

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

Surgical Site Infections in Hip Replacement Procedures in Hospitals and Ambulatory Surgery Centers: 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	70	0	0	Same	118	0	0	Same	108	0	0	Same
Arkansas Valley Regional MC	La Junta	11	***	***	***	16	***	***	***	10	***	***	***
Aspen Valley Hospital	Aspen	51	0	0	Same	59	0	0	Same	47	0	0	Same
Boulder Community Hospital	Boulder	244	2	0.8	Same	325	2	0.6	Same	61	0	0	Same
Boulder Community Hospital-Foothills	Boulder	0	***	***	***	0	***	***	***	319	3	1	Same
Castle Rock Adventist Hospital	Castle Rock	Not yet operating				73	0	0	Same	37	0	0	Same
Centura Avista Adventist Hospital	Louisville	99	4	3.6	Same	94	3	2.8	Same	107	3	2.4	Same
Centura Littleton Adventist Hospital	Littleton	115	0	0	Same	149	1	0.5	Same	180	1	0.4	Same
Centura Penrose St Francis Health	Colorado Springs	480	1	0.2	Better	494	2	0.3	Same	543	5	0.8	Same
Centura Porter Adventist Hospital	Denver	620	5	0.8	Same	713	12	1.5	Same	766	12	1.4	Same
Centura St Anthony Hospital	Lakewood	150	3	1.1	Same	174	1	0.3	Same	152	2	0.7	Same
Centura St Anthony North Hospital	Westminster	103	3	2.3	Same	82	0	0	Same	53	1	1.4	Same
Centura St Francis MC	CO Springs	135	2	1.2	Same	194	2	0.8	Same	314	3	0.8	Same
Centura St Mary Corwin MC	Pueblo	124	1	0.6	Same	148	2	1	Same	190	2	0.8	Same
Centura St Thomas More Hospital	Canon City	39	1	2	Same	29	3	8.1	Worse	23	3	8.3	Worse
Colorado Plains MC	Fort Morgan	32	0	0	Same	29	0	0	Same	27	0	0	Same
Community Hospital	Grand Junction	62	1	1.2	Same	77	1	0.8	Same	97	1	0.9	Same
Delta County Memorial Hospital	Delta	54	1	1.4	Same	52	0	0	Same	75	1	1	Same
Denver Health MC	Denver	111	4	1.9	Same	90	0	0	Same	142	7	2.5	Worse
East Morgan County Hospital	Brush	0	***	***	***	8	***	***	***	0	***	***	***
Estes Park MC	Estes Park	10	***	***	***	10	***	***	***	16	***	***	***
Exempla Good Samaritan MC	Lafayette	302	5	1.2	Same	422	4	0.8	Same	471	7	1.3	Same
Exempla Lutheran MC	Wheat Ridge	161	6	2.1	Same	169	2	0.8	Same	163	1	0.5	Same
Exempla St Joseph Hospital	Denver	674	4	0.5	Same	838	4	0.4	Same	775	3	0.4	Same
Family Health West Hospital	Grand Junction	1	***	***	***	0	***	***	***	0	***	***	***

Surgical Site Infections in Hip Replacement Procedures in Hospitals and Ambulatory Surgery Centers: 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
Grand River MC	Rifle	10	***	***	***	14	***	***	***	13	***	***	***
Gunnison Valley Hospital	Gunnison	6	***	***	***	9	***	***	***	6	***	***	***
Heart of the Rockies Regional MC	Salida	21	0	0	Same	41	0	0	Same	31	0	0	Same
Lincoln Surgery Center	Parker	0	***	***	***	0	***	***	***	55	0	0	Same
Longmont United Hospital	Longmont	133	1	0.5	Same	128	0	0	Same	158	1	0.5	Same
McKee MC	Loveland	150	1	0.6	Same	157	0	0	Same	160	1	0.6	Same
MC of Aurora	Aurora	260	4	1.2	Same	219	2	0.7	Same	204	2	0.8	Same
MC of the Rockies	Loveland	134	4	2.3	Same	131	4	2.1	Same	158	1	0.5	Same
Memorial Hospital Central	Colorado Springs	252	1	0.4	Same	225	4	1.2	Same	200	1	0.4	Same
Memorial Hospital North	Colorado Springs	131	1	0.7	Same	168	0	0	Same	140	3	1.9	Same
Mercy Regional MC	Durango	75	0	0	Same	92	0	0	Same	133	1	0.7	Same
Montrose Memorial Hospital	Montrose	68	0	0	Same	77	0	0	Same	70	0	0	Same
North Colorado MC	Greeley	186	0	0	Same	246	2	0.6	Same	223	3	0.9	Same
North Suburban MC	Thornton	89	1	0.8	Same	36	0	0	Same	53	0	0	Same
OrthoColorado Hospital at St. Anthony Medical Campus	Lakewood	455	1	0.2	Same	533	4	0.8	Same	564	3	0.6	Same
Orthopedic Center of the Rockies ASC	Ft Collins	203	0	0	Same	239	0	0	Same	308	2	0.8	Same
Pagosa Springs MC	Pagosa Springs	0	***	***	***	6	***	***	***	12	***	***	***
Parker Adventist Hospital	Parker	132	2	0.9	Same	155	1	0.5	Same	180	2	1.1	Same
Parkview MC	Pueblo	216	2	0.6	Same	183	0	0	Same	227	3	0.9	Same
Pikes Peak Regional Hospital	Woodland Park	4	***	***	***	6	***	***	***	12	***	***	***
Platte Valley MC	Brighton	14	***	***	***	33	0	0	Same	56	1	1.3	Same
Poudre Valley Hospital	Ft Collins	482	4	0.6	Same	511	6	0.9	Same	545	5	0.8	Same
Presbyterian St Luke's MC	Denver	366	2	0.4	Same	344	10	1.9	Same	222	7	1.9	Same
Rose MC	Denver	305	3	0.9	Same	325	2	0.6	Same	339	1	0.3	Same
San Luis Valley Regional MC	Alamosa	34	0	0	Same	32	2	3.8	Same	23	0	0	Same
Sky Ridge MC	Lone Tree	803	13	1.5	Same	764	6	0.7	Same	1,026	9	0.8	Same
Southwest Memorial Hospital	Cortez	15	***	***	***	12	***	***	***	10	***	***	***
St Anthony Summit MC	Frisco	1	***	***	***	0	***	***	***	0	***	***	***
St Mary's Hospital	Grand	275	1	0.3	Same	292	0	0	Same	324	2	0.5	Same

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	Junction												
Sterling Regional MC	Sterling	30	2	4.6	Same	27	0	0	Same	35	0	0	Same
Surgical Center at Premier	CO Springs	0	***	***	***	39	0	0	Same	46	1	3.2	Same
Swedish MC	Englewood	275	1	0.3	Same	253	3	0.9	Same	292	4	1	Same
The Children's Hospital Colorado	Aurora	19	***	***	***	29	1	1.3	Same	15	***	***	***
The Memorial Hospital	Craig	1	***	***	***	4	***	***	***	2	***	***	***
University of Colorado Hospital	Aurora	262	3	0.6	Same	317	4	0.6	Same	343	5	0.9	Same
Vail Valley MC	Vail	7	***	***	***	1	***	***	***	5	***	***	***
Valley View Hospital	Glenwood Springs	41	0	0	Same	69	0	0	Same	85	3	3.1	Same
Wray Community Hospital	Wray	10	***	***	***	4	***	***	***	6	***	***	***
Yampa Valley MC	Steamboat Springs	58	0	0	Same	52	0	0	Same	65	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.

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

*** 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.

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