Healthcare-associated infections (HAIs) are infections patients can get while receiving medical treatment in a healthcare facility. Working toward the elimination of HAIs is a CDC priority. The standardized infection ratio (SIR) is a summary statistic that can be used to track HAI prevention progress over time; lower SIRs are better. The infection data are reported to CDC’s National Healthcare Safety Network (NHSN).

HAI data for nearly all U.S. hospitals are published on the Hospital Compare website. This report is based on 2014 data, published in 2016.

**CLABSIs**
CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS

When a tube is placed in a large vein and not put in correctly or kept clean, it can become a way for germs to enter the body and cause deadly infections in the blood.

- Michigan hospitals reported no significant change in CLABSIs between 2013 and 2014.
- Among the 61 hospitals in Michigan with enough data to calculate an SIR, 9% had an SIR significantly higher (worse) than 0.50, the value of the national SIR.

**CAUTIs**
CATHETER-ASSOCIATED URINARY TRACT INFECTIONS

When a urinary catheter is not put in correctly, not kept clean, or left in a patient for too long, germs can travel through the catheter and infect the bladder and kidneys.

- Michigan hospitals reported no significant change in CAUTIs between 2013 and 2014.
- Among the 77 hospitals in Michigan with enough data to calculate an SIR, 21% had an SIR significantly higher (worse) than 1.00, the value of the national SIR.

**MRSA Bacteremia**
LABORATORY IDENTIFIED HOSPITAL-ONSET BLOODSTREAM INFECTIONS

Methicillin-resistant *Staphylococcus aureus* (MRSA) is bacteria usually spread by contaminated hands. In a healthcare setting, such as a hospital, MRSA can cause serious bloodstream infections.

- Michigan hospitals reported no significant change in MRSA bacteremia between 2013 and 2014.
- Among the 55 hospitals in Michigan with enough data to calculate an SIR, 16% had an SIR significantly higher (worse) than 0.87, the value of the national SIR.

**SSIs**
SURGICAL SITE INFECTIONS

When germs get into an area where surgery is or was performed, patients can get a surgical site infection. Sometimes these infections involve only the skin. Other SSIs can involve tissues under the skin, organs, or implanted material.

- Michigan hospitals reported no significant change in SSIs related to abdominal hysterectomy surgery between 2013 and 2014.
- Among the 27 hospitals in Michigan with enough data to calculate an SIR, 15% had an SIR significantly higher (worse) than 0.83, the value of the national SIR.

- Michigan hospitals reported a significant increase in SSIs related to colon surgery between 2013 and 2014.
- Among the 57 hospitals in Michigan with enough data to calculate an SIR, 18% had an SIR significantly higher (worse) than 0.98, the value of the national SIR.

**C. difficile Infections**
LABORATORY IDENTIFIED HOSPITAL-ONSET *C. DIFFICILE* INFECTIONS

When a person takes antibiotics, good bacteria that protect against infection are destroyed for several months. During this time, patients can get sick from *Clostridium difficile* (*C. difficile*), bacteria that cause potentially deadly diarrhea, which can be spread in healthcare settings.

- Michigan hospitals reported no significant change in *C. difficile* infections between 2013 and 2014.
- Among the 95 hospitals in Michigan with enough data to calculate an SIR, 11% had an SIR significantly higher (worse) than 0.92, the value of the national SIR.
Healthcare-associated infection (HAI) data give healthcare facilities and public health agencies knowledge to design, implement, and evaluate HAI prevention efforts.

### Healthcare-associated infection (HAI) data

Healthcare facilities and public health agencies use healthcare-associated infection (HAI) data to design, implement, and evaluate HAI prevention efforts. These efforts include tracking progress over time and adjusting for factors that might cause infection rates to be higher or lower, such as hospital size, teaching status, the type of patients a hospital serves, and surgery and patient characteristics.

### Standardized Infection Ratio (SIR)

The **standardized infection ratio** (SIR) is a summary statistic that can be used to track HAI prevention progress over time; lower SIRs are better. The SIR for a facility or state is adjusted to account for factors that might cause infection rates to be higher or lower, such as hospital size, teaching status, the type of patients a hospital serves, and surgery and patient characteristics.

### Michigan Doing to Prevent Healthcare-Associated Infections

Prevention efforts to reduce specific HAIs:
- Central line-associated bloodstream infections
- Catheter-associated urinary tract infections
- Surgical site infections
- Multidrug-resistant infections (MRSA, *C. difficile*, CRE)
- Ventilator-associated events
- Long-term care facilities
- Hand hygiene
- Antibiotic stewardship
- Healthcare personnel influenza vaccination
- Targeted Assessment for Prevention (TAP) strategy

For prevention effort details, see glossary.

### Table: Michigan 2014 HAI Data

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>CLABSI</strong></td>
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<tr>
<td>Nat’l Baseline: 2008</td>
<td>98</td>
<td>↓ 6%</td>
<td>↓ 19%</td>
<td>↓ 60%</td>
<td>0.40</td>
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<td><strong>CAUTI</strong></td>
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<tr>
<td>Nat’l Baseline: 2009</td>
<td>102</td>
<td>↓ 6%</td>
<td>↑ 16%</td>
<td>↑ 15%</td>
<td>1.15</td>
<td>1.00</td>
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<td><strong>SSI, Abdominal Hysterectomy</strong></td>
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<tr>
<td>Nat’l Baseline: 2008</td>
<td>86</td>
<td>↓ 11%</td>
<td>↑ 32%</td>
<td>↑ 8%</td>
<td>1.08</td>
<td>0.83</td>
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<tr>
<td><strong>SSI, Colon Surgery</strong></td>
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<tr>
<td>Nat’l Baseline: 2008</td>
<td>93</td>
<td>↑ 16%</td>
<td>↑ 26%</td>
<td>↑ 22%</td>
<td>1.22</td>
<td>0.98</td>
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<tr>
<td><strong>MRSA Bacteremia</strong></td>
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</tr>
<tr>
<td>Nat’l Baseline: 2011</td>
<td>102</td>
<td>↑ &lt; 1%</td>
<td>↑ 12%</td>
<td>↓ 3%</td>
<td>0.97</td>
<td>0.87</td>
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<tr>
<td><strong>C. difficile Infections</strong></td>
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</tr>
<tr>
<td>Nat’l Baseline: 2011</td>
<td>101</td>
<td>↑ 2%</td>
<td>↓ 1%</td>
<td>↑ 9%</td>
<td>0.91</td>
<td>0.92</td>
</tr>
</tbody>
</table>

*The number of hospitals that reported to NHSN and are included in the SIR calculation. This number may vary across HAI types; for example, some hospitals do not use central lines or urinary catheters, or do not perform colon or abdominal hysterectomy surgeries.

‡Nat’l baseline time period varies by HAI type. See first column of this table for specifics.

For additional data points, refer to the technical data tables.

Learn how your hospital is performing: [www.medicare.gov/hospitalcompare](http://www.medicare.gov/hospitalcompare)

For additional information:
- NHSN: [www.cdc.gov/nhsn](http://www.cdc.gov/nhsn)
- HAIs and prevention activities in Michigan: [www.michigan.gov/hai](http://www.michigan.gov/hai)

**Legend**

- 2014 state SIR is significantly lower (better) than comparison group in column header
- Change in 2014 state SIR compared to group in column header is not statistically significant
- 2014 state SIR is significantly higher (worse) than comparison group in column header
- 2014 state SIR cannot be calculated

**WHAT IS THE STANDARDIZED INFECTION RATIO?**

The **standardized infection ratio** (SIR) is a summary statistic that can be used to track HAI prevention progress over time; lower SIRs are better. The SIR for a facility or state is adjusted to account for factors that might cause infection rates to be higher or lower, such as hospital size, teaching status, the type of patients a hospital serves, and surgery and patient characteristics.

**WHAT IS MICHIGAN DOING TO PREVENT HEALTHCARE-ASSOCIATED INFECTIONS?**

Prevention efforts to reduce specific HAIs:
- Central line-associated bloodstream infections
- Catheter-associated urinary tract infections
- Surgical site infections
- Multidrug-resistant infections (MRSA, *C. difficile*, CRE)
- Ventilator-associated events
- Long-term care facilities
- Hand hygiene
- Antibiotic stewardship
- Healthcare personnel influenza vaccination
- Targeted Assessment for Prevention (TAP) strategy

For prevention effort details, see glossary.