

CLOSTRIDIUM DIFFICILE INFECTION

Clostridium difficile infections (CDI) are a growing problem in health care. *C. difficile* is a spore forming bacteria that can cause symptoms ranging from bloating, diarrhea, fever, and abdominal pain to life-threatening colon inflammation, sepsis and even death. Between 2000 to 2009, the discharge diagnosis of CDI in hospitalized patients increased from approximately 139,000 to 336,000¹⁴ and is estimated to cause 14,000 deaths per year¹⁵. Risk factors for CDI include antibiotic administration, increasing age, duration of hospital stay, and severity of underlying diseases¹⁶. CDI also may be acquired outside of hospitals in the community, and exposures to other types of health care are also a risk factor. Although 94% of CDI are related to health care exposures, 75% of health-care associated CDI have their onset outside of hospitals¹⁷.

Based on the high incidence and potential severity of CDI, Colorado's HAI Advisory Committee added CDI to state reporting requirements for acute care hospitals last year. CDI data became available January 1, 2013, and therefore the first report year's data is a partial year (January 1, 2013 through July 31, 2013). Hospital reported CDI data are classified as hospital-onset (HO), community-onset (CO), and community-onset health care facility associated (CO-HCFA). HO cases are laboratory positive specimens collected >3 days after admission to the facility (i.e., on or after day 4). CO include laboratory identified specimens collected in an outpatient location or an inpatient location ≤3 days after admission to the facility (i.e., days 1, 2, or 3 of admission). CO-HCFA cases include specimens collected from patients discharged from the facility ≤4 weeks prior to current date of stool specimen collection. Data from outpatient locations (e.g., outpatient encounters) are not included in this definition. Only laboratory-identified hospital-onset cases are presented in this report.

This past year, nine acute care hospitals had CDI rates worse than the national average and four had better rates. The statewide CDI rate for all Colorado acute care hospitals combined was worse than the national average.

RESULTS

Table 24 presents laboratory identified hospital onset *C. difficile* cases reported by acute care hospitals from January 2013 through July 2015.

Sixty acute care hospitals submitted CDI data into NHSN this past year. Eight hospitals reported zero CDI. Nine acute care hospitals had CDI rates worse than the national average and four had better rates. This past year, the statewide CDI rate for all Colorado acute care hospitals combined was worse than the national average.

Table 24: Number of *Clostridium difficile* Infections and Standardized Infection Ratios in Hospitals – Colorado, January 2013-July 2015

| Clostridium difficile Infections in Hospitals (facility wide): January 1, 2013 – July 31, 2015 | | | | | | | | | | | | | |
|--|------------------|---------------------|-------------------|-----|---------------------|------------------------|-------------------|-----|---------------------|------------------------|-------------------|-----|---------------------|
| Health Facility and City | | January- July 2013 | | | | August 2013- July 2014 | | | | August 2014- July 2015 | | | |
| | | No. of Patient Days | No. of Infections | SIR | National Comparison | No. of Patient Days | No. of Infections | SIR | National Comparison | No. of Patient Days | No. of Infections | SIR | National Comparison |
| Animas Surgical Hospital | Durango | 679 | 0 | 0 | Same | 581 | 0 | 0 | Same | 256 | 0 | 0 | Same |
| Arkansas Valley Regional MC | La Junta | 2,555 | 4 | 2.3 | Same | 4,057 | 0 | 0 | Same | 3,782 | 0 | 0 | Same |
| Aspen Valley Hospital | Aspen | 0 | *** | *** | *** | 0 | *** | *** | *** | 1,317 | 1 | 1.3 | Same |
| Boulder Community Hospital | Boulder | 16,578 | 17 | 1.5 | Same | 28,197 | 18 | 1 | Same | 11,602 | 3 | 0.4 | Same |
| Boulder Community Hospital-Foothills | Boulder | 3,926 | 8 | 3.3 | Worse | 6,602 | 4 | 1 | Same | 24,475 | 19 | 1.2 | Same |
| Castle Rock Adventist Hospital | Castle Rock | Not yet operating | | | | 7,232 | 2 | 0.4 | Same | 8,626 | 6 | 1 | Same |
| Centura Avista Adventist Hospital | Louisville | 5,184 | 3 | 1 | Same | 10,704 | 4 | 0.6 | Same | 11,132 | 0 | 0 | Better |
| Centura Littleton Adventist Hospital | Littleton | 21,665 | 12 | 1 | Same | 40,718 | 35 | 1.4 | Same | 37,100 | 38 | 1.4 | Same |
| Centura Penrose St Francis Health | Colorado Springs | 29,658 | 16 | 0.9 | Same | 61,866 | 34 | 0.9 | Same | 57,890 | 53 | 1.5 | Worse |
| Centura Porter Adventist Hospital | Denver | 30,449 | 9 | 0.4 | Better | 51,440 | 24 | 0.7 | Same | 44,185 | 30 | 1 | Same |
| Centura St Anthony Central Hospital | Denver | 34,003 | 31 | 2 | Worse | 61,048 | 39 | 1.1 | Same | 62,015 | 60 | 1.4 | Worse |
| Centura St Anthony North Hospital | Westminster | 13,561 | 19 | 2.3 | Worse | 23,492 | 17 | 1.2 | Same | 15,310 | 20 | 2 | Worse |
| Centura St Francis MC | Colorado Springs | 17,846 | 1 | 0.1 | Better | 31,303 | 11 | 0.7 | Same | 34,142 | 11 | 0.6 | Same |
| Centura St Mary Corwin MC | Pueblo | 14,978 | 11 | 1.3 | Same | 25,750 | 5 | 0.4 | Better | 24,169 | 20 | 1.5 | Same |
| Centura St Thomas More Hospital | Canon City | 3,503 | 2 | 1.2 | Same | 5,535 | 2 | 0.8 | Same | 5,984 | 3 | 1 | Same |
| Colorado Plains MC | Fort Morgan | 4,100 | 4 | 1.6 | Same | 6,436 | 2 | 0.5 | Same | 5,047 | 0 | 0 | Same |
| Community Hospital | Grand Junction | 3,023 | 2 | 1.1 | Same | 6,336 | 5 | 1.2 | Same | 7,587 | 4 | 0.9 | Same |
| Delta County Memorial Hospital | Delta | 3,230 | 0 | 0 | Same | 5,332 | 2 | 0.8 | Same | 4,280 | 3 | 1.4 | Same |
| Denver Health MC | Denver | 57,261 | 39 | 0.8 | Same | 98,350 | 70 | 0.8 | Same | 106,394 | 81 | 0.8 | Same |
| East Morgan County Hospital | Brush | 1,248 | 0 | 0 | Same | 2,213 | 0 | 0 | Same | 2,204 | 2 | 1.3 | Same |
| Exempla Good Samaritan MC | Lafayette | 28,721 | 16 | 1.2 | Same | 51,371 | 47 | 1.7 | Worse | 52,822 | 40 | 1.5 | Worse |

Clostridium difficile Infections in Hospitals (facility wide): January 1, 2013 – July 31, 2015

| Health Facility and City | | January- July 2013 | | | | August 2013- July 2014 | | | | August 2014- July 2015 | | | |
|-----------------------------------|------------------|---------------------|-------------------|-----|---------------------|------------------------|-------------------|-----|---------------------|------------------------|-------------------|-----|---------------------|
| | | No. of Patient Days | No. of Infections | SIR | National Comparison | No. of Patient Days | No. of Infections | SIR | National Comparison | No. of Patient Days | No. of Infections | SIR | National Comparison |
| Exempla Lutheran MC | Wheat Ridge | 45,599 | 41 | 1.6 | Worse | 65,362 | 35 | 0.8 | Same | 47,702 | 49 | 1.2 | Same |
| Exempla St Joseph Hospital | Denver | 49,951 | 31 | 1 | Same | 76,381 | 61 | 1 | Same | 77,609 | 68 | 0.9 | Same |
| Grand River MC | Rifle | 0 | *** | *** | *** | 0 | *** | *** | *** | 814 | 0 | 0 | Same |
| Kit Carson Memorial Hospital | Burlington | 0 | *** | *** | *** | 128 | 1 | 21 | Same | 0 | *** | *** | *** |
| Kremmling Memorial Hospital | Kremmling | 0 | *** | *** | *** | 445 | 0 | 0 | Same | 0 | *** | *** | *** |
| Longmont United Hospital | Longmont | 17,854 | 12 | 0.9 | Same | 28,667 | 16 | 0.7 | Same | 22,533 | 10 | 0.7 | Same |
| McKee Medical Center | Loveland | 8,986 | 3 | 0.5 | Same | 14,328 | 5 | 0.5 | Same | 14,996 | 7 | 0.7 | Same |
| Medical Center of Aurora | Aurora | 41,864 | 50 | 1.5 | Worse | 73,096 | 85 | 1.7 | Worse | 71,661 | 98 | 1.6 | Worse |
| Medical Center of the Rockies | Loveland | 22,805 | 26 | 1.5 | Same | 41,109 | 45 | 1.8 | Worse | 40,404 | 31 | 1.6 | Worse |
| Memorial Hospital Central | Colorado Springs | 40,349 | 7 | 0.3 | Better | 59,427 | 18 | 0.5 | Better | 64,445 | 40 | 0.8 | Same |
| Memorial Hospital North | Colorado Springs | 6,277 | 2 | 0.7 | Same | 14,739 | 1 | 0.1 | Better | 12,843 | 4 | 0.5 | Same |
| Mercy Regional MC | Durango | 7,853 | 5 | 1.3 | Same | 12,882 | 16 | 2.5 | Worse | 13,088 | 12 | 1.7 | Same |
| Montrose Memorial Hospital | Montrose | 3,537 | 0 | 0 | Same | 8,672 | 4 | 0.8 | Same | 8,207 | 2 | 0.5 | Same |
| Mt San Rafael Hospital | Trinidad | 0 | *** | *** | *** | 0 | *** | *** | *** | 1,098 | 3 | 3.8 | Same |
| North Colorado MC | Greeley | 32,267 | 16 | 0.8 | Same | 52,850 | 26 | 0.8 | Same | 52,187 | 33 | 1 | Same |
| North Suburban MC | Thornton | 15,139 | 14 | 1.3 | Same | 24,481 | 17 | 1 | Same | 26,629 | 13 | 0.7 | Same |
| OrthoColorado Hospital St Anthony | Lakewood | 2,710 | 0 | 0 | Same | 4,293 | 0 | 0 | Same | 4,436 | 0 | 0 | Same |
| Pagosa Springs MC | Pagosa Springs | 0 | *** | *** | *** | 636 | 0 | 0 | Same | 1,263 | 3 | 4.4 | Same |
| Parker Adventist Hospital | Parker | 12,868 | 12 | 2 | Worse | 24,407 | 14 | 1 | Same | 26,172 | 24 | 1.7 | Worse |
| Parkview MC | Pueblo | 44,994 | 26 | 0.6 | Better | 83,433 | 38 | 0.5 | Better | 87,896 | 27 | 0.3 | Better |
| Pikes Peak Regional Hospital | Woodland Park | 1,299 | 1 | 1.5 | Same | 2,063 | 0 | 0 | Same | 1,087 | 1 | 3.7 | Same |
| Platte Valley MC | Brighton | 5,474 | 3 | 1.1 | Same | 9,464 | 2 | 0.4 | Same | 8,926 | 6 | 1.3 | Same |
| Poudre Valley Hospital | Ft Collins | 23,635 | 43 | 2.4 | Worse | 39,518 | 32 | 1.3 | Same | 44,105 | 25 | 1 | Same |

Clostridium difficile Infections in Hospitals (facility wide): January 1, 2013 – July 31, 2015

| Health Facility and City | | January- July 2013 | | | | August 2013- July 2014 | | | | August 2014- July 2015 | | | |
|---------------------------------|-------------------|---------------------|-------------------|-----|---------------------|------------------------|-------------------|-----|---------------------|------------------------|-------------------|-----|---------------------|
| | | No. of Patient Days | No. of Infections | SIR | National Comparison | No. of Patient Days | No. of Infections | SIR | National Comparison | No. of Patient Days | No. of Infections | SIR | National Comparison |
| Presbyterian St Lukes MC | Denver | 33,414 | 40 | 1.3 | Same | 54,745 | 56 | 1.4 | Worse | 56,387 | 71 | 1.5 | Worse |
| Rose Medical Center | Denver | 27,264 | 21 | 0.8 | Same | 43,311 | 26 | 0.8 | Same | 42,017 | 35 | 1.1 | Same |
| San Luis Valley I MC | Alamosa | 2,623 | 0 | 0 | Same | 5,410 | 4 | 1.4 | Same | 6,084 | 3 | 0.8 | Same |
| Sky Ridge MC | Lone Tree | 26,794 | 20 | 0.8 | Same | 44,209 | 45 | 1 | Same | 47,789 | 62 | 1.2 | Same |
| Southeast Colorado Hospital | Springfield | 0 | *** | *** | *** | 0 | *** | *** | *** | 184 | 0 | 0 | Same |
| Southwest Memorial Hospital | Cortez | 2,172 | 1 | 0.7 | Same | 3,665 | 0 | 0 | Same | 3,271 | 1 | 0.8 | Same |
| Spanish Peaks Health Center | Walsenburg | 0 | *** | *** | *** | 0 | *** | *** | *** | 340 | 0 | *** | *** |
| St Anthony Summit MC | Frisco | 1,610 | 0 | 0 | Same | 2,329 | 1 | 0.8 | Same | 2,350 | 1 | 0.7 | Same |
| St Marys Hospital | Grand Junction | 31,836 | 16 | 0.6 | Same | 56,822 | 28 | 0.6 | Better | 59,037 | 34 | 0.7 | Better |
| Sterling Regional MC | Sterling | 2,557 | 1 | 0.7 | Same | 3,778 | 1 | 0.4 | Same | 4,506 | 1 | 0.4 | Same |
| Swedish Medical Center | Englewood | 53,003 | 74 | 1.7 | Worse | 93,468 | 108 | 1.6 | Worse | 90,032 | 111 | 1.6 | Worse |
| University of Colorado Hospital | Aurora | 76,937 | 89 | 1.2 | Worse | 146,838 | 164 | 1.3 | Worse | 150,959 | 145 | 1 | Same |
| Vail Valley MC | Vail | 3,635 | 1 | 0.4 | Same | 5,610 | 2 | 0.5 | Same | 5,475 | 2 | 0.5 | Same |
| Valley View Hospital | Glenwood Springs | 5,978 | 2 | 0.5 | Same | 10,103 | 4 | 0.6 | Same | 11,383 | 3 | 0.3 | Better |
| Wray Community Hospital | Wray | 0 | *** | *** | *** | 0 | *** | *** | *** | 732 | 1 | 5.5 | Same |
| Yampa Valley MC | Steamboat Springs | 2,503 | 1 | 0.7 | Same | 5,481 | 1 | 0.4 | Same | 4,611 | 2 | 0.7 | Same |

Note: SIR=standardized infection ratio, the ratio of observed to expected infection adjusted for facility risk factors. National comparisons are based on the indirect adjustment of modeled risk factors applied to total patient days. See "Risk Adjustment for Healthcare Facility-Onset *C. difficile* and MRSA Bacteremia Laboratory-identified Event Reporting in NHSN" (CDC).

*** Indicates value not shown due to suppression of infection data, or no National or historical rate, or an expected count of zero, to which to compare facility rate.

Source: National Healthcare Safety Network (NHSN) Database.