSI Rates, 2007-2009

The adult surgical critical care location is a critical care unit (CCU) for the evaluation and management of patients with serious illness before and/or after surgery.

Central Line-Associated Bloodstream Infections (CLABSIs) in Adult Surgical Critical Care Units
Reporting Period: August 1, 2007-July 31, 2008 and August 1, 2008-July 31, 2009

Health Facility and Region		Time Period							
		2007-2008				2008-2009			
		National Rate=2.3							
		Central Line Days	CLABSI	CLABSI Rate	National Comparison	Central Line Days	CLABSI	CLABSI Rate	National Comparison
University of Colorado Hospital	**Aurora**	3,435	13	3.8	Same	3,907	15	3.8	Same

Facility CLABSI rates are per 1,000 central line-days.

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.
See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

Statistical comparison to the national rate performed using the Poisson test.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for hospitals with fewer than 50 central line-days in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.

Source: National Healthcare Safety Network (NHSN)
Database.

Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Catheter-Associated Bloodstream Infection Rates

Long-Term Acute Care Hospitals

Introduction

A long-term acute care hospital is a specialty care hospital that cares for patients that have medical conditions requiring intense and special treatment for a long period of time (an average length of stay is 25 days). These patients often transfer from critical care units in traditional hospitals. Patients in these facilities have a higher severity of illness often with multi-system complications posing a challenge for infection control. There is a high prevalence of multi-drug resistant organisms and antibiotic resistance among patient in these facilities.

List of Tables

Central line-associated bloodstream infections

Central line-associated bloodstream infections (CLABSIs) are primary bloodstream infections that are associated with the presence of a central line within the 48-hour period before a BSI develops. A central line is an intravascular catheter (tube in a vein) that terminates at or close to the heart or in one of the great vessels. An example of a great vessel is the aorta or superior vena cava. A central line can be used to infuse fluids or withdraw blood in patients. Central lines can be either permanent or temporary. Permanent lines are those that are tunneled and cuffed. Temporary lines are those that are not tunneled and not cuffed. Permanent lines are commonly used in LTACH patients and may have lower rates of associated infection than central lines inserted for temporary use. In Colorado, the data shows that a majority of LTACHs are using temporary lines. Both types of lines are used to infuse fluids or withdraw blood in patients.

The department requested that long-term acute care hospitals report CLABSIs by type of line (permanent or temporary as defined by NHSN) beginning in August 2008. Data will be reported on permanent and temporary lines in LTACHs for August 1, 2008 through July 31, 2009.

Reporting central line data by facility type and central line type allows for fairer comparisons between health facilities as it takes into account how differences in care and patients' risk for infection lead to differences in infection rates. Many of the central line-associated bloodstream infections that occur in these facility locations can

- Be prevented by following established prevention techniques;
- Easily be detected and reported accurately; and
- Have a devastating impact on the patient's quality of life.

Central line-associated bloodstream infections often lead to additional days in the hospital, which can be expensive for healthcare payers, healthcare organizations and patients. Evidence suggests that reporting of infections may lead to better adherence to preventive practices and decrease medical complications or death.

Results

The two tables below show facility specific data for CLABSIs in long-term acute care hospitals. The tables contain data from August 1, 2008 through July 31, 2009.

Each table lists all the long-term acute care hospitals in Colorado the city where the hospital is located, the number of central line days in the unit, whether the line is permanent or temporary, the number of infections in the unit, the infection rate for the unit and a comparison to the national infection rate for that unit. The number of central line days is the total number of days a central line was used in the LTACH during the reporting period. The central line-associated bloodstream infection rate is the number of infections per 1,000 central line days. The three categories summarizing how a Colorado hospital compares to the national infection rate for that CCU are

1. Hospitals can have a statistically lower (**better**) infection rate than the national unit rate;
2. Hospitals can have an infection rate that is statistically the **same** as the national unit rate; or
3. Hospitals can have a statistically higher (**worse**) infection rate than the national unit rate.

Table 16: Long-Term Acute Care Hospital CLABSI Rates for Permanent Lines, 2008-2009

Central Line-Associated Bloodstream Infections (CLABSIs) in Long-Term Acute Care Hospital (LTACH), Permanent (Tunneled) Lines Reporting Period: August 1, 2008-July 31, 2009

Health Facility and Region		Time Period: 2008-2009				
		Permanent Central Line Days	CLABSI	CLABSI Rate	National Rate	National Comparison
Colorado Acute Long Term Hospital	**Denver**	646	0	0.0	1.6	Better
Craig Hospital	**Englewood**	91	0	0.0	1.6	Better
Kindred Hospital	**Denver**	1,016	1	1.0	1.6	Same
Northern Colorado Long Term Acute Hospital	**Johnstown**	48	***	***	***	***
Select Long Term Care Hospital	**Colorado Springs**	3,828	4	1.0	1.6	Same
Select Speciality Hospital South Campus	**Denver**	0	***	***	***	***
Select Specialty Hospital	**Denver**	0	***	***	***	***
Triumph Acute Long Term Care Hospital of Aurora	**Aurora**	4	***	***	***	***
Vibra Long Term Acute Care Hospital	**Thornton**	110	0	0.0	1.6	Same

Facility permanent (tunneled) central line infection rates are per 1,000 permanent central line-days.
National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.
See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).
Statistical comparison to the national rate performed using the Poisson test.
Data for Triumph Acute Long Term Care Hospital of Aurora reflect the time period July 2008-March 2009.
* Indicates value not computed/available.
--- Indicates no National rate to which to compare facility rate.
*** Infections data for hospitals with fewer than 50 central line-days in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.
Source: National Healthcare Safety Network (NHSN) Database.
Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 17: Long-Term Acute Care Hospital CLABSI Rates for Temporary Lines, 2008-2009

Central Line-Associated Bloodstream Infections (CLABSIs) in Long-Term Acute Care Hospital (LTACH), Temporary (Non-Tunneled) Lines Reporting Period: August 1, 2008-July 31, 2009

Health Facility and Region		Time Period: 2008-2009				
		Temporary Central Line Days	CLABSI	CLABSI Rate	National Rate	National Comparison
Colorado Acute Long Term Hospital	**Denver**	6,371	19	3	1.7	Worse
Craig Hospital	**Englewood**	6,053	0	0	1.7	Better
Kindred Hospital	**Denver**	4,566	13	2.8	1.7	Same
Northern Colorado Long Term Acute Hospital	**Johnstown**	2,202	5	2.3	1.7	Same
Select Long Term Care Hospital	**Colorado Springs**	245	1	4.1	1.7	Same
Select Speciality Hospital South Campus	**Denver**	4,394	7	1.6	1.7	Same
Select Specialty Hospital	**Denver**	4,186	4	1	1.7	Same
Triumph Acute Long Term Care Hospital of Aurora	**Aurora**	3,673	7	1.9	1.7	Same
Vibra Long Term Acute Care Hospital	**Thornton**	2,095	2	1	1.7	Same

Facility temporary (non-tunneled) central line infection rates are per 1,000 temporary central line-days.
National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.
See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).
Statistical comparison to the national rate performed using the Poisson test.
Data for Triumph Acute Long Term Care Hospital of Aurora reflect the time period July 2008-March 2009.
* Indicates value not computed/available.
--- Indicates no National rate to which to compare facility rate.
*** Infections data for hospitals with fewer than 50 central line-days in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.
Source: National Healthcare Safety Network (NHSN) Database.
Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Catheter-Associated Bloodstream Infection Rates

Neonatal Critical Care Units

Introduction

This section of the report focuses on catheter-associated bloodstream infections acquired in level III and level II/III combined critical care newborn nurseries (NCCU). The four tables show the results of data collected in each NCCU level by birth weight. The reporting period is from August 1, 2007 through July 31, 2008 and August 1, 2008 through July 31, 2009.

List of Tables

Catheter-associated bloodstream infections

Central line catheter (CLABSI) or umbilical catheter (UCABI) associated bloodstream infections are primary bloodstream infections associated with the presence of a catheter at the time of or before the onset of an infection. A central line is an intravascular catheter that terminates at or close to the heart or in one of the great vessels (i.e., a tube placed in a vein). An example of a great vessel is the aorta or superior vena cava. An umbilical catheter is a central vascular catheter inserted through the umbilical artery or vein in a neonate (i.e., a tube placed in the umbilical cord). Both catheter types are used to temporarily or permanently infuse fluids or withdraw blood in patients.

The department requested facilities report catheter associated bloodstream infections by NHSN defined units and the information in this report will show data for CLABSI and UCABI for Neonatal Level III Critical Care Units and CLABSI and UCABI for Neonatal Level II/III Combined Critical Care Units

Hospitals listed in this report all have designated level III neonatal critical care units (NCCUs). Level III NCCUs handle the sickest newborn infants, while level I units would care for healthy newborn infants. Level III NCCUs are organized with personnel and equipment to provide continuous life support and comprehensive care for extremely high-risk newborn infants and those with complex critical illness. Level III NCCUs have a neonatologist on duty at all times. Neonatologists are pediatricians who have special training to deal with diseases and care of newborn infants.

The designation between level III and level II/III is defined by the NHSN reporting guidelines. If a hospital is not able to separate the infants in the unit that are receiving level II care and those receiving level III care that hospital is required to report data as a level II/III combined NICU.

Reporting NCCU data by care level, birth weight and catheter type allows for fairer comparisons between hospitals as it takes into account how differences in care and patients' risk for infection lead to differences in infection rates. Many of the catheter-associated bloodstream infections that occur in these facility locations can

- Be prevented by following established prevention techniques;
- Easily be detected and reported accurately; and
- Have a devastating impact on the patient's quality of life.

Results

The first of the four tables shows information on central line-associated bloodstream infections in level II/III combined units, while the second displays data from level III units. The third table shows data on umbilical catheter associated bloodstream infections in level II/III combined units and the forth table shows data from level III units. Both tables contain results separated into the birth weight categories shown below:

1. Less than or equal to 1.65 pounds (≤750 grams)
2. 1.66 to 2.2 pounds (751-1,000 grams)
3. 2.3 to 3.3 pounds (1,001-1,500 grams)
4. 3.4 to 5.5 pounds (1,501-2,500 grams)
5. Greater than 5.5 pounds (>2,500)

The weight is that of the infant at the time of birth and does not reflect changes during the hospital stay. For example, if a newborn infant weighs 1.66 pounds at birth but remains in the NCCU for two months and has a body weight of 3.3 pounds when it develops an infection, the recorded birth weight would still be 1.66 pounds.

Each table lists the hospital name, the city where the hospital is located, the number of central line catheter days in the unit, the number of infections in the unit, the infection rate for the unit, the national infection rate and a comparison to the national infection rate. National data is unique for each unit level and birth weight. The number of catheter days is the total number of days a catheter was used in the NCCU during the reporting period. The infection rate is the number of infections per 1,000 catheter days. The three categories summarizing how a Colorado hospital compares to the national infection rate for that NCCU are

1. Hospitals can have a statistically lower (**better**) infection rate than the national unit rate;
2. Hospitals can have an infection rate that is statistically the **same** as the national unit rate; or
3. Hospitals can have a statistically higher (**worse**) infection rate than the national unit rate.

Results shown below focus on central line-associated bloodstream infections (CLABSIs) and umbilical catheter-associated bloodstream infections (UCABI).

Cautions

There are some cautions consumers should be aware of when interpreting the data in this report. Some medical conditions in newborn infants predispose them to bloodstream infections whether they have a catheter in place or not. This means that the catheter may not be the reason the blood got infected. However, because the patient has a catheter in place when this infection happens it is counted as a bloodstream infection. For example, bloodstream infections in infants with major intestinal problems are common because bacteria in the intestine can access the bloodstream more easily.

Another limitation of the definition used to report bloodstream infections in newborn infants is that it includes a category called clinical sepsis. This requires that a patient's medical chart be checked each day for key signs and symptoms of infection. This is a labor-intensive data collection process and hospitals with electronic record systems can more efficiently scan their records by generating automated reports. This efficiency can result in more accurate data collection and higher reported infection rates.

Table 18: Neonatal Critical Care Unit Level II/III CLABSI Rates, 2007-2009

Central Line-Associated Bloodstream Infections (CLABSIs) in Neonatal Critical Care Level II/III Combined Units by Birthweight
Reporting Period: August 1, 2007-July 31, 2008 and August 1, 2008-July 31, 2009.

The National Rate to which facility rates are compared in this table are as follows:
- Less than or equal to 1.65 pounds (<=750 grams): 4.9
- 1.66 - 2.2 pounds (751-1,000 grams): 3.2
- 2.3-3.3 pounds (1,001-1,500 grams): 2.0
- 3.4-5.5 pounds (1,501-2,500 grams): 1.5
- Greater than 5.5 pounds (>2,500 grams): 1.2

			Time Period							
			2007-2008				2008-2009			
Health Facility	Region	Birth Weight	Central Line Days	CLABSI	CLABSI Rate	National Comparison	Central Line Days	CLABSI	CLABSI Rate	National Comparison
Centura Avista Adventist Hospital	Louisville	Less than or equal to 1.65 pounds (<=750 grams)	0	***	***	***	0	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	0	***	***	***	0	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	21	***	***	***	0	***	***	***
		3.4-5.5 pounds (1,501-2,500 grams)	9	***	***	***	41	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	0	***	***	***	9	***	***	***
Centura Penrose St Francis Health	Colorado Springs	Less than or equal to 1.65 pounds (<=750 grams)	0	***	***	***	0	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	60	0	0	Same	4	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	34	***	***	***	2	***	***	***
		3.4-5.5 pounds (1,501-2,500 grams)	6	***	***	***	0	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	7	***	***	***	0	***	***	***
Centura St Francis Medical Center	Colorado Springs	Less than or equal to 1.65 pounds (<=750 grams)	*	*	*	*	16	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	*	*	*	*	10	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	*	*	*	*	53	0	0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	*	*	*	*	34	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	*	*	*	*	8	***	***	***
Denver Health Medical Center	Denver	Less than or equal to 1.65 pounds (<=750 grams)	0	***	***	***	37	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	229	0	0	Same	130	2	15.4	Same
		2.3-3.3 pounds (1,001-1,500 grams)	455	1	2.2	Same	296	0	0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	248	0	0	Same	265	0	0	Same

		Greater than 5.5 pounds (>2,500 grams)	48	***	***	***	10	***	***	***
Exempla Lutheran Medical Center	**Wheat Ridge**	**Less than or equal to 1.65 pounds (<=750 grams)**	0	***	***	***	0	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	0	***	***	***	23	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	94	0	0	Same	34	***	***	***
		3.4-5.5 pounds (1,501-2,500 grams)	5	***	***	***	17	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	0	***	***	***	14	***	***	***
Exempla St Joseph Hospital	**Denver**	**Less than or equal to 1.65 pounds (<=750 grams)**	197	2	10.2	Same	233	0	0	Same
		1.66 - 2.2 pounds (751-1,000 grams)	252	0	0	Same	339	1	2.9	Same
		2.3-3.3 pounds (1,001-1,500 grams)	100	1	10	Same	210	1	4.8	Same
		3.4-5.5 pounds (1,501-2,500 grams)	157	0	0	Same	190	0	0	Same
		Greater than 5.5 pounds (>2,500 grams)	131	0	0	Same	58	0	0	Same
Medical Center of Aurora	**Aurora**	**Less than or equal to 1.65 pounds (<=750 grams)**	0	***	***	***	0	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	0	***	***	***	0	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	0	***	***	***	6	***	***	***
		3.4-5.5 pounds (1,501-2,500 grams)	0	***	***	***	3	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	0	***	***	***	9	***	***	***
Parker Adventist Hospital	**Parker**	**Less than or equal to 1.65 pounds (<=750 grams)**	0	***	***	***	0	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	0	***	***	***	0	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	10	***	***	***	33	***	***	***
		3.4-5.5 pounds (1,501-2,500 grams)	58	0	0	Same	79	0	0	Same
		Greater than 5.5 pounds (>2,500 grams)	33	***	***	***	22	***	***	***
Poudre Valley Hospital	**Fort Collins**	**Less than or equal to 1.65 pounds (<=750 grams)**	0	***	***	***	0	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	0	***	***	***	0	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	83	0	0	Same	65	0	0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	94	0	0	Same	202	0	0	Same
		Greater than 5.5 pounds (>2,500 grams)	62	0	0	Same	163	0	0	Same
Rose Medical Center	**Denver**	**Less than or equal to 1.65 pounds (<=750 grams)**	83	0	0	Same	15	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	74	0	0	Same	9	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	47	***	***	***	87	0	0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	48	***	***	***	34	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	8	***	***	***	9	***	***	***
Sky Ridge Medical Center	**Lone Tree**	**Less than or equal to 1.65 pounds (<=750 grams)**	0	***	***	***	0	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	0	***	***	***	5	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	0	***	***	***	23	***	***	***
		3.4-5.5 pounds (1,501-2,500 grams)	0	***	***	***	15	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	0	***	***	***	0	***	***	***
Swedish Medical Center	**Engle-wood**	**Less than or equal to 1.65 pounds (<=750 grams)**	7	***	***	***	21	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	56	0	0	Same	32	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	32	***	***	***	58	0	0	Same

		3.4-5.5 pounds (1,501-2,500 grams)	17	***	***	***	25	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	17	***	***	***	4	***	***	***
University of Colorado Hospital	**Aurora**	**Less than or equal to 1.65 pounds (<=750 grams)**	538	2	3.7	Same	541	3	5.5	Same
		1.66 - 2.2 pounds (751-1,000 grams)	178	0	0	Same	387	0	0	Same
		2.3-3.3 pounds (1,001-1,500 grams)	491	2	4.1	Same	719	0	0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	205	1	4.9	Same	408	2	4.9	Same
		Greater than 5.5 pounds (>2,500 grams)	101	0	0	Same	313	0	0	Same

Facility CLABSI rates are per 1,000 central line-days.

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.

See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

Statistical comparison to the national rate performed using the Poisson test.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for hospitals with fewer than 50 central line-days in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.

Source: National Healthcare Safety Network (NHSN) Database.

Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 19: Neonatal Critical Care Unit Level III CLABSI Rates, 2007-2009

Central Line-Associated Bloodstream Infections (CLABSIs) in Neonatal Critical Care Level III Units by Birthweight
Reporting Period: August 1, 2007-July 31, 2008 and August 1, 2008-July 31, 2009

The National Rate to which facility rates are compared in this table are as follows:
- Less than or equal to 1.65 pounds (<=750 grams): 3.9
- 1.66 - 2.2 pounds (751-1,000 grams): 3.4
- 2.3-3.3 pounds (1,001-1,500 grams): 2.4
- 3.4-5.5 pounds (1,501-2,500 grams): 2.4
- Greater than 5.5 pounds (>2,500 grams): 1.9

			Time Period							
			2007-2008				2008-2009			
Health Facility	Region	Birth Weight	Central Line Days	CLABSI	CLABSI Rate	National Comparison	Central Line Days	CLABSI	CLABSI Rate	National Comparison
Centura Littleton Adventist Hospital	Littleton	Less than or equal to 1.65 pounds (<=750 grams)	19	***	***	***	21	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	32	***	***	***	65	0	0.0	Same
		2.3-3.3 pounds (1,001-1,500 grams)	110	0	0.0	Same	59	0	0.0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	11	***	***	***	17	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	4	***	***	***	6	***	***	***
Memorial Hospital Central	Colorado Springs	Less than or equal to 1.65 pounds (<=750 grams)	663	7	10.6	Worse	664	1	1.5	Same
		1.66 - 2.2 pounds (751-1,000 grams)	412	3	7.3	Same	417	3	7.2	Same
		2.3-3.3 pounds (1,001-1,500 grams)	707	4	5.7	Same	337	0	0.0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	315	1	3.2	Same	262	0	0.0	Same
		Greater than 5.5 pounds (>2,500 grams)	319	0	0.0	Same	99	0	0.0	Same
Presbyterian St Lukes Medical Center	Denver	Less than or equal to 1.65 pounds (<=750 grams)	878	1	1.1	Same	970	2	2.1	Same
		1.66 - 2.2 pounds (751-1,000 grams)	617	2	3.2	Same	427	1	2.3	Same
		2.3-3.3 pounds (1,001-1,500 grams)	409	2	4.9	Same	522	4	7.7	Same
		3.4-5.5 pounds (1,501-2,500 grams)	404	0	0.0	Same	271	0	0.0	Same
		Greater than 5.5 pounds (>2,500 grams)	243	1	4.1	Same	408	1	2.5	Same
St Marys Hospital	Grand Junction	Less than or equal to 1.65 pounds (<=750 grams)	28	***	***	***	48	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	67	0	0.0	Same	102	0	0.0	Same
		2.3-3.3 pounds (1,001-1,500 grams)	77	0	0.0	Same	77	0	0.0	Same

		3.4-5.5 pounds (1,501-2,500 grams)	125	0	0.0	Same	201	0	0.0	Same
		Greater than 5.5 pounds (>2,500 grams)	175	0	0.0	Same	92	0	0.0	Same
The Childrens Hospital	**Aurora**	**Less than or equal to 1.65 pounds (<=750 grams)**	497	5	10.1	Same	466	4	8.6	Same
		1.66 - 2.2 pounds (751-1,000 grams)	734	8	10.9	Worse	440	2	4.5	Same
		2.3-3.3 pounds (1,001-1,500 grams)	491	3	6.1	Same	687	1	1.5	Same
		3.4-5.5 pounds (1,501-2,500 grams)	1,355	5	3.7	Same	843	3	3.6	Same
		Greater than 5.5 pounds (>2,500 grams)	1,384	6	4.3	Same	1,287	4	3.1	Same

Facility CLABSI rates are per 1,000 central line-days.

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.

See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

Statistical comparison to the national rate performed using the Poisson test.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for hospitals with fewer than 50 central line-days in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.

Source: National Healthcare Safety Network (NHSN) Database.

Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 20: Neonatal Critical Care Unit Level II/III UCABI Rates, 2007-2009

Umbilical Catheter-Associated Bloodstream Infections (UCABIs) in Neonatal Critical Care Level II/III Units by Birthweight
Reporting Period: August 1, 2007-July 31, 2008 and August 1, 2008-July 31, 2009

The National Rate to which facility rates are compared in this table are as follows:
- Less than or equal to 1.65 pounds (<=750 grams): 5.7
- 1.66 - 2.2 pounds (751-1,000 grams): 3.2
- 2.3-3.3 pounds (1,001-1,500 grams): 1.7
- 3.4-5.5 pounds (1,501-2,500 grams): 1.0
- Greater than 5.5 pounds (>2,500 grams): 1.0

			Time Period							
			2007-2008				2008-2009			
Health Facility	Region	Birth Weight	Umbilical Line Days	UCABI	UCABI Rate	National Comparison	Umbilical Line Days	UCABI	UCABI Rate	National Comparison
Centura Avista Adventist Hospital	Louisville	Less than or equal to 1.65 pounds (<=750 grams)	0	***	***	***	0	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	0	***	***	***	0	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	9	***	***	***	11	***	***	***
		3.4-5.5 pounds (1,501-2,500 grams)	52	0	0	Same	34	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	7	***	***	***	31	***	***	***
Centura Penrose St Francis Health	Colorado Springs	Less than or equal to 1.65 pounds (<=750 grams)	47	***	***	***	26	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	52	0	0	Same	2	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	63	0	0	Same	12	***	***	***
		3.4-5.5 pounds (1,501-2,500 grams)	54	0	0	Same	0	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	74	0	0	Same	0	***	***	***
Centura St Francis Medical Center	Colorado Springs	Less than or equal to 1.65 pounds (<=750 grams)	*	*	*	*	78	0	0	Same
		1.66 - 2.2 pounds (751-1,000 grams)	*	*	*	*	29	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	*	*	*	*	26	***	***	***
		3.4-5.5 pounds (1,501-2,500 grams)	*	*	*	*	40	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	*	*	*	*	65	0	0	Same
Denver Health Medical Center	Denver	Less than or equal to 1.65 pounds (<=750 grams)	3	***	***	***	14	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	49	***	***	***	28	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	76	0	0	Same	53	0	0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	139	0	0	Same	129	0	0	Same

		Greater than 5.5 pounds (>2,500 grams)	34	***	***	***	25	***	***	***
Exempla Lutheran Medical Center	**Wheat Ridge**	**Less than or equal to 1.65 pounds (<=750 grams)**	2	***	***	***	0	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	4	***	***	***	16	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	122	0	0	Same	77	1	13	Same
		3.4-5.5 pounds (1,501-2,500 grams)	120	0	0	Same	105	0	0	Same
		Greater than 5.5 pounds (>2,500 grams)	61	0	0	Same	100	0	0	Same
Exempla St Joseph Hospital	**Denver**	**Less than or equal to 1.65 pounds (<=750 grams)**	71	0	0	Same	99	0	0	Same
		1.66 - 2.2 pounds (751-1,000 grams)	73	1	13.7	Same	100	0	0	Same
		2.3-3.3 pounds (1,001-1,500 grams)	109	0	0	Same	106	0	0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	57	0	0	Same	64	1	15.6	Same
		Greater than 5.5 pounds (>2,500 grams)	41	***	***	***	82	0	0	Same
Medical Center of Aurora	**Aurora**	**Less than or equal to 1.65 pounds (<=750 grams)**	0	***	***	***	5	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	10	***	***	***	3	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	31	***	***	***	79	0	0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	24	***	***	***	64	0	0	Same
		Greater than 5.5 pounds (>2,500 grams)	17	***	***	***	28	***	***	***
Parker Adventist Hospital	**Parker**	**Less than or equal to 1.65 pounds (<=750 grams)**	0	***	***	***	0	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	0	***	***	***	0	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	0	***	***	***	15	***	***	***
		3.4-5.5 pounds (1,501-2,500 grams)	20	***	***	***	55	0	0	Same
		Greater than 5.5 pounds (>2,500 grams)	3	***	***	***	39	***	***	***
Poudre Valley Hospital	**Fort Collins**	**Less than or equal to 1.65 pounds (<=750 grams)**	0	***	***	***	0	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	18	***	***	***	0	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	100	2	20	Worse	53	0	0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	259	1	3.9	Same	537	0	0	Same
		Greater than 5.5 pounds (>2,500 grams)	197	0	0	Same	465	1	2.2	Same
Rose Medical Center	**Denver**	**Less than or equal to 1.65 pounds (<=750 grams)**	47	***	***	***	18	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	66	0	0	Same	28	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	75	0	0	Same	108	0	0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	48	***	***	***	92	0	0	Same
		Greater than 5.5 pounds (>2,500 grams)	69	0	0	Same	59	0	0	Same
Sky Ridge Medical Center	**Lone Tree**	**Less than or equal to 1.65 pounds (<=750 grams)**	1	***	***	***	0	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	0	***	***	***	1	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	0	***	***	***	23	***	***	***
		3.4-5.5 pounds (1,501-2,500 grams)	38	***	***	***	47	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	14	***	***	***	14	***	***	***
Swedish Medical Center	**Engle-wood**	**Less than or equal to 1.65 pounds (<=750 grams)**	34	***	***	***	18	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	48	***	***	***	29	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	35	***	***	***	39	***	***	***

		3.4-5.5 pounds (1,501-2,500 grams)	19	***	***	***	12	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	28	***	***	***	30	***	***	***
University of Colorado Hospital	**Aurora**	**Less than or equal to 1.65 pounds (<=750 grams)**	242	1	4.1	Same	176	1	5.7	Same
		1.66 - 2.2 pounds (751-1,000 grams)	101	0	0	Same	192	2	10.4	Same
		2.3-3.3 pounds (1,001-1,500 grams)	322	0	0	Same	432	0	0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	255	0	0	Same	225	0	0	Same
		Greater than 5.5 pounds (>2,500 grams)	126	0	0	Same	145	1	6.9	Same

Facility UCABI rates are per 1,000 umbilical catheter-days.

National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.

See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).

Statistical comparison to the national rate performed using the Poisson test.

* Indicates value not computed/available.

--- Indicates no National rate to which to compare facility rate.

*** Infections data for hospitals with fewer than 50 umbilical catheter-days in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.

Source: National Healthcare Safety Network (NHSN) Database.

Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Table 21: Neonatal Critical Care Unit Level III UCABI Rates, 2007-2009

Umbilical Catheter-Associated Bloodstream Infections (UCABIs) in Neonatal Critical Care Level III Units by Birthweight
Reporting Period: August 1, 2007-July 31, 2008 and August 1, 2008-July 31, 2009

The National Rate to which facility rates are compared in this table are as follows:
- Less than or equal to 1.65 pounds (<=750 grams): 3.9
- 1.66 - 2.2 pounds (751-1,000 grams): 2.5
- 2.3-3.3 pounds (1,001-1,500 grams): 1.7
- 3.4-5.5 pounds (1,501-2,500 grams): 0.9
- Greater than 5.5 pounds (>2,500 grams): 0.9

			Time Period							
			2007-2008				2008-2009			
			Umbilical Line Days	UCABI	UCABI Rate	National Comparison	Umbilical Line Days	UCABI	UCABI Rate	National Comparison
Health Facility	**Region**	**Birth Weight**	19	***	***	***	9	***	***	***
Centura Littleton Adventist Hospital	**Littleton**	**Less than or equal to 1.65 pounds (<=750 grams)**								
		1.66 - 2.2 pounds (751-1,000 grams)	7	***	***	***	17	***	***	***
		2.3-3.3 pounds (1,001-1,500 grams)	36	***	***	***	20	***	***	***
		3.4-5.5 pounds (1,501-2,500 grams)	28	***	***	***	18	***	***	***
		Greater than 5.5 pounds (>2,500 grams)	18	***	***	***	7	***	***	***
Memorial Hospital Central	**Colorado Springs**	**Less than or equal to 1.65 pounds (<=750 grams)**	236	1	4.2	Same	194	0	0.0	Same
		1.66 - 2.2 pounds (751-1,000 grams)	157	0	0.0	Same	230	1	4.3	Same
		2.3-3.3 pounds (1,001-1,500 grams)	209	0	0.0	Same	188	1	5.3	Same
		3.4-5.5 pounds (1,501-2,500 grams)	187	0	0.0	Same	170	0	0.0	Same
		Greater than 5.5 pounds (>2,500 grams)	91	0	0.0	Same	150	0	0.0	Same
Presbyterian St Lukes Medical Center	**Denver**	**Less than or equal to 1.65 pounds (<=750 grams)**	315	0	0.0	Same	234	0	0.0	Same
		1.66 - 2.2 pounds (751-1,000 grams)	432	1	2.3	Same	202	0	0.0	Same
		2.3-3.3 pounds (1,001-1,500 grams)	367	0	0.0	Same	267	0	0.0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	233	0	0.0	Same	215	0	0.0	Same
		Greater than 5.5 pounds (>2,500 grams)	201	0	0.0	Same	241	1	4.1	Same
St Marys Hospital	**Grand Junction**	**Less than or equal to 1.65 pounds (<=750 grams)**	7	***	***	***	31	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	43	***	***	***	57	0	0.0	Same
		2.3-3.3 pounds (1,001-1,500 grams)	57	0	0.0	Same	67	0	0.0	Same
		3.4-5.5 pounds (1,501-2,500 grams)	61	0	0.0	Same	93	0	0.0	Same

		Greater than 5.5 pounds (>2,500 grams)	130	0	0.0	Same	91	0	0.0	Same
The Childrens Hospital	**Aurora**	**Less than or equal to 1.65 pounds (<=750 grams)**	134	0	0.0	Same	42	***	***	***
		1.66 - 2.2 pounds (751-1,000 grams)	163	0	0.0	Same	129	0	0.0	Same
		2.3-3.3 pounds (1,001-1,500 grams)	128	0	0.0	Same	209	1	4.8	Same
		3.4-5.5 pounds (1,501-2,500 grams)	291	0	0.0	Same	381	1	2.6	Same
		Greater than 5.5 pounds (>2,500 grams)	665	0	0.0	Same	696	1	1.4	Same

Facility UCABI rates are per 1,000 umbilical catheter-days.
National comparison based on data collected and reported by NHSN-participating hospitals from 2006-2008.
See "National Healthcare Safety Natwork (NHSN) Report, Data Summary for 2006-2008, Issued December 2009" (Am J Infect Control 2009;37:783-805).
Statistical comparison to the national rate performed using the Poisson test.
* Indicates value not computed/available.
--- Indicates no National rate to which to compare facility rate.
*** Infections data for hospitals with fewer than 50 umbilical catheter-days in a twelve-month period are suppressed to protect confidential health information. These hospitals have met the reporting requirements.
Source: National Healthcare Safety Network (NHSN) Database.
Prepared By: Colorado Patient Safety Initiatives Program, Colorado Department of Public Health and Environment.

Future Plans

In late June 2009, the Patient Safety Program applied for funding through the American Recovery and Reinvestment Act (ARRA) through the Centers for Disease Control (CDC) and the Department of Health and Human Services (HHS). In August, the department was notified they had received the funding. This funding will allow the program to: (1) add program staff to assist in education efforts and add dialysis centers as reporting facilities to NHSN, (2) to conduct validation to improve the quality of data reported and, (3) to use the data validation results to modify surveillance definitions and develop education programs for infection prevention staff.

An additional component of our request included funding to partner with an organization experienced in infection prevention to assist program staff in meeting certain goals. These goals include: (1) providing essential infection prevention education for our less experienced infection prevention staff at healthcare facilities, and (2) to form a prevention collaborative to help our facilities make progress toward meeting two of the Department of Health and Human Services (HHS) Action Plan 5-year prevention targets and lower their infection rates.

The patient safety program plans to model our data validation after states that have had successful validation projects (New York and Connecticut). The protocol will be developed with assistance from the staff hired as a result of this grant, including a statistician. The advisory committee will be consulted and provide input to the protocol, data collection forms and analytic plans.

The statistician will perform a power analysis to determine the appropriate number of facilities, procedures and positive blood cultures in NHSN monitored locations to be sampled for data validation. This calculation will ensure the statistical results from validation are accurate and reliable.

A combination of medical record review and interviews with infection prevention staff at facilities will be used to assess data validity. One quarter of calendar year data will be selected for review and a randomly selected set of each facility type will be targeted for this project; the number will be based on the power analysis. Record reviewers will be blinded to the infection status of each patient's record. Reviewed records will be compared with reports in NHSN to determine the accuracy of reported information and completeness of reporting. Interviews with infection prevention (IP) staff will help program staff to assess the IPs understanding of surveillance methods.

A minimum of two staff members will visit the facilities selected for the project. Both staff members will be trained in infection prevention and will have a thorough understanding of the NHSN surveillance definitions.

Each unreported case found during data validation would be analyzed individually to determine why the case went undetected and what action is necessary to correct the problem. CDC will be consulted for any instance where the case definition may be unclear. All data from the project will be analyzed to determine the true infection rate at each facility. The results will be reported to all Colorado healthcare facilities reporting data to NHSN. The patient safety program, in conjunction with the advisory committee, will develop an education program based on the results of the project. If necessary, patient safety program staff will modify surveillance methods with the goal of making NHSN definitions easier to use for Colorado infection prevention staff.

Conclusion

This report shows the results from a new reporting system. The department and the Colorado Health Facility-Acquired Infection Advisory Committee recommend users of these data not draw definitive conclusions from the limited information that is currently available. Other questions to consider asking before receiving healthcare at a specific facility can be found in Appendix F. Facilities vary in the types of patients they treat, and a facility that treats a high volume of severely ill patients may have higher infection rates. Tests of statistical significance are used to determine if the number of infections in a facility is unusually high or low in comparison to the national average. A statistically significant test indicates that results do not happen by chance alone. It is possible for two hospitals to have zero infections yet Hospital A is statistically the same as the national rate and Hospital B is statistically better than the national rate. This can occur because Hospital B, for example, has more central line days so its rate would be compared to a higher expected number of central line-associated bloodstream infections (CLABSIs).

It is important to note, initiatives involving new reporting systems require time to allow facilities to become familiar with the requirements and ensure the system is used correctly. The department believes that the disclosure initiative will ultimately help Colorado health facilities identify areas for improvement and result in fewer infections in the coming years. Because only two years of data are available for hospitals and one year or less of data is available for LTACHs and ASCs, the department is not able to provide trending information. Trend reports will gauge the progress healthcare facilities are making in preventing infections over time. Trend reports will be developed once enough data is collected.

Health Facility-Acquired Infections Report

Appendices

Appendix A

Colorado Health Facility Acquired Infection Advisory Committee (§ 25-3-601 C.R.S.)

11 Members (UPDATED 12.1.09)

A representative from a public hospital

Linda J. "B" Burton, R.N., B.S.N., C.I.C., Infection Preventionist, University of Colorado Hospital – Aurora

A representative from a private hospital

Committee Chair Paul J. Poduska B.S., M(ASCP), C.I.C., Infection Control Coordinator, Poudre Valley Health System – Fort Collins

A Board Certified or Board Eligible physician licensed in the State of Colorado, who is affiliated with a Colorado hospital or medical school, who is an active member of a national organization specializing in health care epidemiology or infection control, and who has demonstrated an interest and expertise in health facility infection control

Connie S. Price, M.D., Denver Health Medical Center, Chief, Division of Infectious Diseases and Medical Director of Infection Control and Prevention, Department of Medicine, Board Certified in Medical Microbiology, Infectious Diseases, and Internal Medicine - Denver

Four infection control practitioners, one from a stand alone ambulatory surgical center and three Registered Nurses who are certified by the Certification Board of Infection Control and Epidemiology

Susan K. Mazula, R.N., B.S.N., C.I.C., C.O.H.N., Infection Prevention Coordinator, North Suburban Medical Center - Thornton

Amber Miller, R.N., M.S.N., C.I.C., Manager Infection Prevention and Control, Lutheran Medical Center – Arvada

Deborah Teetzel, R.N., M.S.N., Administrator, Rocky Mountain Surgery Center – Englewood

Heather M. Gilmartin, R.N., M.S.N., N.P., C.I.C., Nurse Epidemiologist, Vail Valley Medical Center - Vail

A medical statistician with an advanced degree in such specialty or one clinical microbiologist with an advanced degree in such specialty
Allison Lee Sabel-Soteres, M.D., Ph.D., Denver Health Medical Center, Director of Medical Biostatistics – Denver

A representative from a health consumer organization
Denise de Percin, B.A., Executive Director, Colorado Consumer Health Initiative – Denver

A representative from a health insurer
Peggy SaBell, RN, MS, CIC, Regional Infection Control Director, Kaiser Foundation Health Plan of Colorado-Denver

A representative from a purchaser of health insurance
Kerry O'Connell, Construction Executive, Stapleton Infrastructure – Denver

Colorado Department of Public Health and Environment Committee Liaison
Patient Safety Initiatives Coordinator
Health Facilities and Emergency Medical Services Division
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530
Phone 303-692-2800
Fax 303-753-6214
Email : cdphe.hfpatientsafety@state.co.us

Appendix B

Health Facilities Reporting

Based on the mandatory reporting bill there are approximately 262 health facilities targeted to report health facility acquired infections. These include hospitals (including long-term acute care hospitals), hospital units, ambulatory surgery centers (ASC) and dialysis treatment centers (DTC). Not all 262 facilities perform procedures selected for reporting. Dialysis Treatment Centers were not selected to begin reporting for the first two years, however are expected to report in 2010.

Initial metrics will be reported by the following 76 hospitals and long-term acute care hospitals and 44 ambulatory surgery centers. Health facilities reporting the data are listed alphabetically below with the procedures they currently perform and report. The first list includes hospitals and long-term acute care hospitals. The second list includes ambulatory surgery centers. The numbers before the facility name correspond to the maps on the following pages.

Hospitals and Long-Term Acute Care Hospitals

1 Animas Surgical Hospital
Durango, CO 81301
575 Rivergate Lane
970.247.3537
www.animassurgical.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

2 Arkansas Valley Regional Medical Center
La Junta, CO 81050
1100 Carson Avenue
719.383.6000
www.avrmc.org
Performing & Reporting:
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

3 Aspen Valley Hospital
0401 Castle Creek Road
Aspen, CO 81611
970.544.1261
www.avhaspen.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

4 Boulder Community Hospital
1100 Balsam Avenue
Boulder, CO 80301
303.440.2273
www.bch.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

5 Boulder Community Hospital- Foothills Campus
4747 Arapahoe Avenue
Boulder, CO 80303
303.440.2273
www.bch.org
Performing & Reporting:
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

6 Centura Health-Avista Adventist Hospital
100 Health Park Dr
Louisville, CO 80027
303.673.1000
www.avistahospital.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

7 Centura Health-Littleton Adventist Hospital
7700 S Broadway
Littleton, CO 80122
303.730.8900
www.mylittletonhospital.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

8 Centura Health-Penrose St. Francis Health Services
2222 N Nevada Ave
Colorado Springs, CO 80907
719.776.5000
www.penrosestfrancis.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Graft
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

9 Centura Health-Porter Adventist Hospital
2525 S Downing St
Denver, CO 80210
303.778.1955
www.porterhospital.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

10 Centura Health-St Anthony Central Hospital
4231 W 16th Ave
Denver, CO 80204
303.629.3511
www.stanthonyhosp.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy

11 Centura Health-St Anthony North Hospital
2551 W 84th Avenue
Westminster, CO 80031
303.426.2402
www.stanthonyhosp.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

12 Centura Health-St Francis Medical Center
6001 E Woodmen Road
Colorado Springs, CO 80923
www.centura.org
Performing and Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

13 Centura Health-St Mary Corwin Medical Center
1008 Minnequa Ave
Pueblo, CO 81004
719.560.4000
www.stmarycorwin.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

14 Centura Health-St Thomas More Hospital
1338 Phay Ave
Canon City, CO 81212
719.285.2287
www.stmhospital.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

15 The Children's Hospital Association
13123 East 16th Avenue
Aurora, CO 80045
www.thechildrenshospital.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy

16 Colorado Acute Long Term Hospital
1601 North Lowell Blvd.
Denver, Colorado 80204
http://www.lifecare-hospitals.com
Performing and Reporting:
Central lines (permanent and temporary)

17 Colorado Mental Health Institute at Pueblo
1600 W 24th St
Pueblo, CO 81003
www.cdhs.state.co.us/cmhip
Performing & Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

18 Colorado Orthopaedic and Surgical Hospital
1830 Franklin Street Suite 200
Denver, CO 80218
www.mycosh.com
Performing and Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement
Herniorrhaphy

19 Colorado Plains Medical Center
1000 Lincoln St
Fort Morgan, CO 80701
www.coloradoplainsmedicalcenter.com
Performing & Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement
Central Lines
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

20 Community Hospital
2021 N 12th St
Grand Junction, CO 81501
www.gjhosp.org
Performing & Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement
Central Lines
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

21 Craig Hospital
3425 S Clarkson Street
Englewood, CO 80113
www.craighospital.org
Performing and Reporting:
Central lines (permanent and temporary)

22 Delta County Memorial Hospital
1501 E 3rd Street
Delta, CO 81416
www.deltahospital.org
Performing & Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement
Central Lines
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

23 Denver Health Medical Center
777 Bannock St
Denver, CO 80204
www.denverhealth.org
Performing & Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement
Central Lines
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

24 East Morgan County Hospital District
2400 W Edison St
Brush, CO 80723
www.bannerhealth.com
Performing & Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement
Herniorrhaphy

25 Estes Park Medical Center
555 Prospect Ave.
Estes Park, CO 80517
www.epmed**center**.com
Performing and Reporting:
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

26 Exempla Good Samaritan Medical Center
200 Exempla Circle
Lafayette, CO 80026
www.exempla.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

27 Exempla Lutheran Medical Center
8300 W 38th Ave
Wheat Ridge, CO 80033
www.exempla.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

28 Exempla Saint Joseph Hospital
1835 Franklin St
Denver, CO 80218
www.exempla.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

29 Grand River Medical Center
501 Airport Road
Rifle, CO 81650
www.grhd.org
Performing & Reporting:
- Partial Hip Replacement
- Partial Knee Replacement
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

30 Gunnison Valley Hospital
711 N Taylor Street
Gunnison, CO 81230
www.gvh-colorado.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

31 Heart of the Rockies Regional Medical Center
448 E First St
Salida, CO 81201
www.hrrmc.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

32 Kindred Hospital
1920 High St.
Denver, CO 80218
www.kindredhealthcare.com
Performing and Reporting:
- Central lines (permanent and temporary)

33 Kit Carson Memorial Hospital
286 16th St.
Burlington, CO 80807
www.kccmh.org
Performing and reporting:
- Herniorrhaphy

34 Kremmling Memorial Hospital District
214 S 4th Street
Kremmling, CO 80459
www.kremmlinghospital.org
Performing & Reporting:
- Partial Knee Replacement
- Herniorrhaphy

35 Lincoln Community Hospital
111 6th St.
Hugo, CO 80821
lincolncommunityhospitalandnursinghome.com
Performing and Reporting:
- Herniorrhaphy

36 Longmont United Hospital
1950 Mountain View Avenue
Longmont, CO 80502
www.luhcares.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

37 McKee Medical Center
2000 Boise Ave
Loveland, CO 80539
www.bannerhealth.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

38 The Medical Center of Aurora
1501 S Potomac St
Aurora, CO 80012
www.auroramed.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

39 Medical Center of the Rockies
2500 Rocky Mountain Avenue
Loveland, CO 80538
www.pvhs.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

40 Melissa Memorial Hospital
1001 Ea Johnson St.
Holyoke, CO 80734
http://www.melissamemorial.org
Performing and Reporting:
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

41 Memorial Hospital Central
1400 E Boulder St
Colorado Springs, CO 80909
www.memorialhealthsystem.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

42 Memorial Hospital North
4050 Briargate Parkway
Colorado Springs, CO 80920
www.memorialhealthsystem.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

43 The Memorial Hospital
750 Hospital Loop
Craig, CO 81625
www.thememorialhospital.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

44 Mercy Regional Medical Center
1010 Three Springs Blvd
Durango, CO 81301
www.mercydurango.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

45 Montrose Memorial Hospital
800 S 3rd St
Montrose, CO 81401
www.montrosehospital.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

46 Mount San Rafael Hospital
410 Benedicta Ave
Trinidad, CO 81082
http://www.msrhc.org
Performing and Reporting;
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

47 North Colorado Medical Center
1801 16th Street
Greeley, CO 80631
www.bannerhealth.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

48 North Suburban Medical Center
9191 Grant St
Thornton, CO 80229
www.northsuburban.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

49 Northern Colorado Long Term Acute Hospital
4401A Union S.
Johnstown, CO 80534
http://ncltah.ernesthealth.com
Performing and Reporting:
- Central lines (permanent and temporary)

50 Parker Adventist Hospital
9395 Crown Crest Blvd
Parker, CO 80138
www.parkerhospital.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

51 Parkview Medical Center Inc
400 W 16th Street
Pueblo, CO 81003
www.parkviewmc.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

52 Pikes Peak Regional Hospital
16420 Highway 24
Woodland Park, CO 80863
www.pikespeakregionalhospital.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Herniorrhaphy

53 Pioneers Medical Center
345 Cleveland St.
Meeker, CO 81641
http://www.pioneershospital.org
Performing and Reporting:
- Herniorrhaphy

54 Platte Valley Medical Center
1600 Prairie Center Parkway
Brighton, CO 80601
www.pvmc.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

55 Poudre Valley Hospital
1024 S Lemay Ave
Fort Collins, CO 80524
www.pvhs.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

56 Presbyterian St Luke's Medical Center
1719 E 19th Ave
Denver, CO 80218
www.pslmc.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

57 Prowers Medical Center
401 Kendall Drive
Lamar, CO 81052
www.lmpc.org
Performing and Reporting:
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

58 Rose Medical Center
4567 E 9th Avenue
Denver, CO 80220
www.rosemed.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

59 San Luis Valley Regional Medical Center
106 Blanca Ave
Alamosa, CO 81101
www.slvrmc.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

60 Select Long Term Care Hospital-Colorado Spgs.
825 Pikes Peak Ave. Suite 500
Colorado Springs, CO 80903
www.selectmedicalcorp.com
Performing and Reporting:
- Central lines (permanent and temporary)

61 Select Specialty Hospital-Denver South
2525 South Downing RD 3rd Floor
Denver, CO 80210
www.selectmedicalcorp.com
Performing and Reporting:
- Central lines (permanent and temporary)

62 Select Specialty Hospital
1719 East 19th Ave 5B
Denver, CO 80218
www.selectmedicalcorp.com
Performing and Reporting:
- Central line (permanent and temporary)

63 Sky Ridge Medical Center
10101 Ridge Gate Parkway
Lone Tree, CO 80124
www.skyridgemedcenter.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

64 Southeast Colorado Hospital
373 East Tenth Ave.
Springfield, CO 81073
http://www.sechosp.org/
Performing and Reporting:
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

65 Southwest Memorial Hospital
1311 N Mildred Rd
Cortez, CO 81321
www.swhealth.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

66 Spanish Peaks Regional Health Center
23500 US HWY 160
Walsenburg, CO 81089
http://www.sprhc.org
Performing and Reporting:
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

67 St. Anthony Summit Medical Center
340 Peak One Drive
Frisco, CO 80443
www.stanthonyhosp.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

68 St Mary's Hospital and Medical Center
2635 N 7th Street
Grand Junction, CO 81502
www.stmarygj.org
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

69 St. Vincent General Hospital District
822 W 4th Street
Leadville, CO 80461
http://www.svghd.org
Performing and Reporting:
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

70 Sterling Regional Medical Center
615 Fairhurst St
Sterling, CO 80751
www.bannerhealth.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

71 Swedish Medical Center
501 E Hampden Avenue
Englewood, CO 80113
www.swedishhospital.com
Performing & Reporting:
- Total/Partial Hip Replacement
- Total/Partial Knee Replacement
- Coronary Artery Bypass Grafts
- Central Lines
- Herniorrhaphy
- Abdominal Hysterectomy
- Vaginal Hysterectomy

72 Triumph Acute Long Term Care Hospital
700 Potomac St. 2nd Floor
Aurora, CO 80011
www.triumph-healthcare.com
Performing and Reporting:
- Central lines (temporary)

73 University of Colorado Hospital
12605 East 16th Avenue
Aurora, CO 80045
www.uch.edu
Performing & Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement
Coronary Artery Bypass Grafts
Central Lines
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

74 Vail Valley Medical Center
181 W Meadow Drive
Vail, CO 81657
www.vvmc.com
Performing & Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement
Central Lines
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

75 Valley View Hospital Association
1906 Blake Ave
Glenwood Springs, CO 81601
www.vvh.org
Performing & Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement
Central Lines
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

76 Vibra Long Term Acute Care Hospital
8451 Pearl St.
Thornton, CO 80229
www.vibrahealthcare.com
Performing and Reporting:
Central lines (permanent and temporary)

77 Wray Community District Hospital
1017 W 7th St
Wray, CO 80758
www.wcdh.org
Performing & Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

78 Yampa Valley Medical Center
1024 Central Park Dr
Steamboat Springs, CO 80487
www.yvmc.org
Performing & Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement
Central Line
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

79 Yuma District Hospital
1000 West 8th Ave.
Yuma, CO 80759
http://www.yumahospital.org
Performing and Reporting:
Herniorrhaphy
Abdominal Hysterectomy

Ambulatory Surgery Centers

1 Aberdeen Ambulatory Surgical Center, LLC
650 Dittmer Ave.
Pueblo, CO 81005
Performing and Reporting:
Herniorrhaphy

2 Arkansas Valley Surgery Center
933 Sells Ave
Canon City, CO 81212
Arkansasvalleysurgerycenter.com
Performing and Reporting:
Herniorrhaphy

3 ASC Durango at Mercy Regional Med Ctr.
1 Mercado Street Suite 210
Durango, CO 81301
www.ascdurango.org
Performing and Reporting:
Herniorrhaphy

4 Audubon Ambulatory Surgery Center
3030 N. Circle Drive
Colorado Springs, CO 80909
www.audubonsurgerycenter.com
Performing and Reporting:
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

5 Audubon ASC at St. Francis
6011 E Woodmen Road Suite 200
Colorado Springs, CO 80923
www.audubonsurgerycenter.com
Performing and Reporting:
Herniorrhaphy

6 Aurora Surgery Center
1300 South Potomac Street Suite 122
Aurora, CO 80012
www.aurorasurgerycenter.com
Performing and Reporting:
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

7 Black Canyon Surgical Center, LLC
611 East Star Court Suite C
Montrose, CO 81401
www.blackcanyonsurgicalcenter.com
Performing and Reporting:
Herniorrhaphy
Abdominal Hysterectomy

8 Boulder Medical Center, PC
2750 Broadway
Boulder, CO 80304
www.bouldermedicalcenter.com
Performing and Reporting:
Herniorrhaphy

9 Centrum Surgery Center, LTD
8200 E. Belleview Suite 300 E
Greenwood Village, CO 80111
www.centrumsurgicalcenter.com
Performing and Reporting:
Herniorrhaphy

10 Clear Creek Surgery Center, LLC
7809 West 38th Ave.
Wheat Ridge, CO 80033
clearcreeksurgery.com
Performing and Reporting:
Herniorrhaphy

11 Colorado Springs Surgery Center-ASC
1615 Medical Center Point
Colorado Springs, CO 80907
www.coloradospringssurgerycenter.com
Performing and Reporting:
Herniorrhaphy
Abdominal Hysterectomy

12 Crown Point Surgery Center-ASC
9397 Crown Crest Blvd. #110
Parker, CO 80138
Performing and Reporting:
Herniorrhaphy
Abdominal Hysterectomy

13 Denver Midtown Surgery Center-LTD
1919 East 18th Ave
Denver, CO 80206
www.midtownsurgicalcenter.com
Performing and Reporting:
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

14 Denver West Surgery Center
13952 Denver West Parkway Bldg 53 #100
Golden, CO 80401
www.denverwestsrugerycenter.net
Performing and Reporting:
Herniorrhaphy

15 Dry Creek Surgery Center, LLC-ASC
135 Inverness Drive East
Englewood, CO 80112
Closed February 2009

16 First Choice Outpatient Surgery Center at Community Hospital
2596 F Road
Grand Junction, CO 81505
yourcommunityhospital.com/outpatient surgery.cfm
Performing and Reporting:
Herniorrhaphy
Vaginal Hysterectomy

17 Grand Valley Surgical Center, LLC
710 Wellington Ave. Suite 21
Grand Junction, CO 81501
www.grnadvalleysurgicalcenter.com
Performing and Reporting:
Herniorrhaphy
Vaginal Hysterectomy

18 Harmony Surgery Center, LLC
2127 E Harmony Rd. Suite 200
Fort Collins, CO 80528
www.harmonyasc.com
Performing and Reporting:
Herniorrhaphy

19 Kaiser Permanente Ambulatory Surgery Ctr
2045 Franklin Street
Denver, CO 80205
www.kaiserpermanente.org
Performing and Reporting:
Herniorrhaphy

20 Lakewood Surgery Center
2201 Wadsworth Blvd.
Lakewood, CO 80214
www.lakewoodsurgicalcenter.com
Performing and Reporting:
Herniorrhaphy

21 Lincoln Surgery Center, LLC
11960 E Lioness Way #120
Parker, CO 80134
www.lincolnsurgerycenter.com
Performing and Reporting:
Herniorrhaphy

22 Longmont Surgery Center, LLC
2030 W Mountain View Ave #100
Longmont, CO 80501
Longmontsurgerycenter.com
Performing and Reporting:
Herniorrhaphy

23 Loveland Surgery Center, ASC
3800 N Grant Ave.
Loveland, CO 80538
www.lovelandsurgerycenter.com
Performing and Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement

24 MCR Surgery Center, LLC
2500 Rocky Mountain Ave Suite 200
Loveland, CO 80538
Performing and Reporting:
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

25 Midvalley Ambulatory Surgery Center, LLC
1450 E Valley Rd 202
Basalt, CO 81621
Performing and Reporting:
Herniorrhaphy

26 North Colorado Surgery Center
2000 70th Ave
Greeley, CO 80634
Closed August 2009
Reporting:
Herniorrhaphy

27 North Suburban Surgery Center
9195 Grant Street Suite 200
Thornton, CO 80229
www.northsuburbansurgery.com
Performing and Reporting:
Herniorrhaphy

28 Orthopaedic Center of the Rockies, ASC
2500 E Prospect Road
Fort Collins, CO 80525
www.orthohealth.com
Performing and Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement

29 Park Ridge Surgery Center of Sky Ridge
10450 Park Meadows Drive Suite 200
Lonetree, CO 80124
Closed August 2009
Reporting:
Herniorrhaphy

30 Parkwest Surgery Center, LLC
3676 Parker Blvd Suite 140
Pueblo, CO 81008
Performing and Reporting:
Herniorrhaphy

31 Peak One Surgery Center
350 Peak One Drive
Frisco, CO 80443
www.peak1asc.com
Performing and Reporting:
Herniorrhaphy

32 Pueblo Surgery Center
25 Montebello Road
Pueblo, CO 81001
www.pueblosurgery.com
Performing and Reporting:
Herniorrhaphy
Total/Partial Knee Replacement
Abdominal Hysterectomy
Vaginal Hysterectomy

33 Rocky Mountain Surgery Center, LLC
401 West Hampden Place Suite 100
Englewood, CO 80110
Rockymountainsurgery.com
Performing and Reporting:
Herniorrhaphy
Total/Partial Knee Replacement

34 Rose Surgical Center
4700 East Hale Parkway #200
Denver, CO 80220
Rosesurgicalcenter.com
Performing and Reporting:
Herniorrhaphy

35 Sky Ridge Surgical Center
10099 Ridge Gate Parkway Suite 100
Lone Tree, CO 80124
Skyridgesurgicalcenter.com
Performing and Reporting:
Herniorrhaphy

36 Skyline Surgery Center
2555 East 13th Street Suite 200
Loveland, CO 80537
www.bannerhealth.com
Performing and Reporting:
Herniorrhaphy
Total/Partial Knee Replacement
Abdominal Hysterectomy
Vaginal Hysterectomy

37 Summit View Surgery Center, LLC
7730 S Broadway
Littleton, CO 80122
Performing and Reporting:
Herniorrhaphy

38 Surgery Center at Lutheran
3455 Lutheran Parkway Suite 150
Wheat Ridge, CO 80033
www.exempla.org
Performing and Reporting:
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

39 Surgery Center at Printers Park, LLC
175 S Union Blvd Suite 100
Colorado Springs, CO 80910
www.printersparksurg.com
Performing and Reporting:
Herniorrhaphy

40 Surgery Center of Fort Collins
1100 East Prospect Road
Fort Collins, CO 80525
Performing and Reporting:
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

41 Surgical Center at Premier
3920 N Union Blvd Suite 240
Colorado Springs, CO 80907
www.scpremier,net
Performing & Reporting:
Total/Partial Hip Replacement
Total/Partial Knee Replacement
Herniorrhaphy
Abdominal Hysterectomy
Vaginal Hysterectomy

42 Vail Valley Surgery Center, LLC
181 W Meadow Drive Suite 3R
Vail, CO 81657
www.vvmc.com
Performing and Reporting:
Herniorrhaphy
Vaginal Hysterectomy

43 Women's Surgical Center at Northcare
6071 E Woodmen Road Suite 425
Colorado Springs, CO 80923
Performing and Reporting:
Abdominal Hysterectomy
Vaginal Hysterectomy

44 Yosemite Street Surgery Center
9777 S Yosemite Street Suite 210
Lone Tree, CO 80124
Performing and Reporting:
Herniorrhaphy

Figure 1: Colorado Hospitals and Long-Term Acute Care Facilities Reporting in NHSN

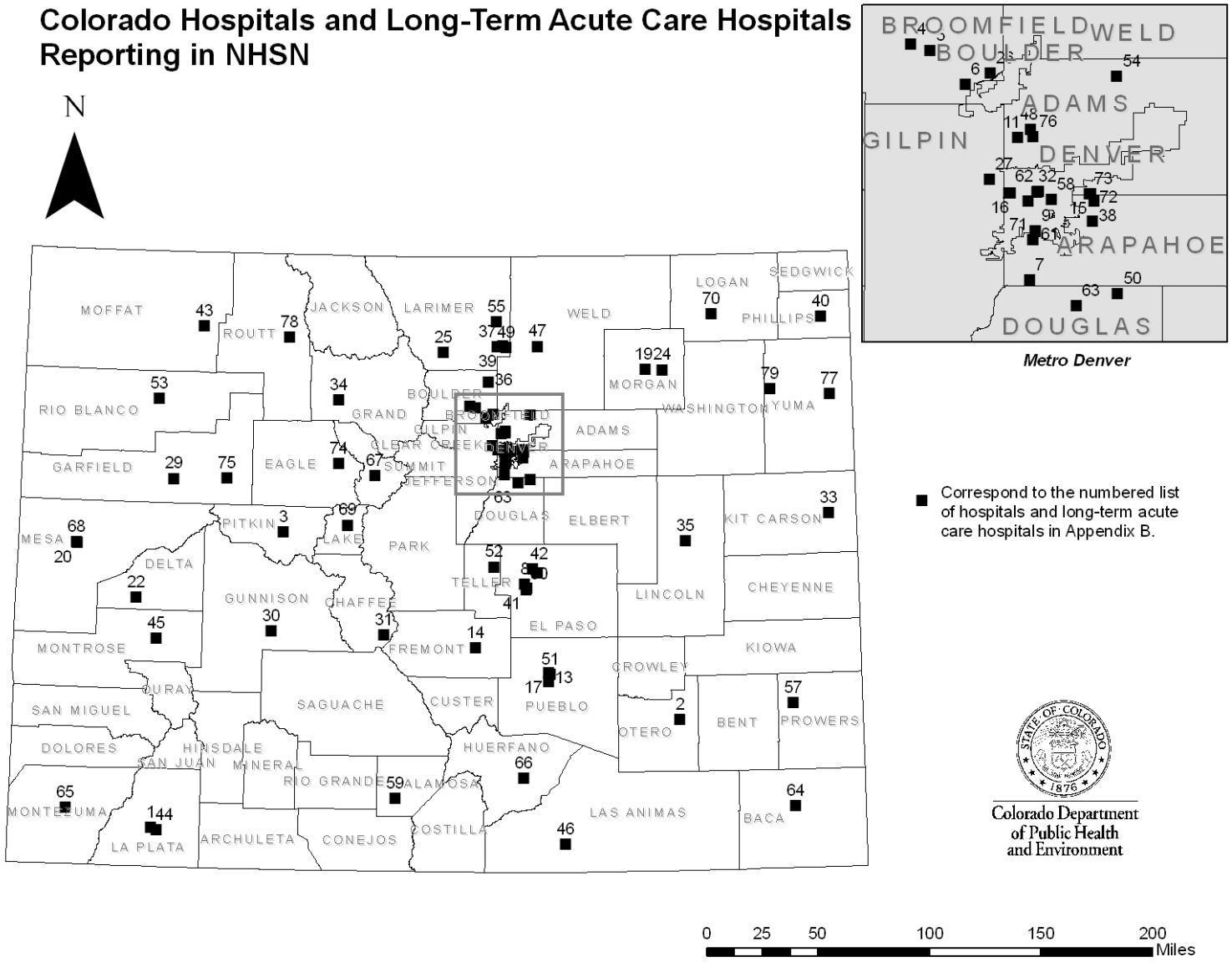
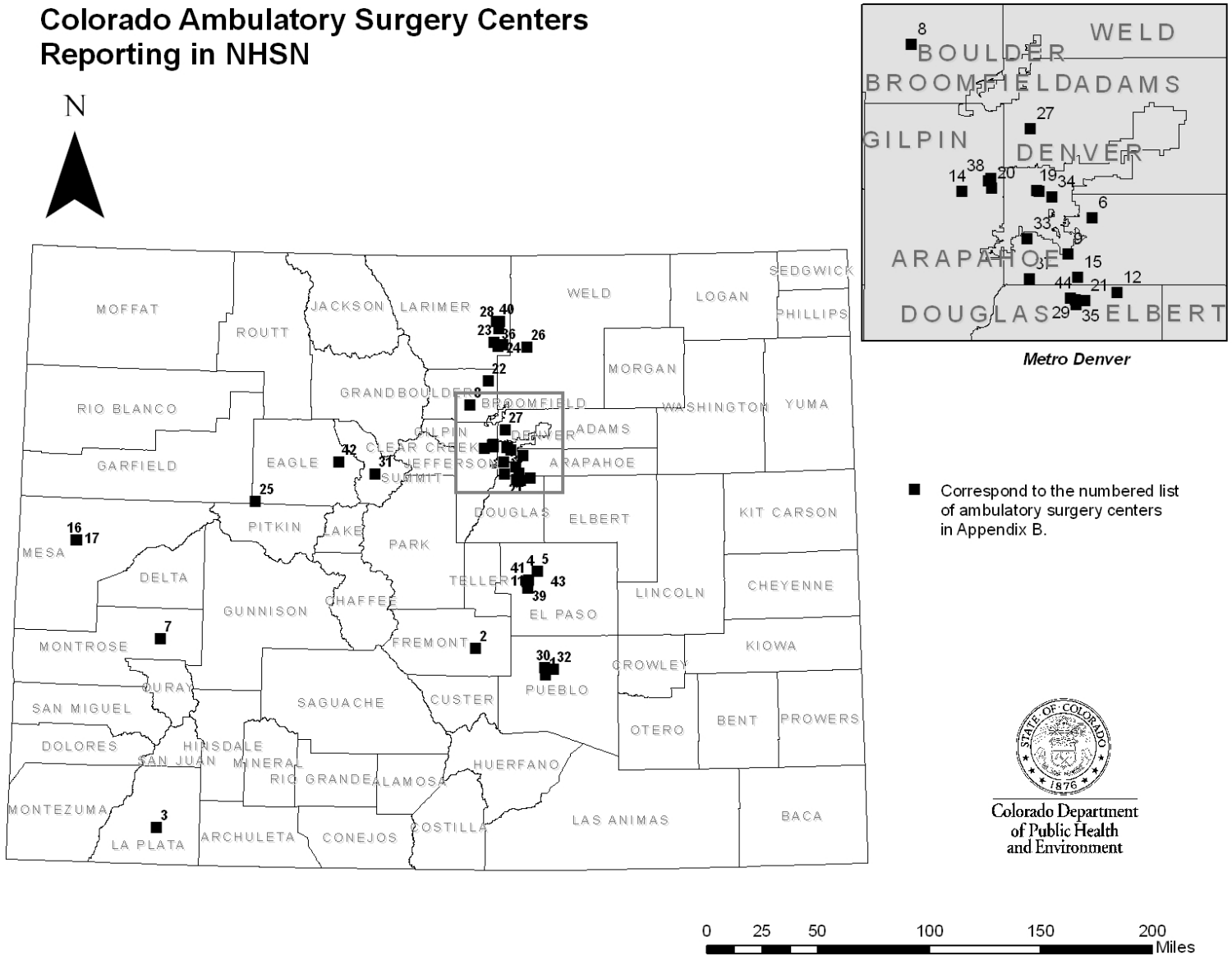


Figure 2: Colorado Ambulatory Surgery Centers Reporting in NHSN



Appendix C

Glossary of Terms

Term	Definition
Active Surveillance	A system used by a trained infection preventionist (IP) to look for infections during a patient's hospital stay. A variety of tools are used to identify infections and determine if they are related to their hospital stay or if the infection was present on hospital admission. These tools may include, but are not limited to, information from laboratory, radiology, operation, pharmacy reports and nursing care units and/or patient treatment areas.
Ambulatory Surgery Center	A freestanding health facility that can keep patients for up to 23 hours to perform a surgical procedure.
Birth weight Categories	Birth weight refers to the weight of the infant at the time of birth. Infants remain in their birth weight category even if they gain weight. Birth weight category is important because the lower the birth weight, the higher the risk of developing an infection.
Case	Instance of a particular disease, injury, or other health condition that meet selected criteria.
Case Definition	Set of uniformly applied criteria for determining whether a person should be identified as having a particular disease, injury, or other health condition. In epidemiology, particularly for an outbreak investigation, a case definition specifies clinical criteria and details of time, place and person.
CAUTI	Catheter-associated urinary tract infection. A urinary tract infection that occurs in a patient who had an indwelling urethral urinary catheter in place within the 7-day period before the onset of the urinary tract infection.
Central line	Flexible tube that is inserted near the patient's heart or into one of the large veins or arteries. A central line provides access to a large vein that can be used to give fluids, measure the amount of fluid in the body or to give medication.
Central line-	A primary bloodstream infection (BSI) in a patient that had a central line within the 48-hour period before the

associated bloodstream infection (CLABSI)	development of the BSI. If the BSI develops within 48-hours of discharge from a location, it is associated with the discharging location.
Central Line Bloodstream Infection (CLABSI) Rate	To get this rate, we divide the total number of central line-associated bloodstream infections by the number of central line days. That result is then multiplied by 1,000. Lower rates are better.
Central Line Days (Device Days)	This is the total number of days a central line is used for patients in an ICU or a NICU. A daily count of patients with a central line in place is performed at the same time each day. Each patient with one or more central lines at the time the daily count is performed is counted as one central line day.
Clinical Sepsis	A patient 1 year of age or younger who has at least one of the following clinical signs or symptoms with no other recognized cause: fever (> 38° C, rectal), hypothermia (< 37°C, rectal), temporary absence of breathing, or an abnormally slow heart rate; and blood culture not done or no organisms detected in blood and no apparent infection at another site, and physician institutes treatment for sepsis.
Confidence Intervals	The confidence interval for a hospital's infection rate is the range of possible rates within which there is a 95% confidence that the real infection rate for that hospital lies, given the number of infections and procedures that were observed in that hospital in a specific time period.
Coronary Artery Bypass Graft Surgery	Coronary artery bypass graft (CABG) surgery is a treatment for heart disease in which a vein or artery from another part of the body is used to create an alternate path for blood to flow to the heart, bypassing a blocked artery.
Critical Care Unity (CCU)	A nursing care area that provides intensive observation, diagnosis, and therapeutic procedures for adults and/or children who are critically ill.
Device Days	For each day of the month, at the same time each day, record the number of patients who have the specific device (e.g., central line, ventilator, or indwelling urinary catheter).
Device-Associated Infection	An infection in a patient with a device (e.g., ventilator or central line) that was used within the 48-hour period before onset of infection.
Donor Incision Site	Coronary Artery Bypass Donor and Chest Surgery (CBGB) is surgery with a chest incision and donor site incisions (donor sites include the patient's leg or arm) from where blood vessel is removed to create a new path for blood to flow to the heart. CBGB surgical incision site infections involving the donor incision site are reported separately from CBGB surgical chest incision site infections.

Drug-resistant infections	Infections that have become resistant to antibiotics commonly used to kill infections caused by resistant strains of bacteria. Usually, other antibiotics can be used to kill drug-resistant infections.
Epidemiology	The study of the distribution and determinants of health conditions or events among populations and the application of that study to control health problems.
Exposure	Coming into contact with a cause of, or possessing a characteristic that is a determinant of, a particular health problem.
Health	State of complete physical, mental, and social well-being and not merely the absence of disease or other infirmity.
Health Facility Acquired Infection	An infection that occurs in a healthcare setting while seeking care for a separate condition.
Heart bypass or coronary artery bypass graft (CABG)	A surgery used to bypass blocked heart arteries by creating new passages for blood to flow to the heart muscle. Arteries or veins from other parts of the body are used as grafts.
Hip Replacement Surgery	An elective procedure for people with severe hip damage or pain related to chronic osteoarthritis, rheumatoid arthritis or other degenerative processes involving the hip joint. Hip replacement surgery involves removing damaged cartilage and bone from the hip joint and replacing them with new, man-made parts.
Implant	A nonhuman-derived object, material, or tissue that is permanently placed in a patient during an operation. Examples include: heart valves, metal rods, mesh, wires, screws, cements, hip replacements and other devices
Infant	A child less than one year old.
Infection	An invasion of the body tissues of a host by an infectious agent, whether or not it causes disease.
Infection Preventionists (IP)	Health professionals that have special training in infection prevention and monitoring.
Inpatient	A patient whose date of admission to the healthcare facility and the date of discharge are different calendar days.
Knee replacement	Surgery (arthroplasty) is an elective procedure for people with severe knee damage and pain related to osteoarthritis, rheumatoid arthritis, and traumatic arthritis. A total knee replacement involves removing the damaged cartilage and bone from the surface of the knee joint and replacing them with a man-made surface of metal and plastic. A partial knee replacement involves replacing only part of the knee joint.

Location	The specific patient care area to which a patient is assigned while receiving care in the healthcare facility.
Long-Term Acute Care Hospital (LTACH)	A specialty care hospital that cares for patients that have medical conditions requiring intense, special treatment for a long time (an average length of stay is 25 days).
Methicillin-Resistant *Staphylococcus aureus* (MRSA)	Methicillin is an antibiotic drug commonly used to treat Staphylococcus (staph) infections. Some strains of staph are not killed by methicillin. If the staph infection is not killed by methicillin then it is called methicillin-resistant Staphylococcus aureus, or MRSA.
Metric	A measurement for calculating health outcomes. There are both process metrics that measure adherence to standard health quality processes and outcome metrics that measure the number of patients affected by specific medical treatments.
Mortality	Death
National Healthcare Safety Network (NHSN)	This is a standardized data reporting system that Colorado healthcare facilities must use to identify and report select HAIs and enter required data on uninfected patients. NHSN is a secure, internet-based surveillance (monitoring and reporting) system. The NHSN is managed by the CDC's Division of Healthcare Quality Promotion
NHSN Operative Procedure	A procedure:1) that is performed on a patient who is an NHSN patient inpatient or a NHSN outpatient, 2) takes place during an operation and 3) that is included in the NHSN operative procedure categories.
Neonate	A patient who is an infant less than or up to 30 days of age (NHSN definitions).
Neonatal Critical Care Unit (NCCU)	A patient care area that provides care to the most critically ill infants.
Nosocomial	Secondary disorder associated with being treated in a hospital but unrelated to the patient's primary condition.
Operating Room (OR)	A patient care area that meets the American Institute of Architects (AIA) criteria for an operating room. This may include an operating room, C-Section room, interventional radiology room or a cardiac catheterization lab.
Operative Procedure	An operation that takes place during a one single trip to the operating room (OR) where a surgeon makes at least one incision (cut) through the skin or mucous membrane, and stitches or staples the incision before the patient leaves the OR.
Outpatient	A patient whose date of admission to the healthcare facility and the date of discharge are the same day.
Patient Days	For each day of the month, at the same time each day, record the number of patients on the unit. At the end of

	the month, the sum of all days is recorded.
Permanent Central Line	A central line that is tunneled, including certain dialysis catheters. Includes implantable catheters.
Population	The total number of inhabitants of a geographic area or the total number of persons in a particular group (e.g., the number of persons engaged in a certain occupation).
Post discharge surveillance	This is the process IPs use to seek out infections after patients have been discharged from the hospital. It includes screening a variety of data sources, including re-admissions, emergency department visits and/or contacting the patient's doctor.
Prevalence	The number or proportion of cases or events or attributes among a given population.
Rate	An expression of the relative frequency with which an event occurs among a defined population per unit of time, calculated as the number of new cases or deaths during a specified period divided by either person-time or the average (mid-interval) population. In epidemiology, it is often used more casually to refer to proportions that are not truly rates (e.g., attack rate or case-fatality rate).
Risk	The probability that an event will occur (e.g., that a person will be affected by, or die from, an illness, injury, or other health condition within a specified time or age span).
Risk Adjustment	Risk adjustment accounts for differences in patient populations and allow for hospitals to be compared. A hospital that performs a large number of complex procedures on very sick patients would be expected to have a higher infection rate than a hospital that performs more routine procedures on healthier patients.
Risk-Adjusted Rate	For surgical site infections, the risk-adjusted rate is based on a comparison of the actual (observed) rate and the expected rate if nationwide the patients had the same distribution of risk factors as the hospital. For CLABSIs, the adjusted rate is a comparison of the actual rate and the expected rate based on national rates for each ICU or within birth weight categories for neonates.
Risk Factor	An aspect of personal behavior or lifestyle, an environmental exposure, or a hereditary characteristic that is associated with an increase in the occurrence of a particular disease, injury, or other health condition.
Surveillance, Active	Public health surveillance in which the health agency solicits reports.
Surgical Site Infections (SSIs)	Infections that are directly related to an operative procedure. Some SSIs are minor and only involve the skin or subcutaneous tissue. Other SSIs may be deeper and more serious.
Surgical Site Infection Rate	Surgical site infection rates per 100 operative procedures are found by dividing the number of SSIs by the number of total number of specific operative procedures within a given reporting period. The results are then multiplied by 100. These calculations are performed separately for each type of surgical procedure. They are

	listed by risk index.
Symptom	Any indication of disease noticed or felt by a patient.
Temporary Central Line	A central line that is not tunneled.
The Department	The Colorado Department of Public Health and Environment (CDPHE).
Transfer Rule	If a device-associated infection develops within 48 hours of transfer from one inpatient location to another in the same facility, the infection is attributed to the transferring location.
Trend	Movement or change in frequency over time, usually upwards or downwards**.**
Umbilical Catheter	A tube that is inserted through the umbilical blood vessel in a neonate.
Umbilical Catheter Days (Device Days)	This is the total number of days an umbilical catheter are present in newborns in a NICU. The count is performed at the same time each day. Each newborn with both an umbilical catheter and a central line is counted as one umbilical catheter day.
Validation	A way of making sure the health facility acquired data reported are complete and accurate.
Validity	The degree to which a measurement, questionnaire, test, or study or any other data-collection tool measures what it is intended to measure.
Ventilator-Associated Pneumonia (VAP)	A pneumonia (PNEU) that occurs in a patient who was intubated and ventilated at the time of or within 48 hours before the onset of the pneumonia. There is no minimum time period required. If the PNEU develops in a patient within 48 hours of discharge from a location, the VAP is associated with the discharging location, not the current location.
Wound Class	An assessment of the likelihood and degree of contamination of a surgical wound at the time of the operation. Wounds are divided into four classes: Clean: An uninfected operation body site is encountered and the respiratory, digestive, genital, or uninfected urinary tracts are not entered. Clean-Contaminated: Operation body sites in which the respiratory, digestive, genital or urinary tracts are entered under controlled conditions and without unusual contamination. Contaminated: Operation body sites that have recently undergone trauma, operations with major breaks in sterile technique (e.g., open cardiac massage) or gross spillage from the gastrointestinal tract. Dirty or Infected: Includes old traumatic wounds with retained dead tissue and those that involve existing infection or perforated intestines

Abbreviations

ASC-Ambulatory Surgery Center
BSI – Bloodstream Infection
CABG – Coronary Artery Bypass Graft Surgery
CDC – Centers for Disease Control and Prevention
CDPHE-Colorado Department of Public Health and Environment
CL – Central Line
CLABSI – Central Line Associated Bloodstream Infection
CCU-Critical Care Unit
DIP – Deep Incisional Infection at the Primary Surgical Site (for CABG procedures, this would be the chest site)
DIS – Deep Incisional Infection at the Secondary Surgical Site (for CABG procedures, this would be the donor vessel site)
HAI – Healthcare-Associated Infection
HHS - Department of Health and Human Services
HER – Hernia repair
HPRO – Hip prosthesis (total or partial)
ICP – Infection Prevention and Control Specialist
IP – Infection Preventionist
KPRO – Knee prosthesis (total or partial)
LTACH – Long Term Acute Care Hospital
MDRO – Multi-Drug Resistant Organism
MRSA – Methicillin-Resistant *Staphylococcus aureus*
NCCU – Neonatal Critical Care Unit
NHSN – National Healthcare Safety Network
OR – Operating Room
SHEA – Society for Healthcare Epidemiology of America
SIP – Superficial Incisional Infection at the Primary Surgical Site (for CABG procedures, this would be the chest site)
SIS – Superficial Incisional Infection at the Secondary Surgical Site (for CABG procedures, this would be the donor vessel site)
SSI – Surgical Site Infection

UB – Umbilical Catheter
VAP – Ventilator-Associated Pneumonia

Appendix D

Standardized Infection Ratio

The Standardized Infection Ratio (SIR) is a risk adjusted summary measure that accounts for the type of procedure and risk category. The following example demonstrates how the SIR is calculated and how to determine if a hospital's ratio is significantly different from the national average.

Hospital A performed 190 hip prosthesis procedures last year and 5 surgical site infections (SSIs) occurred. Table 1 shows for each risk category the number of SSIs, number of hip prosthesis procedures, SSI rate for the risk category, national SSI rate based on the National Healthcare Safety Network (NHSN), and the expected number of SSIs.

Table 1. Hip prosthesis procedures and SSI rates by risk category

Risk category	# of SSIs	# of hip prosthesis procedures	Hospital SSI Rate (SSIs per 100 procedures)	NNIS Rate (SSIs per 100 procedures)	Expected # of SSIs
0	1	100	1.0	0.86	0.86
1	2	60	3.3	1.65	0.99
2,3	2	30	6.7	2.52	0.76
TOTAL	5	190	--	--	2.61

An example for calculating the SSI rate for risk category 1, expected number of SSIs for risk category 1, and total expected SSIs is shown below:

$$\text{SSI Rate for risk category } 1 = \frac{2\ \text{SSIs}}{60\ \text{procedures}} * 100 = 3.3$$

$$\text{Expected SSIs for risk category } 1 = \#\ \text{of procedures} * \text{NNIS rate} = 60 * 1.65/100 = 0.99$$

$$\text{Expected SSIs overall} = \sum \text{expected SSIs} = 0.86 + 0.99 + 0.76 = 2.61$$

The SIR is the ratio of the observed to expected SSIs collapsed over all risk categories, i.e. after adjusting for the risk of the procedure.

$$\text{SIR} = \frac{\text{observed SSIs}}{\text{expected SSIs}} = \frac{5}{2.61} = 1.92$$

Interpretation of the SIR is done by comparing a hospital's value to 1.0 (observed and expected number of SSIs are the same). In other words, the number of infections is what was expected based on the national average. If the SIR value is greater than 1.0, there are more infections than expected and if the SIR value is less than 1.0, there are fewer infections than expected. In this example, Hospital A has 92% more SSIs than expected.

The statistical significance of Hospital A's increase in SSIs compared to the national average is tested using a Z-test or Poisson test. A p-value is produced from the test and helps to determine if the difference in the SSI rate is due to chance alone. If the p-value is greater than or equal to 0.05, then there is no significant difference between the hospital's SSI rate and the national rate. If the p-value is less than 0.05, then the difference is statistically significant. At this point, the value of the SIR determines whether the hospital is better than or worse than the national average. If the SIR is greater than 1, then the hospital has significantly more SSIs than were expected based on the national average. The converse also applies where if the SIR is less than 1, the hospital has significantly fewer SSIs than were expected.

$$Z\ score = \left|1.96 * \left(\sqrt{\#\ \text{of observed SSI}} - \sqrt{\#\ \text{of expected SSI}}\right)\right|$$

$$= \left|1.96 * \left(\sqrt{5} - \sqrt{2.61}\right)\right| = 1.22$$

This score translates into a p-value of 0.22. Therefore, even though Hospital A had 95% more infections than expected, it is not significantly different from the national rate.

Appendix E

In July of 2009, the Colorado Health Facility Acquired Infections Advisory Committee received a letter from Dr. Todd at The Children's Hospital (TCH). The letter addressed concerns that Dr. Todd has about the Neonatal ICU Level III Central Line-Associated Bloodstream Infection rates reported in the Health Facility-Acquired Infections Annual Report. His concern stems from an analysis TCH conducted to analyze the correlation between publicly reported NICU infection data and billing data. TCH used Colorado Hospital Association discharge data to perform the analysis. It should be noted that methodologies for collecting discharge data and for collecting the data reported to the National Healthcare Safety Network for public reporting are not the same and could account for some of the differences reported in this analysis. However, the advisory committee and the Colorado Department of Public Health and Environment recognize the study and Dr. Todd's subsequent letter raise valid points that are important for consumers and other providers to understand in interpreting the report and making informed healthcare decisions. Both the committee and the department further acknowledge that validation is an essential component in evaluating the quality and accuracy of the reported data. As mentioned in the report, the Patient Safety Program has plans to launch a validation project in 2010.

The Children's Hospital

www.thechildrenshospital.org

Epidemiology
Ph: (720) 777-6072
Fx: (720) 777-7295

July 17, 2009

Paul J. Poduska, BS, M(ASCP), CIC
Chair of the Colorado Health Facility Acquired Infections Advisory Committee
Poudre Valley Health System
1024 S. Lemay Ave
Fort Collins, CO 80524-3998

Crystal Berumen
Director of Patient Safety Initiatives
Colorado Hospital Association
7335 East Orchard Road, Suite 100
Greenwood Village, Colorado 80111-2512

Re: *Neonatal ICU Level III CLABSI*

Dear Paul and Crystal,

I am writing to share with you an analysis of the section of the Health Facilities Acquired Infections Annual Report[1] pertaining to *Neonatal ICU Level III CLABSI* rates. As was acknowledged in the "Cautions" section of the report, there are a number of factors not addressed by the current measurement process that could distort the conclusions in the report. It is unfortunate that we are not yet able to provide consumers with more reliable, accurate and consistent data that they can use to make informed healthcare decisions. We recognize that this measure is a consequence of a legislative mandate, and that data for the measure can not be aggregated easily with existing data sources and methods. It is quite clear from the attached analysis that the Report's cautions are justified and that, in its current form, *Neonatal ICU Level III CLABSI* is simply not a reliable measure for public use.

With respect to NICU CL-BSI rates, the report properly recognizes that: *"This is a labor-intensive data collection process and hospitals with electronic record systems can more efficiently scan their records by generating automated reports. This efficiency can result in more accurate data collection and higher reported infection rates."* This is not just a theoretical, or even an un-addressable concern; but it identifies a significant flaw in the current *Neonatal ICU Level III CLABSI* measure that we believe can be remedied.

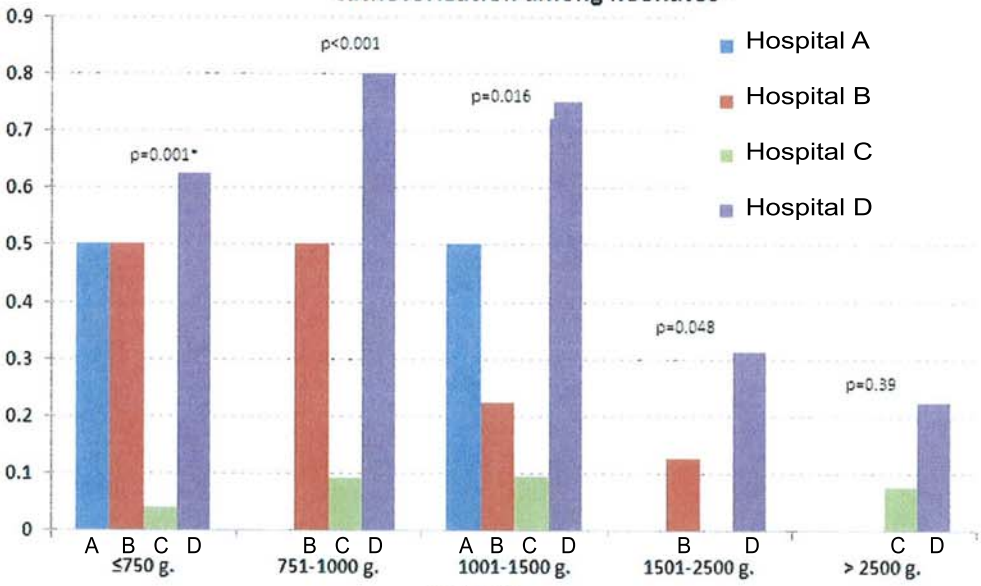
We know also that, under similar mandates, hospitals will be variably able or inclined to accurately report publicly compared rates. As recently reported in the New York Times: *"The lack of accurate reporting makes it virtually impossible for consumers to judge accurately the quality of a hospital or for the hospital*

[1] Health Facility Acquired Infections Disclosure Initiative Semi-Annual Bulletin: Volume 1, No. 2, October 2008 Catheter Associated Bloodstream Infection Rates in Colorado Neonatal Intensive Care Units

to compare itself with its peers and make improvements, the comptroller's office argues, saying the consequences include longer hospital stays and higher health-care costs." [2] Colorado finds itself in the same dilemma.

In an effort to explore the opportunity to use automated discharge data to identify neonates with infection, and to analyze the correlation between publicly reported NICU infection data and billing data, we conducted the attached study. Using CHA discharge data, we assessed ICD-9-coded rates of bacteremia in newborns with central catheters from Colorado hospitals during the same time period as the above-mentioned CDPHE report. Based on the CHA data structure, the methodologies are similar but not exactly comparable. Nonetheless, the highly significant differences for some hospitals between these rates and those reported to NHSN and CDPHE raise significant questions regarding the completeness of ascertainment and reporting (see Figure 1). We conclude that: *"Based on CHA discharge data, there is a lack of correlation between some hospitals billing data and publicly reported infection data. For example, some hospitals appear to have similar bacteremia/sepsis rates to TCH among central and/or umbilical line catheterized neonates, yet have significantly lower reporting rates as reflected in Colorado Department of Public Health and Environment Health Facility Acquired Infections Disclosure Initiative (Semi-Annual Bulletin: Volume 1, No. 2, October 2008. Catheter Associated Bloodstream Infection Rates in Colorado Neonatal Intensive Care Units). This disparity suggests a reporting bias that we believe should be explored and better understood."*

Figure 1: Relative Reporting Ratio, August 2007- July 2008: CLABSI-Health Facility Acquired Infections Disclosure Initiative versus CHA hospitalizations for sepsis/bacteremia with central and/or umbilical line catheterization among neonates*



* Probability: Hospital D vs C

CDPHE is ordinarily meticulous about the measures it reports and CHA has become involved to provide value-added service to its members. In its present form, N*eonatal ICU Level III CLABSI* does not appear to be as reliable or accurate as other hospital performance data. The absence of any budget for validation of reported data is a serious flaw in the process for public reporting of provider data. This analysis demonstrates the risks of such an un-validated process and suggests the need for action on the part of CDPHE and CHA.

The public will only be usefully informed if presented with data they can trust, unencumbered by cautions they have no way to address. This could be achieved by taking one or more of the following actions:

---

[2] http://www.nytimes.com/2009/03/10/nyregion/10hospitals.html

- Hospitals should be required to self-verify the methods they use to determine numerators and denominators (e.g. EMR, inclusive chart review, etc.) and results should be presented in a table and indexed to the cautions section and any measures that are reported. Hospitals that have incomplete ascertainment methods should be specifically identified.

- For *Neonatal ICU Level III CLABSI* auditing should be routine, but CHA could also adapt our analytical methods to identify apparent disparities in reporting that would require spot audits at the hospital's expense.

We would be pleased to answer any questions about this analysis and are interested in continuing to work with CDPHE and CHA to strengthen the comparative performance measures reported to the public concerning care in Colorado hospitals. Based upon this correlation study between billing data and reported data, as it currently exists, the NICU CL-BSI report appears to be an unreliable and potentially misleading way to evaluate and compare care between hospitals in the State.

Sincerely,

James K. Todd, MD
Professor of Pediatrics, Microbiology & Epidemiology
University of Colorado School of Medicine & Colorado School of Public Health
Jules Amer Chair of Community Pediatrics
Director of Epidemiology, Clinical Microbiology, and Clinical Outcomes
The Children's Hospital, Aurora

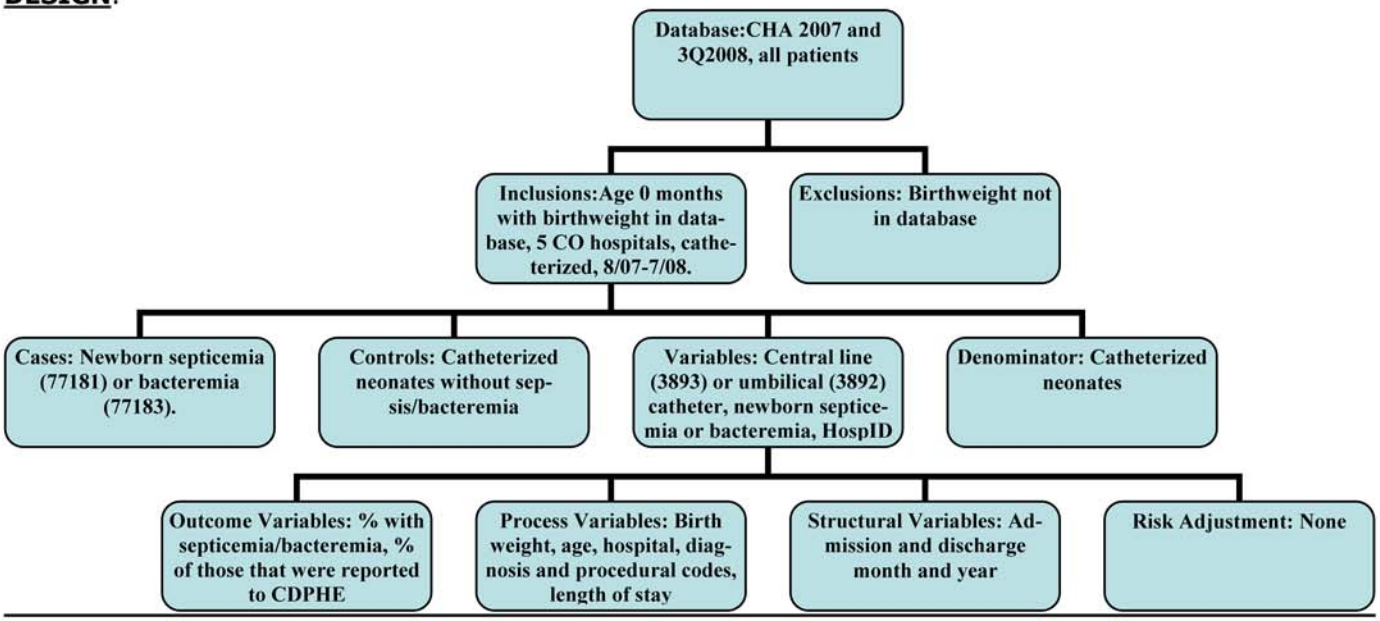
cc: Steven J. Summer, President and CEO, CHA
Ned Colange, MD MPH Chief Medical Officer, CDPHE

Bacteremia/Sepsis among catheterized neonates: 8/07-7/08

Project Lead: James K. Todd **Email**: todd.james@tchden.org, cxa@nedernet.net
Project Team: James K. Todd, Carl Armon, Susan Dolan **Completion Date:** 23 March 2009

OBJECTIVE: Compare bacteremia/sepsis among catheterized neonates with CDPHE report

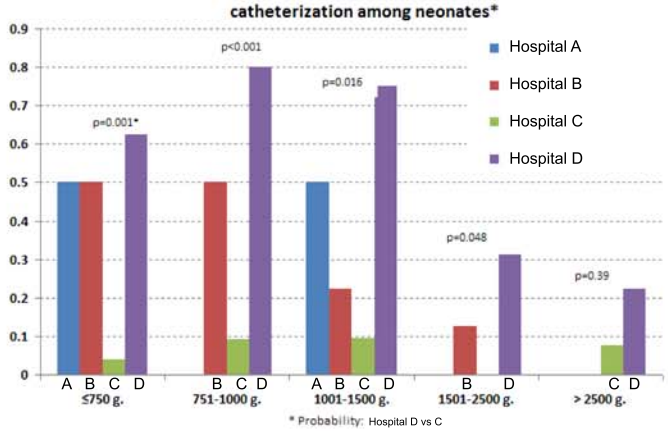
DESIGN:



CONCLUSIONS: (SEE ADDITIONAL ANALYSIS PAGE 4-6)

Based on CHA discharge data, some hospitals have similar bacteremia/sepsis rates to TCH among central and/or umbilical line catheterized neonates, yet have significantly lower reporting rates as reflected in Colorado Department of Public Health and Environment Health Facility Acquired Infections Disclosure Initiative (Semi-Annual Bulletin: Volume 1, No. 2, October 2008. Catheter Associated Bloodstream Infection Rates in Colorado Neonatal Intensive Care Units). This disparity suggests a reporting bias that should be explored.

Figure 1: Relative Reporting Ratio, August 2007- July 2008: CLABSI-Health Facility Acquired Infections Disclosure Initiative versus CHA hospitalizations for sepsis/bacteremia with central and/or umbilical line catheterization among neonates*



* Probability: Hospital D vs C

DATA SOURCES and VARIABLES:

TYPE	NAME	INCLUSION/ EXCLUSIONS
Archive Base File	CHA07ALL_SAS, CHA08Q3ALL_SAS	Inc: admissions from 8/07, discharges up to 7/08, central line or umbilical catheterization of 0 month old neonates with birth weight available in database, among 6 Colorado hospitals Exc: ages 1 month or older, no birth weight available in database
Working File(s)	"bacteremia sepsis 20090322.sas", and "20090323 bacteremia sepsis graphs.xls"	

VARIABLES:

STANDARD:

Variable	Description	Primary Source Logic	Type	Values
admyy	Admission year		numerical	7, 8
admmm	Admission month		numerical	1-12
disyy	Discharge year		numerical	8
dismm	Discharge month		numerical	1-12
agemm	Age in months		numerical	0
nbw	Birth weight		numerical	> 0 (grams)
los	Length of stay		numerical	> 0

PROJECT SPECIFIC:

Variable	Description	Primary Source Logic	Type	Values
sbi	Sepsis or bacteremia	If DX1-DX15 = "77181" or "77183"	binary	0 = no, 1 = yes
cencath	Central line catheterization	If PROC1-PROC15 = "3893"	binary	0 = no, 1 = yes
umbcath	Umbilical catheterization	If PROC1-PROC15 = "3892"	binary	0 = no, 1 = yes
clcath	Central line or umbilical catherization	If PROC1-PROC15 = "3893" or "3892"	binary	0 = no, 1 = yes
nbwcat	Birthweight category		ordinal	1 = < 750 g. 2 = 750 - 999 g. 3 = 1000 - 1499 g. 4 = 1500 - 2499 g. 5 = ≥ 2500 g.

VALIDATION OF DATA FILE(S) AND VARIABLES USED:

Breakdown of month and year of admission of all catheterized neonates

Table of admyr by ADMMM													
admyr	ADMMM(ADMMM)												
	1	2	3	4	5	6	7	8	9	10	11	12	Total
2007	0	1	0	0	0	1	1	77	77	86	73	78	394
2008	76	66	78	67	63	39	23	0	0	0	0	0	412
Total	76	67	78	67	63	40	24	77	77	86	73	78	806

Breakdown of month and year of admission of catheterized neonates with diagnosis of bacteria or sepsis

Table of admyr by ADMMM													
admyr	ADMMM(ADMMM)												
	1	2	3	4	5	6	7	8	9	10	11	12	Total
2007	0	1	0	0	0	1	1	22	24	33	24	29	135
2008	24	22	21	16	20	6	2	0	0	0	0	0	111
Total	24	23	21	16	20	7	3	22	24	33	24	29	246

ANALYSIS:

1. 2 x 2 tables providing OR, 95% CI, and Yates corrected or Fisher exact p-value. These tables can be found in the Excel file "20090323 bacteremia sepsis graphs.xls", in first two worksheets. Bacteremia/sepsis vs. central or umbilical line catheterization for hospital C vs. D.

1. Birth weight ≤ 750 g.

	Hosp C	Hosp D	p-value
CDPHE	1	5	0.001
CHA	24	3	

2. Birth weight 751-1000 g.

	Hosp C	Hosp D	p-value
CDPHE	2	8	<0.001
CHA	20	2	

3. Birth weight 1001-1500 g.

	Hosp C	Hosp D	p-value
CDPHE	2	3	0.016
CHA	19	1	

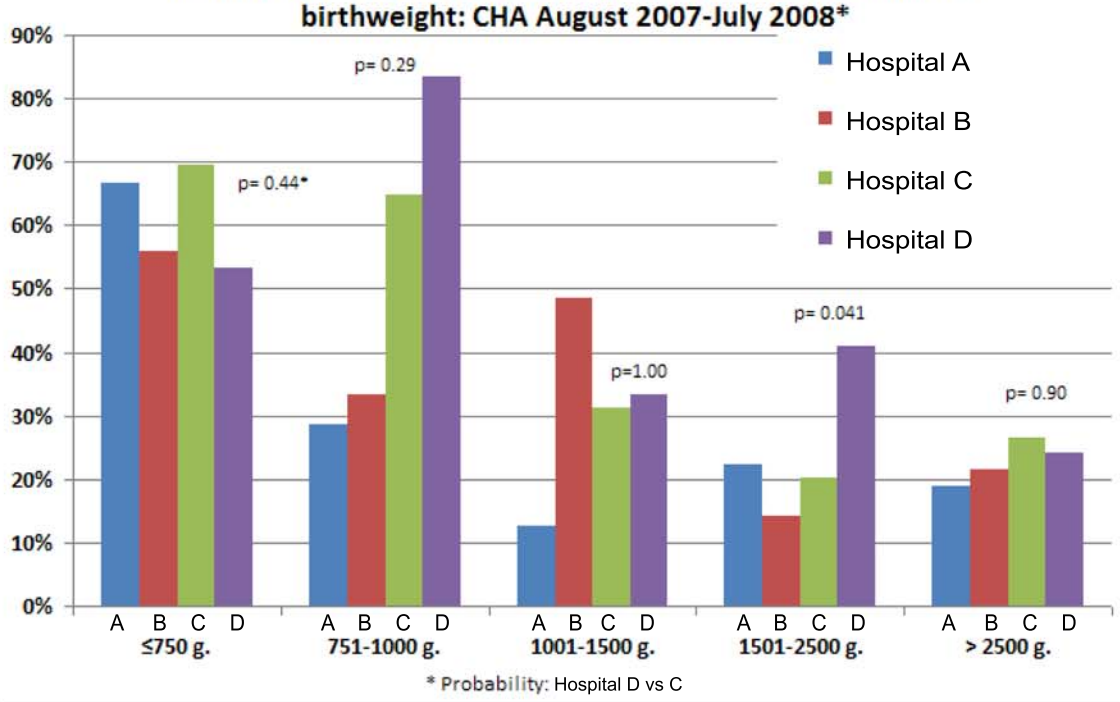
4. Birth weight 1501-2500 g.

	Hosp C	Hosp D	p-value
CDPHE	0	5	0.048
CHA	13	11	

5. Birth weight > 2500 g.

	Hosp C	Hosp D	p-value
CDPHE	1	6	0.39
CHA	12	21	

Figure 2: Percentage of central and/or umbilical line catheterized neonates who received a diagnosis of sepsis or bacteremia by birthweight: CHA August 2007-July 2008*



* Probability: Hospital D vs C

Figure 3: Relative Reporting Ratio, August 2007- July 2008: CLABSI-Health Facility Acquired Infections Disclosure Initiative versus CHA hospitalizations for sepsis/bacteremia with central line catheterization among neonates

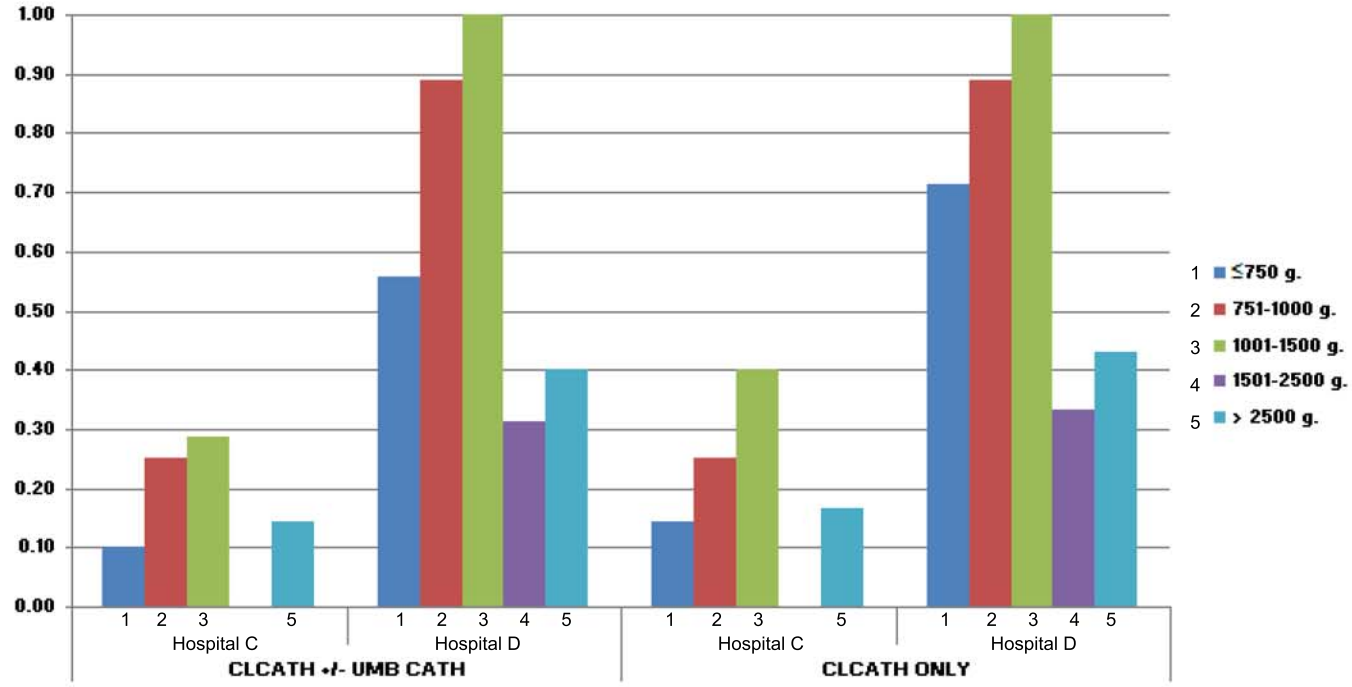
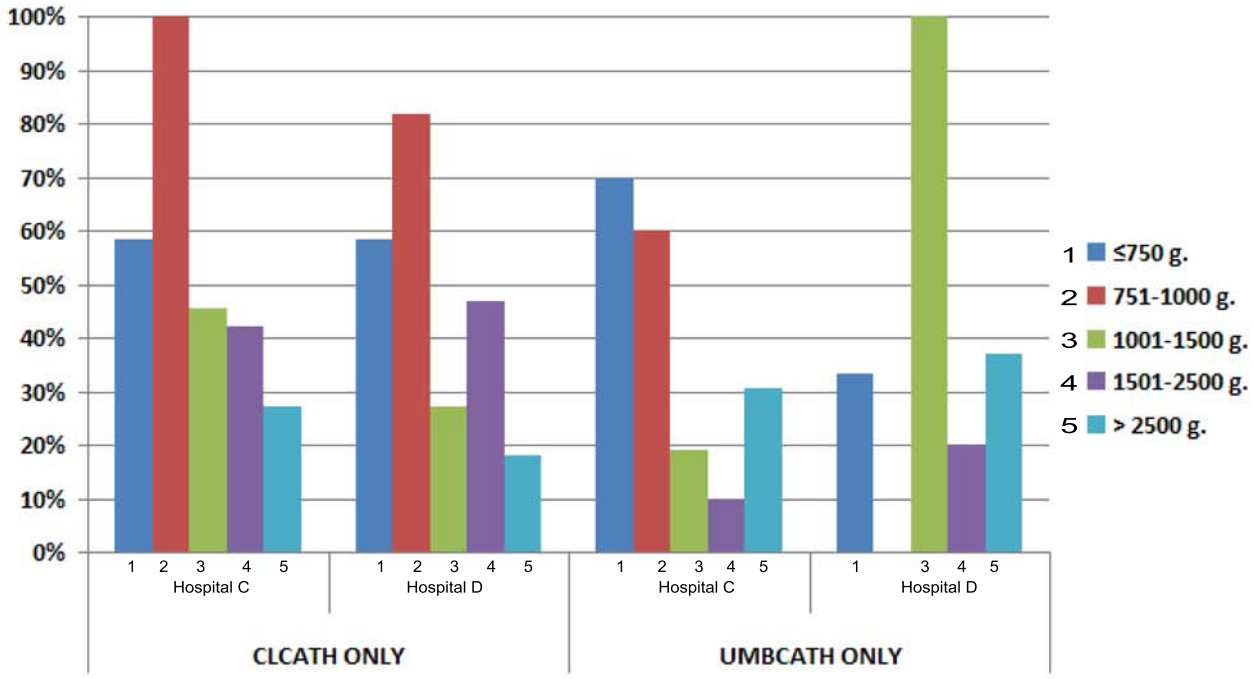


Figure 4: Percentage of catheterized neonates who received a diagnosis of sepsis or bacteremia by catheter type and birthweight: CHA August 2007-July 2008



Appendix F

Medical errors cause tens of thousands of deaths each year. But you can help. Get more involved with your health care. It is important to be prepared before you go in for a procedure by creating a personalized list of questions that you can take with you. Following is a list of suggested questions from the US Dept of Health and Human Services, Agency for Healthcare Research and Quality. Additional information can be found on their website at http://www.ahrq.gov.

- ✓ Why do I need surgery?
- ✓ How long will it take me to recover?
- ✓ What kind of surgery do I need?
- ✓ How long will I be in the hospital?
- ✓ What will you be doing?
- ✓ What will happen after the surgery?
- ✓ What are the benefits and risks of having this surgery?
- ✓ How much will the surgery cost?
- ✓ What are the alternatives to surgery?
- ✓ Will my insurance cover the surgery?
- ✓ Have you done this surgery before? How many times?
- ✓ How successful is this surgery?
- ✓ Why is your hospital best for this surgery?
- ✓ Will the surgery hurt?
- ✓ Will I need anesthesia?
- ✓ How long will the surgery take?
- ✓ What are the possible complications?

Other resources for helping you choose a health care facility can be found at the following websites:

The Leap Frog Group: http://www.leapfroggroup.org/

Institute for Healthcare Improvement: http://www.ihi.org/ihi
Colorado Foundation for Medical Care: http://www.cfmc.org