

>> Health Care-Associated Infections: 2015 Oregon Annual Report



Acknowledgments

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This report would not have been possible without the efforts of Oregon's HAI prevention partners, including the Health Care-Associated Infections Advisory Committee and the health care facilities included in this report.

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October 2016

Please cite this publication as follows:

Oregon Public Health Division.

Health care-associated infections: 2015 Oregon Annual Report.

Oregon Health Authority. Portland, OR. 2016 October.

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Executive summary 2015

Health care-associated infections in Oregon hospitals

Health care-associated infections (HAIs) can have devastating consequences for patients. The summary below shows how 2015 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 12 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 50 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 68 INFECTIONS

Oregon hospitals } *✔ Statistically better than 2006–08 national baseline*
✗ Did not meet 2013 HHS target

MRSA bloodstream infections (MRSA BSIs)†

HOSPITAL-ONSET MRSA BSI 51 INFECTIONS

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

C. Difficile infections ‡

HOSPITAL-ONSET C. DIFFICILE 909 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 117 INFECTIONS

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

CAUTI in adult and pediatric wards §

CATHETER-ASSOCIATED URINARY TRACT INFECTIONS 71 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.

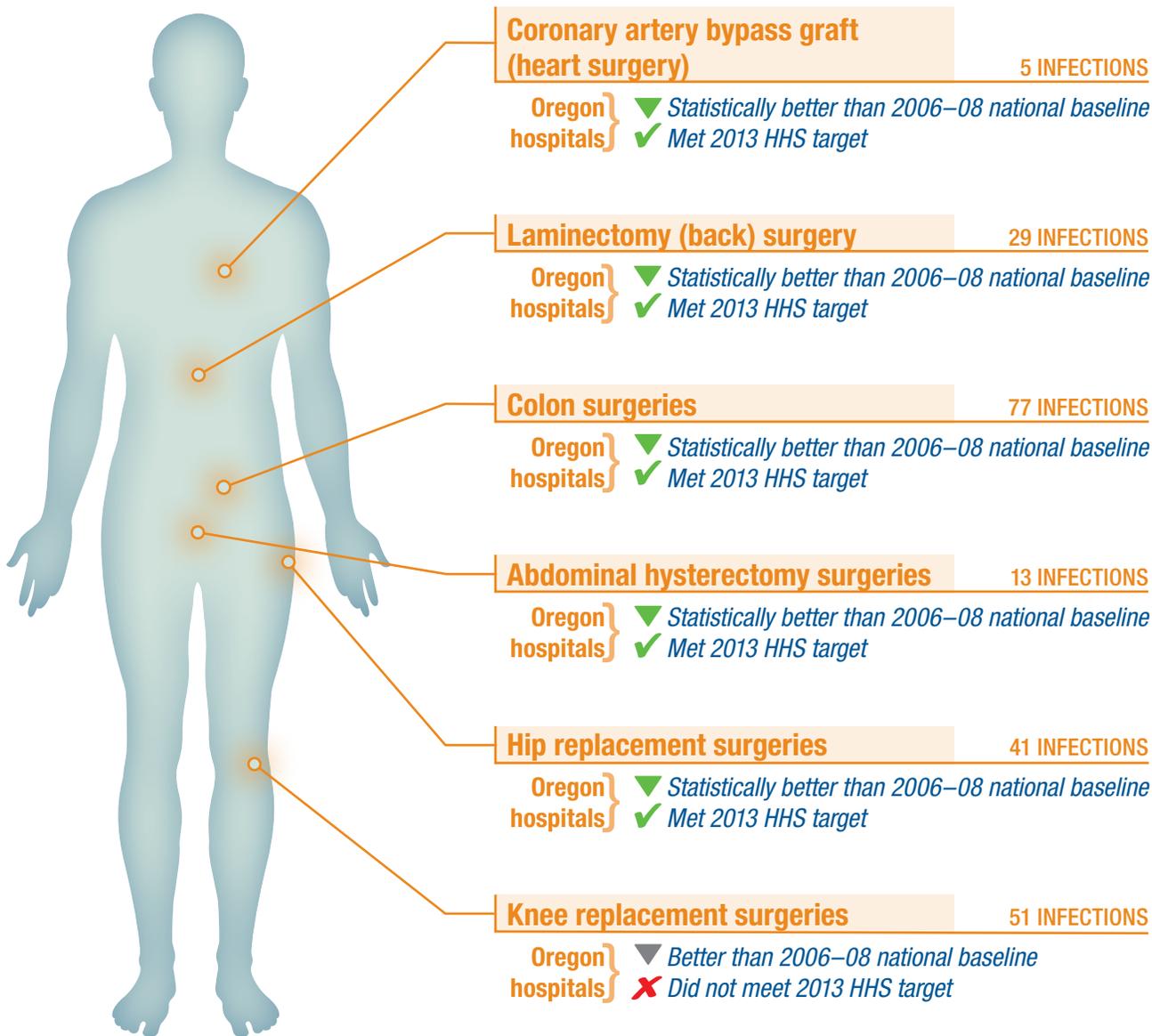
† An MRSA BSI is a difficult to treat infection caused by germs that enter the body through wounds or medical devices.

‡ *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.

SSIs surgical site infections

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 2015, Oregon hospitals continued to reduce CLABSIs in adult and pediatric ICUs, but were unable to meet national prevention targets in NICU and ward settings. On CAUTI infections, Oregon hospitals performed favorably compared to national performance at baseline and currently. Prevention of hospital-onset *C. difficile* infections worsened in 2015.

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

LEGEND

- Statistically fewer infections
- Fewer infections (not statistically significant)
- More infections (not statistically significant)
- Statistically more infections
- Met target
- Did not meet target

Background

One in 25 hospitalized patients in the U.S. acquires a health care-associated infection (HAI) while receiving medical treatment. As a result, an estimated 722,000 HAIs occur each year in acute care facilities.(1) Consequences 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, which created Oregon's HAI Reporting Program to be overseen by an HAI advisory committee (HAIAC) of stakeholders including providers, consumers, insurers and experts. The Oregon HAIAC designates which HAIs are to be reported by facilities to the Oregon Health Authority (OHA) under [Oregon Administrative Rule \(OAR\) 333-018](#). Oregon's acute care hospitals began reporting selected HAIs to OHA in 2009. By 2015, 10 types of HAIs were reportable to OHA by acute care hospitals, and dialysis facilities were required to report adverse events (Table 1). This report contains HAI and dialysis event data. Health care worker influenza vaccination data are presented in a [separate report](#).

Intended audience

This report is intended for health care providers, consumers, public health officials and policy makers. Aggregate data for calendar year 2015 are provided in this report, and facility-specific data and maps are accessible online at <http://www.healthoregon.org/hai-reports>.

How to use this report

Because the information is intended for diverse stakeholders, the following recommendations explain how each group may best use the information.

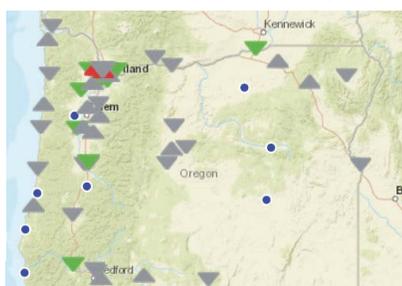
Consumers: Online maps let consumers search HAI data at the region or facility level. For example, a patient seeking an elective knee surgery can see a [map](#) showing knee infections following knee replacement surgeries for the entire state and then look at procedure volume and performance relative to national benchmarks by clicking on specific facilities (Figure 1). Consumers can learn how to minimize the chances of HAIs by reading the tips provided in Appendix II.

Table 1. Required health care-associated reporting elements for hospitals and dialysis facilities in Oregon, 2015

Health care-associated infection	Abbreviation	Locations specified*
Central line-associated bloodstream infection	CLABSI	Hospitals <ul style="list-style-type: none"> • Adult medical and surgical intensive care units (ICUs) • Neonatal ICUs (NICUs) • Adult and pediatric medical, surgical, and medical/surgical wards • >50 central line days
Catheter-associated urinary tract infection	CAUTI	Hospitals <ul style="list-style-type: none"> • All adult and pediatric ICUs • Adult and pediatric medical, surgical, and medical/surgical wards • >50 catheter days
Laboratory-identified (LabID) hospital-onset (HO) <i>Clostridium difficile</i> infection	HO-CDI	Hospitals: <ul style="list-style-type: none"> • Facility-wide excluding neonatal, well-baby and babies in post-partum units
LabID HO methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) bloodstream infections	HO-MRSA BSI	Hospitals: <ul style="list-style-type: none"> • Facility-wide
Surgical site infections	SSI	Hospitals: <ul style="list-style-type: none"> • Inpatient procedures only • >20 procedures of any reportable surgery reported annually
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	Free-standing dialysis facilities
Dialysis events:		
Bloodstream infections	BSI	
Access-related BSI	AR-BSI	
*Only certain locations within the hospital are required to report CLABSI and CAUTI (Appendix I).		

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

Map of hospital performance on hospital-onset *C. difficile*



Example of facility-specific detail on knee surgery infections enumerated by clicking on facility



Health care providers: Facility-level [tables](#) published online will be of interest to health care providers, including front-line personnel, infection preventionists and administrators. The tables include benchmarks to compare with facility performance. The standardized infection ratio (SIR, explained in methods) is a measure of performance relative to a national baseline established up to 10 years ago. These tables provide more recent benchmarks, such as whether performance met the 2013 U.S. Health and Human Services (HHS) benchmarks, and how individual facility performance compared to facilities nationwide in 2014.

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

Patient days	Observed	Predicted	2015 SIR	SIR 95% CI	SIR icon	SIR interpretation (2010–11)	2013 targets	Percentile of 2014 national SIR distribution
2,646	1	1.66	0.602	0.030, 2.968	▼	Fewer infections	SIR target (<0.7) met	36–40%
825	0	0.37	*	*		Numbers too small to calculate	ZERO infections	
3,721	1	2.13	0.47	2.024, 2.317	▼	Fewer infections	SIR target (<0.7) met	26–30%
155,993	198	111.54	1.775	1.540, 2.036	▲	Statistically more infections	Target not met	96–100%
6,846	3	3.45	0.87	0.221, 2.367	▼	Fewer infections	Target not met	56–60%
28,485	18	18.26	0.986	0.603, 1.528	▼	Fewer infections	Target not met	66–70%
24,672	9	13.71	0.656	0.320, 1.204	▼	Fewer infections	SIR target (<0.7) met	36–40%
503	0	0.23	*	*		Numbers too small to calculate	ZERO infections	
24,199	7	14.33	0.488	0.214, 0.966	▼	Statistically fewer infections	SIR target (<0.7) met	26–30%
30,907	10	19.88	0.503	0.256, 0.897	▼	Statistically fewer infections	SIR target (<0.7) met	26–30%
41,865	16	29.48	0.543	0.321, 0.863	▼	Statistically fewer infections	SIR target (<0.7) met	31–35%

State and regional health officials: Public health officials will better understand overall burden and how to guide resource allocation by viewing aggregate data in the executive summary and infection-specific trend summaries. Local officials can filter the interactive online report by county or health preparedness program (HPP) region to examine regional performance.

Figure 3. Interactive filter capability by county and health preparedness program region:

SIR Icon	SIR interpretation (2010–11 U.S. baseline)	2013 HHS targets	Percentile of 2014 national SIR distribution	County	HPP region
▲	More infections	Target not met	71–75%	Clackamas	Region1
▼	Statistically fewer infections	SIR target (<0.7) met	26–30%	Clackamas	Region1
▼	Statistically fewer infections	SIR target (<0.7) met	16–20%	Clackamas	Region1
▼	Statistically fewer infections	SIR target (<0.7) met	11–15%	Clackamas	Region1

Data collection and exemptions

Facilities reported 2015 data to OHA through the National Healthcare Safety Network (NHSN), which is 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 are required to submit required data elements to NHSN within 30 days of the end of each month.

Hospitals are eligible for exemption from reporting specific HAIs if annual device use, patient volume or procedure volume is low. OHA grants exemptions from CLABSI reporting if hospitals report fewer than 50 central line days annually, from CAUTI reporting if fewer than 50 urinary catheter days annually, and from procedure-specific SSI reporting if fewer than 20 of a reportable surgical procedure. Some hospitals voluntarily report even when exempt.

Data validation by OHA

OHA staff review all data submitted and notify facilities of the following data omissions or aberrations:

- Missing months
- Surgical procedure times of less than five minutes or more than five times the interquartile range (IQR5)
- Unknown or atypical surgical wound class categorization
- Any other data inconsistencies.

Facilities are given two months to respond and to correct any errors.

Metrics

This report characterizes HAIs using the standardized infection ratio (SIR). CDC recommends using this metric, which is the ratio of the observed number of infections reported in a calendar year to the predicted number for that year, based on risk-adjusted national baseline rates. The risk adjustment inherent in the SIR makes comparisons more objective among hospitals. For example, CLABSIs and CAUTIs are adjusted for hospital unit type, hospital-onset MRSA and CDI LabID

events are adjusted for admission prevalence and laboratory testing methods, and SSIs are adjusted for patient-level risk factors. CDC posts risk adjustment methods in a [technical appendix](#) for NHSN reporting <http://www.cdc.gov/hai/surveillance/progress-report/faq.html>, as well as in-depth statistical explanations for [SSI](#) and [LabID](#) event risk adjustment.

Dialysis events are presented as the incidence of bloodstream infections (BSIs) and access-related BSIs (ARBSIs) per 100 patient-months, using NHSN protocols. To benchmark facility performance, facility rates are stratified by access type and compared to national pooled means.

Aggregate data for all Oregon facilities

This report presents a summary of overall performance in 2015 for each metric required by Oregon’s HAI reporting program. Aggregate data were downloaded on Jun. 15, 2016. Facility-specific tables and maps can be found [online](#), alphabetized by facility name, with facility-specific data. The number of infections included in the “All Oregon” (top) row of the facility-specific tables may differ slightly from the total number of facility-specific infections, since some infections were not included in the aggregate. In a few instances, infections were reported to OHA directly rather than through NHSN, and some numbers were clarified after Jun. 15, 2016. These infections, while reported in facility-specific rows, are omitted from the All Oregon rows and from the aggregate report.

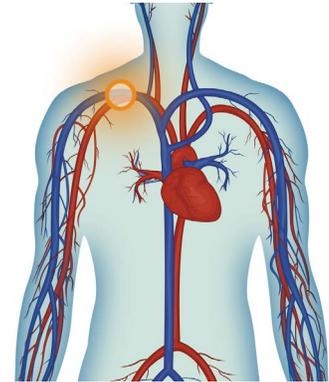
Facility-specific table elements

- **Facility name**
Facilities listed reported data to OHA without filing for exemption based on patient or procedure volume. Facilities missing from the tables were granted exemption from reporting.
- **Location (where relevant)**
For device-associated infections, (CLABSI and CAUTI) facilities were required to report from specific locations, which are aligned with CMS requirements for the inpatient quality reporting program. Data are presented in aggregate and stratified by location in each table.
- **Total observed infections**
Total number of infections or LabID events meeting the NHSN criteria for reporting.
- **Predicted infections**
A calculated value that reflects the number of infections (or events for LabID reporting) “predicted” for 2015, 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 value**
 An SIR value of one indicates the facility observed the same number of infections (or LabID events) as predicted from risk-adjusted national baselines. Values of less than one indicate facilities reported fewer infections than predicted based on national baselines. Values greater than one indicate more infections than predicted.
- 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 SIR is not “statistically significant.” A confidence interval cannot be calculated if the SIR is not calculated. A mid-P exact test is used to determine statistical significance.
- Direction and significance**
 The following symbols indicate how a facility’s observed number of HAIs in 2015 compared to the number predicted, based on national baseline data collected by CDC:
 - ▼ 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 can help facilities assess progress towards HAI prevention goals. While the ultimate goal for all hospitals should be zero infections, five-year HAI reduction targets set by the U.S. Department of Health and Human Services (HHS) in 2009 (for 2013) reflect whether hospitals have reduced HAIs substantially since baseline data were collected.
- Percentile range on 2014 national SIR distribution**
 At the time of publication, the most recent national distribution for facility-specific SIRs published by CDC was for the 2014 calendar year. The percentile range of where a given SIR falls on the 2014 national distribution is shown for each facility with a calculated SIR.

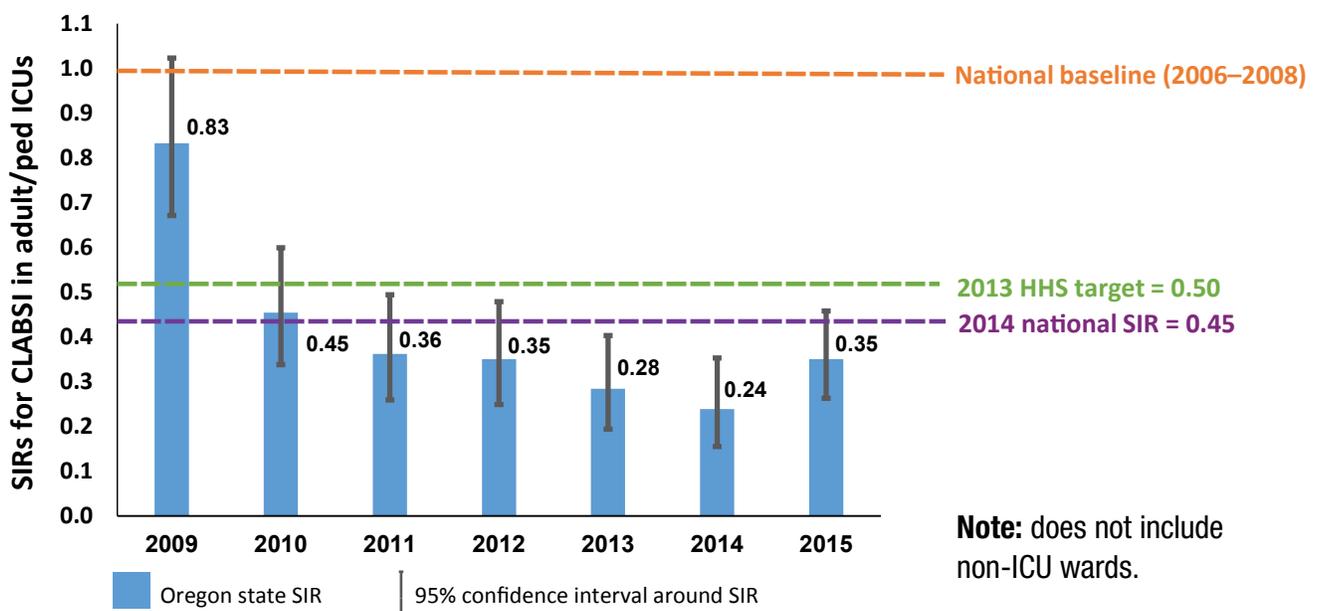
Central line-associated bloodstream infections (CLABSI) — in adult and pediatric intensive care units and ward

A “central line” or a “central catheter” is a tube used to draw blood and give fluids and medications, which is placed into a patient’s large vein, usually in the neck or chest. It may be left in place for several weeks. A central line-associated bloodstream infection (CLABSI) can occur when germs travel down the central line and enter the bloodstream. Great gains in prevention have been made over the past decade by following evidence-based recommendations for insertion and maintenance of central lines.⁽³⁾



The HAI reporting program has required Oregon hospitals report CLABSIs in adult medical, surgical and medical/surgical ICUs since 2009. In 2015, hospitals expanded reporting to all adult and pediatric ICUs and for all adult and pediatric medical, surgical and medical/surgical wards. Of 118 total non-NICU CLABSIs in 2015, 50 (42%) were in ICUs, and the statewide SIR in ICUs was 0.35 (95% CI, 0.26–0.46). The remaining 68 reported CLABSIs (58%) were in wards. Figure 4 shows SIRs over time for ICUs. Oregon’s SIR for CLABSI in ICUs in 2015 met the 2013 HHS reduction target with an SIR of <0.5 and was below the 2014 national average. Non-ICU wards had an SIR of 0.53 (95% CI 0.41–0.67). These locations did not meet the SIR of 0.5, but tracked closely with the national SIR for non-ICU wards in 2014, which was 0.56 (95% CI, 0.55–0.57).

Figure 4. Oregon CLABSI standardized infection ratios (SIR) in adult and pediatric ICUs: 2009–2015



For facility-specific CLABSI data and maps, see <http://www.healthoregon.org/hai-reports>

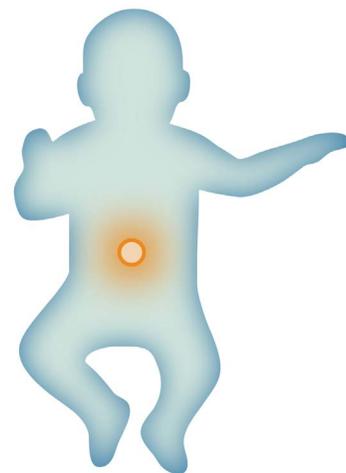
What can providers do to prevent CLABSI in ICUs and wards?

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

CDC prevention resources: <http://www.cdc.gov/HAI/bsi/CLABSI-resources.html>

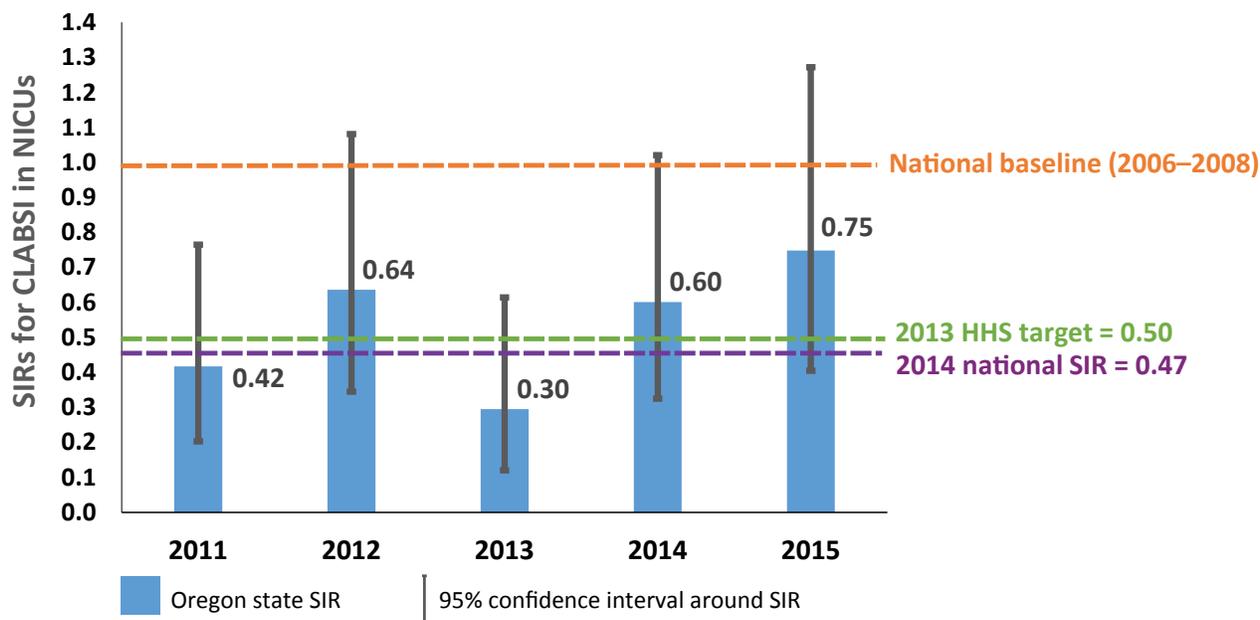
Central line-associated bloodstream infections (CLABSI)— in neonatal intensive care units (NICUs)

Central line-associated bloodstream infections (CLABSI) are caused by 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. NICU CLABSIs can be prevented through proper line maintenance, removal of lines when appropriate, and good communication between medical providers and families.(4)



In 2015, Oregon’s CLABSI NICU SIR was 0.75 (95% CI, 0.41–1.27), representing a slight increase since 2014. Oregon NICUs did not collectively meet the 2013 HHS target SIR of 0.50 (Figure 5, green line). When comparing Oregon’s 2015 CLABSI NICU SIR to the most recent annual CLABSI NICU SIRs published by CDC (Figure 5, purple line), Oregon’s SIR was higher but statistically equivalent due to wide confidence intervals.

Figure 5. Oregon CLABSI standardized infection ratios (SIR) in neonatal ICUs: 2011–2015



For facility-specific NICU CLABSI data and maps, see <http://www.healthoregon.org/hai-reports>

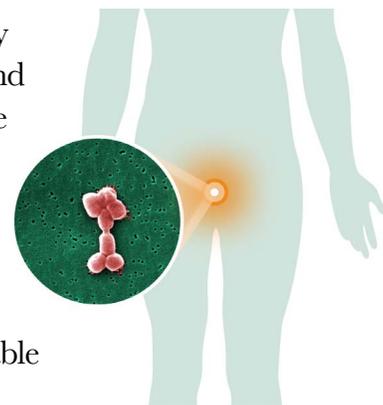
What can providers do to prevent CLABSI in NICUs?

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

CDC prevention resources: <http://www.cdc.gov/HAI/bsi/CLABSI-resources.html>

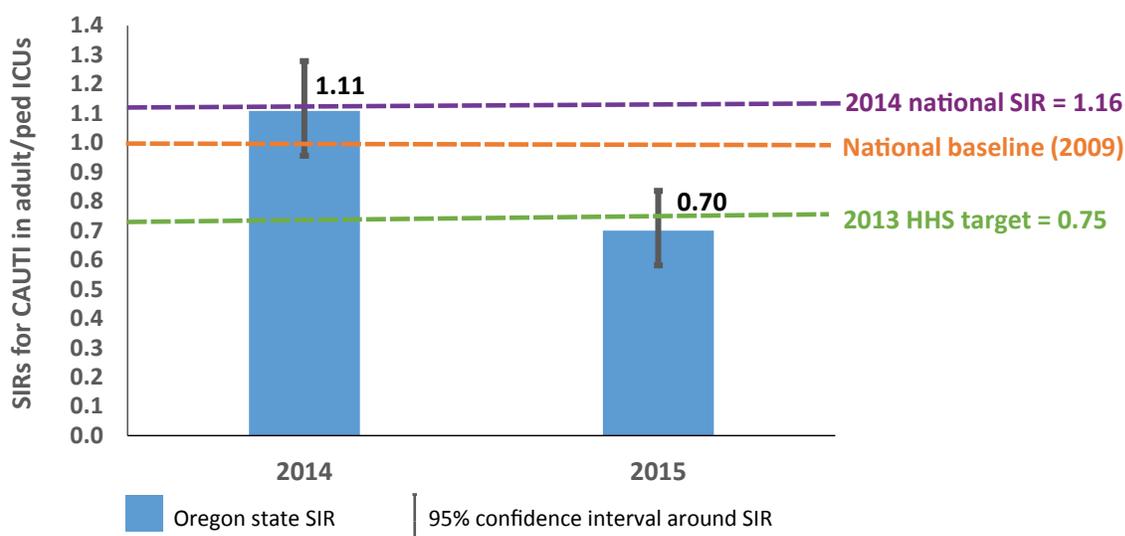
Catheter-associated urinary tract infections (CAUTI) – in adult and pediatric intensive care units and wards

Catheter-associated urinary tract infections (CAUTI) are caused by bacteria traveling up urinary catheters and infecting the bladder and kidneys. The risk for CAUTI increases with the amount of time the catheter is in place. Use of urinary catheters is common in ICUs, so it is particularly important to follow appropriate insertion and maintenance practices.⁽⁵⁾



In Oregon, adult and pediatric ICUs began reporting CAUTI to OHA for the first time in 2014. In 2015, CAUTI data were reportable from all adult and pediatric ICUs and from medical, surgical and medical/surgical wards. In 2015, Oregon ICUs reported 117 of 188 (62%) total CAUTIs, resulting in a statewide SIR for ICUs of 0.70 (95% CI, 0.58–0.84), meaning they had 30% fewer CAUTIs than predicted based on risk-adjusted baselines. The SIR for wards was even lower at 0.40 (95% CI, 0.31–0.50). A definition change in 2015 makes comparisons across years questionable. In 2015 Oregon ICUs collectively met the 2013 HHS target SIR of 0.75 (Figure 3, green line). Note: the figure below displays SIRs for ICUs only.

Figure 6. Oregon CAUTI standardized infection ratios (SIR) in adult and pediatric ICUs: 2014–2015



For facility-specific CAUTI data and maps, see <http://www.healthoregon.org/hai-reports>

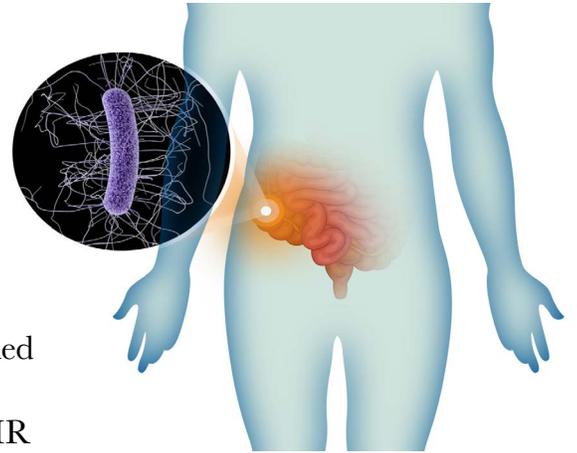
What can providers do to prevent CAUTI?

- ✓ **Insert urinary catheters only when necessary and remove as soon as possible**
- ✓ **Allow only trained professionals to insert catheters, using sterile technique**
- ✓ **Pay close attention to line maintenance:**
 - » Clean hands before and after handling
 - » Avoid disconnecting catheter from drain tube
 - » Do not let the drain spout touch anything while emptying

CDC prevention resources: <http://www.cdc.gov/HAI/caUTI/uti.html>

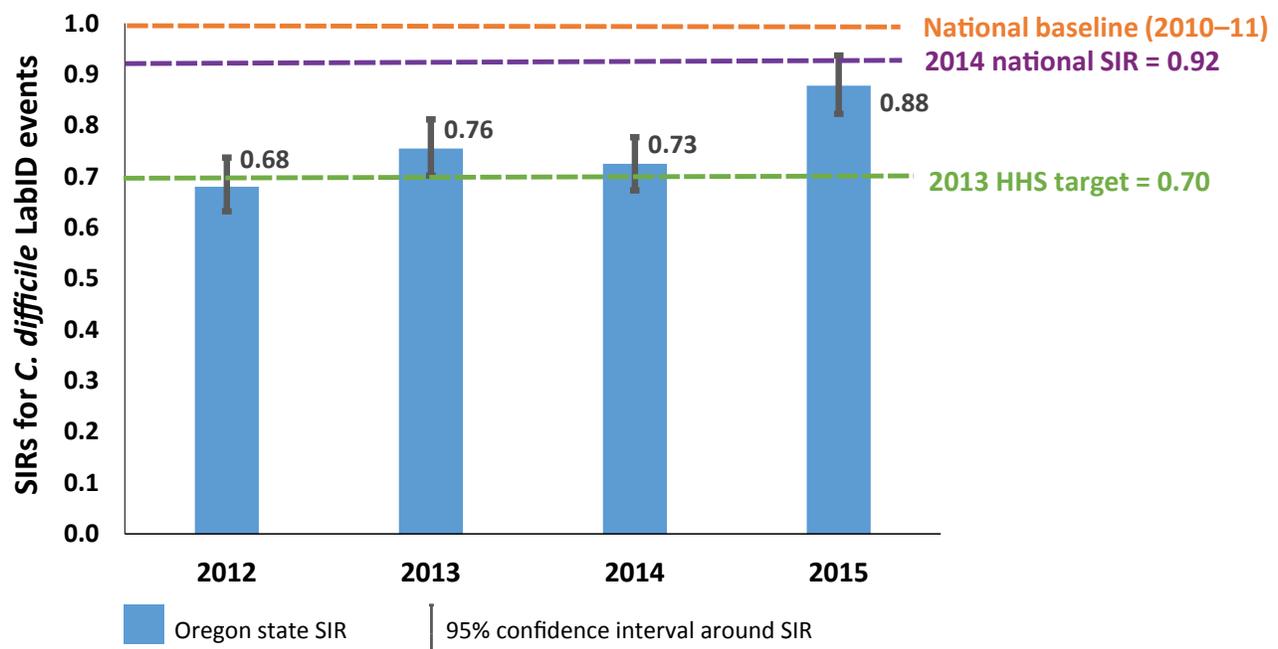
Clostridium difficile (*C. difficile*) infection

C. difficile is a spore-forming bacterium that 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 are people, especially older adults, who take antibiotics and get medical care.(7)



In Oregon, hospital-onset *C. difficile* infection identified through laboratory records (LabID events) has been reportable since 2012. In 2015, Oregon's *C. difficile* SIR increased to the highest ever reported in the state at 0.88 (95% CI, 0.82–0.94), meaning hospitals reported 12% fewer events than predicted based on 2010–2011 national baselines. Hospitals did not collectively meet the 2013 HHS target SIR of 0.70, but Oregon's SIR was slightly lower than the national SIR in 2014. To help fight the spread of *C. difficile*, Oregon's inter-facility transfer communication law took effect in 2014, which requires health care facilities to notify receiving facilities of a patient's *C. difficile* status upon transfer.

Figure 7. Oregon *C. difficile* standardized infection ratios (SIR): 2012–2015



For facility-specific *C. difficile* LabID data and maps, see <http://www.healthoregon.org/hai-reports>

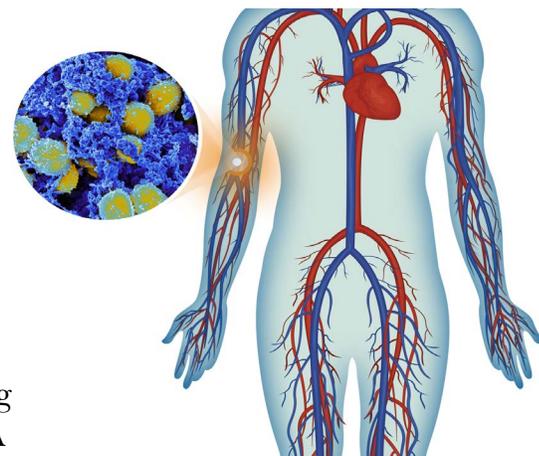
What can providers do to prevent CDI?

- ✓ **Prescribe antibiotics judiciously**
- ✓ **Rapidly identify and isolate patients identified with *C. difficile***
- ✓ **Wear gowns and gloves when treating patients with *C. difficile***
- ✓ **Clean surfaces with an EPA-approved disinfectant where *C. difficile* patients have been treated**
- ✓ **Notify receiving facility of patients *C. difficile* status upon transfer**

CDC prevention resources: http://www.cdc.gov/hai/organisms/cdiff/Cdiff_clinicians.html

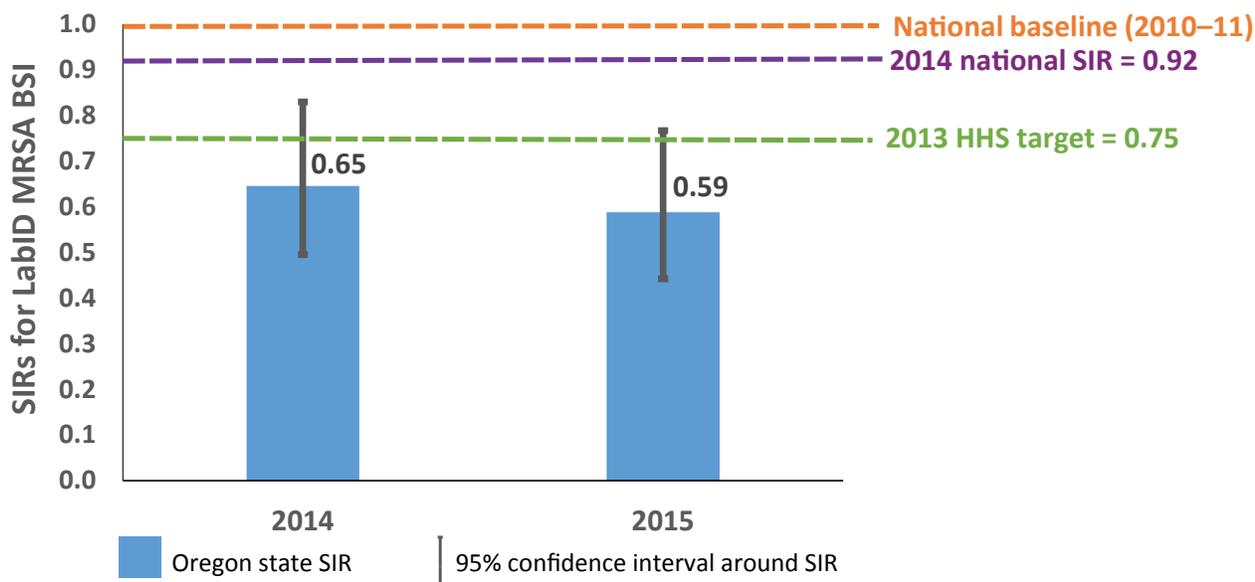
Methicillin-resistant *Staphylococcus aureus* bloodstream infection (MRSA BSI)

A hospital-onset MRSA BSI occurs when antibiotic-resistant bacteria enter the bloodstream through wounds or medical devices during the course of medical treatment. These bacteria are resistant to many common antibiotics. MRSA can spread in hospitals through contaminated hands and surfaces.



In Oregon, facility-wide MRSA bacteremia identified through laboratory records (LabID events) became reportable through the state's mandatory HAI reporting program starting in 2014. Collectively, Oregon's MRSA BSI SIR was 0.59 (95% CI, 0.44–0.77), meaning hospitals reported 41% fewer infections than expected based on national baselines, and exceeded the 2013 HHS target SIR of 0.75. When comparing Oregon's 2015 hospital-onset MRSA BSI SIR to the most recent annual SIRs published by CDC, Oregon's SIR was lower. To help fight spread of MRSA, in 2014, Oregon's inter-facility transfer communication law took effect, which requires health care facilities to notify receiving facilities of a patient's MRSA status on transfer.

Figure 8. Oregon MRSA BSI standardized infection ratios (SIR): 2014–2015



For facility-specific MRSA BSI LabID data and maps, see <http://www.healthoregon.org/hai-reports>

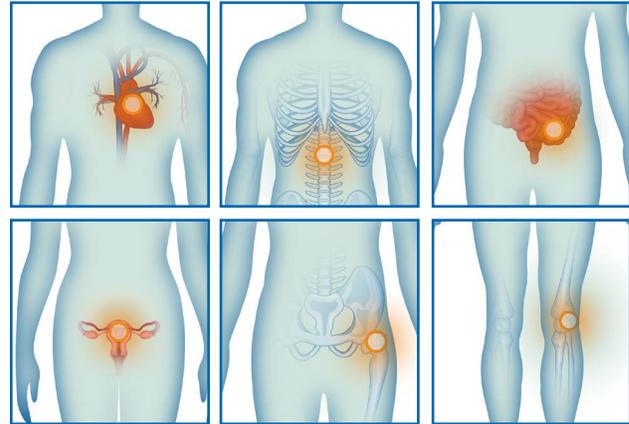
What can providers do to prevent MRSA bacteremia?

- ✓ **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**
- ✓ **Notify receiving facility of a patient's MRSA status upon transfer**
- ✓ **When receiving a patient from another facility, confirm MDRO status**

CDC prevention resources: <http://www.cdc.gov/HAI/organisms/mrsa-infection.html>

Surgical site infection (SSI) following select surgeries

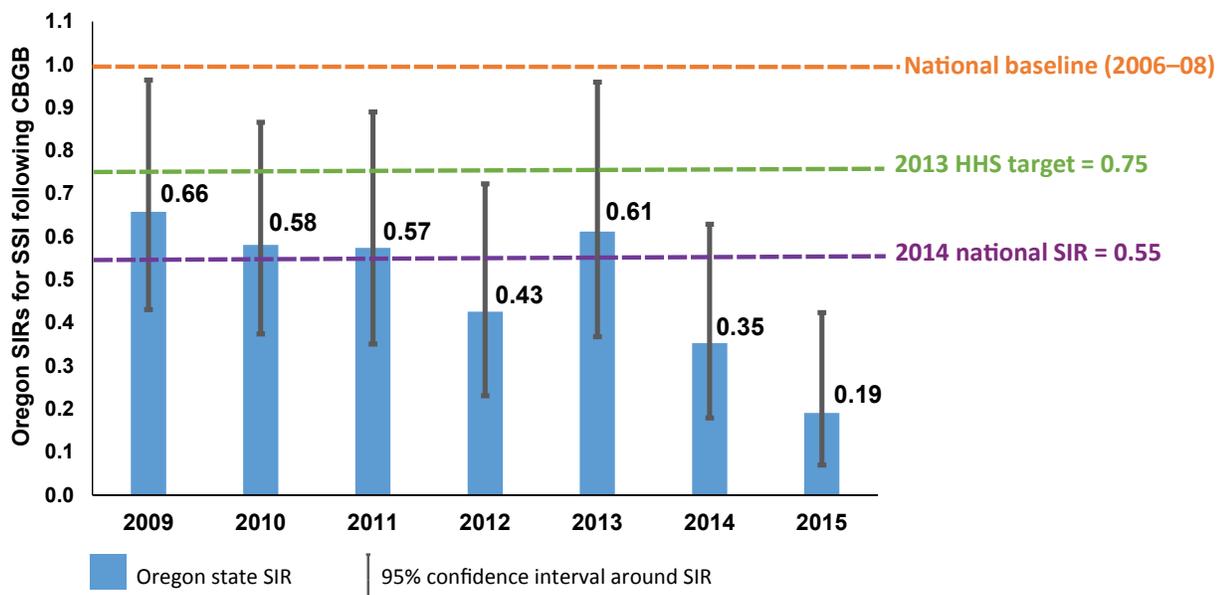
Surgical site infections (SSIs), which are found in 2–5% of patients undergoing inpatient surgery, can lead to serious complications and hospitalization.⁽⁸⁾ These infections can spread in superficial skin layers, tissue layers, deep incisional and organ space areas. The data displayed on this page and comparisons to national baselines are based on deep incisional and organ space SSIs due to inconsistency in reporting superficial SSIs.



For facility-specific SSI data and maps: <http://www.healthoregon.org/hai-reports>

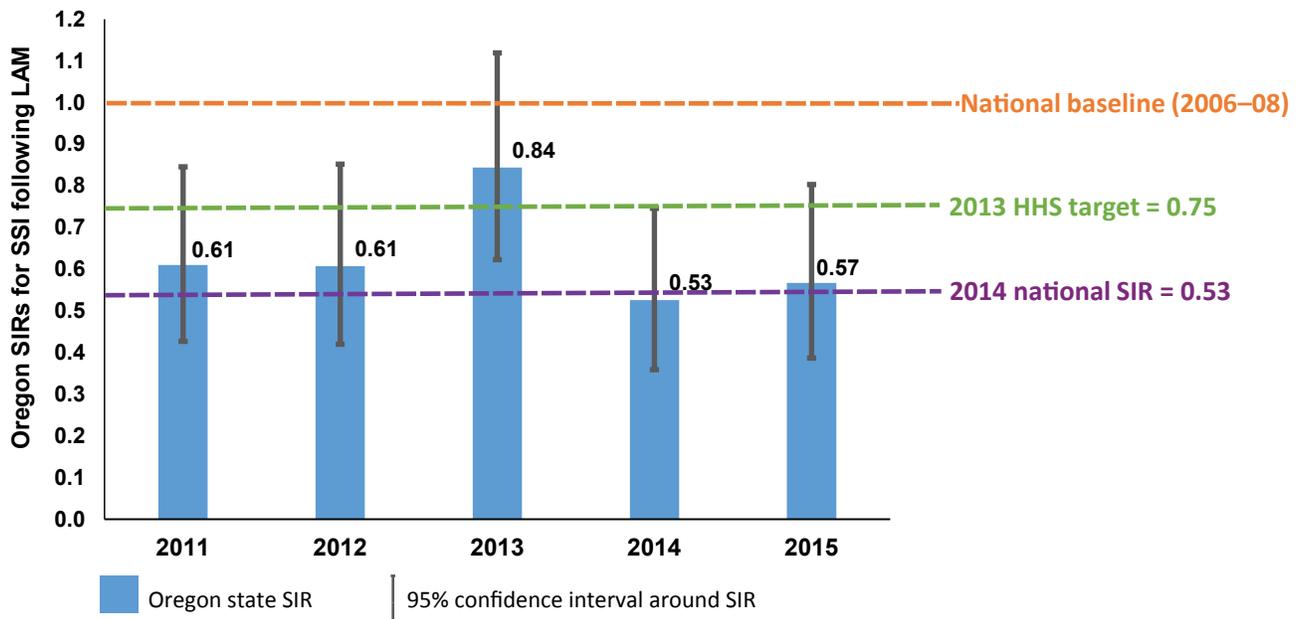
In Oregon, SSIs following CBGB surgeries have been reportable since 2009. In 2015, Oregon hospitals had an SIR of 0.19 (95% CI, 0.07–0.42); collectively, Oregon hospitals met the 2013 HHS target SIR of <0.75 and had a lower SIR than the nation in 2014.

Figure 9. Oregon standardized infection ratios (SIR) following CBGB surgeries: 2009–2015



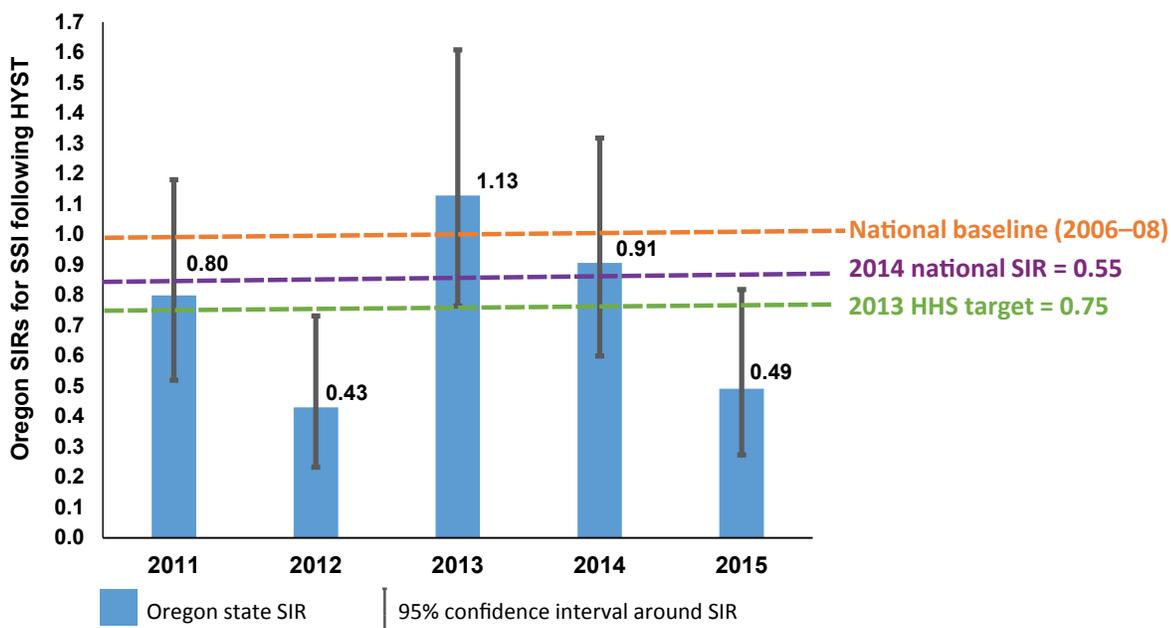
In Oregon, SSIs following laminectomy (LAM) surgeries have been reportable since 2011. In 2015, Oregon hospitals had an SIR of 0.57 (95% CI, 0.39–0.80); collectively, Oregon hospitals met the 2013 HHS target SIR of <0.75, but had a slightly higher SIR than the nation in 2014.

Figure 10. Oregon standardized infection ratios (SIR) following LAM surgeries: 2011–2015



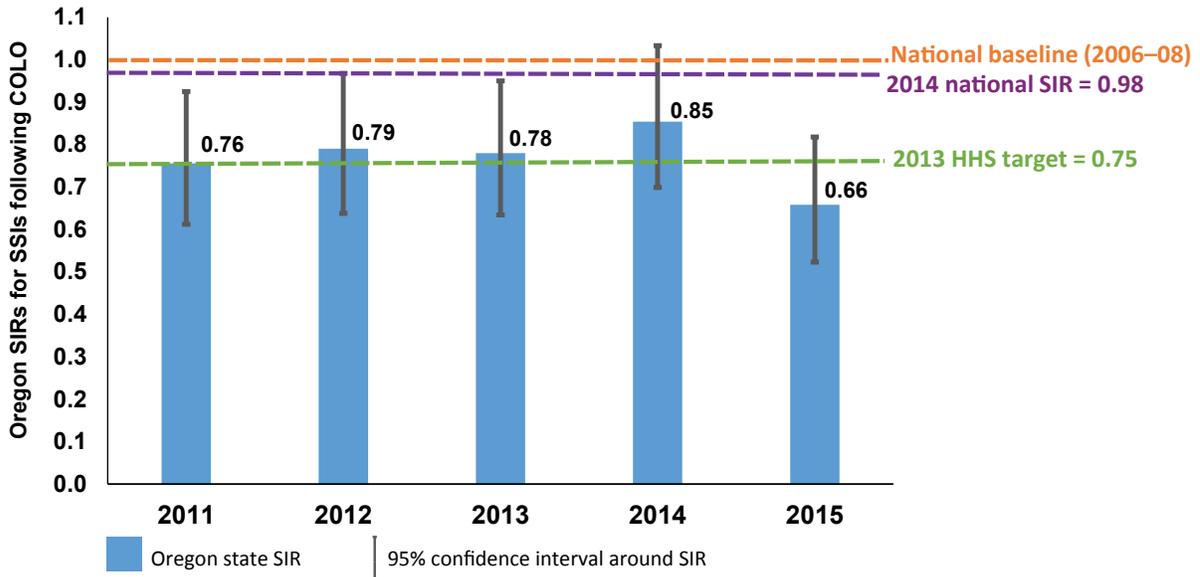
In Oregon, SSIs following abdominal hysterectomy (HYST) surgeries have been reportable since 2011. In 2015, Oregon hospitals had an SIR of 0.49 (95% CI, 0.27–0.82); collectively, Oregon hospitals met the 2013 HHS target SIR of <0.75 and had a lower SIR than the nation in 2014.

Figure 11. Oregon standardized infection ratios (SIR) following HYST surgeries: 2011–2015



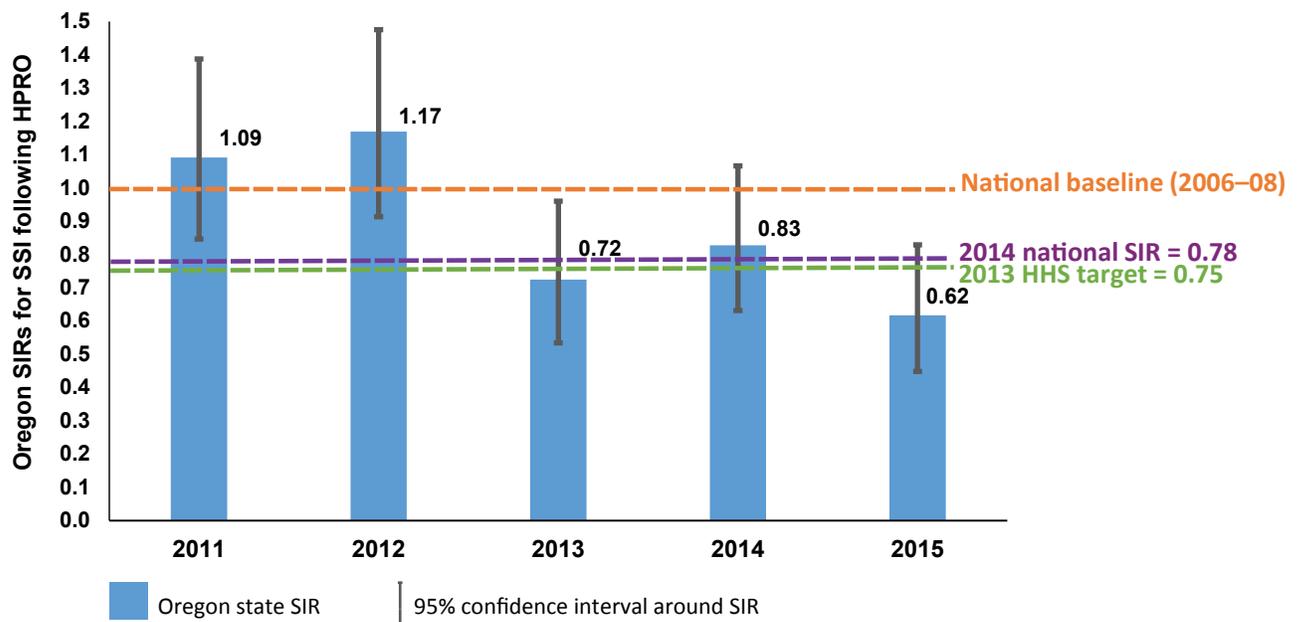
In Oregon, SSIs following colon (COLO) surgeries have been reportable since 2011. In 2015, Oregon hospitals had an SIR of 0.66 (95% CI, 0.52–0.82); collectively, Oregon hospitals met the 2013 HHS target SIR of <0.75 and had a lower SIR than the nation in 2014.

Figure 12. Oregon standardized infection ratios (SIR) following COLO surgeries: 2011–2015



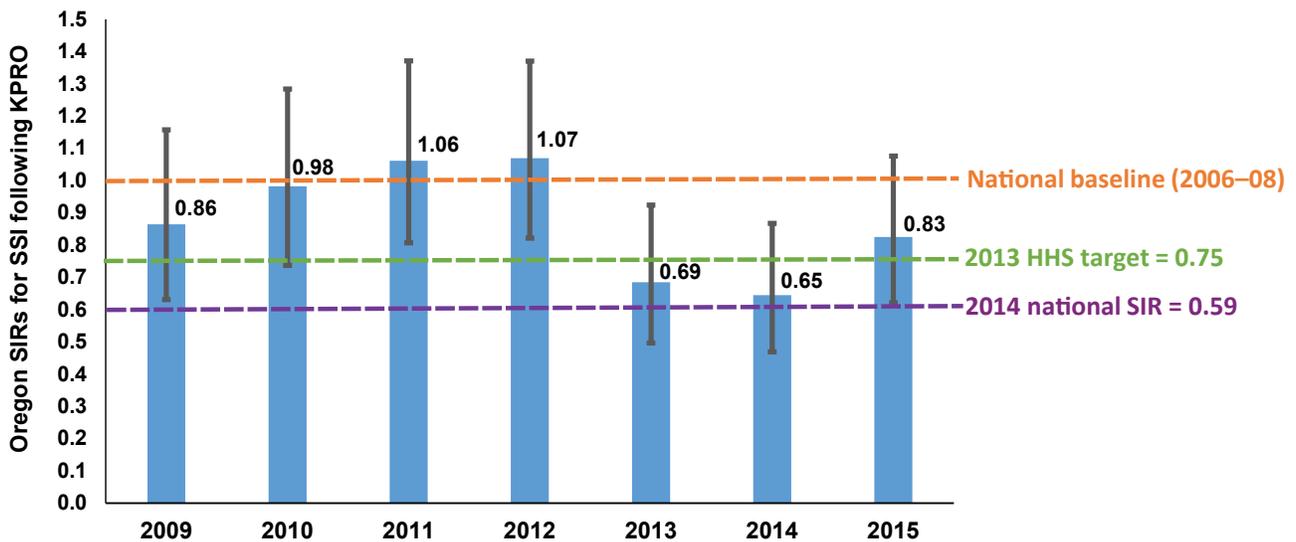
In Oregon, SSIs following hip replacement (HPRO) surgeries have been reportable since 2011. In 2015, Oregon hospitals had an SIR of 0.62 (95% CI, 0.45–0.83); collectively, Oregon hospitals met the 2013 HHS target SIR of <0.75 and had a lower SIR than the nation in 2014.

Figure 13. Oregon standardized infection ratios (SIR) following HPRO surgeries: 2011–2015



In Oregon, SSIs following knee replacement (KPRO) surgeries have been reportable since 2009. In 2015, Oregon hospitals had an SIR of 0.83 (95% CI, 0.621.08); collectively, Oregon hospitals did not meet the 2013 HHS target SIR of <0.75 and had a higher SIR than the nation in 2014.

Figure 14. Oregon standardized infection ratios (SIR) following KPRO surgeries: 2009–2015



CDC prevention resources: <http://www.cdc.gov/HAI/ssi/ssi.html>

What can providers do to prevent surgical site infections?

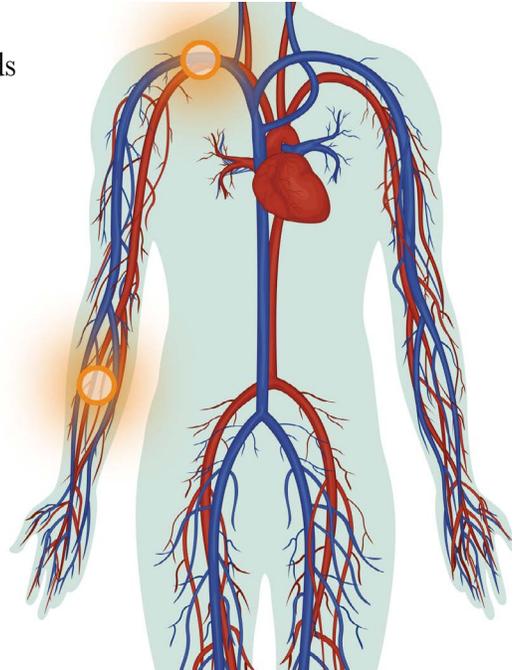
- ✓ Clean hands and arms up to elbows with an antiseptic agent before surgery
- ✓ Perform vigilant hand hygiene during post-operative care
- ✓ Remove hair immediately before surgery using electric clippers (not a razor)
- ✓ Wear sterile barriers during surgery and minimize entry and exit
- ✓ Provide appropriate antibiotics within 60 minutes before the surgery starts and discontinue within 24 hours after surgery

Bloodstream infections in freestanding outpatient dialysis facilities

Dialysis patients are at risk of getting bloodstream infections that can be spread from surfaces and hands to a patient's bloodstream through dialysis access points. Nationwide, about 370,000 people with end stage renal disease rely on hemodialysis. Oregon dialysis facilities have reported bloodstream and access-related bloodstream infections since January 2013.

Patients can receive hemodialysis through different access types: fistula, graft and central venous catheters (CVC, tunneled or non-tunneled), which affect infection risk. Overall, in 2015, Oregon had 60% fewer BSIs per 100 patient-months than the national average, and 58% fewer access-related BSIs than the national average.

For facility-specific dialysis event data and maps:
<http://www.healthoregon.org/hai-reports>



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Appendix I. Location mapping for reportable HAIs in Oregon

CLABSI NHSN locations	CLABSI state location
IN:ACUTE:CC:C	Adult ICU (medical cardiac critical care)
IN:ACUTE:CC:CT	Adult ICU (surgical cardiothoracic critical care)
IN:ACUTE:CC:M	Adult ICU (medical critical care)
IN:ACUTE:CC:MS	Adult ICU (medical/surgical critical care)
IN:ACUTE:CC:MS_PED	Pediatric ICU (pediatric medical/surgical critical Care)
IN:ACUTE:CC:NS	Adult ICU (neurosurgical critical care)
IN:ACUTE:CC:NURS	NICU (neonatal critical care (level III))
IN:ACUTE:CC:S	Adult ICU (surgical critical care)
IN:ACUTE:CC_STEP:NURS	NICU (neonatal critical care (level II/III))
IN:ACUTE:WARD:M	Adult medical ward
IN:ACUTE:WARD:MS	Adult medical/surgical ward
IN:ACUTE:WARD:MS_PED	Pediatric medical/surgical ward
IN:ACUTE:WARD:M_PED	Pediatric medical ward
IN:ACUTE:WARD:S	Adult surgical ward
IN:ACUTE:WARD:S_PED	Pediatric surgical ward
IN:ACUTE:WARD:REHAB	Adult inpatient rehab ward
IN:ACUTE:WARD: REHAB_PED	Pediatric inpatient rehab ward

Appendix II: Recommendations for patients and families to minimize HAI risk

What can patients and families do to prevent CLABSI in ICUs?

- Ask a health care provider why the central line is necessary, and how long it will be in place.
- Ask staff if they use a central line insertion checklist and how they safely access and maintain the central line.
- Follow staff instructions on how to keep your central line clean and dry.
- Remind all visitors, family, and health care workers to wash their hands — before and after they visit or provide care.
- Avoid touching the catheter and tubing, as much as possible. Do not let any visitors touch the catheter or tubing.
- Pay attention to the bandage and the area around the central line. Tell a health care worker right away if:
 - » The bandage comes off or gets wet or dirty
 - » The area around the catheter is sore or red
 - » The patient has a fever or chills.
- Maintain active lines of communication with health care workers. Speak up about any concerns so health care workers are reminded to follow the best infection prevention practices.
- For more information, see <http://www.cdc.gov/HAI/bsi/CLABSI-resources.html>.

What can patients and families do to prevent CAUTI in ICUs?

- Ask health care workers to clean their hands before inserting or accessing a catheter.
- Ask whether health care workers follow sterile technique for catheter insertion.

- Follow health care worker instructions to keep the urine catheter clean and prevent infection:
 - » Avoid twisting or kinking the catheter.
 - » Ensure the bag is lower than the bladder to prevent backflow and the catheter is secured to the leg to prevent pulling on the catheter.
- If catheter will remain in place after discharge, ask health care workers to explain everything you need to know about taking care of the catheter. Be sure you know who to contact if you have questions or problems after you get home.
- If you get bladder pain, fever or chills, tell your health care provider right away.
- Tell health care providers, including home health aides and therapists, if you have *C. diff.*
- For additional CDC resources, see: http://www.cdc.gov/hai/pdfs/uti/CA-UTI_tagged.pdf

What can patients and families do to prevent *C. difficile* infection and transmission?

- Take antibiotics exactly as prescribed by your doctor.
- Tell your doctor if you get diarrhea after taking antibiotics.
- Wash your hands with soap and water after using the bathroom.
- Try to use a separate bathroom if you have diarrhea, and be sure the bathroom is well cleaned if someone with diarrhea has used it.
- Disinfect your bathroom and soiled surfaces with bleach.
- For additional CDC resources, see: <http://www.cdc.gov/vitalsigns/HAI/StoppingCdifficile/index.html>

What can patients and families do to prevent MRSA infection and transmission?

- Make sure all health care workers clean their hands before and after caring for you.
- Clean your hands often, especially before and after changing a wound dressing or bandage.
- Keep wounds clean and covered; change bandages as instructed by a health care provider until healed.

- Avoid sharing personal items such as towels or razors.
- Take antibiotics exactly as prescribed by your doctor.
- Tell health care providers, including home health aides and therapists, if you have MRSA.
- For more information, see http://www.cdc.gov/mrsa/pdf/SHEA-mrsa_tagged.pdf.

What can patients and families do to prevent surgical site infections?

- **Before surgery:**
 - » If you smoke, talk to your doctor about how you can quit. Smokers get more infections.
 - » If you are overweight, check with your doctor on whether you should lose weight before your surgery. Patients who are overweight get more infections.
 - » If you are diabetic, talk to your doctor about stabilizing your diabetes before surgery.
 - » Ask if you should shower or bathe with an antibacterial cleanser before surgery.
 - » Do not shave before surgery since shaving irritates your skin, making it more likely to be infected.
- **At the time of surgery:**
 - » If a health care worker tries to shave your skin, ask why you need to be shaved.
 - » Talk to your surgeon or anesthesiologist if you have any concerns.
- **After surgery:**
 - » Ask your providers, family or friends to clean their hands before visiting you.
 - » Ask how to care for your wound before leaving the hospital, and who to contact with questions.
 - » Clean your hands before and after caring for your wound.
 - » If you experience pain, redness, wound drainage, fever or chills, call your doctor immediately.
- For more information, see http://www.cdc.gov/HAI/ssi/faq_ssi.html.

What can dialysis patients and families do to prevent bloodstream infections?

(from: <http://www.cdc.gov/dialysis/PDFs/Dialysis-Patient-PocketGuide.pdf>)

- Catheters have a higher risk of infection. Ask your doctor about getting a fistula or graft instead.
- Take care of your access site at home. If you have a catheter, do not get it wet; if you have a fistula or graft, avoid scratching or picking at the site.
- Wash your hands often, especially before dialysis treatment. If you have a fistula or graft, wash or cleanse the access site before treatment.
- Know the steps your health care providers should take when accessing your dialysis access site.
- Know the signs and symptoms of infection at your access site.
- Know what to do if you have any problem with your dialysis access site.
- For more information, see <http://www.cdc.gov/dialysis/patient/index.html>.



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