

COLORADO FACILITY SPECIFIC HEALTH CARE-ACQUIRED INFECTION DATA - SURGICAL SITE INFECTION OVERVIEW

Surgical site infections (SSI) are infections directly related to a surgical procedure. It is estimated that more than 20 percent of HAI are attributed to SSI, equating to infections in approximately two percent of all surgical procedures nationally.⁵ The impact from an SSI can be devastating, often leading to a longer hospital stay, additional treatment and higher costs.⁶ The economic toll per patient occurrence is estimated to be between \$3,000 and \$25,500 depending on the procedure and pathogen(s) involved.^{1,7} Overall in the United States, SSI can cost consumers and health care payers from 3 to 10 billion dollars each year.¹

Surgical procedures required for SSI reporting are selected because they are (1) performed at a high volume, (2) performed at a variety of facilities, and (3) associated with a high risk for SSI. The surgeries monitored for SSI in Colorado include cardiac procedures, hip and knee replacements, hernia repairs, hysterectomies (abdominal and vaginal), and breast and colon procedures. The NHSN manual defines reportable procedures for surveillance as those that occur in a single trip to an operating room where the incision is closed following the procedure.² Surgeries are performed as either inpatient or outpatient procedures.

Reportable infections occur within 30 or 90 days of the procedure, depending on the type of procedure and infection depth. Common signs of infection include fever, pain or tenderness, drainage from the incision site, redness, or presence of an abscess. In NHSN, SSI are classified into three different categories based on the depth of the infection.

- Superficial incision infection, which involves only the top layers of the skin.
- Deep incision, which involves deeper soft tissues (e.g., fascia and muscle layers).
- Organ space, which involves any part of the body that is opened or manipulated during the surgical procedure, excluding the top layers of skin, fascia or muscle layers.

Every table presenting SSI data below lists each facility in Colorado that performed the designated procedure, its city, the number of procedures performed, number of infections, standardized infection ratio (SIR) and a comparison to national infection data. For a detailed explanation of how the SIR is calculated, see Appendix B. There are three categories that indicate how a facility's own infection rate compares to the national infection rate. These are:

1. Statistically fewer infections than expected based on national infection rates (**better**);
2. Statistically similar infections as expected based on the national infection rates (**same**); or
3. Statistically more infections than expected based on national infection rates (**worse**).

ABDOMINAL PROCEDURES

BACKGROUND

The surgeries presented in this section are hernia repairs, colon surgeries and hysterectomies (abdominal and vaginal). These surgeries can be performed as inpatient or outpatient procedures.

A hernia procedure involves the repair of a hernia or bulging of internal organs or tissues that protrude through an abnormal opening in the muscle wall. Reportable NHSN hernia procedures include inguinal, femoral, umbilical or anterior abdominal wall repairs.

In Colorado, hernia repairs were removed from mandatory reporting in acute care hospitals based on new national reporting requirements by the Centers for Medicare and Medicaid Services (CMS). To fulfill CMS reimbursement requirements, facilities nationwide began reporting certain colon procedures on January 1, 2013. Since facilities already were reporting colon surgeries to fulfill CMS requirements, Colorado removed the mandatory reporting of hernia repairs in hospitals, replacing it with colon surgeries. Hernia repair remains a reportable surgery for ASC and colon procedures only are reportable for hospitals.

Colon surgeries involve the excision of abnormal tissue in the large intestines. The intestines, which are muscular tubes that extend from the end of the stomach to the rectum, carry food, products of digestion and bacteria that help break down food in the digestive process. Since the intestines house bacteria, colon surgeries have a high risk for contamination and infection.

Hysterectomies are reported both by hospitals and ASC and involve the surgical removal of the uterus and occasionally, one or both fallopian tubes and/or ovaries. Indications for hysterectomy typically include benign fibroid tumors, cancerous tumors, uterine prolapse (uterus slips down into the vagina), endometriosis (cells from the uterine lining grow outside the uterus, causing pain and bleeding), chronic pelvic pain, and others.

Number of procedures, number of infections and SIRs for hernia repairs, colon surgeries and hysterectomies are presented in Tables 12-15 below.

HERNIA REPAIRS

Hernia procedures involve the repair of bulging internal organs or tissues that protrude through an abnormal opening in the muscle wall. Reportable NHSN hernia procedures include inguinal, femoral, umbilical or anterior abdominal wall repairs. Since January 2013, hospitals no longer are required to report hernia repairs; therefore, hernia repairs are only reported for ambulatory surgery centers (ASC).

The statewide hernia SSI rate in ASC has been better than the national average for the last several reporting periods.

RESULTS

Table 12 shows facility specific data for SSI attributed to hernia repairs performed in ASC from August 1, 2014 through July 31, 2015, along with historical data for two previous reporting periods.

Thirty ASC reported 5,570 **hernia repairs** this past year; 18 ASC reported zero SSI. Individually, all ASC had hernia SSI rates similar to the national average. However, when examining all ASC combined (see Table 5), the statewide hernia SSI rate has been better than the national average for the last several reporting periods.

TABLE 12: Number of Surgical Site Infections and Standardized Infection Ratios for Hernia Repairs in Ambulatory Surgery Centers - Colorado, August 2012 – July 2015

Surgical Site Infections in Hernia Repairs in Ambulatory Surgery Centers (ASC): August 1, 2012 – July 31, 2015													
Health Facility and City		August 2012- July 2013				August 2013- July 2014				August 2014- July 2015			
		No. of Procedures	No. of Infections	SIR	National Comparison	No. of Procedures	No. of Infections	SIR	National Comparison	No. of Procedures	No. of Infections	SIR	National Comparison
ASC Durango at Mercy MC	Durango	91	0	0	Same	90	0	0	Same	68	0	0	Same
Aberdeen Ambulatory Surgical Center	Pueblo	4	***	***	***	1	***	***	***	1	***	***	***
Arkansas Valley Surgery Center	Canon City	92	0	0	Same	90	0	0	Same	112	0	0	Same
Audubon Ambulatory Surgery Center	Colorado Springs	18	***	***	***	38	0	0	Same	16	***	***	***
Audubon Ambulatory Surgery Center at St. Francis	Colorado Springs	475	0	0	Same	552	1	0.4	Same	580	0	0	Same
Black Canyon Surgical Center	Montrose	37	0	0	Same	33	0	0	Same	41	0	0	Same
Centrum Surgical Center	Greenwood Village	13	***	***	***	20	0	0	Same	3	***	***	***
Children's North Surgery Center	Broomfield	73	0	0	Same	72	0	0	Same	56	0	0	Same
Clear Creek Surgery Center	Wheat Ridge	369	0	0	Same	311	0	0	Same	308	0	0	Same
Crown Point Surgery Center	Parker	312	0	0	Same	307	0	0	Same	318	0	0	Same
Denver Midtown Surgery Center	Denver	179	0	0	Same	215	0	0	Same	212	0	0	Same
First Choice Outpatient Surgery Center at Community Hospital	Grand Junction	78	1	2.8	Same	55	0	0	Same	0	***	***	***
Grand Valley Surgical Center	Grand Junction	182	0	0	Same	199	5	5.2	Worse	199	0	0	Same
Harmony Ambulatory Surgery Center	Ft Collins	486	2	0.9	Same	498	3	1.2	Same	445	1	0.5	Same
Kaiser Permanente Ambulatory Surgery Center	Denver	676	5	1.5	Same	708	1	0.3	Same	452	2	0.8	Same
Lincoln Surgery Center	Parker	55	0	0	Same	19	***	***	***	0	***	***	***
Longmont Surgery Center	Longmont	126	0	0	Same	104	1	2.1	Same	84	0	0	Same
North Suburban Surgery Center	Thornton	194	0	0	Same	181	0	0	Same	56	1	3.6	Same
Parkwest Surgery Center	Pueblo	11	***	***	***	9	***	***	***	4	***	***	***
Peak One Surgery Center	Frisco	60	0	0	Same	56	0	0	Same	62	0	0	Same
Pueblo Surgery Center	Pueblo	7	***	***	***	1	***	***	***	5	***	***	***
Red Rocks Surgery Center	Golden	254	0	0	Same	327	0	0	Same	301	0	0	Same
Renewal Surgery Center	Lone Tree	3	***	***	***	0	***	***	***	0	***	***	***

Surgical Site Infections in Hernia Repairs in Ambulatory Surgery Centers (ASC): August 1, 2012 – July 31, 2015

Health Facility and City		August 2012- July 2013				August 2013- July 2014				August 2014- July 2015			
		No. of Procedures	No. of Infections	SIR	National Comparison	No. of Procedures	No. of Infections	SIR	National Comparison	No. of Procedures	No. of Infections	SIR	National Comparison
Rocky Mountain Surgery Center	Englewood	279	0	0	Same	354	0	0	Same	325	2	1.3	Same
Rose Surgical Center	Denver	399	0	0	Same	456	0	0	Same	387	1	0.6	Same
Sky Ridge Surgical Center	Lone Tree	330	0	0	Same	506	0	0	Same	332	0	0	Same
Skyline Surgery Center	Loveland	128	0	0	Same	160	0	0	Same	172	0	0	Same
Southwest Colorado Surgical Center	Cortez	13	***	***	***	15	***	***	***	14	***	***	***
Summit View Surgery Center	Littleton	346	0	0	Same	323	1	0.7	Same	407	0	0	Same
Surgery Center At Lutheran	Wheat Ridge	5	***	***	***	1	***	***	***	0	***	***	***
Surgery Center Of Ft Collins	Ft Collins	13	***	***	***	10	***	***	***	10	***	***	***
Surgery Center of the Rockies	Colorado Springs	47	0	0	Same	68	0	0	Same	28	0	0	Same
Surgical Center at Premier	Colorado Springs	83	0	0	Same	74	0	0	Same	82	0	0	Same
UCH Memorial Surgery Center At Printers Park	Colorado Springs	132	1	1.6	Same	237	0	0	Same	225	0	0	Same

Note: SIR=Standardized Infection Ratio, the ratio of observed to expected infections adjusted for procedure risk factors; MC=Medical Center.

National comparison based on the indirect adjustment of modeled risk factors for each procedure type.

*** Indicates value not shown due to suppression of infection data, no national or historical rate available, or an expected infection count of less than 1.

Infections for facilities performing less than 20 procedures per year are suppressed to protect confidential health information. These facilities fulfilled reporting requirements.

Source: National Health Care Safety Network (NHSN) Database.