

# 2021 National and State HAI Prc Report

## Long-Term Acute Care Hospitals

### Introduction:

Welcome to the 2021 National and State HAI Progress Report using the 2015 baseline and risk adjustment calculations. Standardiz are used to describe different HAI types by comparing the number of observed infections to the number of predicted infections. The This report is created by CDC staff within the National Healthcare Safety Network (NHSN).

This workbook includes national and state-specific SIR data for long-term acute care hospitals (LTACHs).

### Scope of report:

HAI Type	LTACH	
	National	State
Central line-associated bloodstream infections (CLABSI) by locations	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Catheter-associated urinary tract infections (CAUTI) by locations	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ventilator-associated events (VAE) by locations	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Hospital-onset methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) bacteremia by facility-wide reporting	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Hospital-onset <i>Clostridioides difficile</i> (CDI) by facility-wide reporting	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Progress

Standardized infection ratios (SIRs)  
: 2021 SIRs are compared to previous year's SIRs.

## 2021 Annual National and State HAI Progress Report

### Long-term Acute Care Hospitals: Full series of tables for all national and state-specific data

**Table 1** National standardized infection ratios (SIRs) for the following HAIs from Long-term Acute Care Hospitals (LTACHs):  
1a. Central line-associated bloodstream infections (CLABSI)  
1a. Catheter-associated urinary tract infections (CAUTI)  
1a. Ventilator-associated events (VAE)  
1b. Hospital-onset methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia  
1b. Hospital-onset *Clostridioides difficile* (CDI)

**Table 2** State-specific SIRs for CLABSI from LTACHs for all locations combined

**Table 3** State-specific SIRs for CAUTI from LTACHs for all locations combined

**Table 4** State-specific SIRs for VAE from LTACHs

**Table 5** State-specific SIRs for hospital-onset MRSA bacteremia from LTACHs

**Table 6** State-specific SIRs for hospital-onset CDI from LTACHs

**Table 7** Changes in national SIRs for CLABSI, CAUTI, VAE, hospital-onset MRSA bacteremia, and hospital-onset CDI

**Table 8** Changes in state-specific SIRs between 2020 and 2021 from LTACHs  
8a. CLABSI, all locations combined  
8b. CAUTI, all locations combined  
8c. VAE, all locations combined  
8d. Hospital-onset MRSA bacteremia  
8e. Hospital-onset CDI

**Appendix A** Factors used in NHSN risk adjustment of the device-associated HAIs (CLABSI, CAUTI, VAE)

**Appendix B** Factors used in NHSN risk adjustment of the MRSA Bacteremia and CDI negative binomial

**Additional Resources**    [SIR Guide](#)  
                                  [Technical Appendix](#)  
                                  [HAI Progress Report Home Page](#)

**NOTE:** Tables contain data from Long-term Acute Care Hospitals (LTACHs); as such, they exclude

are Hospitals (LTACHs):

hospital-onset CDI between 2020 and 2021 from LTACHs

;) negative binomial regression models from LTACHs

regression models from LTACHs

data from Inpatient Rehabilitation Facilities (IRFs), Critical Access Hospitals (CAHs), and Acute Care Hospitals (AC

)(Hs).

<u>HAI and Patient Population</u>	<u>Reporting Hospitals</u>			<u>Standardize</u>	
	No. of Long Term Acute Care Hospitals Reporting <sup>1</sup>	Total Patient Days	Total Device Days	Observed Events	Predicted Events
<b>CLABSI, all<sup>4</sup></b>	390	4,672,028	1,661,511	1,524	2,051.130
<b>ICUs<sup>5</sup></b>	68	280,877	113,257	205	266.580
<b>Wards<sup>6</sup></b>	385	4,391,151	1,548,254	1,319	1,784.550
<b>CAUTI, all<sup>7</sup></b>	390	4,646,693	1,464,668	1,884	2,515.280
	68	280,513	104,196	121	247.260
	385	4,366,180	1,360,472	1,763	2,268.010
<b>VAE, all<sup>7</sup></b>	168	1,964,535	616,827	658	1,174.361
	39	122,956	60,459	153	151.680
	164	1,841,579	556,368	505	1,022.681

1. The number of reporting facilities included in the SIR calculation.

2. Percent of facilities with at least one predicted infection (event) that had an SIR significantly greater than or less than the nominal value of the nation.

3. Facility-specific percentiles are only calculated if at least 20 facilities had  $\geq 1.0$  predicted HAI in 2021. If a facility's predicted number of HAIs was <

4. Data from all ICUs and wards

5. Data from all ICUs; excludes wards. For VAE, pediatric locations are excluded from SIR since pediatric and neonatal locations are excluded from

6. Data from all wards. For VAE, pediatric locations are excluded from SIR since pediatric and neonatal locations are excluded from VAE surveillance

7. Data from all ICUs and wards. For VAE, pediatric locations are excluded from SIR since pediatric and neonatal locations are excluded from VAE surveillance. IVAC-plus includes those events identified as infection-related ventilator-associated condition (IVAC) and possible ventilator-associated pneumonia.

NOTE: Risk factors used in the calculation of the number of predicted device-associated infections are listed in Appendix A.

**Table 1a. National standardized infection ratios (SIRs) and facility-specific summary SIRs using HAI data reported to NHSN during 2021 by Central line-associated bloodstream infections (CLABSIs), catheter-associated urinary tract infections (CAUTIs) and ventilator-associated pneumonia (VAPs).**

<u>National Infection Ratio Data</u>			<u>Facility SIRs Compared to National SIR</u>							
SIR	Lower 95% Confidence Interval	Upper 95% Confidence Interval	No. Facilities with $\geq 1$ Predicted Infection (Event)	No. Facilities with SIR Significantly > National SIR		No. Facilities with SIR Significantly < National SIR		5%	10%	
				N	% <sup>2</sup>	N	%			
0.743	0.706	0.781	374	46	12%	56	15%	0.000	0.000	
0.769	0.669	0.880	60	9	15%	2	3%	0.000	0.000	
0.739	0.700	0.780	367	44	12%	49	13%	0.000	0.000	
0.749	0.716	0.783	381	44	12%	55	14%	0.000	0.000	
0.489	0.408	0.583	62	5	8%	0	0%	0.000	0.000	
0.777	0.742	0.814	374	41	11%	58	16%	0.000	0.000	
0.560	0.519	0.604	138	19	14%	32	23%	0.000	0.000	
1.009	0.858	1.178	34	6	18%	8	24%	0.000	0.000	
0.494	0.452	0.538	130	17	13%	26	20%	0.000	0.000	

National SIR for the given HAI type. This is only calculated if at least 10 facilities had  $\geq 1.0$  predicted HAI in 2021.

If a facility-specific SIR was neither calculated nor included in the distribution of facility-specific SIRs.

VAE surveillance.

e.

surveillance. Total VAE includes IVAC-plus events.

a (pVAP). IVAC-plus events are a subset of the total VAE, meaning the IVAC-plus events are included in the total VAE SIR as well.

facility type, HAI, and patient population:  
 or-associated events (VAEs)

**Percentile Distribution of Facility-specific SIRs<sup>3</sup>**

<b>Median</b>												
<b>15%</b>	<b>20%</b>	<b>25%</b>	<b>30%</b>	<b>35%</b>	<b>40%</b>	<b>45%</b>	<b>50%</b>	<b>55%</b>	<b>60%</b>	<b>65%</b>	<b>70%</b>	<b>75%</b>
0.000	0.000	0.000	0.146	0.236	0.313	0.378	0.451	0.531	0.648	0.777	0.914	1.075
0.000	0.000	0.000	0.000	0.227	0.273	0.314	0.364	0.426	0.525	0.638	0.992	1.249
0.000	0.000	0.000	0.130	0.216	0.299	0.373	0.437	0.523	0.647	0.788	0.915	1.074
0.000	0.132	0.221	0.291	0.357	0.406	0.477	0.550	0.671	0.769	0.875	1.019	1.108
0.000	0.000	0.000	0.000	0.000	0.000	0.207	0.294	0.304	0.460	0.543	0.718	0.869
0.000	0.114	0.209	0.287	0.354	0.405	0.476	0.587	0.651	0.772	0.888	1.025	1.137
0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.162	0.323	0.377	0.522	0.596	0.759
0.000	0.000	0.000	0.000	0.000	0.336	0.392	0.593	0.759	0.923	1.209	1.318	1.436
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.249	0.329	0.378	0.558	0.679



<b>80%</b>	<b>85%</b>	<b>90%</b>	<b>95%</b>
1.274	1.508	1.832	2.598
1.417	1.681	2.194	2.647
1.293	1.497	1.843	2.614
1.288	1.449	1.720	2.301
0.955	1.024	1.215	1.348
1.321	1.491	1.805	2.360
0.957	1.353	2.250	3.520
1.832	2.422	3.281	4.787
0.870	1.130	2.103	3.407

<u>HAI and Patient Population</u>	<u>Reporting Hospitals</u>				<b>Observed Hospital- onset Events<sup>4</sup></b>
	<b>Total Admissions<sup>2</sup></b>	<b>Total Patient Days<sup>3</sup></b>	<b>Community-onset events</b>		
<b>MRSA bacteremia, facility-wide<sup>4</sup></b>	194	74,439	2,527,622	32	264
<b>Hospital-onset <i>C. difficile</i>, facility-wide<sup>4</sup></b>	391	156,978	4,810,872	202	1,683

1. The number of reporting facilities included in the SIR calculation.

2. Total inpatient admissions reported from all inpatient locations.

3. Total patient days reported from all inpatient units.

4. Hospital-onset events are defined as those that were identified in an inpatient location on the 4th day (or later) after admission to the facility.

5. Calculated from a negative binomial regression model. Risk factors used in the calculation of the number of predicted events are listed in Appendix B.

6. Percent of facilities with at least one predicted event that had an SIR significantly greater than or less than the nominal value of the national SIR for the

7. Percentile distribution of facility-specific SIRs. This is only calculated if at least 20 facilities had  $\geq 1.0$  predicted HAI in 2021. If a facility's predicted number

**Table 1b. National standardized infection ratios (SIRs) and facility-specific summary SIRs using HAI data reported to NHSN during 2021 for hospital-onset methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia and hospital-onset *Clostridioides***

<b>Standardized Infection Ratio Data</b>				<b>Facility SIRs Compared to National SIR</b>					
<b>Predicted Hospital-onset Events<sup>5</sup></b>	<b>SIR</b>	<b>Lower 95% Confidence Interval</b>	<b>Upper 95% Confidence Interval</b>	<b>No. Facilities with ≥1 Predicted Event</b>	<b>No. Facilities with SIR Significantly &gt; National SIR</b>		<b>No. Facilities with SIR Significantly &lt; National SIR</b>		<b>5%</b>
					<b>N</b>	<b>%<sup>6</sup></b>	<b>N</b>	<b>%</b>	
395.315	0.668	0.591	0.752	142	16	11%	4	3%	0.000
4,718.571	0.357	0.340	0.374	388	51	13%	35	9%	0.000

<sup>5</sup> e given HAI type. This is only calculated if at least 10 facilities had ≥ 1.0 predicted HAI in 2021.

<sup>6</sup> nber of events was <1.0, a facility-specific SIR was neither calculated nor included in the distribution of facility-specific SIRs.

by facility type, HAI, and patient population:  
*Clostridium difficile* (CDI)

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**Percentile Distribution of Facility-specific SIRs<sup>7</sup>**

<b>Median</b>												
<b>10%</b>	<b>15%</b>	<b>20%</b>	<b>25%</b>	<b>30%</b>	<b>35%</b>	<b>40%</b>	<b>45%</b>	<b>50%</b>	<b>55%</b>	<b>60%</b>	<b>65%</b>	<b>70%</b>
0.000	0.000	0.000	0.000	0.000	0.000	0.081	0.287	0.395	0.513	0.633	0.755	0.944
0.000	0.000	0.055	0.104	0.134	0.159	0.205	0.236	0.287	0.323	0.356	0.403	0.447

<b>75%</b>	<b>80%</b>	<b>85%</b>	<b>90%</b>	<b>95%</b>
1.055	1.257	1.752	2.047	2.445
0.502	0.581	0.718	0.862	1.100

**Table 2. State-specific standardized infection rate  
NHSN Long-Term Acute Care Ho  
Central line-associated bloodstream ir**

State	State NHSN Mandate <sup>2</sup>	Any Validation <sup>3</sup>	No. of LTACHs Reporting <sup>4</sup>	No. of Infections			95% CI
				Observed	Predicted	SIR	Lower
Alabama	No	No	8	12	20.842	0.576	0.312
Alaska	Yes	No	1	.	.	.	.
Arizona			6	5	24.015	0.208	0.076
Arkansas			8	12	21.499	0.558	0.302
California			22	327	258.522	1.265	1.133
Colorado	Yes	No	6	6	23.920	0.251	0.102
Connecticut	Yes	No	2	.	.	.	.
D.C.	Yes	No	2	.	.	.	.
Delaware			1	.	.	.	.
Florida	No	Yes	27	103	172.488	0.597	0.490
Georgia			12	42	66.998	0.627	0.458
Guam			0	.	.	.	.
Hawaii	No	No	0	.	.	.	.
Idaho	No	No	2	.	.	.	.
Illinois	No	No	9	73	73.382	0.995	0.785
Indiana	Yes	No	9	26	53.862	0.483	0.322
Iowa	No	No	2	.	.	.	.
Kansas			3	.	.	.	.
Kentucky			9	19	37.567	0.506	0.314
Louisiana			28	53	86.126	0.615	0.466
Maine	No	No	0	.	.	.	.
Maryland	No	No	2	.	.	.	.
Massachusetts	Yes	No	11	63	54.401	1.158	0.897
Michigan	No	No	17	62	50.104	1.237	0.957
Minnesota	No	No	2	.	.	.	.
Mississippi	Yes	No	7	43	26.450	1.626	1.191
Missouri	No	No	10	33	39.890	0.827	0.579
Montana	No	No	1	.	.	.	.
Nebraska	No	No	4	.	.	.	.
Nevada			8	13	52.668	0.247	0.137
New Hampshire	No	No	0	.	.	.	.
New Jersey	No	No	12	42	48.483	0.866	0.632
New Mexico			3	.	.	.	.
New York			1	.	.	.	.
North Carolina	Yes	No	8	17	43.298	0.393	0.236
North Dakota	No	No	2	.	.	.	.
Ohio	No	No	25	44	120.458	0.365	0.269
Oklahoma			10	15	56.211	0.267	0.155
Oregon	Yes	No	1	.	.	.	.
Pennsylvania			17	36	62.993	0.571	0.406
Puerto Rico	No	No	0	.	.	.	.
Rhode Island	No	No	0	.	.	.	.

South Carolina	Yes	Yes	6	22	27.314	0.805	0.518
South Dakota	No	No	1	.	.	.	.
Tennessee	Yes	Yes	8	30	30.246	0.992	0.681
Texas			58	235	377.510	0.623	0.547
Utah	Yes	No	3	.	.	.	.
Vermont			0	.	.	.	.
Virgin Islands			0	.	.	.	.
Virginia	Yes	No	6	25	24.561	1.018	0.673
Washington	Yes	No	1	.	.	.	.
West Virginia	Yes	No	5	31	19.077	1.625	1.124
Wisconsin	No	Yes	4	.	.	.	.
Wyoming			0	.	.	.	.
<b>All US</b>			<b>390</b>	<b>1,524</b>	<b>2,051.130</b>	<b>0.743</b>	<b>0.706</b>

1. Includes data reported from all locations (i.e., adult and pediatric critical care units and wards) within LTACHs.
2. Yes indicates the presence of a state mandate to report CLABSI data from any location to NHSN at the beginning of 2021. No indicates that a state mandate did not exist during 2021.
3. Yes indicates that the state health department reported the completion of all of the following validation activities: assessment of missing or implausible values on at least six months of 2021 NHSN data prior to June 1, 2022, an audit of facility medical or laboratory records prior to June 1, 2022 (varies by state). Information on validation efforts was requested from all states, regardless of the presence of a reporting of a given HAI to the state health department have performed validation on NHSN data that is voluntary.
4. The number of LTACHs that reported 2021 CLABSI data and are included in the SIR calculation. SIRs and accreditation from at least one location in 2021.
5. Percent of facilities with  $\geq 1.0$  predicted CLABSI that had an SIR significantly greater or less than the nominal value of  $\geq 1.0$  predicted CLABSI in 2021.
6. Facility-specific key percentiles were only calculated if at least 20 facilities had  $\geq 1.0$  predicted CLABSI in 2021. Facilities not included in the distribution of facility-specific SIRs.





1.199	6	.	.	.	.	.	.
.	.	.	.	.	.	.	.
1.398	8	.	.	.	.	.	.
0.706	57	11%	19%	0.000	0.000	0.316	0.746
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
1.480	5	.	.	.	.	.	.
.	.	.	.	.	.	.	.
2.278	5	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
<b>0.781</b>	<b>374</b>	<b>12%</b>	<b>15%</b>	<b>0.000</b>	<b>0.000</b>	<b>0.451</b>	<b>1.075</b>

ing of 2021. M indicates midyear implementation of a mandate.

: state health department had access to 2021 NHSN data, state health department performed an  
nd state health department contacted identified facilities.

2 to confirm proper case ascertainment (although intensity of auditing activities  
legislative mandate for the particular HAI type. Some states without mandatory  
ily shared with them by facilities in their jurisdiction.

ompanying statistics are only calculated for states in which at least 5 LTACHs reported CLABSI data

lue of the 2021 national LTACH CLABSI SIR of 0.743. This is only calculated if at least 10 facilities had

If a facility's predicted number of CLABSI was <1.0, a facility-specific SIR was neither calculated

tiles<sup>6</sup>

90%

3.094

1.295

2.406

1.040

1.495

1.832

**Table 3. State-specific standardized infection rate  
NHSN Long-Term Acute Care Ho  
Catheter-associated urinary tract in**

State			No. of Infections	95% CI			
	Observed	Predicted		SIR	Lower		
Alabama	No	No	8	21	34.277	0.613	0.389
Alaska	Yes	No	1	.	.	.	.
Arizona			6	17	23.970	0.709	0.427
Arkansas			8	20	36.301	0.551	0.346
California			22	303	350.139	0.865	0.772
Colorado	Yes	No	6	59	49.166	1.200	0.922
Connecticut	Yes	No	2	.	.	.	.
D.C.	Yes	No	2	.	.	.	.
Delaware			1	.	.	.	.
Florida	No	Yes	27	117	207.114	0.565	0.469
Georgia			12	95	95.112	0.999	0.813
Guam			0	.	.	.	.
Hawaii	No	No	0	.	.	.	.
Idaho	No	No	2	.	.	.	.
Illinois	No	No	9	69	83.563	0.826	0.647
Indiana	Yes	No	9	40	51.151	0.782	0.566
Iowa	No	No	2	.	.	.	.
Kansas			3	.	.	.	.
Kentucky			9	41	38.634	1.061	0.772
Louisiana			28	60	123.893	0.484	0.373
Maine	No	No	0	.	.	.	.
Maryland	No	No	2	.	.	.	.
Massachusetts	Yes	No	11	88	65.972	1.334	1.076
Michigan	No	No	17	68	72.401	0.939	0.735
Minnesota	No	No	2	.	.	.	.
Mississippi	Yes	No	7	32	35.256	0.908	0.631
Missouri	No	No	10	48	53.742	0.893	0.666
Montana	No	No	1	.	.	.	.
Nebraska	No	No	4	.	.	.	.
Nevada			8	46	50.763	0.906	0.671
New Hampshire	No	No	0	.	.	.	.
New Jersey	No	No	12	32	60.409	0.530	0.369
New Mexico			3	.	.	.	.
New York			1	.	.	.	.
North Carolina	Yes	No	8	23	51.817	0.444	0.288
North Dakota	No	No	2	.	.	.	.
Ohio	No	No	25	97	121.759	0.797	0.650
Oklahoma			10	29	63.449	0.457	0.312
Oregon	Yes	No	1	.	.	.	.
Pennsylvania			17	54	69.507	0.777	0.589
Puerto Rico	Yes	No	0	.	.	.	.
Rhode Island	No	No	0	.	.	.	.

South Carolina	No	No	6	36	25.850	1.393	0.990
South Dakota	No	No	1	.	.	.	.
Tennessee	Yes	Yes	8	25	47.298	0.529	0.350
Texas			58	225	418.029	0.538	0.471
Utah	Yes	No	3	.	.	.	.
Vermont			0	.	.	.	.
Virgin Islands			0	.	.	.	.
Virginia	Yes	No	6	32	39.940	0.801	0.557
Washington	No	No	1	.	.	.	.
West Virginia	Yes	No	5	25	36.242	0.690	0.456
Wisconsin	No	Yes	4	.	.	.	.
Wyoming			0	.	.	.	.
<b>All US</b>			<b>390</b>	<b>1,884</b>	<b>2,515.280</b>	<b>0.749</b>	<b>0.716</b>

1. Includes data reported from all locations (i.e., adult and pediatric critical care units and wards) within LTACHs.
2. Yes indicates the presence of a state mandate to report CAUTI data from any location to NHSN at the beginning of 2021. No indicates that a state mandate did not exist during 2021.
3. Yes indicates that the state health department reported the completion of all of the following validation activities: assessment of missing or implausible values on at least six months of 2021 NHSN data prior to June 1, 2022, an audit of facility medical or laboratory records prior to June 1, 2022, and a review of facility reporting of a given HAI to the state health department (varies by state). Information on validation efforts was requested from all states, regardless of the presence of a reporting of a given HAI to the state health department have performed validation on NHSN data that is voluntary.
4. The number of LTACHs that reported 2021 CAUTI data and are included in the SIR calculation. SIRs and account for facilities from at least one location in 2021.
5. Percent of facilities with  $\geq 1.0$  predicted CAUTI that had an SIR significantly greater or less than the nominal value of  $\geq 1.0$  predicted CAUTI in 2021.
6. Facility-specific key percentiles were only calculated if at least 20 facilities had  $\geq 1.0$  predicted CAUTI in 2021. If not included in the distribution of facility-specific SIRs.



1.907	6	.	.	.	.	.	.
.	.	.	.	.	.	.	.
0.769	8	.	.	.	.	.	.
0.612	58	12%	24%	0.000	0.000	0.250	0.740
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
1.118	6	.	.	.	.	.	.
.	.	.	.	.	.	.	.
1.003	5	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
<b>0.783</b>	<b>381</b>	<b>12%</b>	<b>14%</b>	<b>0.000</b>	<b>0.221</b>	<b>0.550</b>	<b>1.108</b>

g of 2021. M indicates midyear implementation of a mandate.

: state health department had access to 2021 NHSN data, state health department performed an  
nd state health department contacted identified facilities.

2 to confirm proper case ascertainment (although intensity of auditing activities  
legislative mandate for the particular HAI type. Some states without mandatory  
ily shared with them by facilities in their jurisdiction.

mpanying statistics are only calculated for states in which at least 5 LTACHs reported CAUTI data

ie of the 2021 national LTACH CAUTI SIR of 0.749. This is only calculated if at least 10 facilities had

: a facility's predicted number of CAUTI was <1.0, a facility-specific SIR was neither calculated

90%

1.162

1.646

1.286

1.554



1.562


**1.720**

**Table 4. State-specific standardized  
NHSN Long-Term  
Ventilator-ass**

State				No. of Events		
	Observed	Predicted	SIR	Observed	Predicted	SIR
Alabama	No	No	6	0	14.373	0.000
Alaska	Yes	No	0	.	.	.
Arizona			1	.	.	.
Arkansas			2	.	.	.
California			17	118	276.193	0.427
Colorado	No	No	2	.	.	.
Connecticut	No	No	0	.	.	.
D.C.	No	No	2	.	.	.
Delaware			0	.	.	.
Florida	No	Yes	11	48	89.658	0.535
Georgia			6	14	30.500	0.459
Guam			0	.	.	.
Hawaii	No	No	0	.	.	.
Idaho	No	No	0	.	.	.
Illinois	No	No	8	78	77.405	1.008
Indiana	No	No	3	.	.	.
Iowa	No	No	0	.	.	.
Kansas			0	.	.	.
Kentucky			5	38	22.656	1.677
Louisiana			4	.	.	.
Maine	No	No	0	.	.	.
Maryland	No	No	1	.	.	.
Massachusetts	No	No	6	15	56.359	0.266
Michigan	No	No	4	.	.	.
Minnesota	No	No	0	.	.	.
Mississippi	No	No	2	.	.	.
Missouri	No	No	7	51	22.842	2.233
Montana	No	No	0	.	.	.
Nebraska	No	No	0	.	.	.
Nevada			4	.	.	.
New Hampshire	No	No	0	.	.	.
New Jersey	No	No	9	6	51.916	0.116
New Mexico			1	.	.	.
New York			1	.	.	.
North Carolina	No	No	3	.	.	.
North Dakota	No	No	0	.	.	.
Ohio	No	No	3	.	.	.
Oklahoma			1	.	.	.
Oregon	No	No	0	.	.	.
Pennsylvania			16	47	76.534	0.614
Puerto Rico	No	No	0	.	.	.
Rhode Island	No	No	0	.	.	.

South Carolina	Yes	Yes	6	17	24.444	0.695
South Dakota	No	No	0	.	.	.
Tennessee	Yes	Yes	8	24	55.139	0.435
Texas			23	96	87.590	1.096
Utah	No	No	1	.	.	.
Vermont			0	.	.	.
Virgin Islands			0	.	.	.
Virginia	No	No	1	.	.	.
Washington	No	No	1	.	.	.
West Virginia	Yes	No	3	.	.	.
Wisconsin	No	Yes	0	.	.	.
Wyoming			0	.	.	.
<b>All US</b>			<b>168</b>	<b>658</b>	<b>1,174.361</b>	<b>0.560</b>

1. Includes data reported from all locations (i.e., adult critical care units and wards) within LTACHs.
2. Yes indicates the presence of a state mandate to report VAE data from any location to NHSN at the time of the data collection. No indicates that a state mandate did not exist during 2021.
3. Yes indicates that the state health department reported the completion of all of the following validation efforts: assessment of missing or implausible values on at least six months of 2021 NHSN data prior to July 2021; Yes indicates that the state also conducted an audit of facility medical or laboratory records prior to July 2021 (varies by state). Information on validation efforts was requested from all states, regardless of whether the state reported a given HAI to the state health department have performed validation on NHSN data prior to July 2021.
4. The number of LTACHs that reported 2021 VAE data and are included in the SIR calculation. SIR is calculated from at least one location in 2021.
5. Percent of facilities with  $\geq 1.0$  predicted VAE that had an SIR significantly greater or less than the predicted VAE  $\geq 1.0$  predicted VAE in 2021.
6. Facility-specific key percentiles were only calculated if at least 20 facilities had  $\geq 1.0$  predicted VAE and were not included in the distribution of facility-specific SIRs.

**d infection ratios (SIRs) and facility-specific SIR summary measures,  
 Acute Care Hospitals (LTACHs) reporting during 2021  
 sociated events (VAEs) in LTACHs, all locations<sup>1</sup>**

<u>95% CI for SIR</u>		<u>Facility-specific SIRs</u>				
<b>Lower</b>	<b>Upper</b>	<b>No. of facs with at least 1 predicted VAE</b>			<b>10%</b>	<b>25%</b>
.	0.208	4	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.355	0.510	17	12%	41%	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.399	0.704	10	10%	50%	.	.
0.261	0.752	6	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.802	1.251	8	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
1.204	2.278	5	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.155	0.429	4	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
1.680	2.912	6	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.047	0.240	9	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.456	0.810	14	14%	7%	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.

0.419	1.091	6	.	.	.	.
0.285	0.638	8	.	.	.	.
0.893	1.332	16	19%	13%	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
<b>0.519</b>	<b>0.604</b>	<b>138</b>	<b>14%</b>	<b>23%</b>	<b>0.000</b>	<b>0.000</b>

the beginning of 2021. M indicates midyear implementation of a mandate.

auditing activities: state health department had access to 2021 NHSN data, state health department performed audits from June 1, 2022, and state health department contacted identified facilities.

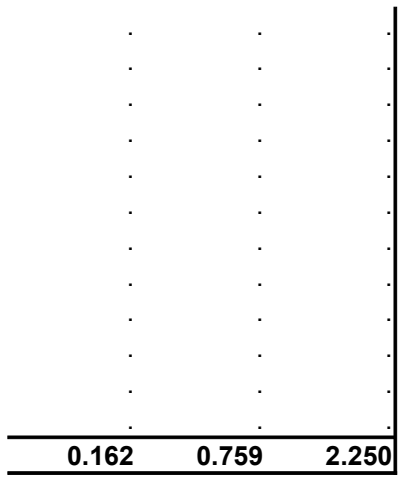
to June 1, 2022 to confirm proper case ascertainment (although intensity of auditing activities varied by state due to the presence of a legislative mandate for the particular HAI type. Some states without mandatory HAI reporting that is voluntarily shared with them by facilities in their jurisdiction.

Facility-specific SIRs and accompanying statistics are only calculated for states in which at least 5 LTACHs reported VAE data.

Facility-specific SIRs are calculated as the ratio of the facility's VAE SIR to the nominal value of the 2021 national LTACH VAE SIR of 0.560. This is only calculated if at least 10 facilities reported VAE data in 2021.

If a facility's predicted number of VAE was <1.0, a facility-specific SIR was neither calculated nor reported.





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**Table 5. State-specific standardized infection rat  
NHSN Long-Term Acute Care Ho**

State			Hospital-onset methicillin-resistant <i>Staphy</i>				
			No. of Events		95% CI		
			Observed	Predicted	SIR	Lower	
Alabama	No	No	6	7	8.556	0.818	0.358
Alaska	Yes	No	0	.	.	.	.
Arizona			1	.	.	.	.
Arkansas			2	.	.	.	.
California			22	80	74.304	1.077	0.859
Colorado	No	No	4	.	.	.	.
Connecticut	No	No	0	.	.	.	.
D.C.	Yes	No	0	.	.	.	.
Delaware			1	.	.	.	.
Florida	No	Yes	11	23	22.943	1.002	0.651
Georgia			6	10	14.811	0.675	0.343
Guam			0	.	.	.	.
Hawaii	No	No	1	.	.	.	.
Idaho	No	No	1	.	.	.	.
Illinois	Yes	No	9	16	25.226	0.634	0.375
Indiana	No	No	5	6	6.672	0.899	0.364
Iowa	No	No	0	.	.	.	.
Kansas			0	.	.	.	.
Kentucky			6	7	8.834	0.792	0.347
Louisiana			5	0	6.381	0.000	.
Maine	No	No	0	.	.	.	.
Maryland	No	No	2	.	.	.	.
Massachusetts	Yes	No	8	8	32.866	0.243	0.113
Michigan	No	No	4	.	.	.	.
Minnesota	No	No	1	.	.	.	.
Mississippi	No	No	2	.	.	.	.
Missouri	No	No	7	2	9.404	0.213	0.036
Montana	No	No	0	.	.	.	.
Nebraska	No	No	2	.	.	.	.
Nevada			5	1	5.576	0.179	0.009
New Hampshire	No	No	0	.	.	.	.
New Jersey	No	No	6	9	14.283	0.630	0.307
New Mexico			1	.	.	.	.
New York			1	.	.	.	.
North Carolina	No	No	3	.	.	.	.
North Dakota	No	No	2	.	.	.	.
Ohio	No	No	5	10	6.956	1.438	0.730
Oklahoma			2	.	.	.	.
Oregon	Yes	No	1	.	.	.	.
Pennsylvania			16	10	25.048	0.399	0.203
Puerto Rico	Yes	No	0	.	.	.	.
Rhode Island	No	No	0	.	.	.	.



South Carolina	Yes	Yes	6	6	12.270	0.489	0.198
South Dakota	No	No	0	.	.	.	.
Tennessee	Yes	Yes	8	14	19.841	0.706	0.402
Texas			25	30	39.807	0.754	0.518
Utah	Yes	No	1	.	.	.	.
Vermont			0	.	.	.	.
Virgin Islands			0	.	.	.	.
Virginia	No	No	2	.	.	.	.
Washington	No	No	1	.	.	.	.
West Virginia	Yes	No	2	.	.	.	.
Wisconsin	No	Yes	1	.	.	.	.
Wyoming			0	.	.	.	.
<b>All US</b>			<b>194</b>	<b>264</b>	<b>395.315</b>	<b>0.668</b>	<b>0.591</b>

1. Includes data reported from all locations (i.e., adult and pediatric critical care units and wards) within LTACHs.
2. Yes indicates the presence of a state mandate to report MRSA bacteremia data from any location to NHSN at the time of data collection. No indicates that a state mandate did not exist during 2021.
3. Yes indicates that the state health department reported the completion of all of the following validation activities: assessment of missing or implausible values on at least six months of 2021 NHSN data prior to June 1, 2022, an audit of facility medical or laboratory records prior to June 1, 2022, and a review of facility reporting of a given HAI to the state health department (validation efforts vary by state). Information on validation efforts was requested from all states, regardless of the presence of a reporting of a given HAI to the state health department have performed validation on NHSN data that is voluntary.
4. The number of LTACHs that reported 2021 MRSA bacteremia data and are included in the SIR calculation. SIR is calculated for facilities that reported MRSA bacteremia data from at least one location in 2021.
5. Percent of facilities with  $\geq 1.0$  predicted MRSA bacteremia that had an SIR significantly greater or less than the  $\geq 1.0$  predicted MRSA bacteremia in 2021.
6. Facility-specific key percentiles were only calculated if at least 20 facilities had  $\geq 1.0$  predicted MRSA bacteremia. If fewer than 20 facilities had  $\geq 1.0$  predicted MRSA bacteremia, the key percentiles were neither calculated nor included in the distribution of facility-specific SIRs.

ios (SIRs) and facility-specific SIR summary measures,  
ospitals (LTACHs) reporting during 2021

*lococcus aureus* (MRSA) bacteremia, facility-wide<sup>1</sup>

for SIR	Facility-specific SIRs				10%	25%	75%
	Upper	No. of facs with at least 1 predicted MRSA					
1.618	5	.	.	.	.	.	
.	.	.	.	.	.	.	
.	.	.	.	.	.	.	
1.333	21	38%	5%	0.019	0.257	0.908	
.	.	.	.	.	.	.	
.	.	.	.	.	.	.	
1.480	8	.	.	.	.	.	
1.203	5	.	.	.	.	.	
.	.	.	.	.	.	.	
1.008	8	.	.	.	.	.	
1.870	3	.	.	.	.	.	
.	.	.	.	.	.	.	
1.567	4	.	.	.	.	.	
0.469	1	.	.	.	.	.	
.	.	.	.	.	.	.	
0.462	6	.	.	.	.	.	
.	.	.	.	.	.	.	
.	.	.	.	.	.	.	
0.703	5	.	.	.	.	.	
.	.	.	.	.	.	.	
0.884	2	.	.	.	.	.	
.	.	.	.	.	.	.	
1.156	6	.	.	.	.	.	
.	.	.	.	.	.	.	
.	.	.	.	.	.	.	
2.563	3	.	.	.	.	.	
.	.	.	.	.	.	.	
0.712	12	0%	0%	.	.	.	
.	.	.	.	.	.	.	
.	.	.	.	.	.	.	

1.017	5	.	.	.	.	.	.
.	.	.	.	.	.	.	.
1.156	7	.	.	.	.	.	.
1.062	20	10%	0%	0.000	0.000	0.525	1.086
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
<b>0.752</b>	<b>142</b>	<b>11%</b>	<b>3%</b>	<b>0.000</b>	<b>0.000</b>	<b>0.395</b>	<b>1.055</b>

the beginning of 2021. M indicates midyear implementation of a mandate.

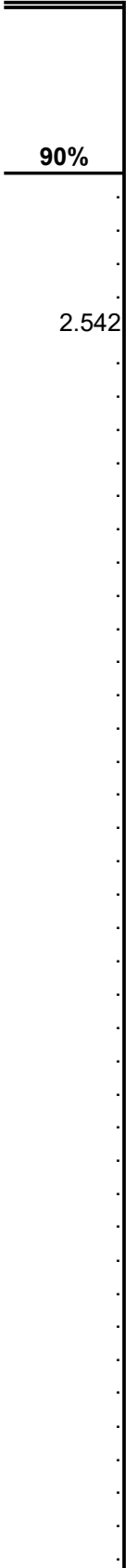
If state health department had access to 2021 NHSN data, state health department performed an audit and state health department contacted identified facilities.

2 to confirm proper case ascertainment (although intensity of auditing activities may vary by state) and to confirm legislative mandate for the particular HAI type. Some states without mandatory reporting still shared with them by facilities in their jurisdiction.

Facility-level data and accompanying statistics are only calculated for states in which at least 5 LTACHs reported data.

Nominal value of the 2021 national LTACH MRSA SIR of 0.668. This is only calculated if at least 10 facilities have reported data.

Facility-specific SIR in 2021. If a facility's predicted number of MRSA bacteremia was <1.0, a facility-specific SIR was calculated as 1.0.



2.449

2.047

d

**Table 6. State-specific standardized infection rat  
NHSN Long-Term Acute Care Ho**

**Hospital-onset *Clostridio***

State				No. of Events		SIR	95% CI
	Observed	Predicted		Lower			
Alabama	No	No	8	22	52.062	0.423	0.272
Alaska	Yes	No	1	.	.	.	.
Arizona			6	39	61.737	0.632	0.455
Arkansas			8	21	51.500	0.408	0.259
California			22	266	486.381	0.547	0.484
Colorado	Yes	No	6	51	94.008	0.543	0.408
Connecticut	Yes	No	2	.	.	.	.
D.C.	Yes	No	2	.	.	.	.
Delaware			1	.	.	.	.
Florida	No	Yes	27	140	415.071	0.337	0.285
Georgia			12	30	153.072	0.196	0.135
Guam			0	.	.	.	.
Hawaii	No	No	1	.	.	.	.
Idaho	No	No	2	.	.	.	.
Illinois	Yes	No	9	58	169.023	0.343	0.263
Indiana	Yes	No	9	28	85.474	0.328	0.222
Iowa	No	No	2	.	.	.	.
Kansas			3	.	.	.	.
Kentucky			9	32	77.967	0.410	0.286
Louisiana			27	52	199.530	0.261	0.197
Maine	No	No	0	.	.	.	.
Maryland	No	No	2	.	.	.	.
Massachusetts	Yes	No	11	95	311.139	0.305	0.248
Michigan	No	No	17	55	149.525	0.368	0.280
Minnesota	No	No	2	.	.	.	.
Mississippi	Yes	No	7	10	72.660	0.138	0.070
Missouri	No	No	10	19	91.152	0.208	0.129
Montana	No	No	1	.	.	.	.
Nebraska	No	No	4	.	.	.	.
Nevada			8	36	90.699	0.397	0.282
New Hampshire	No	No	0	.	.	.	.
New Jersey	No	No	12	36	137.065	0.263	0.187
New Mexico			3	.	.	.	.
New York			2	.	.	.	.
North Carolina	Yes	No	8	35	92.210	0.380	0.269
North Dakota	No	No	2	.	.	.	.
Ohio	No	No	25	89	251.913	0.353	0.285
Oklahoma			10	28	96.091	0.291	0.197
Oregon	Yes	No	1	.	.	.	.
Pennsylvania			17	58	145.284	0.399	0.306
Puerto Rico	Yes	No	0	.	.	.	.
Rhode Island	No	No	0	.	.	.	.

South Carolina	Yes	Yes	6	27	61.084	0.442	0.297
South Dakota	No	No	1	.	.	.	.
Tennessee	Yes	Yes	8	25	90.551	0.276	0.183
Texas			58	213	573.332	0.372	0.324
Utah	Yes	No	3	.	.	.	.
Vermont			0	.	.	.	.
Virgin Islands			0	.	.	.	.
Virginia	Yes	No	6	18	84.856	0.212	0.130
Washington	No	No	1	.	.	.	.
West Virginia	Yes	No	5	32	34.630	0.924	0.643
Wisconsin	No	Yes	4	.	.	.	.
Wyoming			0	.	.	.	.
<b>All US</b>			<b>391</b>	<b>1,683</b>	<b>4,718.571</b>	<b>0.357</b>	<b>0.340</b>

1. Includes data reported from all locations (i.e., adult and pediatric critical care units and wards) within LTACHs.
2. Yes indicates the presence of a state mandate to report CDI data from any location to NHSN at the beginning of 2021. No indicates that a state mandate did not exist during 2021.
3. Yes indicates that the state health department reported the completion of all of the following validation activities: assessment of missing or implausible values on at least six months of 2021 NHSN data prior to June 1, 2022, and an audit of facility medical or laboratory records prior to June 1, 2022. (Information on validation efforts varies by state). Information on validation efforts was requested from all states, regardless of the presence of a reporting of a given HAI to the state health department have performed validation on NHSN data that is voluntary.
4. The number of LTACHs that reported 2021 CDI data and are included in the SIR calculation. SIRs and accompanying data were reported from at least one location in 2021.
5. Percent of facilities with  $\geq 1.0$  predicted CDI that had an SIR significantly greater or less than the nominal value of  $\geq 1.0$  predicted CDI in 2021.
6. Facility-specific key percentiles were only calculated if at least 20 facilities had  $\geq 1.0$  predicted CDI in 2021. If a facility was not included in the distribution of facility-specific SIRs.





0.634	6	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
0.402	8	.	.	.	.	.	.	.
0.424	58	12%	9%	0.000	0.041	0.232	0.466	.
.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
0.329	6	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
1.289	5	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
<b>0.374</b>	<b>388</b>	<b>13%</b>	<b>9%</b>	<b>0.000</b>	<b>0.104</b>	<b>0.287</b>	<b>0.502</b>	.

f 2021. M indicates midyear implementation of a mandate.

: state health department had access to 2021 NHSN data, state health department performed an  
 and state health department contacted identified facilities.

2 to confirm proper case ascertainment (although intensity of auditing activities

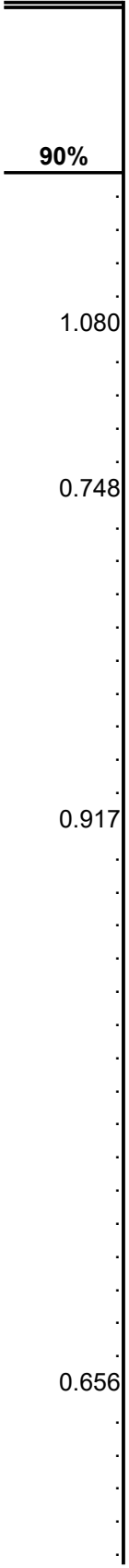
legislative mandate for the particular HAI type. Some states without mandatory

ily shared with them by facilities in their jurisdiction.

anying statistics are only calculated for states in which at least 5 LTACHs reported CDI data

of the 2021 national LTACH CDI SIR of 0.357. This is only calculated if at least 10 facilities had

facility's predicted number of CDI was <1.0, a facility-specific SIR was neither calculated



0.850

0.862

**Table 7. Changes in national standardized infection ratios (SIRs) using HAI data reported from all NHSN Long-Term Central line-associated bloodstream infections (CLABSIs), catheter-associated urinary tract methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia and *Clostridi***

HAI and Patient Population	2020 SIR	2021 SIR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
CLABSI, all locations <sup>1</sup>	0.707	0.743	5%	No change	0.1714
CAUTI, all locations <sup>1</sup>	0.738	0.749	1%	No change	0.6550
VAE, all locations	0.548	0.560	2%	No change	0.7017
Hospital-onset MRSA bacteremia, facility-wide <sup>2</sup>	0.844	0.668	21%	Decrease	0.0046
Hospital-onset <i>C. difficile</i> infections, facility-wide <sup>2</sup>	0.398	0.357	10%	Decrease	0.0011

\* Statistically significant,  $p < 0.0500$

1. Data from all ICUs and wards.

2. Hospital-onset is defined as an event detected on the 4th day (or later) after admission to an inpatient location within the facility.

**Acute Care Hospitals (LTACHs) reporting during 2021 by HAI and patient population:  
ct infections (CAUTIs), ventilator-associated events (VAEs),  
*Clostridium difficile* infections, 2020 compared to 2021**

**Table 8. Changes in state-specific standardized infection ratios (SIRs) between 2020 and 2021 from NHSN Long-Term Acute Care Hospitals**  
**8a. Central line-associated bloodstream infections (CLABSI), all locations<sup>1</sup>**

State <sup>2</sup>	All Long-Term Acute Care Hospitals Reporting to NHSN				
	2020 SIR	2021 SIR	Percent Change <sup>3</sup>	Direction of Change, Based on Statistical Significance	p-value
Alabama	0.361	0.576	60%	No change	0.2818
Alaska	.	.	.	.	.
Arizona	0.521	0.208	60%	No change	0.0676
Arkansas	1.015	0.558	45%	No change	0.1011
California	0.926	1.265	37%	Increase	0.0002
Colorado	0.630	0.251	60%	Decrease	0.0431
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.391	0.597	53%	Increase	0.0054
Georgia	0.559	0.627	12%	No change	0.5984
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	1.016	0.995	2%	No change	0.8952
Indiana	0.865	0.483	44%	Decrease	0.0139
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	0.951	0.506	47%	Decrease	0.0259
Louisiana	0.827	0.615	26%	No change	0.1036
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.864	1.158	34%	No change	0.1051
Michigan	1.133	1.237	9%	No change	0.6278
Minnesota	.	.	.	.	.
Mississippi	0.820	1.626	98%	Increase	0.0071
Missouri	0.883	0.827	6%	No change	0.7871
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.428	0.247	42%	No change	0.1059
New Hampshire	.	.	.	.	.
New Jersey	0.721	0.866	20%	No change	0.4028
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	0.576	0.393	32%	No change	0.2078
North Dakota	.	.	.	.	.
Ohio	0.414	0.365	12%	No change	0.5503
Oklahoma	0.409	0.267	35%	No change	0.2045
Oregon	.	.	.	.	.
Pennsylvania	0.750	0.571	24%	No change	0.2151
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	1.198	0.805	33%	No change	0.1264
South Dakota	.	.	.	.	.
Tennessee	0.528	0.992	88%	Increase	0.0306
Texas	0.589	0.623	6%	No change	0.5503
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.834	1.018	22%	No change	0.4737
Washington	.	.	.	.	.
West Virginia	0.713	1.625	128%	Increase	0.0122
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
<b>All US</b>	<b>0.707</b>	<b>0.743</b>	<b>5%</b>	<b>No change</b>	<b>0.1714</b>

\* Statistically significant, p < 0.0500

1. Data from all ICUs, wards (and other non-critical care locations).

2. States without SIR either in 2020 and/or 2021 and therefore subsequent data not calculated

3. For states with >>100% value in the percent change field, the p-value cannot be estimated due to sparse data reported within the facility type.

The p-value is indicated as inestimable when the numerator and/or denominator of percent change = 0.

**Table 8. Changes in state-specific standardized infection ratios (SIRs) between 2020 and 2021 from NHSN Long-Term Acute Care Hospitals**

**8b. Catheter-associated urinary tract infections (CAUTI), all locations<sup>1</sup>**

	All Long-Term Acute Care Hospitals Reporting to NHSN				
	2020 SIR	2021 SIR	Direction of Change, Based on Statistical Significance		p-value
Alabama	0.285	0.613	115%	Increase	0.0371
Alaska	.	.	.	.	.
Arizona	0.625	0.709	13%	No change	0.7020
Arkansas	0.743	0.551	26%	No change	0.3370
California	0.571	0.865	51%	Increase	<0.0001
Colorado	1.117	1.200	7%	No change	0.6955
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.521	0.565	8%	No change	0.5386
Georgia	1.271	0.999	21%	No change	0.0906
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.684	0.826	21%	No change	0.2707
Indiana	0.646	0.782	21%	No change	0.4127
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	1.359	1.061	22%	No change	0.2317
Louisiana	0.657	0.484	26%	No change	0.0819
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	1.258	1.334	6%	No change	0.6966
Michigan	1.191	0.939	21%	No change	0.1404
Minnesota	.	.	.	.	.
Mississippi	0.767	0.908	18%	No change	0.5073
Missouri	0.564	0.893	58%	No change	0.0565
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.745	0.906	22%	No change	0.3565
New Hampshire	.	.	.	.	.
New Jersey	0.636	0.530	17%	No change	0.4252
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	0.306	0.444	45%	No change	0.2500
North Dakota	.	.	.	.	.
Ohio	0.899	0.797	11%	No change	0.3873
Oklahoma	0.686	0.457	33%	No change	0.0854
Oregon	.	.	.	.	.
Pennsylvania	0.848	0.777	8%	No change	0.6391
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	1.173	1.393	19%	No change	0.4591
South Dakota	.	.	.	.	.
Tennessee	0.702	0.529	25%	No change	0.2805
Texas	0.577	0.538	7%	No change	0.4673
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.743	0.801	8%	No change	0.7636
Washington	.	.	.	.	.
West Virginia	0.931	0.690	26%	No change	0.2970
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
<b>All US</b>	<b>0.738</b>	<b>0.749</b>	<b>1%</b>	<b>No change</b>	<b>0.6550</b>

\* Statistically significant, p < 0.0500

1. Data from all ICUs and wards (and other non-critical care locations).

2. States without SIR either in 2020 and/or 2021 and therefore subsequent data not calculated

3. For states with >>100% value in the percent change field, the p-value cannot be estimated due to sparse data reported within the facility type.

The p-value is indicated as inestimable when the numerator and/or denominator of percent change = 0.

**Table 8. Changes in state-specific standardized infection ratios (SIRs) between 2020 and 2021 from NHSN Long-Term Acute Care Hospitals**  
**8c. Ventilator-associated events (VAE), all locations<sup>1</sup>**

	All Long-Term Acute Care Hospitals Reporting to NHSN				
	2020 SIR	2021 SIR	Direction of Change, Based on Statistical Significance		p-value
Alabama	0.000	0.000	0%		Inestimable
Alaska	.	.	.	.	.
Arizona	.	.	.	.	.
Arkansas	.	.	.	.	.
California	0.384	0.427	11%	No change	0.4474
Colorado	.	.	.	.	.
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.547	0.535	2%	No change	0.9169
Georgia	0.640	0.459	28%	No change	0.3413
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.626	1.008	61%	Increase	0.0072
Indiana	.	.	.	.	.
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	1.798	1.677	7%	No change	0.7581
Louisiana	.	.	.	.	.
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.000	0.266	>>100%		Inestimable
Michigan	0.537	.	.	.	.
Minnesota	.	.	.	.	.
Mississippi	.	.	.	.	.
Missouri	1.631	2.233	37%	No change	0.2037
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	.	.	.	.	.
New Hampshire	.	.	.	.	.
New Jersey	0.167	0.116	31%	No change	0.4796
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	.	.	.	.	.
North Dakota	.	.	.	.	.
Ohio	0.450	.	.	.	.
Oklahoma	0.000	.	.	.	.
Oregon	.	.	.	.	.
Pennsylvania	0.648	0.614	5%	No change	0.7932
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	1.432	0.695	51%	Decrease	0.0090
South Dakota	.	.	.	.	.
Tennessee	0.555	0.435	22%	No change	0.3859
Texas	0.515	1.096	113%	Increase	<0.0001
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	.	.	.	.	.
Washington	.	.	.	.	.
West Virginia	.	.	.	.	.
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
<b>All US</b>	<b>0.548</b>	<b>0.560</b>	<b>2%</b>	<b>No change</b>	<b>0.7017</b>

\* Statistically significant, p < 0.0500

1. Data from all ICUs and wards (and other non-critical care locations).

2. States without SIR either in 2020 and/or 2021 and therefore subsequent data not calculated

3. For states with >>100% value in the percent change field, the p-value cannot be estimated due to sparse data reported within the facility type.

The p-value is indicated as inestimable when the numerator and/or denominator of percent change = 0.



**Table 8. Changes in state-specific standardized infection ratios (SIRs) between 2020 and 2021 from NHSN Long-Term Acute Care Hospitals**

**8d. Hospital-onset methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia, facility-wide<sup>1</sup>**

	All Long-Term Acute Care Hospitals Reporting to NHSN				
	2020 SIR	2021 SIR	Direction of Change, Based on Statistical Significance		p-value
Alabama	2.284	0.818	64%	Decrease	0.0138
Alaska	.	.	.	.	.
Arizona	.	.	.	.	.
Arkansas	.	.	.	.	.
California	0.975	1.077	10%	No change	0.5481
Colorado	.	.	.	.	.
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	1.582	1.002	37%	No change	0.0794
Georgia	0.153	0.675	341%	Increase	0.0378
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.848	0.634	25%	No change	0.3697
Indiana	0.382	0.899	135%	No change	0.2364
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	1.515	0.792	48%	No change	0.1763
Louisiana	.	0.000	.	.	.
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.307	0.243	21%	No change	0.6351
Michigan	0.206	.	.	.	.
Minnesota	.	.	.	.	.
Mississippi	.	.	.	.	.
Missouri	1.088	0.213	80%	Decrease	0.0203
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.122	0.179	47%	No change	0.8094
New Hampshire	.	.	.	.	.
New Jersey	0.851	0.63	26%	No change	0.4980
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	.	.	.	.	.
North Dakota	.	.	.	.	.
Ohio	1.192	1.438	21%	No change	0.6902
Oklahoma	0.000	.	.	.	.
Oregon	.	.	.	.	.
Pennsylvania	0.680	0.399	41%	No change	0.1890
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	1.313	0.489	63%	Decrease	0.0421
South Dakota	.	.	.	.	.
Tennessee	1.508	0.706	53%	Decrease	0.0173
Texas	0.575	0.754	31%	No change	0.3214
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	.	.	.	.	.
Washington	.	.	.	.	.
West Virginia	.	.	.	.	.
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
<b>All US</b>	<b>0.844</b>	<b>0.668</b>	<b>21%</b>	<b>Decrease</b>	<b>0.0046</b>

\* Statistically significant, p < 0.0500

1. Hospital-onset is defined as event detected on the 4th day (or later) after admission to an inpatient location within the facility.

2. States without SIR either in 2020 and/or 2021 and therefore subsequent data not calculated

3. For states with >>100% value in the percent change field, the p-value cannot be estimated due to sparse data reported within the facility type.

The p-value is indicated as inestimable when the numerator and/or denominator of percent change = 0.

**Table 8. Changes in state-specific standardized infection ratios (SIRs) between 2020 and 2021 from NHSN Long Term Acute Care Hospitals**  
**8e. Hospital-onset *Clostridioides difficile* infection (CDI), facility-wide<sup>1</sup>**

	All Long Term Acute Care Hospitals Reporting to NHSN				
	2020 SIR	2021 SIR	Direction of Change, Based on Statistical Significance		p-value
Alabama	0.353	0.423	20%	No change	0.5595
Alaska	.	.	.	.	.
Arizona	0.385	0.632	64%	No change	0.0616
Arkansas	0.399	0.408	2%	No change	0.9449
California	0.475	0.547	15%	No change	0.1067
Colorado	0.456	0.543	19%	No change	0.4195
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.439	0.337	23%	Decrease	0.0191
Georgia	0.156	0.196	26%	No change	0.4145
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.267	0.343	28%	No change	0.1969
Indiana	0.498	0.328	34%	No change	0.0806
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	0.607	0.410	32%	No change	0.0820
Louisiana	0.263	0.261	1%	No change	0.9636
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.267	0.305	14%	No change	0.3768
Michigan	0.452	0.368	19%	No change	0.2673
Minnesota	.	.	.	.	.
Mississippi	0.173	0.138	20%	No change	0.5977
Missouri	0.342	0.208	39%	No change	0.0863
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.353	0.397	12%	No change	0.6349
New Hampshire	.	.	.	.	.
New Jersey	0.454	0.263	42%	Decrease	0.0072
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	0.458	0.380	17%	No change	0.4136
North Dakota	.	.	.	.	.
Ohio	0.511	0.353	31%	Decrease	0.0074
Oklahoma	0.395	0.291	26%	No change	0.2308
Oregon	.	.	.	.	.
Pennsylvania	0.485	0.399	18%	No change	0.2758
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.462	0.442	4%	No change	0.8677
South Dakota	.	.	.	.	.
Tennessee	0.305	0.276	10%	No change	0.7185
Texas	0.442	0.372	16%	No change	0.0641
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.468	0.212	55%	Decrease	0.0069
Washington	.	.	.	.	.
West Virginia	0.962	0.924	4%	No change	0.8731
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
<b>All US</b>	<b>0.398</b>	<b>0.357</b>	<b>10%</b>	<b>Decrease</b>	<b>0.0011</b>

\* Statistically significant, p < 0.0500

- Hospital-onset is defined as event detected on the 4th day (or later) after admission to an inpatient location within the facility.
- States without SIR either in 2020 and/or 2021 and therefore subsequent data not calculated
- For states with >>100% value in the percent change field, the p-value cannot be estimated due to sparse data reported within the facility type. The p-value is indicated as inestimable when the numerator and/or denominator of percent change = 0.

**Appendix A. Factors used in NHSN risk adjustment of the device-associated HAIs (CLABSI, CAUTI, VAE) negative binomial regression models<sup>1</sup> from Long-Term Acute Care Hospitals**

HAI Type	Validated Parameters for Risk Model
CLABSI	Intercept Location Type Facility Bed Size* Average Length of Stay**
CAUTI	Intercept Average Length of Stay** Setting† Location Type
VAE	Intercept Facility bed size* Proportion of admissions on hemodialysis*** Location Type Average Length of Stay**

1. SIR Guide: <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf>

\* Facility bed size is taken from the Annual LTACH Survey.

\*\* Average length of stay is taken from the Annual LTACH Survey. It is calculated as: total # of annual patient days

\*\*\* Proportion of annual admissions on a ventilator (or hemodialysis) is taken from the Annual LTACH Survey.

It is calculated as: number of admissions on a ventilator (or hemodialysis) / total # of annual admissions.

† LTACH Setting (free-standing vs. within a hospital) is taken from the Annual LTACH Survey.

ays / total # of annual admissions.

**Appendix B. Factors used in NHSN risk adjustment of the MRSA Bacteremia and *C. difficile* negative binomial regression models<sup>1</sup> from Long-Term Acute Care Hospitals**

HAI Type	Validated Parameters for Risk Model
MRSA bacteremia	Intercept, Percent of admissions on ventilator*
<i>C. difficile</i> infections	Intercept, Inpatient CO prevalence rate** Percent of admissions on ventilator* CDI test type^ Percent of single occupancy rooms <sup>‡</sup>

\* Percent of annual admissions on a ventilator is taken from the Annual LTACH Survey. It is calculate ventilator / total # annual admissions) x 100

\*\* Inpatient community-onset prevalence is calculated as: (# of inpatient community-onset CDI events / total # inpatient community-onset CDI events) x 100. The prevalence rate for each quarter is used in the risk adjustment.

^ CDI test type is reported on the FacWideIN MDRO denominator form on the 3<sup>rd</sup> month of each quarter

‡ Percent of beds located in single occupancy rooms is taken from the Annual LTACH Survey. It is calculate (single occupancy rooms / total number of beds) x 100.

ed as: (# admissions on a

. / total # admissions) x 100.

ter.

alculated as: # of single occupancy

Additional Resources

**SIR Guide:** <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf>

**Technical Appendix (2021 Report):** <http://www.cdc.gov/hai/progress-report/index.html>

*Explains the methodology used to produce the HAI Report.*

**HAI Data Report Home Page:** <http://www.cdc.gov/hai/progress-report/index.html>

*The complete HAI Report, including the Executive Summary and previous reports, can be found at the above*

*website.*