

# >> Health Care-Associated Infections: 2016 Oregon Annual Report



# Acknowledgments

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# Executive summary 2016

## Health care-associated infections in Oregon hospitals

**Health care-associated infections (HAIs)** can have devastating consequences for patients. The summary below shows how 2016 data from Oregon's acute care hospitals compares to: 1) national baselines and 2) 2013 national HAI reduction targets set by the U.S. Department of Health and Human Services (HHS).

### CLABSI in NICUs\*

CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS 13 INFECTIONS

Oregon hospitals } *▼ Better than 2006–08 national baseline*  
*✗ Did not meet 2013 HHS target*

### CLABSI in adult and pediatric ICUs\*

CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS 57 INFECTIONS

Oregon hospitals } *✓ Statistically better than 2006–08 national baseline*  
*✓ Met 2013 HHS target*

### CLABSI in adult and pediatric wards\*

CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS 43 INFECTIONS

Oregon hospitals } *✓ Statistically better than 2006–08 national baseline*  
*✓ Met 2013 HHS target*

### MRSA bloodstream infections (MRSA BSIs)†

HOSPITAL-ONSET MRSA BSI 57 INFECTIONS

Oregon hospitals } *✓ Statistically better than 2010–11 national baseline*  
*✓ Met 2013 HHS target*

### C. difficile infections ‡

HOSPITAL-ONSET C. DIFFICILE 906 INFECTIONS

Oregon hospitals } *✓ Statistically better than 2010–11 national baseline*  
*✗ Did not meet 2013 HHS target*

### CAUTI in adult and pediatric ICUs §

CATHETER-ASSOCIATED URINARY TRACT INFECTIONS 109 INFECTIONS

Oregon hospitals } *✓ Statistically better than 2009 national baseline*  
*✓ Met 2013 HHS target*

### CAUTI in adult and pediatric wards §

CATHETER-ASSOCIATED URINARY TRACT INFECTIONS 75 INFECTIONS

Oregon hospitals } *✓ Statistically better than 2009 national baseline*  
*✓ Met 2013 HHS target*

\* A CLABSI occurs when germs enter the blood along a tube (central line) placed in a large vein.

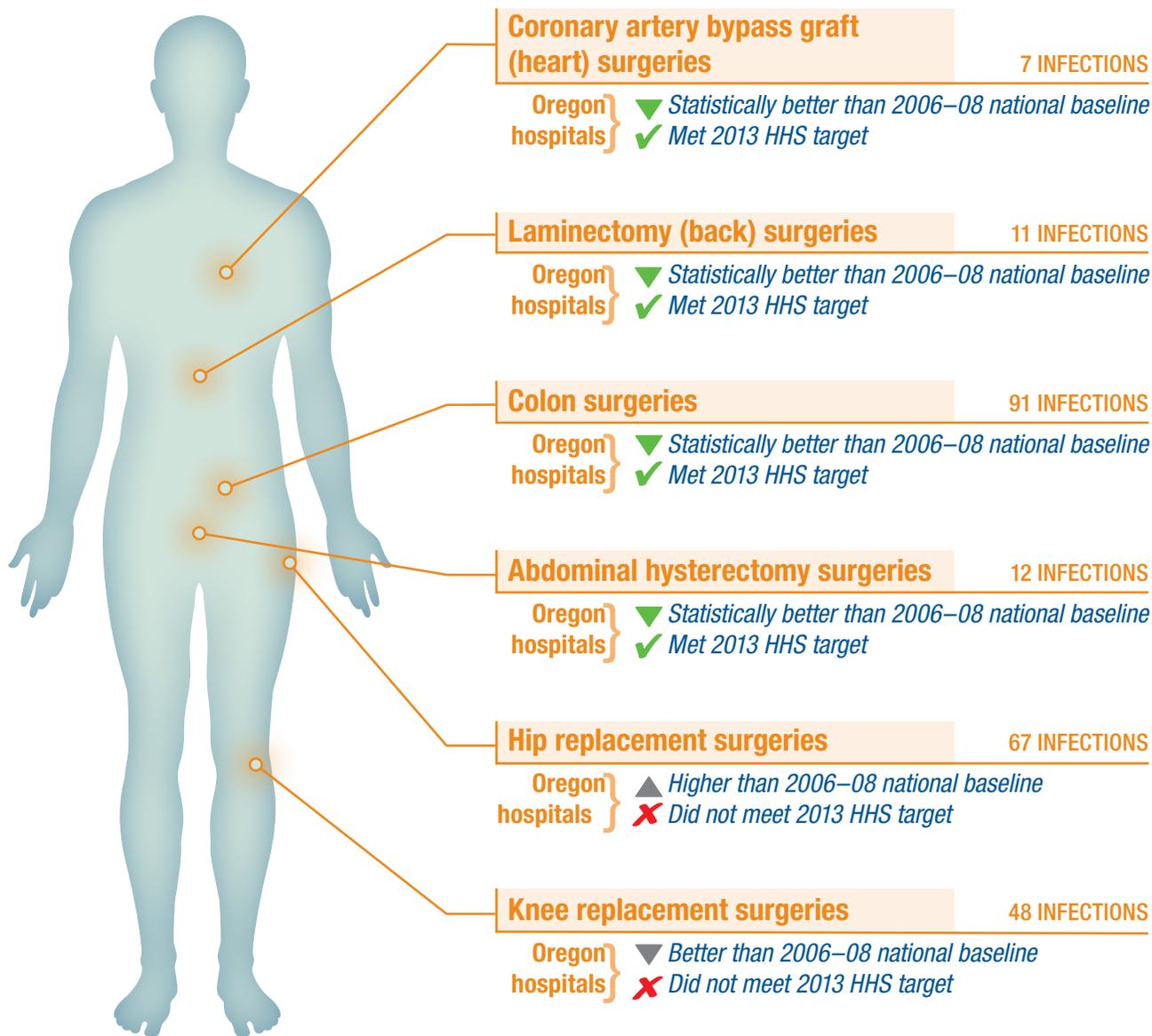
† A MRSA BSI is a difficult to treat infection caused by germs that enter the body through wounds or medical devices.

‡ *C. difficile* spreads to patients from unclean hands and surfaces in hospitals, leading to colon infection and diarrhea.

§ CAUTIs occur when germs travel up a urinary catheter that was not put in correctly, not kept clean, or left in too long.

## Surgical site infections (SSIs)

A surgical site infection (SSI) occurs when germs enter a surgical wound during or after surgery. The data below are for deep incisional and organ/space SSIs, which are detected upon index admission or readmission, only.



### THE TAKE AWAY

- In 2016, Oregon hospitals met national prevention targets for CLABSIs in adult and pediatric ICUs and wards, but were unable to do so in NICU settings.
- Regarding CAUTIs, Oregon hospitals performed favorably compared to national performance during the baseline measurement period as well as more recent national data. Prevention of hospital-onset *C. difficile* infections and MRSA BSIs remained stable.

Oregon hospitals performed better than hospitals nationally in terms of preventing SSIs following heart, laminectomy, colon, and hysterectomy surgeries. Oregon hospitals did not meet the HHS reduction target for SSIs following hip and knee replacement surgeries.

### LEGEND

- ▼ Statistically fewer infections
- ▼ Fewer infections (not statistically significant)
- ▲ More infections (not statistically significant)
- ✓ Met target
- ✗ Did not meet target

# Introduction

## Background

One in 25 hospitalized patients in the United States gets a health care-associated infection (HAI) while receiving medical treatment. An estimated 722,000 HAIs occur each year in acute care facilities.(1) Results of HAIs include medical complications, longer hospital stays, increased risk of death, and increased health care costs.(2)

In 2007, the Oregon Legislative Assembly passed House Bill 2524. This bill created Oregon's HAI Program, with oversight provided by its HAI Advisory Committee (HAIAC) of stakeholders including providers, consumers, insurers and experts. The HAIAC advises the Oregon Health Authority (OHA) regarding which HAIs facilities should report to OHA under Oregon Administrative Rule (OAR) 333-018. Oregon's hospitals began reporting selected HAIs to OHA in 2009. By 2015, 10 types of HAIs were reportable by hospitals. In addition, a requirement for dialysis facilities to report adverse events was established. (Table 1) This report contains HAI and dialysis event data. Health care worker influenza vaccination data are in a separate report.

## Statewide infection prevention

The HAI Program supports various infection prevention efforts. In November of 2014, Oregon's inter-facility transfer communication law took effect. This law requires health care facilities to notify receiving facilities of a patient colonized by or infected with a multidrug-resistant organism (MDRO), including MRSA and *Clostridium difficile*. Additional information about prevention activities is available on the [HAI Program website](#).

## Report audience

This report is for health care providers, consumers, public health officials and policy makers. Combined data for calendar year 2016 are in this report. Facility-specific data and maps are accessible online at [www.healthoregon.org/hai-reports](http://www.healthoregon.org/hai-reports).

**Table 1. Required health care-associated infections reporting elements for hospitals and dialysis facilities in Oregon, 2016**

Health care-associated infection	Abbreviation	Locations*
<b>Central line-associated bloodstream infection</b>	CLABSI	<b>Hospitals</b> <ul style="list-style-type: none"> <li>• Adult and pediatric:               <ul style="list-style-type: none"> <li>▪ Medical wards</li> <li>▪ Surgical wards</li> <li>▪ Medical/surgical wards</li> <li>▪ Intensive care units (ICUs)</li> </ul> </li> <li>• Neonatal ICUs (NICUs)</li> <li>• &gt;50 central line days</li> </ul>
<b>Catheter-associated urinary tract infection</b>	CAUTI	<b>Hospitals</b> <ul style="list-style-type: none"> <li>• Adult and pediatric:               <ul style="list-style-type: none"> <li>▪ Medical wards</li> <li>▪ Surgical wards</li> <li>▪ Medical/surgical wards</li> <li>▪ ICUs</li> </ul> </li> <li>• Inpatient rehabilitation wards</li> </ul>
<b>Laboratory-identified (LabID) hospital-onset (HO) <i>Clostridium difficile</i> infection</b>	HO-CDI	<b>Hospitals</b> <ul style="list-style-type: none"> <li>• Facility-wide, excluding neonatal locations, well-baby locations and babies in post-partum units</li> </ul>
<b>LabID HO methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) bloodstream infections (BSI)</b>	HO-MRSA BSI	<b>Hospitals</b> <ul style="list-style-type: none"> <li>• Facility-wide</li> </ul>
<b>Surgical site infections</b>	SSI	<b>Hospitals</b> <ul style="list-style-type: none"> <li>• Inpatient procedures only</li> <li>• &gt;20 procedures of any reportable surgery reported annually</li> </ul>
Coronary artery bypass graft: chest and donor site incisions	CBGB	
Laminectomy	LAM	
Colon surgery	COLO	
Abdominal hysterectomy	HYST	
Hip prosthesis surgery	HPRO	
Knee prosthesis surgery	KPRO	
<b>Dialysis events</b>		<b>Free-standing dialysis facilities</b> <ul style="list-style-type: none"> <li>• Facility-wide</li> </ul>
Bloodstream infections	BSI	
Access-related BSI	AR-BSI	

\*Only certain locations within the hospital are required to report CLABSI and CAUTI.

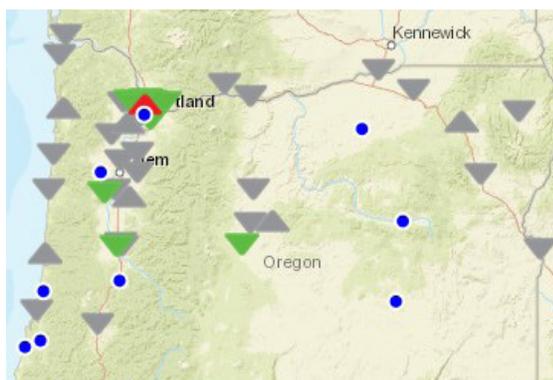
## How to use the data

Because the information presented here and online is for diverse stakeholders, we provide the following recommendations for use.

### Consumers

Online maps let consumers search HAI data at the region or facility level. For example, a patient seeking elective medical care can view a [map](#) for HO-CDI for the entire state, with performance on national benchmarks, by clicking on facilities. (Figure 1) Consumers can learn how to minimize HAI risk by reading the tips in Appendix I.

**Figure 1. Examples of interactive maps available for high-level or specific searches**



Map of hospital performance on HO-CDI



Example of facility-specific detail on HO-CDI, available by clicking on facility

### Health care providers

Facility-level [tables](#) published online will be of interest to front-line personnel, those who work in infection prevention, administrators and other health care providers. The tables include benchmarks to evaluate facility performance. The standardized infection ratio (SIR; explained in methods) is a measurement in relation to a national baseline established up to 10 years ago. The tables also provide benchmarks that are more recent. These include whether performance met U.S. Department of Health and Human Services (HHS) HAI reduction targets, and how the individual facility's data compared with national performance.

Figure 2. Example of an online facility-specific table with national benchmarks included

Patient days	Observed	Predicted	2016 SIR	SIR 95% CI	SIR icon	SIR interpretation (2010–11 U.S. baseline)	2013 HHS targets	Percentile on 2014 national SIR distribution
37,983	15	26.48	0.566	0.329, 0.913	▼	Statistically fewer infections	SIR target (<0.7) met	31–35%
4,212	2	2.69	0.744	0.125, 2.459	▼	Fewer infections	Target not met	46–50%
3,610	2	1.81	1.102	0.185, 3.642	▲	More infections	Target not met	71–75%
1,608	1	0.6	*	*		#s too small to calculate		*
69,406	51	59.33	0.86	0.647, 1.121	▼	Fewer infections	Target not met	56–60%
23,753	10	18.41	0.543	0.276, 0.968	▼	Statistically fewer infections	SIR target (<0.7) met	31–35%
2,696	0	1.26	0	, 2.386	▼	Fewer infections	SIR target (<0.7) met & zero infections	0–10%
94,364	46	72.14	0.638	0.472, 0.843	▼	Statistically fewer infections	SIR target (<0.7) met	36–40%
42,046	23	30.28	0.76	0.493, 1.122	▼	Fewer infections	Target not met	46–50%
31,836	16	20.59	0.777	0.460, 1.235	▼	Fewer infections	Target not met	46–50%

## State and regional health officials

By viewing the executive summary and infection-specific trend data, public health officials will know more about the overall burden of HAIs and the best way to guide resources. Local officials can filter the interactive online report by county or Health Preparedness Program (HPP) region to examine regional performance.

Figure 3. Example using the online interactive performance filter by county and HPP region

SIR icon	SIR interpretation (2010–11 U.S. baseline)	2013 HHS targets	Percentile on 2014 national SIR distribution	County	HPP region
▼	Fewer infections	Target not met	56–60%	Clackamas	Region 1
▼	Fewer infections	Target not met	46–50%	Clackamas	Region 1
▼	Fewer infections	SIR target (<0.7) met	26–30%	Clackamas	Region 1
▼	Statistically fewer infections	SIR target (<0.7) met	11–15%	Clackamas	Region 1

## Data collection and exemptions

Facilities reported 2016 data to OHA through the National Healthcare Safety Network (NHSN), managed by the Centers for Disease Control and Prevention (CDC). See [CDC's NHSN infection tracking page](#) for reporting details. Per OAR 333-018, facilities must enter required data elements into NHSN within 30 days of the end of each month.

Hospitals may be exempt from reporting specific HAIs. They may be eligible if their annual central line or procedure volume is low. OHA grants exemptions from CLABSI reporting if hospitals report fewer than 50 central line days a year. Likewise, OHA grants exemptions from procedure-specific surgical site infection (SSI) reporting if hospitals report performing fewer than 20 of a given reportable surgical procedure a year. Some hospitals report voluntarily despite meeting criteria for an exemption. HAI Program staff follow-up with facilities that do not report data for measures for which they are not exempt.

## Data validation

OHA staff review all data submitted, and provide each facility their own annual data for each reported measure before publication. Facilities have two weeks to respond and to correct any errors. The HAI Program offers technical assistance to help resolve any data discrepancies.

## Metrics

This report characterizes HAIs using the SIR. CDC recommends this metric. This metric is the ratio of the observed number of infections reported in 2016 to the predicted number for 2016. The predicted number comes from risk-adjusted national baseline data. The risk adjustment inherent in the SIR helps accurately compare different kinds of hospitals. For example, CLABSIs and CAUTIs are adjusted for hospital unit type (e.g., wards, ICUs); HO-MRSA and HO-CDI LabID events are adjusted for admission prevalence and laboratory testing methods; and SSIs are adjusted for patient-level risk. CDC posts risk adjustment methods in a [technical appendix](#) for NHSN reporting. In addition, the CDC posts in-depth statistical explanations for [SSI](#) and [LabID](#) event risk adjustment.

Metrics for dialysis events in this report include the rate of BSIs and AR-BSIs per 100 patient-months. Facility rates are calculated by access type and are compared to national rates to benchmark facility performance.

## Benchmarks

OHA compares the collective, state-level data in this report against two national benchmarks:

- The 2013 U.S. HHS target SIRs for acute care hospital HAI prevention, as described in the [National Action Plan to Prevent Health Care-Associated Infections: Road Map to Elimination](#).
- The 2014 national SIR established by NHSN, as described in the [National and State Healthcare-Associated Infections Progress Report](#).

At the time of the writing of this report, CDC and HHS were updating targets for both of these benchmarks. More details on these updates are accessible online:

- CDC's NHSN website: <https://www.cdc.gov/nhsn/index.html>.
- HHS's Office of Disease Prevention and Health Promotion website: <https://health.gov/hcq/prevent-hai-measures.asp>.

## Collective data for all Oregon facilities

In this report, we summarize performance for all metrics for 2016 that facilities must report to Oregon's HAI Program. On April 24, 2017, OHA staff exported data from NHSN. Facility-specific tables and maps are [online](#), alphabetized by facility name, with facility-specific data.

### Facility-specific table elements

- **Facility name:** Facilities listed are those that reported data to OHA. Facilities missing from tables had an exemption from reporting.
- **Location (where relevant):** For device-associated infections (CLABSI and CAUTI), facilities must report from specific locations. (Table 1) This aligns with the Centers for Medicare & Medicaid Services (CMS) for the hospital inpatient quality reporting program (IQR). Each table presents both collective data and data by location.
- **Observed infections:** Total number of infections (or events) meeting the NHSN criteria for reporting.
- **Predicted infections:** Total number of infections (or events) predicted for 2016, based on risk-adjusted national baselines.

- **Standardized infection ratio (SIR):** This measure divides the number of observed infections (or events) by the number of predicted infections (or events).
- **SIR interpretation:** An SIR value of one means the facility reported the same number of infections (or events) as predicted based on risk-adjusted national baselines. Values of less than one means the facility reports fewer infections than predicted based on the national baseline. Values of greater than one means the facility reports more infections than predicted based on the national baseline.
- **95% confidence interval (CI):** There is a 95% chance the true SIR lies within this range of values. If this range includes the value of one, the number of infections or events reported was not significantly different from predicted. Confidence intervals (CI) will not be calculated when an SIR is not available.
- **Direction and significance:** The following symbols describe visually how a facility's observed number of HAIs in 2016 compared to the number of HAIs predicted based on the national baseline.

▼	Statistically fewer infections
▽	Fewer infections (not statistically significant)
▲	More infections (not statistically significant)
▲	Statistically more infections

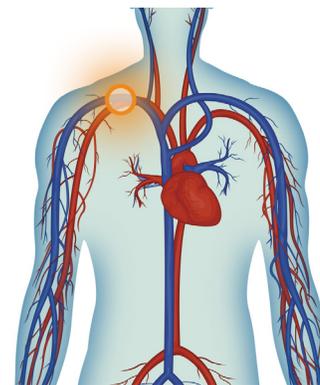
- **Benchmarks: met 2013 HHS target SIR or zero infections:** Benchmarks help facilities assess progress towards HAI prevention goals. The goal for all hospitals should be zero infections. Still, five-year HAI reduction targets set by HHS in 2009 (for 2013) reflect if hospitals have seen substantial decreases in HAIs since collecting baseline data.
- **Percentile range on 2014 national SIR distribution:** During report preparation, the most recent facility-specific SIRs published by CDC were for 2014. The percentile range of where a given SIR falls on the 2014 national distribution is shown for each facility with a calculated SIR.

**Note:** Facility-level data relative to HHS and CDC updated benchmarks will be measurable once benchmark data become available. OHA will then publish comparison data in additional tables and maps.

# Central line-associated bloodstream infections:

## Adult and pediatric intensive care units and wards

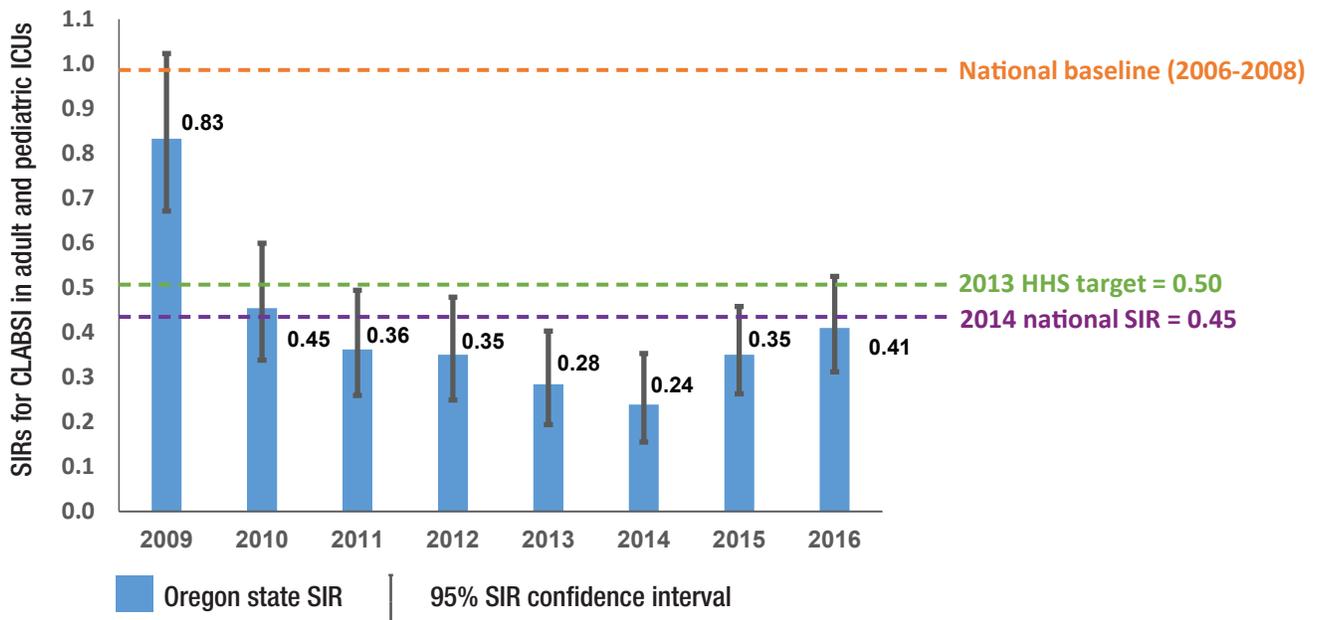
A “central line” or a “central catheter” is a tube placed into a patient’s large vein, usually in the neck or chest, to draw blood and give fluids and medications. It may be in place for several weeks. A central line-associated bloodstream infection (CLABSI) is an infection from germs traveling down or along the central line and entering the bloodstream. There have been great gains in prevention over the past decade by following evidence-based recommendations for central line insertion and maintenance.<sup>(3)</sup>



Since 2009, hospitals have been required to report CLABSIs in adult medical, surgical and medical/surgical ICUs. In 2015, hospitals expanded reporting to all adult and pediatric ICUs and to all adult and pediatric medical, surgical and medical/surgical wards.

Of 100 non-NICU CLABSIs reported in Oregon for 2016, 57 were in ICUs, and the remaining 43 were in wards. Figure 4 shows SIRs over time for ICUs. In 2016, Oregon’s statewide SIR for CLABSI in ICUs was 0.41 (95% CI, 0.31–0.53), which met the 2013 HHS reduction target SIR of 0.50. In addition, Oregon’s SIR fell below the 2014 national SIRs published by CDC. Non-ICU ward locations met the 2013 HHS target with an SIR of 0.35 (95% CI, 0.26–0.47).

Figure 4. Oregon SIRs for CLABSI in adult and pediatric ICUs: 2009–2016



**Note:** Figure 4 does not include data for non-ICU wards.

For facility-specific non-NICU CLABSI data and maps, see [www.healthoregon.org/hai-reports](http://www.healthoregon.org/hai-reports).

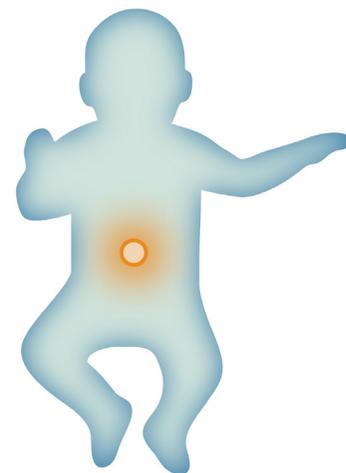
### What can providers do to prevent CLABSI in ICUs and wards?

- ✓ Follow the central line insertion checklist each time.
- ✓ Once the line is in place, follow recommended maintenance practices.
- ✓ Remove the central line as soon as it is no longer needed.

For more CDC resources go to [www.cdc.gov/HAI/bsi/CLABSI-resources.html](http://www.cdc.gov/HAI/bsi/CLABSI-resources.html).

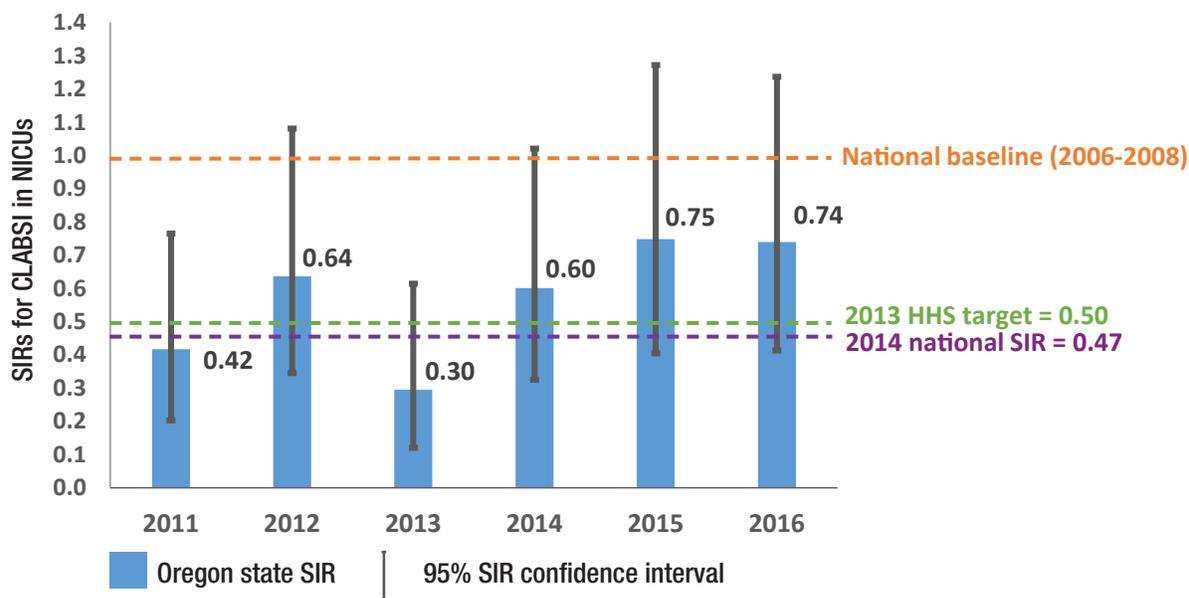
# Central line-associated bloodstream infections: Neonatal intensive care units

CLABSIs are the result of germs entering the bloodstream through catheters inserted into large veins for medication delivery and monitoring. Immature immune systems and compromised skin make newborns, particularly preterm infants, vulnerable to infection. Proper line maintenance, removal of lines when they are no longer needed and good communication between medical providers and families can prevent CLABSIs in neonatal intensive care units (NICU).<sup>(4)</sup>



Since 2011, Oregon hospitals have been required to report CLABSIs in NICUs. In 2016, Oregon’s NICU CLABSI SIR was 0.74 (95% CI, 0.41–1.24), representing a slight decrease since 2015. Oregon NICUs did not collectively meet the 2013 HHS target SIR of 0.50. (Figure 5, green line) When comparing Oregon’s 2016 CLABSI NICU SIR to the most recent annual CLABSI NICU SIRs published by CDC (Figure 5, purple line), Oregon’s SIR was higher than benchmarks. This difference was not statistically significant. However, wide CIs reflect high variability in SIR because of few NICU CLABSI events.

**Figure 5. Oregon SIRs for CLABSI in NICUs: 2011–2016**



For facility-specific NICU CLABSI data and maps, see [www.healthoregon.org/hai-reports](http://www.healthoregon.org/hai-reports).

## What can providers do to prevent CLABSI in NICUs?

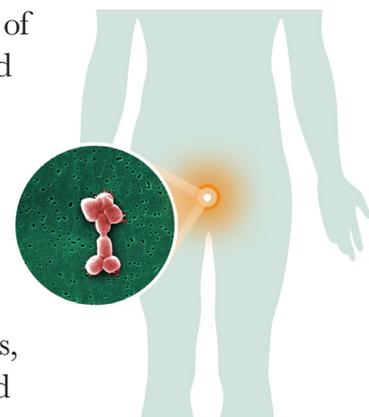
- ✓ **Follow the central line insertion checklist.**
- ✓ **Allow only trained professionals to insert lines.**
- ✓ **Pay close attention to line maintenance:**
  - » Follow evidence-based guidelines for maintenance;
  - » Emphasize hand hygiene; and
  - » Educate parents and visitors.
- ✓ **Remove the central line as soon as it is no longer needed.**
- ✓ **Assess and address local challenges to recommend practices.**

For more CDC resources go to  
[www.cdc.gov/HAI/bsi/CLABSI-resources.html](http://www.cdc.gov/HAI/bsi/CLABSI-resources.html).

# Catheter-associated urinary tract infections:

## Adult and pediatric intensive care units and wards

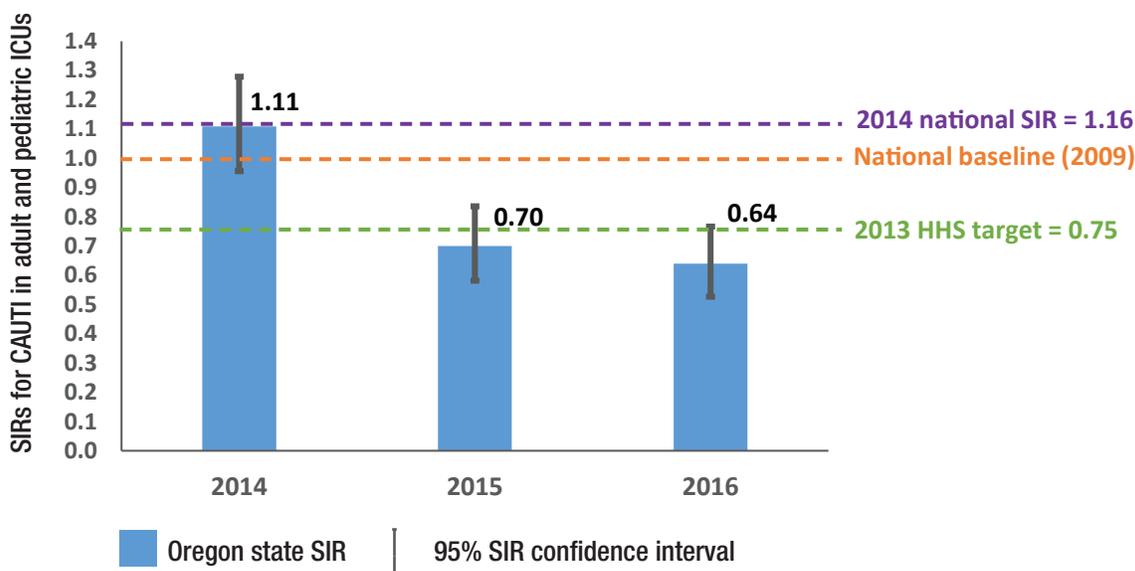
Catheter-associated urinary tract infections (CAUTIs) are the result of bacteria traveling up urinary catheters and infecting the bladder and kidneys. The risk for CAUTI increases with the time the catheter is in place. It is important to follow appropriate insertion and maintenance practices in intensive care units (ICUs) where use of urinary catheters is common.<sup>(5)</sup>



Since 2014, Oregon hospitals have been required to report CAUTIs in adult and pediatric ICUs. As of 2015, all adult and pediatric ICUs, as well as adult and pediatric medical, surgical, medical/surgical and inpatient rehabilitation wards must report CAUTI data.

Of 184 CAUTIs reported in Oregon for 2016, 109 (59%) occurred in ICUs. This resulted in a statewide SIR for CAUTI in ICUs of 0.64 (95% CI, 0.53–0.77). This means that hospitals reported 36% fewer CAUTIs than were predicted, based on risk-adjusted baselines. The SIR for wards was lower than for ICUs, at 0.42 (95% CI, 0.33–0.52). In 2016, Oregon ICUs collectively met the 2013 HHS target SIR of 0.75. (Figure 6, green line).

**Figure 6. Oregon SIRs for CAUTI in adult and pediatric ICUs: 2014–2016**



**Note:** Figure 6 displays SIRs for ICUs only.

For facility-specific CAUTI data and maps, see [www.healthoregon.org/hai-reports](http://www.healthoregon.org/hai-reports).

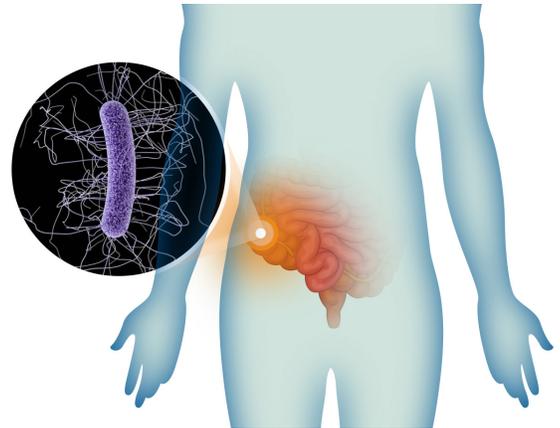
## What can providers do to prevent CAUTI?

- ✓ **Insert urinary catheters only when necessary.**
- ✓ **Remove as soon as possible.**
- ✓ **Allow only trained professionals to insert catheters, using sterile techniques.**
- ✓ **Pay close attention to catheter care:**
  - » Clean hands before and after handling;
  - » Properly secure indwelling catheters after insertion; and
  - » Maintain free urine flow.

For more CDC resources go to [www.cdc.gov/HAI/ca\\_uti/uti.html](http://www.cdc.gov/HAI/ca_uti/uti.html).

# Clostridium difficile infections

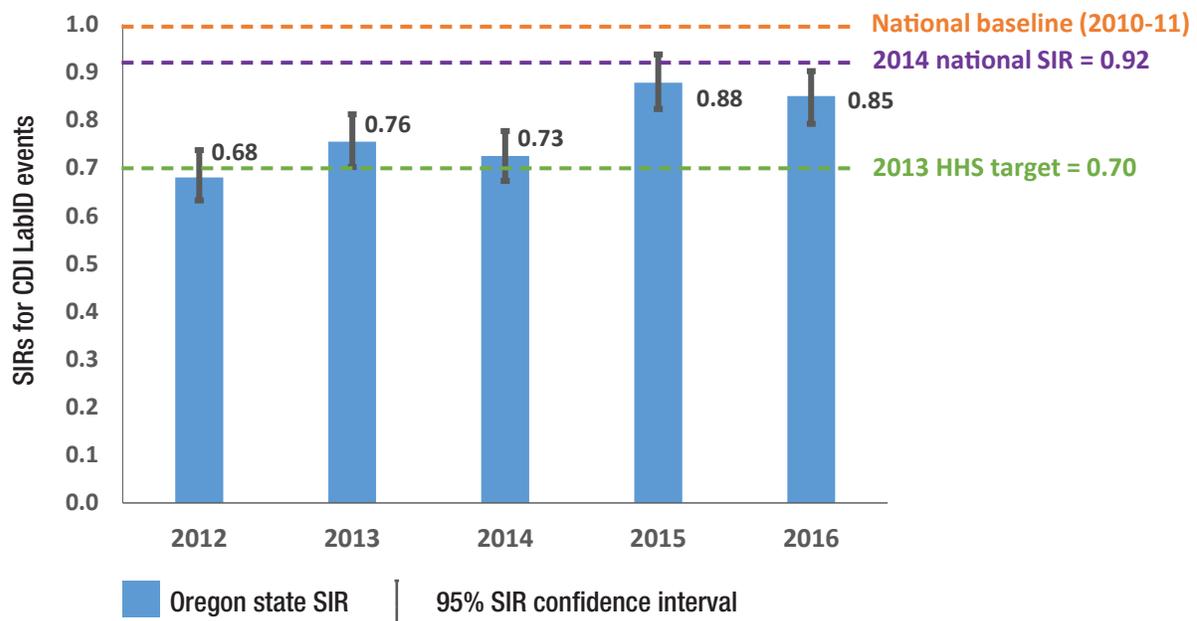
*Clostridium difficile* (*C. difficile*) is a spore-forming bacterium. It causes severe diarrhea, colon infection, sepsis and death. *C. difficile* caused almost half a million infections in the United States in 2011. 29,000 infected people died within 30 days of the initial diagnosis.(6) Those most at risk for this type of infection are people who take antibiotics and get medical care, especially older adults.(7)



Since 2012, Oregon hospitals have been required to report facility-wide, hospital-onset *C. difficile* infections (HO-CDI) identified through laboratory records (LabID events).

In 2016, Oregon's HO-CDI SIR was 0.85 (95% CI, 0.79–0.90). This means that hospitals reported 15% fewer events than predicted, based on risk-adjusted baselines. This represents a slight decrease from the previous year. Hospitals did not collectively meet the 2013 HHS target SIR of 0.70. However, Oregon's SIR was statistically significantly lower than the 2014 national SIR published by CDC.

Figure 7. Oregon SIRs for CDI LabID events: 2012–2016



For facility-specific HO-CDI LabID data and maps, see [www.healthoregon.org/hai-reports](http://www.healthoregon.org/hai-reports).

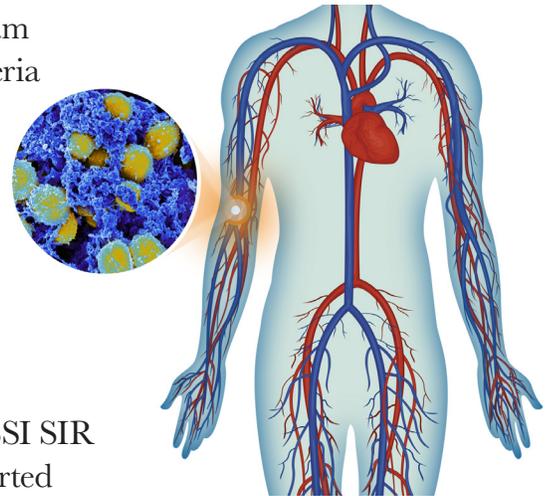
## What can providers do to prevent CDI?

- ✓ **Prescribe antibiotics with care.**
- ✓ **Swiftly detect and isolate any patient with *C. difficile*.**
- ✓ **Wear gowns and gloves when treating a patient with *C. difficile*. Alcohol-based hand rubs will not kill *C. difficile*. Hand washing with soap and water is preferable.**
- ✓ **In areas where patients with *C. difficile* have been treated, clean surfaces with a U.S. Environmental Protection Agency-approved, spore-killing disinfectant.**
- ✓ **When transferring a patient with *C. difficile*, let the receiving facility know of the patient's status.**

For more CDC resources go to  
[www.cdc.gov/hai/organisms/cdiff/Cdiff\\_clinicians.html](http://www.cdc.gov/hai/organisms/cdiff/Cdiff_clinicians.html).

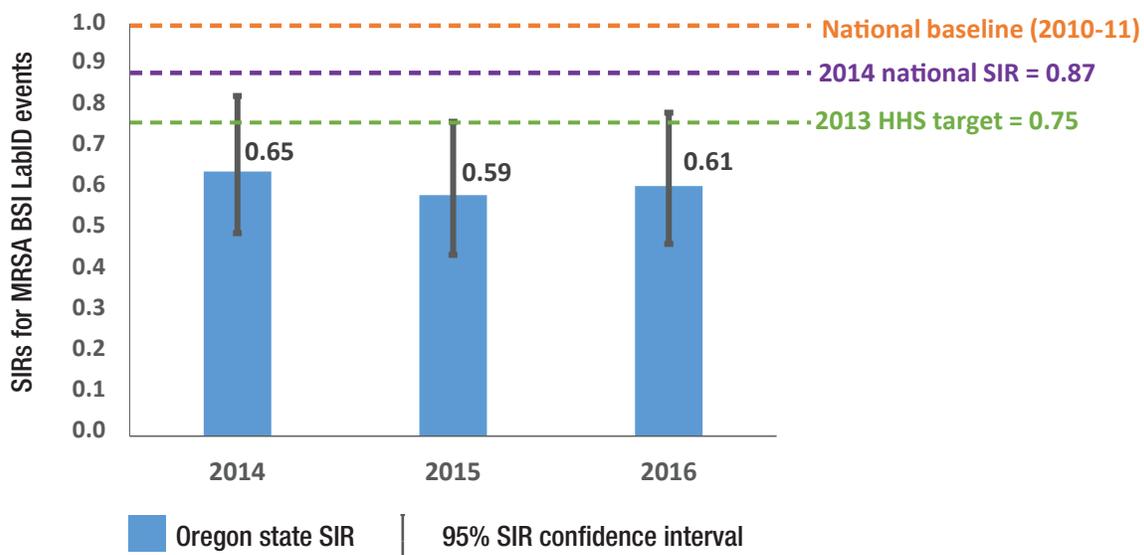
# Methicillin-resistant *Staphylococcus aureus* bloodstream infections

Methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infections (BSIs) occur when certain antibiotic-resistant bacteria enter the bloodstream. Bacteria enter through wounds or medical devices during medical treatment. These bacteria are resistant to many common antibiotics. MRSA can spread in health care facilities through contaminated hands and surfaces.



Since 2012, Oregon hospitals have been required to report facility-wide, HO-MRSA BSI identified through laboratory records (LabID events). Collectively, Oregon's HO-MRSA BSI SIR was 0.61 (95% CI, 0.47–0.79). This means that hospitals reported 39% fewer infections than predicted, based on national baselines. Oregon's SIR met the 2013 HHS target SIR of 0.75. Oregon's 2016 HO-MRSA BSI SIR was lower than the most recent annual SIRs published by CDC.

Figure 8. Oregon SIRs for MRSA BSI LabID events: 2014–2016



For facility-specific HO-MRSA BSI LabID data and maps, see [www.healthoregon.org/hai-reports](http://www.healthoregon.org/hai-reports).

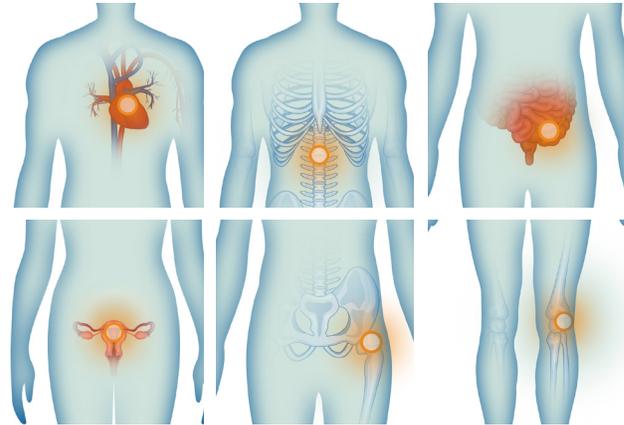
## What can providers do to prevent MRSA BSIs?

- ✓ **Perform hand hygiene before and after patient care or contact with surfaces in patient care areas.**
- ✓ **Carefully clean hospital rooms and medical equipment.**
- ✓ **Use contact precautions (gown and gloves) when caring for patients with MRSA.**
- ✓ **When transferring a patient with MRSA, let the receiving facility know of the patient's status.**
- ✓ **When receiving a patient from another facility, confirm the status of any infections with a MDRO.**

For more CDC resources go to  
[www.cdc.gov/HAI/organisms/mrsa-infection.html](http://www.cdc.gov/HAI/organisms/mrsa-infection.html).

# Surgical site infection (SSI) following select surgeries

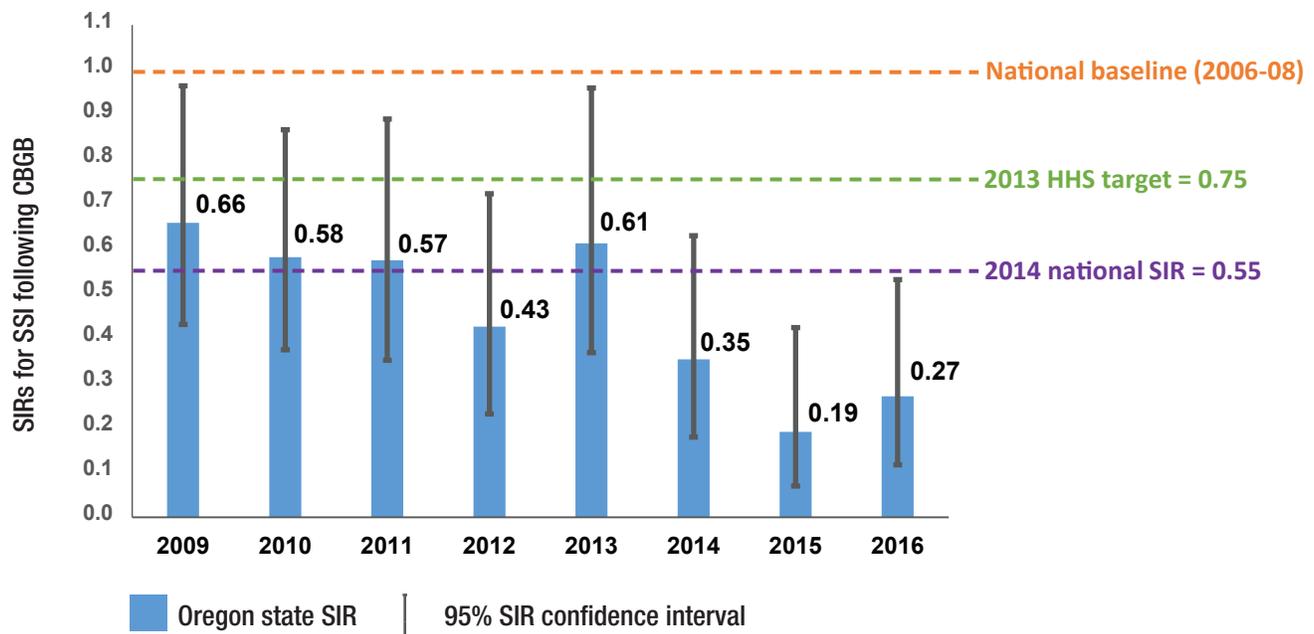
Surgical site infections (SSIs) can lead to serious complications and hospitalization. SSIs occur in 2%–5% of patients undergoing inpatient surgery.<sup>(8)</sup> These infections can spread in superficial skin layers and deep incisional layers (fascial and muscle). In addition, they can spread in the organ/space areas. There is inconsistency in reporting SSIs that occur superficially. Therefore, the SSI data presented here include only data from deep incisional and organ/space SSIs.



For facility-specific SSI data and maps, see [www.healthoregon.org/hai-reports](http://www.healthoregon.org/hai-reports).

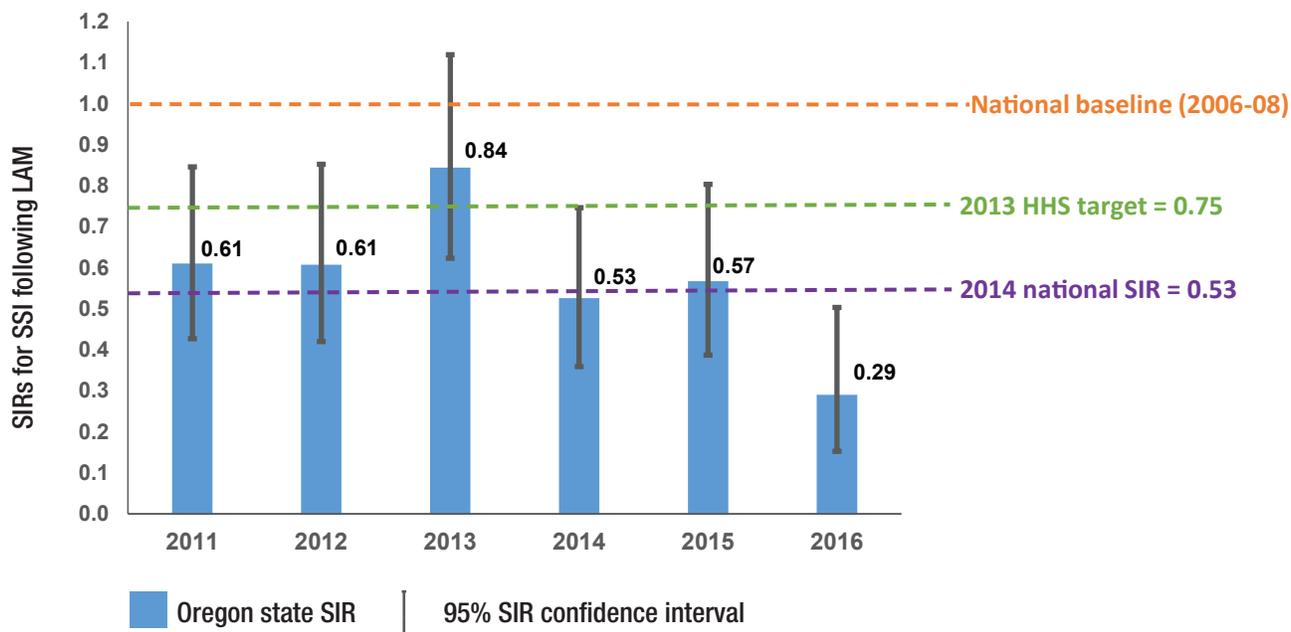
Since 2009, Oregon hospitals have been required to report SSIs following coronary artery bypass graft (CBGB) surgeries with both chest and donor site incisions. In 2016, Oregon hospitals collectively had a CBGB SIR of 0.27 (95% CI, 0.12–0.53). This meets the 2013 HHS target SIR of 0.75. It is lower than the 2014 national SIR published by CDC.

**Figure 9. Oregon SIRs for SSI following CBGB: 2009–2016**



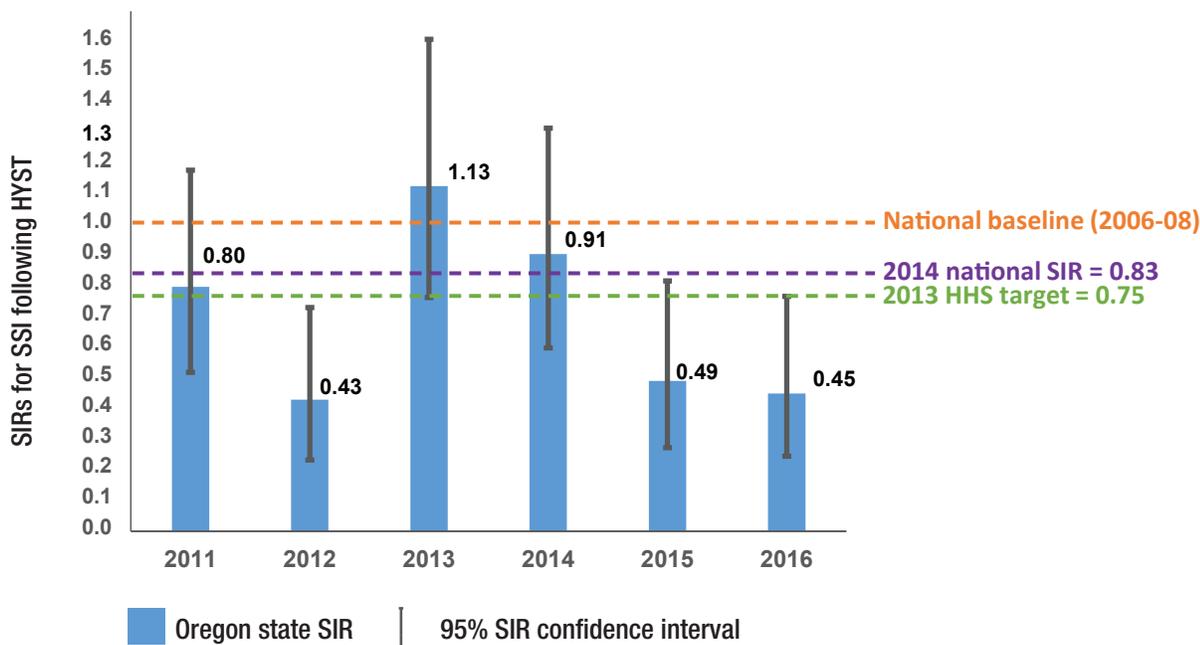
Since 2011, Oregon hospitals have been required to report SSIs following laminectomy (LAM) surgeries. In 2016, Oregon hospitals collectively had a LAM SIR of 0.29 (95% CI, 0.15–0.50). This meets the 2013 HHS target SIR of 0.75. It is lower than the 2014 national SIR published by CDC.

**Figure 10. Oregon SIRs for SSI following LAM: 2011–2016**



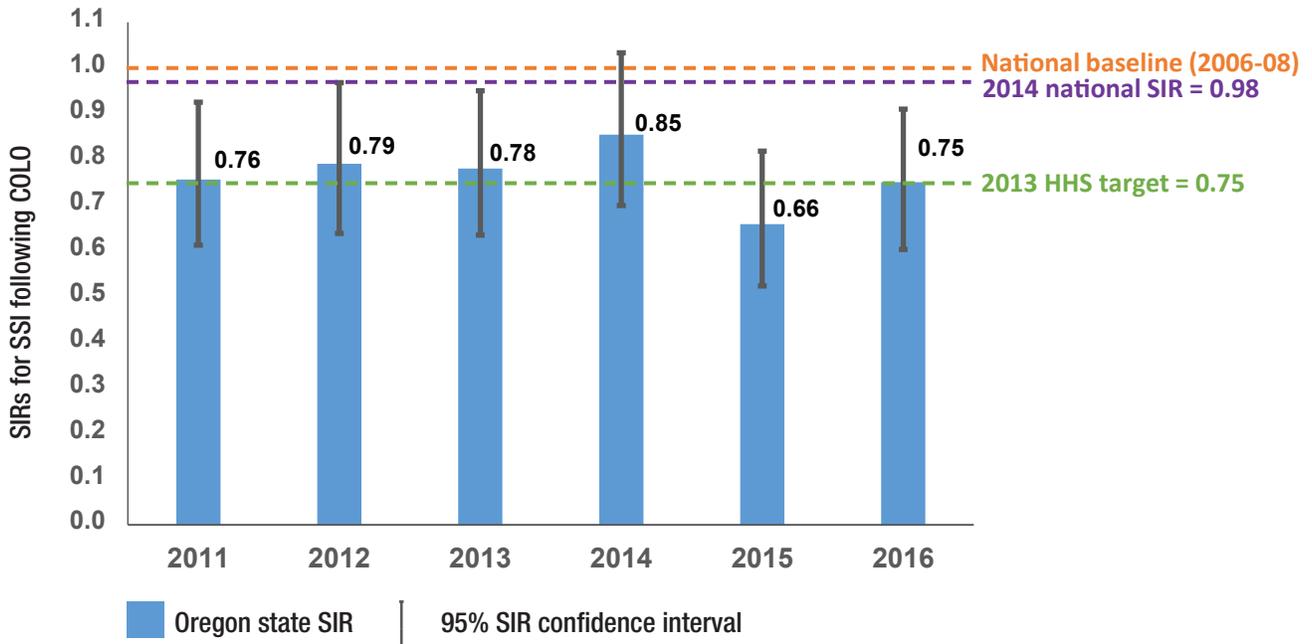
Since 2011, Oregon hospitals have been required to report SSIs following hysterectomy (HYST) surgeries. In 2016, Oregon hospitals collectively had a HYST SIR of 0.45 (95% CI, 0.25–0.77). This meets the 2013 HHS target SIR of 0.75. It is lower than the 2014 national SIR published by CDC.

**Figure 11. Oregon SIRs for SSI following HYST: 2011–2016**



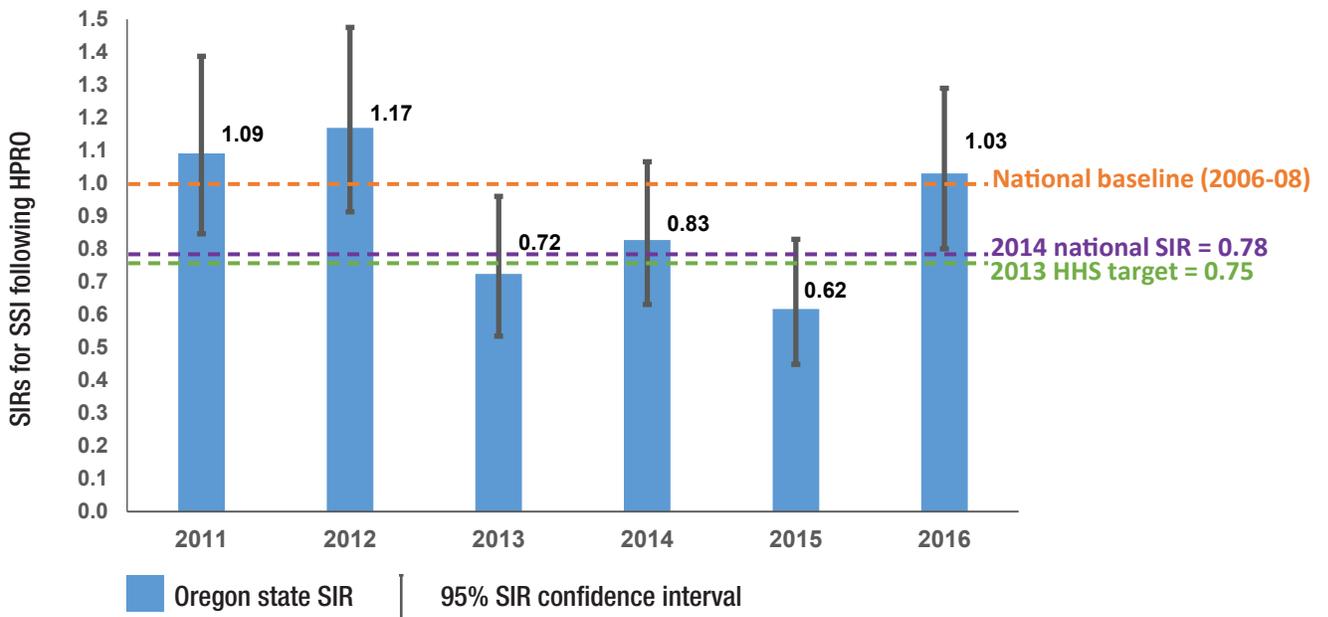
Since 2011, Oregon hospitals have been required to report SSIs following colon (COLO) surgeries. In 2016, Oregon hospitals collectively had a COLO SIR of 0.75 (95% CI, 0.60–0.91). This meets the 2013 HHS target SIR of 0.75. It is lower than the 2014 national SIR published by CDC.

**Figure 12. Oregon SIRs for SSI following COLO: 2011–2016**



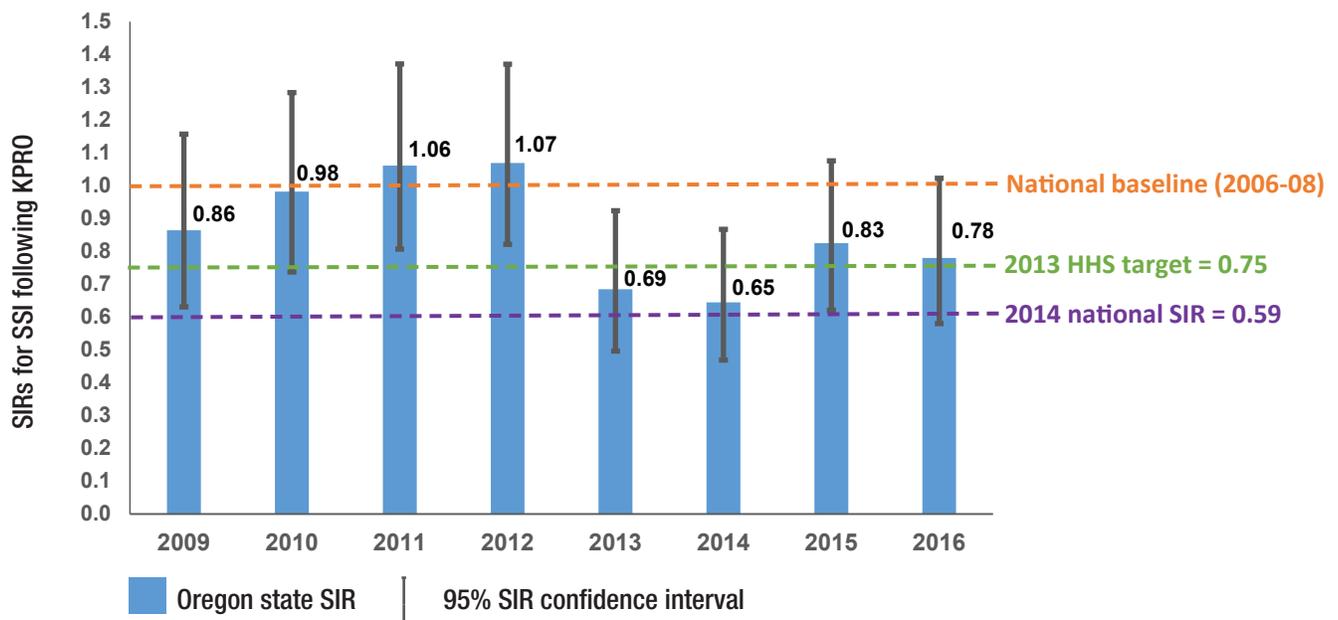
Since 2011, Oregon hospitals have been required to report SSIs following hip replacement (HPRO) surgeries. In 2016, Oregon hospitals collectively had a HPRO SIR of 1.03 (95% CI, 0.80–1.29). This did not meet the 2013 HHS target SIR of 0.75. The SIR was higher than the 2014 national SIR published by CDC.

**Figure 13. Oregon SIRs for SSI following HPRO: 2011–2016**



Since 2009, Oregon hospitals have been required to report SSIs following knee replacement (KPRO) surgeries. In 2016, Oregon hospitals collectively had a KPRO SIR of 0.78 (95% CI, 0.58–1.02). This did not meet the 2013 HHS target SIR of 0.75. The SIR was higher than the 2014 national SIR published by CDC.

**Figure 14. Oregon SIRs for SSI following KPRO: 2009–2016**



### What can providers do to prevent surgical site infections?

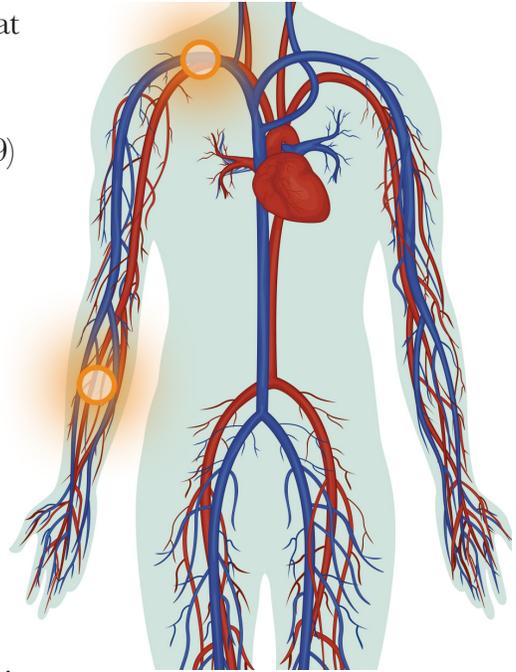
- ✓ Clean hands and arms up to elbows with an antiseptic before surgery.
- ✓ Perform vigilant hand hygiene during post-operative care.
- ✓ Remove hair immediately before surgery using electric clippers (not a razor).
- ✓ Wear sterile barriers during surgery.
- ✓ Minimize the number of times the incision is entered and exited during surgery.
- ✓ Provide appropriate antibiotics within 60 minutes before the surgery starts. Stop antibiotics within 24 hours after surgery.

For more CDC resources go to [www.cdc.gov/HAI/ssi/ssi.html](http://www.cdc.gov/HAI/ssi/ssi.html).

# Bloodstream infections in freestanding outpatient dialysis facilities

Dialysis patients are at risk of infection from pathogens that can spread from surfaces and hands to their bloodstream through dialysis access points. Nationwide, about 370,000 people with end-stage renal disease rely on hemodialysis.(9) Since January 2013, Oregon dialysis facilities have been required to report dialysis-related BSIs and access-related BSIs (AR-BSIs).

Patients can receive hemodialysis through different access types. These access types include fistulas and grafts. Other access types include tunneled and non-tunneled central venous catheters (CVCs). What access type a patient has affects their risk of developing one of these infections. Collectively, in 2016, Oregon facilities observed 39% fewer dialysis-related BSIs per 100 patient-months than the national average. In addition, Oregon facilities observed 48% fewer AR-BSIs per 100 patient-months than the national average published by CDC.



For facility-specific dialysis event data and maps, see [www.healthoregon.org/hai-reports](http://www.healthoregon.org/hai-reports).

## What can providers do to prevent BSIs in dialysis settings?

- ✓ **Track infections and feedback rates to providers regularly.**
- ✓ **Practice vigilant hand hygiene.**
- ✓ **Observe staff adherence to aseptic technique when connecting and disconnecting catheters and during dressing changes.**
- ✓ **Reduce use of catheters.**

For more CDC resources go to [www.cdc.gov/dialysis/prevention-tools/index.html](http://www.cdc.gov/dialysis/prevention-tools/index.html).

# Acronym glossary

<b>AR-BSI:</b>	Access-related bloodstream infection	<b>HO-CDI:</b>	Hospital-onset <i>Clostridium difficile</i> infection
<b>BSI:</b>	Bloodstream infection	<b>HO-MRSA BSI:</b>	Hospital-onset methicillin-resistant <i>Staphylococcus aureus</i> bloodstream infection
<b>CAUTI:</b>	Catheter-associated urinary tract infection	<b>HPP:</b>	Health Preparedness Program
<b>CBGB:</b>	Coronary artery bypass graft surgery	<b>HPRO:</b>	Hip prosthesis surgery
<b>CC:</b>	Critical care location	<b>HYST:</b>	Abdominal hysterectomy surgery
<b>CDC:</b>	Centers for Disease Control and Prevention	<b>ICU:</b>	Intensive care unit
<b>CDI:</b>	<i>Clostridium difficile</i> ( <i>C. difficile</i> ) infection	<b>IQR:</b>	Hospital inpatient quality reporting program
<b>CI:</b>	Confidence interval	<b>KPRO:</b>	Knee prosthesis surgery
<b>CLABSI:</b>	Central line-associated bloodstream infection	<b>LAM:</b>	Laminectomy surgery
<b>COLO:</b>	Colon surgery	<b>LabID:</b>	Laboratory-identified
<b>CVC:</b>	Central venous catheter	<b>MDRO:</b>	Multidrug-resistant organism
<b>HAI:</b>	Health care-associated infection	<b>MRSA:</b>	Methicillin-resistant <i>Staphylococcus aureus</i>
<b>HAIAC:</b>	HAI Advisory Committee	<b>NHSN:</b>	National Healthcare Safety Network
<b>HHS:</b>	U.S. Department of Health and Human Services	<b>OAR:</b>	Oregon Administrative Rule
<b>HICPAC:</b>	Healthcare Infection Control Practices Advisory Committee	<b>OHA:</b>	Oregon Health Authority
<b>HO:</b>	Hospital-onset	<b>SIR:</b>	Standardized infection ratio
		<b>SSI:</b>	Surgical site infection

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# Appendix I:

## Recommendations for patients and families to minimize health care-associated infections risk(10)

### To prevent all infections:

- If you do not see your healthcare providers clean their hands before caring for you, don't be shy about asking them to do so. This is your healthcare. You have a right to speak up!
  - » Make sure you, your family members and friends keep their hands clean too!
- Ask your healthcare provider what specific steps they take to prevent infections. Also, ask what you can do to prevent infections before, during and after your visit.

### To prevent central line-associated bloodstream infections (CLABSIs) and catheter-associated urinary tract infections (CAUTIs):

If you need a central line or urinary catheter, ask your doctors and nurses to explain why and how long you will need it.

- Ask your healthcare providers each day if you still need it.
- If the bandage covering your central line becomes wet or dirty, tell your nurse or doctor immediately.
- Tell your nurse or doctor if the area around your central line or catheter is sore or red, or you feel feverish.
- Follow your healthcare providers' instructions for the care of the central line or urinary catheter to keep it working as it should and keep it clean and free of germs.
- Do not let family and friends touch the central line tubing or bandage.

### To prevent surgical site infections (SSIs):

- Immediately after your surgery and during recovery:
  - » Avoid touching your incision area.
  - » Follow all instructions from your doctor about how to take care of your incision.

- » Before and after taking care of your incision area, wash your hands or use an alcohol-based hand rub. Have anyone helping with your care do the same.
- » If you have any infection signs or symptoms like redness, pain, fever or drainage, call your doctor as soon as possible.
- » Until the incision heals completely, always use a different washcloth for the incision area than the one you use for the rest of your body.
- » Keep clean sheets on your bed and make sure the clothes that touch your incision are clean.
- » Keep pets away from the incision until it heals.
- Before you leave the hospital or ambulatory surgery center:
  - » Make sure you understand how to take care of your wound. Ask questions when you are unsure.
  - » Know who to contact if you have questions or problems after you get home.
  - » Keep all appointments scheduled at the time of discharge.

### To prevent *Clostridium difficile* infections:

- » Take antibiotics only as prescribed by your doctor and complete the course of treatment.
- » Tell your doctor if you have recently been on antibiotics. Also, let your doctor know if you get diarrhea within a few months of taking the antibiotics.
- » Wash your hands before eating.
- » Wash your hands after using the bathroom.

### To prevent methicillin-resistant *Staphylococcus aureus* (MRSA) infections:

- » Clean your hands often, especially before and after changing wound dressings or bandages.
- » Keep wounds clean and change bandages as directed by your doctor until healed.
- » Avoid sharing personal items such as towels or razors.
- » Take antibiotics only as prescribed by your doctor and complete the course of treatment.



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