

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

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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.<sup>5</sup> The impact from an SSI can be devastating, often leading to a longer hospital stay, additional treatment and higher costs.<sup>6</sup> The economic toll per patient occurrence is estimated to be between \$3,000 and \$25,500 depending on the procedure and pathogen(s) involved.<sup>1,7</sup> Overall in the United States, SSI can cost consumers and health care payers from 3 to 10 billion dollars each year.<sup>1</sup>

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.<sup>2</sup> 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**).

## BREAST PROCEDURES

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### BACKGROUND

Breast procedures for purposes of surveillance and reporting into NHSN involve those procedures with at least one incision to the skin in either male or female patients performed in either inpatient or outpatient surgery locations. There are 36 types breast procedures that qualify in this category and can include an open biopsy of the breast, local excision of a lesion of the breast, insertion and removal of breast implants and radical mastectomies to name a few.

### RESULTS

Tables 16 and 17, show facility-specific data for SSI attributed to **breast procedures** in hospitals and ASC, respectively, performed from August 1, 2012 through July 31, 2015.

In this past reporting period, 61 hospitals reported 10,966 breast surgeries; 15 hospitals reported zero infections. Four hospitals (same as last year) had breast SSI rates worse than the national average; one hospital had a breast SSI rate better than the national average; all other hospitals had SSI rates similar to the national average. When numbers from all hospitals were combined (Table 5), the statewide breast SSI rate has been worse than the national average for the last 3 reporting periods.

**Four hospitals had breast SSI rates worse than the national average; one hospital had a breast SSI rate better than the national average; all others had SSI rates similar to the national average.**

**Fourteen ASC reported zero SSI. One ASC had a breast SSI rate worse than the national average and all others' breast SSI rates were similar to the national average.**

Thirty-three ASC reported 5,587 breast surgeries. Fourteen ASC reported zero SSI. One ASC had a breast SSI rate worse than the national average and all others' breast SSI rates were similar to the national average.

TABLE 16: Number of Surgical Site Infections and Standardized Infection Ratios for Breast Surgeries in Hospitals – Colorado, August 1, 2012 – July 31, 2015

Surgical Site Infections in Breast Procedures in Hospitals (In- and Outpatient Combined): 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
Animas Surgical Hospital	Durango	159	0	0	Same	154	0	0	Same	192	0	0	Same
Arkansas Valley Regional MC	La Junta	7	***	***	***	4	***	***	***	6	***	***	***
Aspen Valley Hospital	Aspen	20	0	0	Same	10	***	***	***	15	***	***	***
Boulder Community Hospital	Boulder	111	0	0	Same	248	5	1.8	Same	39	0	0	Same
Boulder Community Hospital-Foothills	Boulder	234	0	0	Same	11	***	***	***	190	2	1	Same
Castle Rock Adventist Hospital	Castle Rock	Not yet operating				56	0	0	Same	138	1	0.6	Same
Centura Avista Adventist Hospital	Louisville	154	4	2.5	Same	227	1	0.5	Same	240	1	0.5	Same
Centura Littleton Adventist Hospital	Littleton	307	4	2.7	Same	301	1	0.7	Same	327	3	1.8	Same
Centura Penrose St Francis Health	CO Springs	158	0	0	Same	380	0	0	Same	384	4	2.4	Same
Centura Porter Adventist Hospital	Denver	348	6	3	Worse	116	2	2.6	Same	149	2	2.5	Same
Centura St Anthony Central Hospital	Denver	234	7	5.3	Worse	342	0	0	Same	284	5	3.5	Worse
Centura St Anthony North Hospital	Westminster	44	1	1.7	Same	41	1	1.4	Same	42	0	0	Same
Centura St Francis MC	CO Springs	317	1	0.3	Same	147	0	0	Same	199	0	0	Same
Centura St Mary Corwin MC	Pueblo	149	2	1.2	Same	172	1	0.6	Same	127	3	2.1	Same
Centura St Thomas More Hospital	Canon City	14	***	***	***	20	0	0	Same	13	***	***	***
Colorado Plains MC	Fort Morgan	10	***	***	***	12	***	***	***	14	***	***	***
Community Hospital	Grand Junction	97	1	0.9	Same	79	1	1.2	Same	171	1	0.6	Same
Delta County Memorial Hospital	Delta	45	0	0	Same	50	0	0	Same	52	0	0	Same
Denver Health MC	Denver	167	3	1	Same	144	3	1.1	Same	143	1	0.4	Same
East Morgan County Hospital	Brush	19	***	***	***	12	***	***	***	2	***	***	***

**Surgical Site Infections in Breast Procedures in Hospitals (In- and Outpatient Combined): 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
Estes Park MC	Estes Park	1	***	***	***	2	***	***	***	7	***	***	***
Exempla Good Samaritan MC	Lafayette	503	4	1.4	Same	506	5	1.9	Same	370	4	2.4	Same
Exempla Lutheran MC	Wheat Ridge	430	4	1.9	Same	443	9	4.1	Worse	408	10	4.3	Worse
Exempla St Joseph Hospital	Denver	923	8	1.4	Same	1,029	15	1.9	Worse	1,034	13	1.8	Same
Family Health West Hospital	Grand Junction	54	0	0	Same	25	0	0	Same	2	***	***	***
Grand River MC	Rifle	20	0	0	Same	40	0	0	Same	55	0	0	Same
Heart of the Rockies Regional MC	Salida	18	***	***	***	31	0	0	Same	23	0	0	Same
Kit Carson Memorial Hospital	Burlington	1	***	***	***	1	***	***	***	1	***	***	***
Longmont United Hospital	Longmont	93	2	2.1	Same	70	1	1.6	Same	57	2	3.7	Same
McKee MC	Loveland	143	1	0.8	Same	139	0	0	Same	136	1	0.7	Same
MC of Aurora	Aurora	283	3	2.6	Same	259	3	2.8	Same	228	0	0	Same
MC of the Rockies	Loveland	266	3	0.9	Same	242	2	0.6	Same	201	1	0.4	Same
Memorial Hospital Central	CO Springs	27	0	0	Same	39	2	9	Worse	50	1	4.1	Same
Memorial Hospital North	CO Springs	288	2	0.7	Same	255	2	0.7	Same	334	5	1.3	Same
Mercy Regional MC	Durango	132	0	0	Same	116	0	0	Same	157	3	1.7	Same
Montrose Memorial Hospital	Montrose	80	1	1.2	Same	82	2	2.4	Same	53	2	4	Same
Mt San Rafael Hospital	Trinidad	2	***	***	***	***	***	***	***	1	***	***	***
North Colorado MC	Greeley	135	0	0	Same	179	3	3.6	Same	178	1	1.3	Same
North Suburban MC	Thornton	50	0	0	Same	58	0	0	Same	65	0	0	Same
Pagosa Springs MC	Pagosa Springs	1	***	***	***	3	***	***	***	3	***	***	***
Parker Adventist Hospital	Parker	47	1	1.2	Same	75	4	3.8	Worse	88	1	0.8	Same
Parkview MC	Pueblo	230	2	2.2	Same	186	0	0	Same	179	5	6.7	Worse
Pioneers MC	Meeker	0	***	***	***	3	***	***	***	0	***	***	***
Platte Valley MC	Brighton	69	1	1.7	Same	61	0	0	Same	67	0	0	Same
Poudre Valley Hospital	Ft Collins	193	3	2.1	Same	240	4	2.4	Same	263	5	3.2	Worse
Presbyterian St Luke's MC	Denver	480	2	1.1	Same	533	0	0	Same	479	3	1.4	Same

Surgical Site Infections in Breast Procedures in Hospitals (In- and Outpatient Combined): 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
Prowers MC	Lamar	0	***	***	***	5	***	***	***	1	***	***	***
Rose MC	Denver	1,413	9	1.4	Same	1,537	3	0.4	Same	1,862	3	0.3	Better
San Luis Valley Regional MC	Alamosa	30	0	0	Same	42	0	0	Same	26	0	0	Same
Sky Ridge MC	Lone Tree	496	4	1.2	Same	562	6	1.1	Same	695	13	1.8	Same
Southeast Colorado Hospital	Springfield	0	***	***	***	1	***	***	***	0	***	***	***
Southwest Memorial Hospital	Cortez	29	1	3.4	Same	35	0	0	Same	26	0	0	Same
Spanish Peaks Regional Health Center	Walsenburg	0	***	***	***	3	***	***	***	0	***	***	***
St Anthony Summit MC	Frisco	4	***	***	***	1	***	***	***	4	***	***	***
St Marys Hospital	Grand Junction	186	1	1.1	Same	145	1	1.4	Same	225	1	0.9	Same
Sterling Regional MC	Sterling	20	2	6.7	Same	13	***	***	***	18	***	***	***
Swedish MC	Englewood	104	0	0	Same	98	0	0	Same	78	0	0	Same
The Childrens Hospital	Aurora	7	***	***	***	16	***	***	***	21	1	9.8	Same
The Memorial Hospital	Craig	0	***	***	***	0	***	***	***	2	***	***	***
University of Colorado Hospital	Aurora	415	2	0.2	Better	435	2	0.2	Better	614	5	0.5	Same
Vail Valley MC	Vail	102	3	2.7	Same	91	2	2.1	Same	119	3	2.7	Same
Valley View Hospital	Glenwood Springs	138	0	0	Same	73	0	0	Same	64	0	0	Same
Wray Community Hospital	Wray	2	***	***	***	1	***	***	***	0	***	***	***
Yampa Valley MC	Steamboat Springs	28	0	0	Same	28	0	0	Same	42	0	0	Same
Yuma District Hospital	Yuma	4	***	***	***	4	***	***	***	3	***	***	***

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.

Table 17: Number of Surgical Site Infections and Standardized Infection Ratios Breast Surgeries in Ambulatory Surgery Centers – Colorado, August 2012 –July 2015

Surgical Site Infections in Breast Procedures in ASCs (Outpatient): 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	15	***	***	***	15	***	***	***	13	***	***	***
Aberdeen Ambulatory Surgical Center	Pueblo	354	0	0	Same	310	0	0	Same	339	0	0	Same
Arkansas Valley Surgery Center	Canon City	8	***	***	***	4	***	***	***	2	***	***	***
Audubon Ambulatory Surgery Center	CO Springs	83	0	0	Same	5	***	***	***	1	***	***	***
Audubon Ambulatory Surgery Center at St. Francis	CO Springs	12	***	***	***	6	***	***	***	4	***	***	***
Avista Surgery Center	Boulder	455	1	0.5	Same	491	6	2.9	Worse	565	3	1.7	Same
Black Canyon Surgical Center	Montrose	0	***	***	***	2	***	***	***	2	***	***	***
Centrum Surgical Center	Greenwood Village	504	0	0	Same	456	2	1.2	Same	381	0	0	Same
Clear Creek Surgery Center	Wheat Ridge	13	***	***	***	16	***	***	***	5	***	***	***
Colorado Springs Surgery Center	CO Springs	110	1	1.9	Same	161	1	1.3	Same	128	1	1.7	Same
Crown Point Surgery Center	Parker	126	0	0	Same	228	1	0.9	Same	239	1	0.8	Same
Denver Midtown Surgery Center	Denver	33	0	0	Same	22	0	0	Same	27	0	0	Same
1st Choice Outpatient Surgery Center at Comm. Hosp.	Grand Junction	129	0	0	Same	65	0	0	Same	0	***	***	***
Grand Valley Surgical Center	Grand Junction	233	1	1	Same	300	4	2.5	Same	249	0	0	Same
Harmony Ambulatory Surgery Center	Ft Collins	372	3	1.2	Same	340	0	0	Same	359	0	0	Same
Kaiser Permanente Ambulatory Surgery Center	Denver	215	0	0	Same	202	1	0.9	Same	160	2	2.3	Same
Longmont Surgery Center	Longmont	115	0	0	Same	105	0	0	Same	78	0	0	Same
North Suburban Surgery Center	Thornton	31	0	0	Same	35	0	0	Same	9	***	***	***
Park Meadows Cosmetic Surgery	Lone Tree	213	1	0.8	Same	218	0	0	Same	243	1	0.8	Same
Parkwest Surgery Center	Pueblo	6	***	***	***	4	***	***	***	3	***	***	***
Peak One Surgery Center	Frisco	0	***	***	***	0	***	***	***	4	***	***	***
Pueblo Surgery Center	Pueblo	14	***	***	***	27	0	0	Same	0	***	***	***
Red Rocks Surgery Center	Golden	133	0	0	Same	66	0	0	Same	95	0	0	Same

Surgical Site Infections in Breast Procedures in ASCs (Outpatient): 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
Renewal Surgery Center	Lone Tree	205	0	0	Same	2	***	***	***	39	0	0	Same
Rocky Mountain Surgery Center	Englewood	3	***	***	***	4	***	***	***	2	***	***	***
Rose Surgical Center	Denver	171	0	0	Same	151	0	0	Same	182	0	0	Same
Sky Ridge Surgical Center	Lone Tree	1	***	***	***	1	***	***	***	0	***	***	***
Skyline Surgery Center	Loveland	131	0	0	Same	171	0	0	Same	279	0	0	Same
Southwest Colorado Surgical Center	Cortez	4	***	***	***	1	***	***	***	3	***	***	***
Summit View Surgery Center	Littleton	68	0	0	Same	123	1	1.8	Same	127	0	0	Same
Surgery Center At Lutheran	Wheat Ridge	133	2	3.5	Same	81	0	0	Same	88	0	0	Same
Surgery Center Of Ft Collins	Ft Collins	162	2	1.6	Same	129	1	1	Same	109	0	0	Same
Surgery Center of the Rockies	Aurora	67	1	3.9	Same	118	0	0	Same	94	0	0	Same
Surgical Center At Premier	CO Springs	611	0	0	Same	357	0	0	Same	145	2	7.3	Worse
Surgical Center of the Rockies	CO Springs	0	***	***	***	142	4	5.9	Worse	273	2	1.5	Same
UCH Memorial Surgery Center At Printers Park	CO Springs	590	4	1.2	Same	619	11	3.4	Worse	684	4	1.7	Same

The standardized infection ratio (SIR) is 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.

\*\*\* 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.