

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 days of the procedure or within one year if an implant was placed during the procedure. 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 location 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 (**better**) infections than expected based on national infection rates;
2. Statistically similar (**same**) infections as expected based on the national infection rates; or
3. Statistically more (**worse**) infections than expected based on national infection rates.

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 Jan. 1, 2012.

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 small and 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) and chronic pelvic pain.

Procedures counts, SSI counts and SSI rates for hernia repairs, colon surgeries and hysterectomies are presented in Tables 11-14 below.

COLON SURGERIES

Colon surgeries involve the small and large intestines, muscular tubes that extend from the end of the stomach to the rectum. The intestines carry bacteria as part of the digestive process, and therefore have a high risk for contamination and infection. Facilities began reporting for certain colon procedures on Jan. 1, 2012, as part of the Centers for Medicare and Medicaid Services (CMS) reporting requirements.

When combining data across all Colorado hospitals, the statewide aggregate rate for colon SSI has been better than the national average in all reporting

Results

Table 12 shows facility specific data for SSI attributed to **colon surgeries** performed from Jan. 1, 2012 through July 31, 2013.

Fifty-four hospitals reported 4,556 colon surgeries this past year and three hospitals reported zero SSI. Three hospitals had colon SSI rates better than the national average; all others had rates similar to the national average. When combining data across all Colorado hospitals (Table 5), the statewide aggregate rate for colon SSI has been better than the national average in all reporting periods.

Table 12: Colon Surgeries in Hospitals, Jan. 1, 2012 - July 31, 2013

Surgical Site Infections in Colon Procedures in Hospitals: Jan. 1, 2012 – July 31, 2013									
Health Facility and City		January-July 2012*				August 2012-July 2013			
		Procedure Count	Infection Count	SIR	National Comparison	Procedure Count	Infection Count	SIR	National Comparison
Arkansas Valley Regional MC	La Junta	8	***	***	***	12	***	***	***
Aspen Valley Hospital	Aspen	6	***	***	***	6	***	***	***
Boulder Community Hospital	Boulder	39	1	0.5	Same	74	5	1.1	Same
Boulder Community Hospital-Foothills	Boulder	2	***	***	***	10	***	***	***
Centura Avista Adventist Hospital	Louisville	18	***	***	***	39	2	0.9	Same
Centura Littleton Adventist Hospital	Littleton	60	2	0.6	Same	102	4	0.7	Same
Centura Penrose St Francis Health	Colorado Springs	145	5	0.6	Same	213	7	0.6	Same
Centura Porter Adventist Hospital	Denver	58	6	1.7	Same	82	4	0.9	Same
Centura St Anthony Hospital	Lakewood	6300	4	1.0	Same	127	13	1.7	Same
Centura St Anthony North Hospital	Westminster	39	3	1.5	Same	75	4	1.0	Same
Centura St Francis MC	Colorado Springs	40	1	0.5	Same	68	2	0.6	Same
Centura St Mary Corwin MC	Pueblo	41	0	0	Same	52	4	1.3	Same
Centura St Thomas More Hospital	Canon City	25	0	0	Same	44	4	1.7	Same
Colorado Plains MC	Fort Morgan	14	***	***	***	19	***	***	***
Community Hospital	Grand Junction	21	0	0	Same	41	4	1.8	Same
Delta County Memorial Hospital	Delta	23	0	0	Same	28	2	1.2	Same
Denver Health MC	Denver	93	7	1.1	Same	146	18	1.6	Same
East Morgan County Hospital	Brush	2	***	***	***	0	***	***	***
Estes Park MC	Estes Park	2	***	***	***	0	***	***	***
Exempla Good Samaritan MC	Lafayette	120	6	0.9	Same	169	3	0.3	Better
Exempla Lutheran MC	Wheat Ridge	110	6	1.0	Same	152	5	0.6	Same
Exempla St Joseph Hospital	Denver	176	3	0.3	Better	362	17	0.9	Same
Grand River MC	Rifle	6	***	***	***	4	***	***	***
Gunnison Valley Hospital	Gunnison	2	***	***	***	0	***	***	***
Heart of the Rockies Regional MC	Salida	6	***	***	***	16	***	***	***
Longmont United Hospital	Longmont	69	6	1.7	Same	97	3	0.5	Same
McKee MC	Loveland	28	3	2.1	Same	76	2	0.5	Same
MC of Aurora	Aurora	60	2	0.6	Same	121	10	1.5	Same
MC of the Rockies	Loveland	66	0	0	Better	127	0	0	Better
Memorial Hospital Central	Colorado Springs	65	2	0.5	Same	142	6	0.7	Same
Memorial Hospital North	Colorado Springs	35	3	1.8	Same	56	0	0	Same
Mercy Regional MC	Durango	24	0	0	Same	45	0	0	Same
Montrose Memorial Hospital	Montrose	21	0	0	Same	41	2	0.8	Same

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Health Facility and City		January-July 2012*				August 2012-July 2013			
		Procedure Count	Infection Count	SIR	National Comparison	Procedure Count	Infection Count	SIR	National Comparison
Mt San Rafael Hospital	Trinidad	1	***	***	***	1	***	***	***
North Colorado MC	Greeley	105	5	0.8	Same	149	10	1.1	Same
North Suburban MC	Thornton	33	1	0.5	Same	61	1	0.3	Same
Pagosa Springs MC	Pagosa Springs	1	***	***	***	1	***	***	***
Parker Adventist Hospital	Parker	73	2	0.5	Same	128	4	0.5	Same
Parkview MC	Pueblo	89	4	0.9	Same	110	4	0.7	Same
Pikes Peak Regional Hospital	Woodland Park	5	***	***	***	8	***	***	***
Platte Valley MC	Brighton	18	***	***	***	33	4	2.1	Same
Poudre Valley Hospital	Ft Collins	106	5	0.9	Same	169	5	0.6	Same
Presbyterian St Luke's MC	Denver	69	1	0.3	Same	131	2	0.3	Same
Prowers MC	Lamar	1	***	***	***	1	***	***	***
Rose MC	Denver	93	4	0.9	Same	192	4	0.4	Same
San Luis Valley Regional MC	Alamosa	10	***	***	***	15	***	***	***
Sky Ridge MC	Lone Tree	81	6	1.4	Same	148	9	1.1	Same
Southwest Memorial Hospital	Cortez	16	***	***	***	16	***	***	***
St Anthony Summit MC	Frisco	6	***	***	***	6	***	***	***
St Mary's Hospital	Grand Junction	69	2	0.6	Same	183	3	0.3	Same
Sterling Regional MC	Sterling	6	***	***	***	17	***	***	***
Swedish MC	Englewood	173	12	1.3	Same	296	15	0.9	Same
The Children's Hospital	Aurora	25	0	0	Same	73	1	0.2	Same
University of Colorado Hospital	Aurora	112	1	0.1	Better	222	6	0.4	Better
Vail Valley MC	Vail	15	***	***	***	15	***	***	***
Valley View Hospital	Glenwood Springs	19	***	***	***	26	3	1.9	Same
Wray Community Hospital	Wray	3	***	***	***	0	***	***	***
Yampa Valley MC	Steamboat Springs	3	***	***	***	9	***	***	***

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

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

*Hospitals began reporting colon procedures January, 2012.

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

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.