

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

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.

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.

Fifty-eight hospitals reported 8,337 HR procedures this past year. One hospital had a HR SSI rate worse than the national average; all other hospitals had HR SSI rates similar to the national average.

Results

Tables 9 and 10 show facility specific data for SSI attributed to hip and knee procedures performed in hospitals (inpatient and outpatient) and ASC (outpatient only) from Aug. 1, 2012 through July 31, 2013. Historical data for two previous reporting years are also provided.

Fifty-eight hospitals reported 8,337 HR procedures this past year, 12 of which reported zero HR SSI. One hospital had a HR SSI rate worse than the national average; all other hospitals had HR SSI rates similar to the national average.

Only one ASC reported HR procedures this past year. Of 200 HR procedures performed at that ASC, zero infections were reported.

Fifty-eight hospitals reported 12,234 KR procedures this past year; 21 reported zero KR SSI. One hospital had a KR SSI rate better than the national average and one hospital's rate was worse.

Fifty-eight hospitals reported 12,234 KR procedures this past year; 21 reported zero KR SSI. One hospital had a KR SSI rate better than the national average, one hospital's rate was worse, and all others were similar to the national average.

Three ASC reported 469 KR procedures this year, all three of which reported zero infections.

Table 10: Knee Replacement (Total or Partial) in Hospitals and Ambulatory Surgery Centers (ASC), Aug. 1, 2010 - July 31, 2013

Surgical Site Infections in Knee Replacement Procedures in Hospitals (In- and Outpatient Combined): Aug. 1, 2010 – July 31, 2013													
Health Facility and City		August 2010- July 2011				August 2011- July 2012				August 2012- July 2013			
		Procedure Count	Infection Count	SIR	National Comparison	Procedure Count	Infection Count	SIR	National Comparison	Procedure Count	Infection Count	SIR	National Comparison
Animas Surgical Hospital	Durango	81	0	0	Same	115	0	0	Same	128	0	0	Same
Arkansas Valley Regional MC	La Junta	44	0	0	Same	36	0	0	Same	21	0	0	Same
Aspen Valley Hospital	Aspen	28	0	0	Same	27	0	0	Same	65	1	1.9	Same
Boulder Community Hospital	Boulder	256	2	0.8	Same	265	5	2.1	Same	246	0	0	Same
Centura Avista Adventist Hospital	Louisville	156	1	0.8	Same	168	1	0.8	Same	159	3	2.5	Same
Centura Littleton Adventist Hospital	Littleton	146	0	0	Same	141	1	0.6	Same	177	0	0	Same
Centura Penrose St Francis Health	Colorado Springs	447	3	0.7	Same	477	5	1.1	Same	453	2	0.5	Same
Centura Porter Adventist Hospital	Denver	979	7	0.8	Same	972	7	0.8	Same	1,077	6	0.6	Same
Centura St Anthony Hospital	Lakewood	285	0	0	Same	138	3	2	Same	130	0	0	Same
Centura St Anthony North Hospital	Westminster	80	2	2.8	Same	77	1	1.3	Same	90	2	2.5	Same
Centura St Francis MC	Colorado Springs	295	3	1.1	Same	243	8	3.2	Worse	317	0	0	Same
Centura St Mary Corwin MC	Pueblo	214	3	1.5	Same	210	1	0.5	Same	222	2	1.0	Same
Centura St Thomas More Hospital	Canon City	79	1	1.6	Same	72	1	1.7	Same	73	0	0	Same
Colorado Plains MC	Fort Morgan	31	0	0	Same	56	0	0	Same	52	1	2.3	Same
Community Hospital	Grand Junction	124	2	1.6	Same	131	1	0.7	Same	117	0	0	Same
Delta County Memorial Hospital	Delta	101	2	2.4	Same	112	0	0	Same	77	0	0	Same
Denver Health MC	Denver	126	5	3.9	Worse	133	2	1.4	Same	133	0	0	Same
Durango at Mercy MC ASC	Durango	1	***	***	***	0	***	** *	***	0	***	***	***
East Morgan County Hospital	Brush	15	***	***	***	14	***	***	***	0	***	***	***
Estes Park MC	Estes Park	0	***	** *	***	8	***	***	***	2	***	***	***
Exempla Good Samaritan MC	Lafayette	446	1	0.3	Same	517	3	0.6	Same	492	3	0.7	Same
Exempla Lutheran MC	Wheat Ridge	323	3	1.0	Same	116	2	1.6	Same	122	1	0.8	Same
Exempla St Joseph Hospital	Denver	657	5	0.8	Same	828	3	0.4	Same	895	3	0.3	Better

Surgical Site Infections in Knee Replacement Procedures in Hospitals (In- and Outpatient Combined): Aug. 1, 2010 – July 31, 2013

Health Facility and City		August 2010- July 2011				August 2011- July 2012				August 2012- July 2013			
		Procedure Count	Infection Count	SIR	National Comparison	Procedure Count	Infection Count	SIR	National Comparison	Procedure Count	Infection Count	SIR	National Comparison
Family Health West Hospital	Grand Junction	1	***	***	***	9	***	***	***	2	***	***	***
Grand River MC	Rifle	9	***	***	***	8	***	***	***	2	***	***	***
Gunnison Valley Hospital	Gunnison	4	***	***	***	3	***	***	***	7	***	***	***
Heart of the Rockies Regional MC	Salida	40	2	5.6	Same	15	***	***	***	50	0	0	Same
Kremmling Memorial Hospital	Kremmling	1	***	***	***	1	***	***	***	1	***	***	***
Longmont Surgery Center ASC	Longmont	0	***	**	***	1	***	***	***	0	***	***	***
Longmont United Hospital	Longmont	218	0	0	Same	243	2	0.9	Same	248	0	0	Same
Loveland Surgery Center ASC	Loveland	2	***	***	***	2	***	***	***	0	***	***	***
McKee MC	Loveland	290	1	0.4	Same	285	3	1.4	Same	300	2	0.9	Same
MC of Aurora	Aurora	341	8	2.2	Same	296	2	0.6	Same	358	6	1.5	Same
MC of the Rockies	Loveland	87	0	0	Same	116	1	0.6	Same	151	4	2.2	Same
Memorial Hospital Central	Colorado Springs	638	1	0.1	Better	487	1	0.2	Same	358	4	1.2	Same
Memorial Hospital North	Colorado Springs	328	4	1.4	Same	393	3	0.9	Same	364	5	1.6	Same
Mercy Regional MC	Durango	114	0	0	Same	149	0	0	Same	164	1	0.8	Same
Montrose Memorial Hospital	Montrose	141	0	0	Same	140	0	0	Same	135	1	1.0	Same
North Colorado MC	Greeley	286	3	0.9	Same	306	5	1.4	Same	282	1	0.3	Same
North Suburban MC	Thornton	174	2	1.3	Same	151	1	0.7	Same	145	5	3.1	Same
OrthoColorado Hospital at St. Anthony Medical Campus	Lakewood	604	3	0.7	Same	885	2	0.3	Same	1,043	11	1.4	Same
Orthopaedic Center of the Rockies ASC	Ft Collins	329	0	0	Same	349	0	0	Same	408	0	***	***
Parker Adventist Hospital	Parker	163	3	2.1	Same	167	0	0	Same	200	2	0.7	Same
Parkview MC	Pueblo	361	6	1.5	Same	364	9	2.3	Worse	335	2	0.5	Same
Pikes Peak Regional Hospital	Woodland Park	32	0	0	Same	44	0	0	Same	27	0	0	Same
Platte Valley MC	Brighton	48	0	0	Same	66	2	3.9	Same	63	3	6.0	Worse
Poudre Valley Hospital	Ft Collins	991	5	0.5	Same	977	4	0.4	Same	988	7	0.7	Same
Presbyterian St Luke's MC	Denver	373	4	1.0	Same	360	1	0.3	Same	354	4	1	Same
Rocky Mountain Surgery Center ASC	Englewood	9	***	***	***	5	***	***	***	0	***	***	***
Rose MC	Denver	532	4	0.8	Same	555	5	0.9	Same	595	3	0.5	Same

Surgical Site Infections in Knee Replacement Procedures in Hospitals (In- and Outpatient Combined): Aug. 1, 2010 – July 31, 2013

Health Facility and City		August 2010- July 2011				August 2011- July 2012				August 2012- July 2013			
		Procedure Count	Infection Count	SIR	National Comparison	Procedure Count	Infection Count	SIR	National Comparison	Procedure Count	Infection Count	SIR	National Comparison
San Luis Valley Regional MC	Alamosa	42	1	2.7	Same	25	0	0	Same	38	1	2.7	Same
Sky Ridge MC	Lone Tree	806	15	1.9	Worse	715	5	0.7	Same	737	6	0.9	Same
Skyline Surgery Center ASC	Loveland	7	***	***	***	5	***	***	***	0	***	***	***
Southwest Memorial Hospital	Cortez	48	0	0	Same	55	0	0	Same	25	1	5.0	Same
St Anthony Summit MC	Frisco	40	1	3.5	Same	65	0	0	Same	36	0	0	Same
St Mary's Hospital	Grand Junction	301	1	0.3	Same	332	1	0.3	Same	326	0	0	Same
Sterling Regional MC	Sterling	29	0	0	Same	45	0	0	Same	37	0	0	Same
Surgery Center At Lutheran ASC	Wheat Ridge	0	***	** *	***	1	***	***	***	12	***	***	***
Surgical Center at Premier ASC	Colorado Springs	14	***	***	***	4	***	***	***	37	0	***	***
Swedish MC	Englewood	305	2	0.7	Same	324	2	0.6	Same	429	4	1.0	Same
The Children's Hospital	Aurora	2	***	***	***	8	***	***	***	5	***	***	***
The Memorial Hospital	Craig	1	***	** *	***	29	0	0	Same	8	***	***	***
University of Colorado Hospital	Aurora	299	6	1.9	Same	327	8	1.8	Same	293	2	0.5	Same
Vail Valley MC	Vail	204	1	0.6	Same	132	0	0	Same	138	0	0	Same
Valley View Hospital	Glenwood Springs	123	1	1.0	Same	115	1	1.0	Same	91	0	0	Same
Wray Community Hospital	Wray	16	***	***	***	20	0	0	Same	19	***	***	***
Yampa Valley MC	Steamboat Springs	90	0	0	Same	110	1	1.0	Same	83	0	0	Same

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.

*** 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.

