

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**).

ORTHOPEDIC PROCEDURES

BACKGROUND

A total or partial hip replacement is a 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 (HR) involves removing the damaged cartilage and bone from the hip joint and replacing them with an artificial device. The procedure consists of placing a cup, which is typically plastic, ceramic or metal, to replace the hip socket, a metal or ceramic ball to replace the head of the thighbone, and a metal stem to attach to the bone.

Statewide, the SSI rate for KR in Colorado hospitals has been better than the national rate for three consecutive years.

A total or partial knee replacement (KR) is a surgery for people with severe knee damage and pain related to osteoarthritis, rheumatoid arthritis or traumatic arthritis. A total knee replacement involves removing the damaged cartilage and bone from the surface of the knee joint and replacing them 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.

RESULTS

Tables 10 and 11 show facility specific data for SSI attributed to **hip and knee surgeries** performed in hospitals (inpatient and outpatient) and ASC (outpatient only) from August 1, 2014 through July 31, 2015. Historical data for two previous reporting periods are also provided.

Fifty-eight hospitals reported 10,613 HR surgeries this past year, 11 of which reported zero HR SSI. Two hospitals had HR SSI rates worse than the national average.

Three ASC reported a total of 362 HR surgeries this past year with five reported SSI.

Fifty-eight hospitals reported 15,178 KR surgeries this past year; 16 reported zero KR SSI. One hospital had KR SSI rates better than the national average, and all others had rates similar to the national average. Statewide, the aggregate SSI rate for KR performed in Colorado hospitals has been better than the national rate for three consecutive years.

Eight ASC reported 640 KR surgeries in the latest reporting period. For the past three periods, there were zero infections in knee replacements performed in ASC.

Eight ASC reported 640 knee replacements in the latest reporting period. For the past three periods, there were zero infections in knee replacements performed in ASC.

TABLE 11: Number of Surgical Site Infections and Standardized Infection Ratios for Knee Replacements (Total or Partial) in Hospitals and Ambulatory Surgery Centers (ASC) – Colorado, August 2012-July 2015

Surgical Site Infections in Knee Replacement Procedures in Hospitals and ASCs: 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	128	0	0	Same	182	0	0	Same	149	1	0.7	Same
Arkansas Valley Regional MC	La Junta	21	0	0	Same	25	0	0	Same	21	0	0	Same
Aspen Valley Hospital	Aspen	66	1	1.9	Same	121	1	1.1	Same	105	1	1.3	Same
Boulder Community Hospital	Boulder	246	1	0.4	Same	381	4	1.3	Same	75	0	0	Same
Castle Rock Adventist Hospital	Castle Rock	Not yet operating				106	0	0	Same	84	0	0	Same
Centura Avista Adventist Hospital	Louisville	159	3	2.5	Same	167	0	0	Same	182	1	0.7	Same
Centura Littleton Adventist Hospital	Littleton	177	0	0	Same	194	1	0.5	Same	231	1	0.4	Same
Centura Penrose St Francis Health	Colorado Springs	455	2	0.5	Same	455	1	0.2	Same	442	1	0.2	Same
Centura Porter Adventist Hospital	Denver	1,082	7	0.7	Same	1,143	5	0.5	Same	1,297	5	0.4	Same
Centura St Anthony Hospital	Lakewood	132	0	0	Same	137	3	1.6	Same	105	2	1.3	Same
Centura St Anthony North Hospital	Westminster	90	2	2.5	Same	73	1	1.7	Same	65	1	1.5	Same
Centura St Francis MC	Colorado Springs	318	0	0	Same	448	4	0.9	Same	651	5	0.8	Same
Centura St Mary Corwin MC	Pueblo	222	2	1	Same	238	1	0.5	Same	322	1	0.4	Same
Centura St Thomas More Hospital	Canon City	73	0	0	Same	61	0	0	Same	61	0	0	Same
Colorado Plains MC	Fort Morgan	52	1	2.3	Same	44	0	0	Same	53	0	0	Same
Community Hospital	Grand Junction	118	0	0	Same	120	0	0	Same	144	0	0	Same
Delta County Memorial Hospital	Delta	77	0	0	Same	107	1	1.1	Same	100	0	0	Same
Denver Health MC	Denver	133	0	0	Same	173	1	0.5	Same	159	1	0.6	Same
East Morgan County Hospital	Brush	0	***	***	***	11	***	***	***	0	***	***	***
Estes Park MC	Estes Park	2	***	***	***	8	***	***	***	14	***	***	***
Exempla Good Samaritan MC	Lafayette	494	4	0.9	Same	713	3	0.5	Same	713	3	0.5	Same
Exempla Lutheran MC	Wheat Ridge	124	1	0.8	Same	146	2	1.6	Same	143	1	0.8	Same
Exempla St Joseph Hospital	Denver	904	3	0.3	Better	1,010	5	0.5	Same	950	7	0.8	Same

Surgical Site Infections in Knee Replacement Procedures in Hospitals and ASCs: 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
Family Health West Hospital	Grand Junction	2	***	***	***	0	***	***	***	0	***	***	***
Grand River MC	Rifle	2	***	***	***	18	***	***	***	20	0	0	Same
Gunnison Valley Hospital	Gunnison	7	***	***	***	8	***	***	***	16	***	***	***
Harmony Ambulatory Surgery Center	Ft Collins	0	***	***	***	0	***	***	***	15	***	***	***
Heart of the Rockies Regional MC	Salida	50	0	0	Same	56	2	2.9	Same	45	0	0	Same
Lincoln Surgery Center	Parker	0	***	***	***	0	***	***	***	19	***	***	***
Longmont United Hospital	Longmont	248	0	0	Same	253	1	0.4	Same	291	1	0.4	Same
Loveland Surgery Center ASC	Loveland	0	***	***	***	1	***	***	***	1	***	***	***
McKee MC	Loveland	301	2	0.9	Same	305	2	0.9	Same	184	2	1.4	Same
MC of Aurora	Aurora	360	6	1.5	Same	291	4	1.2	Same	274	5	1.6	Same
MC of the Rockies	Loveland	151	4	2.2	Same	178	3	1.6	Same	264	4	1.6	Same
Memorial Hospital Central	Colorado Springs	359	4	1.2	Same	215	3	1.3	Same	152	1	0.7	Same
Memorial Hospital North	Colorado Springs	364	5	1.6	Same	444	1	0.2	Same	406	1	0.3	Same
Mercy Regional MC	Durango	164	1	0.8	Same	149	0	0	Same	153	1	0.8	Same
Montrose Memorial Hospital	Montrose	137	1	1	Same	115	1	1	Same	168	0	0	Same
North Colorado MC	Greeley	283	1	0.3	Same	326	3	0.8	Same	374	4	1	Same
North Suburban MC	Thornton	145	5	3.1	Same	86	1	1.4	Same	75	1	1.4	Same
Ortho Colorado Hospital at St. Anthony Medical Campus	Lakewood	1,049	11	1.4	Same	1,117	3	0.4	Same	1,176	9	1	Same
Orthopedic Center of the Rockies ASC	Ft Collins	409	0	***	***	446	0	***	***	491	0	***	***
Pagosa Springs MC	Pagosa Springs	0	***	***	***	7	***	***	***	14	***	***	***
Parker Adventist Hospital	Parker	200	2	0.7	Same	253	0	0	Same	269	3	1.3	Same
Parkview MC	Pueblo	335	2	0.5	Same	354	0	0	Better	367	4	0.9	Same
Pikes Peak Regional Hospital	Woodland Park	27	0	0	Same	26	0	0	Same	18	***	***	***
Platte Valley MC	Brighton	63	3	6	Worse	71	0	0	Same	126	0	0	Same
Poudre Valley Hospital	Ft Collins	988	7	0.7	Same	1,034	5	0.5	Same	985	8	0.9	Same
Presbyterian St Luke's MC	Denver	354	4	1	Same	370	5	0.9	Same	235	5	1.3	Same

Surgical Site Infections in Knee Replacement Procedures in Hospitals and ASCs: 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
Rose MC	Denver	595	3	0.5	Same	551	2	0.4	Same	594	4	0.8	Same
Rose Surgical Center	Denver	0	***	***	***	18	***	***	***	26	0	0	Same
San Luis Valley Regional MC	Alamosa	38	1	2.7	Same	31	0	0	Same	39	0	0	Same
Sky Ridge MC	Lone Tree	741	6	0.8	Same	818	10	1.2	Same	1,149	5	0.4	Better
Skyline Surgery Center ASC	Loveland	0	***	***	***	9	***	***	***	1	***	***	***
Southwest Memorial Hospital	Cortez	25	1	5	Same	28	0	0	Same	27	0	0	Same
St Anthony Summit MC	Frisco	36	0	0	Same	47	0	0	Same	60	0	0	Same
St Mary's Hospital	Grand Junction	326	0	0	Same	381	0	0	Better	421	1	0.3	Same
Sterling Regional MC	Sterling	37	0	0	Same	32	0	0	Same	29	0	0	Same
Surgery Center At Lutheran ASC	Wheat Ridge	12	***	***	***	28	0	***	***	21	0	***	***
Surgical Center at Premier ASC	Colorado Springs	38	0	***	***	89	0	0	Same	66	0	0	Same
Swedish MC	Englewood	431	4	1	Same	406	4	1	Same	414	2	0.5	Same
The Children's Hospital Colorado	Aurora	5	***	***	***	2	***	***	***	2	***	***	***
The Memorial Hospital	Craig	9	***	***	***	8	***	***	***	9	***	***	***
University of Colorado Hospital	Aurora	294	2	0.5	Same	338	6	1.3	Same	391	2	0.5	Same
Vail Valley MC	Vail	141	0	0	Same	139	1	1	Same	104	0	0	Same
Valley View Hospital	Glenwood Springs	91	0	0	Same	105	0	0	Same	120	2	1.9	Same
Wray Community Hospital	Wray	19	***	***	***	9	***	***	***	12	***	***	***
Yampa Valley MC	Steamboat Springs	84	0	0	Same	112	0	0	Same	129	2	2	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.