2019 National and State HAI Progress Report

Long-Term Acute Care Hospitals

Introduction: Welcome to the 2019 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	þ	þ
Catheter-associated urinary tract infections (CAUTI) by locations	þ	þ
Ventilator-associated events (VAE) by locations	þ	þ
Hospital-onset methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia by facility-wide reporting	þ	þ
Hospital-onset *Clostridioides difficile* (CDI) by facility-wide reporting	þ	þ

ogress

zed infection ratios (SIRs)
2019 SIRs are compared to previous year's SIRs.

2019 Annual National and State HAI Progress Report
Long-term Acute Care Hospitals: Full series of tables for all national and state-specific data

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

are Hospitals (LTACHs):

hospital-onset CDI between 2018 and 2019 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).

HAI and Patient Population	Reporting Hospitals			Standardize
	No. of Long Term Acute Care Hospitals Reporting[1]	Total Patient Days	Total Device Days	Observed Events	Predicted Events[2]
CLABSI, all[5]	437	4,732,442	1,978,596	1,768	2,292.260
ICUs[6]	74	266,158	126,943	196	275.400
Wards[7]	421	4,466,284	1,851,653	1,572	2,016.860
CAUTI, all[8]	438	4,687,142	1,482,964	1,924	2,421.200
	74	264,920	102,373	140	229.600
	422	4,422,222	1,380,591	1,784	2,191.600
VAE, all[8]	268	2,556,843	637,097	617	1,044.250
	54	171,032	67,614	145	146.307
	255	2,385,811	569,483	472	897.943

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

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

3. 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 natio

4. Facility-specific percentiles are only calculated if at least 20 facilities had ≥1.0 predicted HAI in 2019. If a facility's predicted number of HAIs was <

5. Data from all ICUs and wards

6. Data from all ICUs; excludes wards. VAE includes only adult locations, per surveillance definition..

7. Data from all wards. VAE includes only adult locations, per surveillance definition.

8. Data from all ICUs and wards. VAE includes only adult locations, per surveillance definition. Total VAE includes IVAC-plus events.
   IVAC-plus includes those events identified as infection-related ventilator-associated condition (IVAC) and possible ventilator-associated pneumoni

Table 1a. National standardized infection ratios (SIRs) and facility-specific summary SIRs using HAI data reported to NHSN during 2019 by
Central line-associated bloodstream infections (CLABSIs), catheter-associated urinary tract infections (CAUTIs) and ventilato

ed Infection Ratio Data			Facility SIRs Compared to National SIR						
SIR	Lower 95% Confidence Interval	Upper 95% Confidence Interval	No. Facilities with ≥1 Predicted Infection (Event)	No. Facilities with SIR Significantly > National SIR		No. Facilities with SIR Significantly < National SIR		5%	10%
				N	%³	N			
0.771	0.736	0.808	403	46	11%	50	12%	0.000	0.000
0.712	0.617	0.817	67	6	9%	6	9%	0.000	0.000
0.779	0.742	0.819	394	43	11%	48	12%	0.000	0.000
0.795	0.760	0.831	406	51	12%	46	11%	0.000	0.000
0.610	0.515	0.717	62	5	7%	3	4%	0.000	0.000
0.814	0.777	0.852	397	47	11%	37	9%	0.000	0.000
0.591	0.546	0.639	159	17	11%	24	15%	0.000	0.000
0.991	0.839	1.163	40	5	13%	7	18%	0.000	0.000
0.526	0.48	0.575	146	14	10%	21	14%	0.000	0.000

onal SIR for the given HAI type. This is only calculated if at least 10 facilities had ≥ 1.0 predicted HAI in 2019.

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

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)

<u>**Percentile Distribution of Facility-specific SIRs**[4]</u>

15%	20%	25%	30%	35%	40%	45%	Median 50%	55%	60%	65%	70%	75%
0.025	0.203	0.297	0.377	0.446	0.535	0.581	0.675	0.788	0.862	0.961	1.071	1.204
0.000	0.000	0.177	0.259	0.321	0.391	0.461	0.555	0.623	0.784	0.821	0.881	1.018
0.000	0.192	0.290	0.377	0.452	0.541	0.581	0.680	0.785	0.879	0.970	1.087	1.223
0.152	0.225	0.327	0.384	0.450	0.520	0.610	0.695	0.760	0.847	0.969	1.116	1.277
0.000	0.000	0.000	0.183	0.295	0.354	0.407	0.506	0.584	0.672	0.757	0.915	1.056
0.144	0.227	0.324	0.377	0.450	0.510	0.598	0.697	0.760	0.846	0.992	1.123	1.272
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.189	0.235	0.311	0.457	0.591	0.851
0.000	0.000	0.000	0.000	0.000	0.248	0.324	0.461	0.536	0.760	0.934	1.130	1.452
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.132	0.207	0.239	0.384	0.564	0.770

80%	85%	90%	95%
1.353	1.528	1.910	2.708
1.345	1.460	1.806	2.651
1.375	1.532	1.920	2.731
1.430	1.620	1.979	2.434
1.272	1.505	1.889	2.119
1.388	1.641	1.990	2.444
1.182	1.603	2.166	3.246
1.945	2.549	3.066	4.313
1.118	1.575	2.042	2.749

HAI and Patient Population	Reporting Hospitals				
		Total Admissions[2]	Total Patient Days[3]	Community-onset events	Observed Hospital-onset Events[4]
MRSA bacteremia, facility-wide[4]	308	109,020	3,291,169	59	313
Hospital-onset _C. difficile_, facility-wide[4]	426	168,057	4,985,710	309	2,544

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 ≥1.0 predicted HAI in 2019. If a facility's predicted num

Table 1b. National standardized infection ratios (SIRs) and facility-specific summary SIRs using HAI data reported to NHSN during 2019 b
hospital-onset methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia and hospital-onset *Clostridioic*

Standardized Infection Ratio Data				Facility SIRs Compared to National SIR						
Predicted Hospital-onset Events[5]	SIR	Lower 95% Confidence Interval	Upper 95% Confidence Interval	No. Facilities with ≥1 Predicted Event	No. Facilities with SIR Significantly > National SIR		No. Facilities with SIR Significantly < National SIR		5%	
					N	%[6]	N			
443.873	0.705	0.630	0.787	180	16	9%	3	2%	0.000	
4,824.179	0.527	0.507	0.548	421	50	12%	50	12%	0.000	

.
e given HAI type. This is only calculated if at least 10 facilities had ≥ 1.0 predicted HAI in 2019.
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:

***des difficile* (CDI)**

<u>**Percentile Distribution of Facility-specific SIRs[7]**</u>

10%	15%	20%	25%	30%	35%	40%	45%	Median 50%	55%	60%	65%	70%
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.559	0.677	0.773	0.890
0.000	0.114	0.161	0.215	0.276	0.333	0.395	0.438	0.498	0.546	0.609	0.684	0.755

75%	80%	85%	90%	95%
1.186	1.519	1.694	1.971	2.571
0.828	0.904	0.973	1.056	1.245

Table 2. State-specific standardiz
NHSN Long-Term
Central line-associated

State	State NHSN Mandate[2]	Any Validation[3]	No. of LTACHs Reporting[4]	No. of Infections		
				Observed	Predicted	SIR
Alabama	No	No	8	19	28.500	0.667
Alaska			1	.	.	.
Arizona			6	11	25.141	0.438
Arkansas			8	29	20.324	1.427
California	Yes	No	23	252	279.587	0.901
Colorado	Yes	Yes	7	16	28.658	0.558
Connecticut	Yes	No	2	.	.	.
D.C.			2	.	.	.
Delaware			1	.	.	.
Florida	No	Yes	26	119	177.265	0.671
Georgia			13	46	70.253	0.655
Guam			1	.	.	.
Hawaii			1	.	.	.
Idaho			2	.	.	.
Illinois			10	91	83.964	1.084
Indiana	No	No	11	54	57.632	0.937
Iowa	No	No	2	.	.	.
Kansas	No	No	3	.	.	.
Kentucky	Yes	No	9	45	40.562	1.109
Louisiana			31	97	94.529	1.026
Maine	No	No	1	.	.	.
Maryland	No	No	2	.	.	.
Massachusetts	No	No	11	45	76.793	0.586
Michigan			20	53	53.794	0.985
Minnesota	No	Yes	2	.	.	.
Mississippi	Yes	Yes	7	25	31.019	0.806
Missouri			10	42	40.003	1.050
Montana	No	No	1	.	.	.
Nebraska			4	.	.	.
Nevada	Yes	No	10	15	65.445	0.229
New Hampshire	No	No	1	.	.	.
New Jersey	Yes	No	12	67	58.360	1.148
New Mexico	No	No	3	.	.	.
New York			1	.	.	.
North Carolina	Yes	No	8	35	52.344	0.669
North Dakota	No	No	2	.	.	.
Ohio	No	No	28	80	128.030	0.625
Oklahoma			12	32	51.158	0.626
Oregon	Yes	Yes	1	.	.	.
Pennsylvania	Yes	Yes	21	41	60.875	0.674
Puerto Rico			1	.	.	.
Rhode Island	No	No	1	.	.	.

South Carolina	Yes	Yes	6	25	34.556	0.723
South Dakota	No	Yes	1	.	.	.
Tennessee	Yes	No	9	37	43.077	0.859
Texas	No	No	69	292	417.898	0.699
Utah			4	.	.	.
Vermont	No	No	1	.	.	.
Virgin Islands			1	.	.	.
Virginia	M	No	6	21	33.732	0.623
Washington	Yes	No	3	.	.	.
West Virginia	Yes	No	4	.	.	.
Wisconsin	No	Yes	6	15	23.712	0.633
Wyoming	No	No	1	.	.	.
All US			**437**	**1,768**	**2,292.260**	**0.771**

1. Includes data reported from all locations (i.e., adult and pediatric critical care units and wards) with
2. Yes indicates the presence of a state mandate to report CLABSI data from any location to NHSN
   No indicates that a state mandate did not exist during 2019. Blank fields indicate data not available
3. Yes indicates that the state health department reported the completion of all of the following valida
   assessment of missing or implausible values on at least six months of 2019 NHSN data prior to Ju
   YesA indicates that the state also conducted an audit of facility medical or laboratory records prior
   varies by state). Information on validation efforts was requested from all states, regardless of the
   reporting of a given HAI to the state health department have performed validation on NHSN data t
4. The number of LTACHs that reported 2019 CLABSI data and are included in the SIR calculation.
   from at least one location in 2019.
5. Percent of facilities with ≥1.0 predicted CLABSI that had an SIR significantly greater or less than th
   ≥ 1.0 predicted CLABSI in 2019.
6. Facility-specific key percentiles were only calculated if at least 20 facilities had ≥1.0 predicted CLA
   nor included in the distribution of facility-specific SIRs.

bloodstream infections (CLABSIs) in LTACHs, all locations[1]

95% CI for SIR		Facility-specific SIRs			Facility-specifi	
Lower	Upper	No. of facilities with at least 1 predicted CLABSI	% of facilities with SIR sig higher than national SIR[5]	% of facilities with SIR sig lower than national SIR[5]	10%	25%
0.413	1.022	8	.	.	.	.
.	.	.	.	.	.	.
0.230	0.760	6	.	.	.	.
0.974	2.023	8	.	.	.	.
0.795	1.018	22	14%	23%	0.113	0.395
0.330	0.887	5	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.559	0.800	26	15%	31%	0.000	0.033
0.485	0.866	13	8%	15%		
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.878	1.324	9	.	.	.	.
0.711	1.213	10	20%	0%	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.819	1.471	9	.	.	.	.
0.837	1.246	25	28%	16%	0.000	0.000
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.433	0.777	10	0	30%		
0.745	1.279	18	22%	0%		
.	.	.	.	.	.	.
0.533	1.172	7	.	.	.	.
0.766	1.406	10	20%	10%	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.133	0.370	10	0%	30%	.	.
.	.	.	.	.	.	.
0.897	1.449	10	20%	0%	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.473	0.920	8	.	.	.	.
.	.	.	.	.	.	.
0.499	0.774	26	8%	12%	0.000	0.353
0.435	0.872	11	18%	18%	.	.
.	.	.	.	.	.	.
0.490	0.905	20	5%	0%	0.000	0.284
.	.	.	.	.	.	.
.	.	.	.	.	.	.

0.479	1.052	6	.	.	.	.
.	.	.	.	.	.	.
0.614	1.171	9	.	.	.	.
0.622	0.782	67	9%	13%	0.000	0.284
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.396	0.935	6	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.368	1.020	6	.	.	.	.
.	.	.	.	.	.	.
0.736	**0.808**	**403**	**11%**	**12%**	**0.000**	**0.297**

in LTACHs.
at the beginning of 2019. M indicates midyear implementation of a mandate.
e
ation activities: state health department had access to 2019 NHSN data, state health department performed
ly 1, 2020, and state health department contacted identified facilities.
to July 1, 2020 to confirm proper case ascertainment (although intensity of auditing activities
presence of a legislative mandate for the particular HAI type. Some states without mandatory
hat is voluntarily shared with them by facilities in their jurisdiction.
SIRs and accompanying statistics are only calculated for states in which at least 5 LTACHs reported CLABS

he nominal value of the 2019 national LTACH CLABSI SIR of 0.771. This is only calculated if at least 10 fac

BSI in 2019. If a facility's predicted number of CLABSI was <1.0, a facility-specific SIR was neither calculat

SIRs at Key Percentiles[6]

Median (50%)	75%	90%
.	.	.
.	.	.
.	.	.
.	.	.
0.806	1.078	1.563
.	.	.
.	.	.
.	.	.
.	.	.
0.529	1.381	1.586
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
0.652	2.000	3.477
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
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.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
0.521	0.988	1.389
.	.	.
.	.	.
0.581	0.820	1.231
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0.563      1.046      1.600
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0.675      1.204      1.910
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Table 3. State-specific standardized infection r...
NHSN Long-Term Acute Care H...
Catheter-associated urinary tract i...

State				Observed	Predicted	SIR	Lower
				No. of Infections			95% CI
Alabama	No	No	8	22	31.942	0.689	0.443
Alaska			1	.	.	.	.
Arizona			6	23	28.468	0.808	0.525
Arkansas			8	47	29.596	1.588	1.180
California	No	No	23	185	312.348	0.592	0.511
Colorado	Yes	Yes	7	64	46.528	1.376	1.068
Connecticut	Yes	No	3	.	.	.	.
D.C.			2	.	.	.	.
Delaware			1	.	.	.	.
Florida	No	Yes	26	136	203.811	0.667	0.562
Georgia			13	72	85.683	0.840	0.662
Guam			1	.	.	.	.
Hawaii			1	.	.	.	.
Idaho			2	.	.	.	.
Illinois			10	79	85.819	0.921	0.734
Indiana	No	No	11	34	56.267	0.604	0.425
Iowa	No	No	2	.	.	.	.
Kansas	No	No	3	.	.	.	.
Kentucky	Yes	No	9	47	46.954	1.001	0.744
Louisiana			31	73	118.366	0.617	0.487
Maine	No	No	1	.	.	.	.
Maryland	No	No	2	.	.	.	.
Massachusetts	No	No	11	64	66.262	0.966	0.750
Michigan			20	81	62.353	1.299	1.038
Minnesota	No	Yes	2	.	.	.	.
Mississippi	Yes	Yes	7	35	36.869	0.949	0.672
Missouri			10	31	41.799	0.742	0.513
Montana	No	No	1	.	.	.	.
Nebraska			4	.	.	.	.
Nevada	No	No	10	48	71.166	0.674	0.503
New Hampshire	No	No	1	.	.	.	.
New Jersey	Yes	No	12	46	58.350	0.788	0.584
New Mexico	No	No	3	.	.	.	.
New York			1	.	.	.	.
North Carolina	Yes	No	8	30	52.009	0.577	0.396
North Dakota	No	No	2	.	.	.	.
Ohio	No	No	28	108	117.451	0.920	0.758
Oklahoma			12	30	57.016	0.526	0.362
Oregon	Yes	Yes	1	.	.	.	.
Pennsylvania	Yes	Yes	21	64	61.647	1.038	0.806
Puerto Rico			1	.	.	.	.
Rhode Island	No	No	1	.	.	.	.

South Carolina	No	No	6	33	24.251	1.361	0.952
South Dakota	No	Yes	1	.	.	.	.
Tennessee	Yes	No	9	34	49.897	0.681	0.479
Texas	No	No	69	233	388.175	0.600	0.527
Utah			4	.	.	.	.
Vermont	No	No	1	.	.	.	.
Virgin Islands			1	.	.	.	.
Virginia	M	No	6	30	37.955	0.790	0.543
Washington	No	No	3	.	.	.	.
West Virginia	Yes	No	4	.	.	.	.
Wisconsin	No	Yes	6	27	22.822	1.183	0.796
Wyoming	No	No	1	.	.	.	.
All US			**438**	**1,924**	**2421.200**	**0.795**	**0.760**

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
   No indicates that a state mandate did not exist during 2019. Blank fields indicate data not available
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 2019 NHSN data prior to July 1, 2020, an
   YesA indicates that the state also conducted an audit of facility medical or laboratory records prior to July 1, 202
   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 voluntar
4. The number of LTACHs that reported 2019 CAUTI data and are included in the SIR calculation. SIRs and acco
   from at least one location in 2019.
5. Percent of facilities with ≥1.0 predicted CAUTI that had an SIR significantly greater or less than the nominal valu
   ≥ 1.0 predicted CAUTI in 2019.
6. Facility-specific key percentiles were only calculated if at least 20 facilities had ≥1.0 predicted CAUTI in 2019. If
   nor included in the distribution of facility-specific SIRs.

atios (SIRs) and facility-specific SIR summary measures,
Hospitals (LTACHs) reporting during 2019

infections (CAUTIs) in LTACHs, all locations[1]

for SIR	Facility-specific SIRs							
Upper	No. of facilities with at least 1 predicted CAUTI			10%	25%		75%	
1.026	8	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	
1.193	6	.	.	.	.	.	.	
2.094	8	.	.	.	.	.	.	
0.682	22	0%	36%	0.132	0.311	0.645	0.993	
1.745	6	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	
0.787	26	15%	19%	0.000	0.195	0.517	1.073	
1.052	13	0%	15%	.	.	.	.	
.	.	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	
1.141	9	.	.	.	.	.	.	
0.835	10	10%	10%	.	.	.	.	
.	.	.	.	.	.	.	.	
1.320	9	.	.	.	.	.	.	
0.771	26	4%	15%	0.000	0.094	0.505	0.936	
.	.	.	.	.	.	.	.	
1.225	10	20%	10%	.	.	.	.	
1.606	18	22%	0%					
1.306	7	.	.	.	.	.	.	
1.040	10	10%	10%	.	.	.	.	
.	.	.	.	.	.	.	.	
0.887	10	20%	30%	.	.	.	.	
1.042	10	10%	20%	.	.	.	.	
.	.	.	.	.	.	.	.	
0.813	8	.	.	.	.	.	.	
1.106	27	19%	0%	0.000	0.295	0.626	1.457	
0.742	10	10%	20%	.	.	.	.	
1.317	20	10%	5%	0.000	0.408	0.958	1.416	
.	.	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	

1.889	6	.	.	.	.	.	.
.	.	.	.	.	.	.	.
0.941	9	.	.	.	.	.	.
0.681	68	6%	15%	0.000	0.115	0.491	0.857
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
1.114	6	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
1.698	5	.	.	.	.	.	.
.	.	.	.	.	.	.	.
0.831	**367**	**12%**	**11%**	**0.000**	**0.327**	**0.695**	**1.277**

ɥ of 2019. M indicates midyear implementation of a mandate.

 state health department had access to 2019 NHSN data, state health department performed an
ɪd state health department contacted identified facilities.
ɪ0 to confirm proper case ascertainment (although intensity of auditing activities
 legislative mandate for the particular HAI type. Some states without mandatory
ɨily shared with them by facilities in their jurisdiction.
ɪmpanying statistics are only calculated for states in which at least 5 LTACHs reported CAUTI data

ɪe of the 2019 national LTACH CAUTI SIR of 0.795. This is only calculated if at least 10 facilities had

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

90%

1.042

1.740

1.303

2.124

2.146

	.
	.
	.
1.352	.
	.
	.
	.
	.
	.
	.
	.
1.979	.

Table 4. State-specific standardiz
NHSN Long-Tern
Ventilator-a

State				No. of Events		
				Observed	Predicted	SIR
Alabama	No	No	7	0	9.949	0.000
Alaska			1	.	.	.
Arizona			2	.	.	.
Arkansas			2	.	.	.
California	No	No	18	123	205.301	0.599
Colorado	No	No	5	8	13.546	0.591
Connecticut	No	No	1	.	.	.
D.C.			2	.	.	.
Delaware			0	.	.	.
Florida	No	No	15	56	92.631	0.605
Georgia			8	15	27.157	0.552
Guam			0	.	.	.
Hawaii			0	.	.	.
Idaho			0	.	.	.
Illinois			9	71	72.965	0.973
Indiana	No	No	6	6	21.565	0.278
Iowa	No	No	0	.	.	.
Kansas	No	No	1	.	.	.
Kentucky	Yes	No	5	34	18.525	1.835
Louisiana			18	3	2.791	1.075
Maine	No	No	0	.	.	.
Maryland	No	No	1	.	.	.
Massachusetts	No	No	7	4	33.356	0.120
Michigan			10	9	15.735	0.572
Minnesota	No	Yes	1	.	.	.
Mississippi	No	No	2	.	.	.
Missouri			7	20	8.437	2.370
Montana	No	No	0	.	.	.
Nebraska			0	.	.	.
Nevada	No	No	6	3	20.217	0.148
New Hampshire	No	No	0	.	.	.
New Jersey	No	No	10	14	51.399	0.272
New Mexico	No	No	1	.	.	.
New York			1	.	.	.
North Carolina	No	No	4	.	.	.
North Dakota	No	No	0	.	.	.
Ohio	No	No	11	11	23.430	0.469
Oklahoma			8	2	3.910	0.512
Oregon	No	No	0	.	.	.
Pennsylvania	Yes	Yes	21	49	64.413	0.761
Puerto Rico			0	.	.	.
Rhode Island	No	No	0	.	.	.

South Carolina	Yes	Yes	6	28	21.997	1.273
South Dakota	No	Yes	0	.	.	.
Tennessee	Yes	No	9	21	46.300	0.454
Texas	No	No	50	50	62.312	0.802
Utah			2	.	.	.
Vermont	No	No	0	.	.	.
Virgin Islands			0	.	.	.
Virginia	No	No	3	.	.	.
Washington	No	No	2	.	.	.
West Virginia	Yes	No	3	.	.	.
Wisconsin	No	Yes	3	.	.	.
Wyoming	No	No	0	.	.	.
All US			**268**	**617**	**1,044.250**	**0.591**

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 t
   No indicates that a state mandate did not exist during 2019. Blank fields indicate data not availabl
3. Yes indicates that the state health department reported the completion of all of the following valida
   assessment of missing or implausible values on at least six months of 2019 NHSN data prior to Ju
   YesA indicates that the state also conducted an audit of facility medical or laboratory records prior
   varies by state). Information on validation efforts was requested from all states, regardless of the
   reporting of a given HAI to the state health department have performed validation on NHSN data f
4. The number of LTACHs that reported 2019 VAE data and are included in the SIR calculation. SIF
   from at least one location in 2019.
5. Percent of facilities with ≥1.0 predicted VAE that had an SIR significantly greater or less than the
   ≥ 1.0 predicted VAE in 2019.
6. Facility-specific key percentiles were only calculated if at least 20 facilities had ≥1.0 predicted VAE
   nor included in the distribution of facility-specific SIRs.

...ssociated events (VAEs) in LTACHs, all locations[1]

95% CI for SIR		Facility-specific SIRs				
Lower	Upper	No. of facilities with at least 1 predicted VAE			10%	25%
.	0.301	4	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.500	0.712	17	24%	29%	.	.
0.274	1.121	3	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.461	0.779	13	8%	23%	.	.
0.321	0.891	6	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.766	1.220	9	.	.	.	.
0.113	0.579	4	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
1.291	2.536	4	.	.	.	.
0.273	2.925	0	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.038	0.289	5	.	.	.	.
0.279	1.050	6	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
1.489	3.596	2	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.038	0.404	3	.	.	.	.
.	.	.	.	.	.	.
0.155	0.446	8	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
0.247	0.816	6	.	.	.	.
0.086	1.690	2	.	.	.	.
.	.	.	.	.	.	.
0.569	0.997	15	20%	13%	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.

0.862	1.815	5	.	.	.	.
.				.	.	.
0.288	0.681	9	.	.	.	.
0.602	1.049	18	6%	6%	.	.
.	.	.	.		.	.
.	.	.	.		.	.
.	.	.	.		.	.
.	.	.	.		.	.
.	.	.	.		.	.
.	.	.	.		.	.
0.546	**0.639**	**159**	**11%**	**15%**	**0.000**	**0.000**

he beginning of 2019. M indicates midyear implementation of a mandate.
le
ation activities: state health department had access to 2019 NHSN data, state health department performed a
uly 1, 2020, and state health department contacted identified facilities.
r to July 1, 2020 to confirm proper case ascertainment (although intensity of auditing activities
 presence of a legislative mandate for the particular HAI type. Some states without mandatory
that is voluntarily shared with them by facilities in their jurisdiction.
Rs and accompanying statistics are only calculated for states in which at least 5 LTACHs reported VAE data

nominal value of the 2019 national LTACH VAE SIR of 0.591. This is only calculated if at least 10 facilities ha

Ξ in 2019. If a facility's predicted number of VAE was <1.0, a facility-specific SIR was neither calculated

	75%	90%

0.189	**0.851**	**2.166**
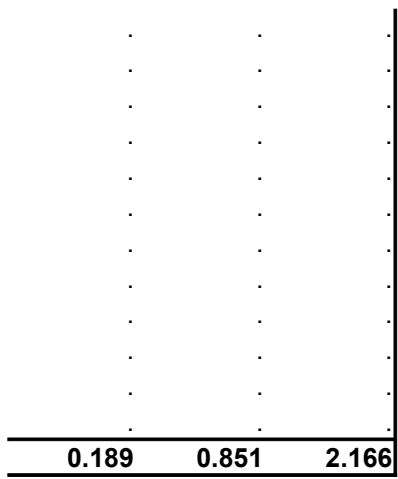
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ad

Table 5. State-specific standardized infection ra
NHSN Long-Term Acute Care H

Hospital-onset methicillin-resistant _Staph_

| | | | | No. of Events | | 95% CI | |
State				Observed	Predicted	SIR	Lower
Alabama	No	No	7	10	9.446	1.059	0.538
Alaska			0	.	.	.	.
Arizona			1	.	.	.	.
Arkansas			3	.	.	.	.
California	Yes	Yes	23	75	62.774	1.195	0.946
Colorado	No	No	6	4	10.499	0.381	0.121
Connecticut	No	No	2	.	.	.	.
D.C.			2	.	.	.	.
Delaware			1	.	.	.	.
Florida	No	Yes	16	41	26.327	1.557	1.132
Georgia			8	3	13.657	0.220	0.056
Guam			0	.	.	.	.
Hawaii			1	.	.	.	.
Idaho			1	.	.	.	.
Illinois			10	12	24.118	0.498	0.270
Indiana	No	No	8	9	9.410	0.956	0.466
Iowa	No	No	1	.	.	.	.
Kansas	No	Yes	1	.	.	.	.
Kentucky	Yes	No	5	13	7.188	1.809	1.006
Louisiana			18	1	11.977	0.083	0.004
Maine	No	No	0	.	.	.	.
Maryland	No	No	2	.	.	.	.
Massachusetts	No	No	10	8	32.282	0.248	0.115
Michigan			11	9	9.529	0.944	0.461
Minnesota			1	.	.	.	.
Mississippi	Yes	Yes	1	.	.	.	.
Missouri			8	8	8.036	0.996	0.462
Montana	No	No	0	.	.	.	.
Nebraska			2	.	.	.	.
Nevada	Yes	No	7	5	7.745	0.646	0.237
New Hampshire	No	No	0	.	.	.	.
New Jersey	Yes	No	11	9	20.264	0.444	0.217
New Mexico	No	No	2	.	.	.	.
New York			2	.	.	.	.
North Carolina	Yes	No	5	3	7.797	0.385	0.098
North Dakota	No	No	2	.	.	.	.
Ohio	No	No	16	8	20.498	0.390	0.181
Oklahoma			9	3	6.170	0.486	0.124
Oregon	Yes	Yes	1	.	.	.	.
Pennsylvania	Yes	Yes	21	7	24.927	0.281	0.123
Puerto Rico			0	.	.	.	.
Rhode Island	No	No	0	.	.	.	.

South Carolina	Yes	Yes	5	1	6.667	0.150	0.008
South Dakota	No	Yes	0	.	.	.	.
Tennessee	Yes	No	9	14	16.441	0.852	0.485
Texas	No	No	55	36	56.610	0.636	0.452
Utah			2	.	.	.	.
Vermont	No	No	0	.	.	.	.
Virgin Islands			0	.	.	.	.
Virginia	No	No	4	.	.	.	.
Washington	No	No	3	.	.	.	.
West Virginia	Yes	No	3	.	.	.	.
Wisconsin	No	No	2	.	.	.	.
Wyoming	No	No	0	.	.	.	.
All US			**308**	**313**	**443.873**	**0.705**	**0.630**

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 th
   No indicates that a state mandate did not exist during 2019. Blank fields indicate data not available
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 2019 NHSN data prior to July 1, 2020, an
   YesA indicates that the state also conducted an audit of facility medical or laboratory records prior to July 1, 202
   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 voluntar
4. The number of LTACHs that reported 2019 MRSA bacteremia data and are included in the SIR calculation. SIF
   MRSA bacteremia data from at least one location in 2019.
5. Percent of facilities with ≥1.0 predicted MRSA bacteremia that had an SIR significantly greater or less than the r
   ≥ 1.0 predicted MRSA bacteremia in 2019.
6. Facility-specific key percentiles were only calculated if at least 20 facilities had ≥1.0 predicted MRSA bacteremia
   was neither calculated nor included in the distribution of facility-specific SIRs.

ylococcus aureus (MRSA) bacteremia, facility-wide[1]

for SIR	Facility-specific SIRs				10%	25%		75%	
Upper	No. of facilities with at least 1 predicted MRSA								
1.887	6	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
1.489	21	24%		0%	0.000	0.332	1.159	1.590	
0.919	5	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
2.092	10	30%		0%	.	.	.	.	.
0.598	5	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
0.846	9	.		.	.	.	.	.	.
1.755	5	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
3.015	2	.		.	.	.	.	.	.
0.412	3	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
0.471	8 .	.		.	.	.	.	.	.
1.733	5	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
1.890	5	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
1.431	4	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
0.815	10	10%		0%	.	.	.	.	.
.	.	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
1.047	4	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
0.741	5	.		.	.	.	.	.	.
1.323	2	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.
0.555	12	0%		0%	.	.	.	.	.
.	.	.		.	.	.	.	.	.
.	.	.		.	.	.	.	.	.

0.740	5	.	.	.	.	.	.
.	.	.	.	.	.	.	.
1.395	7	.	.	.	.	.	.
0.871	28	4%	0%	0.000	0.000	0.000	0.909
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
0.787	**180**	**9%**	**2%**	**0.000**	**0.000**	**0.333**	**1.186**

ɪe beginning of 2019. M indicates midyear implementation of a mandate.

: state health department had access to 2019 NHSN data, state health department performed an
ɪd state health department contacted identified facilities.
!0 to confirm proper case ascertainment (although intensity of auditing activities
 legislative mandate for the particular HAI type. Some states without mandatory
ɪly shared with them by facilities in their jurisdiction.
ℛs and accompanying statistics are only calculated for states in which at least 5 LTACHs reported

ɪominal value of the 2019 national LTACH MRSA SIR of 0.705. This is only calculated if at least 10 facilities had

ɪ in 2019. If a facility's predicted number of MRSA bacteremia was <1.0, a facility-specific SIR

90%

2.492

1.658

1.971

Hospital-onset *Clostridi*

State				No. of Events			95% CI
				Observed	Predicted	SIR	Lower
Alabama	No	No	8	22	61.362	0.359	0.230
Alaska			1	.	.	.	.
Arizona			5	33	51.742	0.638	0.446
Arkansas			8	17	50.908	0.334	0.201
California	Yes	Yes	23	383	508.207	0.754	0.681
Colorado	Yes	Yes	7	44	70.838	0.621	0.457
Connecticut	Yes	Yes	3	.	.	.	.
D.C.			2	.	.	.	.
Delaware			1	.	.	.	.
Florida	No	Yes	26	218	413.612	0.527	0.460
Georgia			13	51	153.108	0.333	0.251
Guam			0	.	.	.	.
Hawaii			1	.	.	.	.
Idaho			2	.	.	.	.
Illinois			9	84	159.527	0.527	0.423
Indiana	No	No	10	55	95.799	0.574	0.437
Iowa	No	No	2	.	.	.	.
Kansas	No	Yes	3	.	.	.	.
Kentucky	Yes	No	9	62	78.528	0.790	0.611
Louisiana			31	73	186.129	0.392	0.310
Maine	No	No	0	.	.	.	.
Maryland	No	No	2	.	.	.	.
Massachusetts	No	No	12	126	343.357	0.367	0.307
Michigan			20	80	151.737	0.527	0.421
Minnesota			2	.	.	.	.
Mississippi	Yes	Yes	7	28	66.932	0.418	0.283
Missouri			10	42	84.367	0.498	0.363
Montana	No	No	1	.	.	.	.
Nebraska			4	.	.	.	.
Nevada	No	No	10	22	81.372	0.270	0.174
New Hampshire	No	No	0	.	.	.	.
New Jersey	Yes	No	11	82	143.901	0.570	0.456
New Mexico	No	No	3	.	.	.	.
New York			2	.	.	.	.
North Carolina	Yes	No	8	52	100.668	0.517	0.390
North Dakota	No	No	2	.	.	.	.
Ohio	No	No	27	118	289.454	0.408	0.339
Oklahoma			12	30	86.033	0.349	0.240
Oregon	Yes	Yes	1	.	.	.	.
Pennsylvania	Yes	Yes	20	84	150.188	0.559	0.449
Puerto Rico			0	.	.	.	.
Rhode Island	No	No	0	.	.	.	.

State							
South Carolina	Yes	Yes	6	18	63.818	0.282	0.172
South Dakota	No	Yes	1	.	.	.	.
Tennessee	Yes	No	9	28	98.844	0.283	0.192
Texas	No	No	69	437	600.431	0.728	0.662
Utah			4	.	.	.	.
Vermont	No	No	0	.	.	.	.
Virgin Islands			0	.	.	.	.
Virginia	M	No	6	42	64.190	0.654	0.478
Washington	Yes	Yes	3	.	.	.	.
West Virginia	Yes	No	4	.	.	.	.
Wisconsin	No	No	6	25	43.317	0.577	0.382
Wyoming	No	No	0	.	.	.	.
All US			**426**	**2,544**	**4,824.179**	**0.527**	**0.507**

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
   No indicates that a state mandate did not exist during 2019. Blank fields indicate data not available
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 2019 NHSN data prior to July 1, 2020, an
   YesA indicates that the state also conducted an audit of facility medical or laboratory records prior to July 1, 202
   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 voluntar
4. The number of LTACHs that reported 2019 CDI data and are included in the SIR calculation. SIRs and accomp
   from at least one location in 2019.
5. Percent of facilities with ≥1.0 predicted CDI that had an SIR significantly greater or less than the nominal value o
   ≥ 1.0 predicted CDI in 2019.
6. Facility-specific key percentiles were only calculated if at least 20 facilities had ≥1.0 predicted CDI in 2019. If a f
   nor included in the distribution of facility-specific SIRs.

...oides difficile (CDI), facility-wide[1]

for SIR	Facility-specific SIRs						
Upper	No. of facilities with at least 1 predicted CDI			10%	25%		75%
0.534	8	.	.	.	.	.	.
	.	.	.	.	.	.	.
0.885	5	.	.	.	.	.	.
0.524	8	.	.	.	.	.	.
0.832	23	30%	9%	0.277	0.541	0.820	0.938
0.826	7	.	.	.	.	.	.
	.	.	.	.	.	.	.
	.	.	.	.	.	.	.
	.	.	.	.	.	.	.
0.601	26	0%	4%	0.223	0.349	0.435	0.722
0.434	13	0%	23%	.	.	.	.
	.	.	.	.	.	.	.
	.	.	.	.	.	.	.
0.649	9	.	.	.	.	.	.
0.742	10	10%	0%	.	.	.	.
	.	.	.	.	.	.	.
1.005	9	.	.	.	.	.	.
0.490	28	0%	4%	0.000	0.154	0.293	0.622
	.	.	.	.	.	.	.
0.435	12	33%	33%	.	.	.	.
0.653	19	11%	21%	.	.	.	.
0.597	7	.	.	.	.	.	.
0.667	10	10%	30%	.	.	.	.
	.	.	.	.	.	.	.
0.403	10	0%	30%	.	.	.	.
	.	.	.	.	.	.	.
0.704	11	18%	9%	.	.	.	.
	.	.	.	.	.	.	.
0.672	8	.	.	.	.	.	.
	.	.	.	.	.	.	.
0.486	27	7%	15%	0.000	0.192	0.490	0.855
0.492	12	8%	17%	.	.	.	.
	.	.	.	.	.	.	.
0.689	20	10%	0%	0.161	0.314	0.425	0.571
	.	.	.	.	.	.	.
	.	.	.	.	.	.	.

0.437	6	.	.	.	.	.	.
.	.	.	.	.	.	.	.
0.404	9	.	.	.	.	.	.
0.799	69	20%	7%	0.000	0.296	0.711	1.000
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
0.876	6	.	.	.	.	.	.
.	.	.	.	.	.	.	.
0.839	6	.	.	.	.	.	.
.	.	.	.	.	.	.	.
0.548	**421**	**12%**	**12%**	**0.000**	**0.215**	**0.498**	**0.828**

f 2019. M indicates midyear implementation of a mandate.

state health department had access to 2019 NHSN data, state health department performed an
d state health department contacted identified facilities.
0 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 2019 national LTACH CDI SIR of 0.527. 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

90%

1.077

0.891

0.900

1.139

0.996
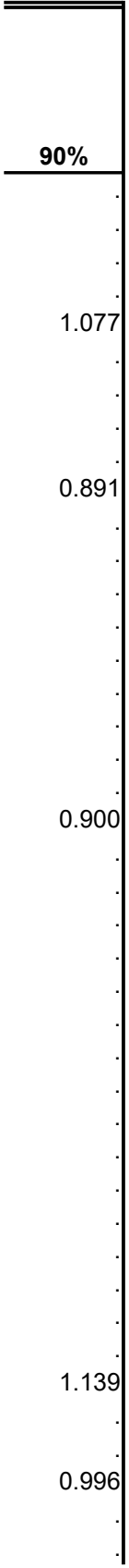
1.344

1.056

**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 tra
methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia and *Clostridi***

HAI and Patient Population	2018 SIR	2019 SIR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
CLABSI, all locations[1]	0.865	0.771	-11%	Decrease	0.0003
CAUTI, all locations[1]	0.877	0.795	-9%	Decrease	0.0013
VAE, all locations	0.841	0.591	-30%	Decrease	0.0000
Hospital-onset MRSA bacteremia, facility-wide[2]	0.744	0.705	5%	No change	0.4551
Hospital-onset *C. difficile* infections, facility-wide[2]	0.628	0.527	-16%	Decrease	0.0000

* 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 2019 by HAI and patient population:
ct infections (CAUTIs), ventilator-associated events (VAEs),
ides difficile infections, 2018 compared to 2019

Table 8. Changes in state-specific standardized infection ratios (SIRs) between 2018 and 2019 from NHSN Long-Term Acute Care Hospitals

8a. Central line-associated bloodstream infections (CLABSI), all locations[1]

State[2]	All Long-Term Acute Care Hospitals Reporting to NHSN				
	2018 SIR	2019 SIR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
Alabama	0.562	0.667	19%	No change	0.6126
Alaska	.	.	.	.	.
Arizona	0.351	0.438	25%	No change	0.6329
Arkansas	0.968	1.427	47%	No change	0.1898
California	0.974	0.901	7%	No change	0.3692
Colorado	0.497	0.558	12%	No change	0.7488
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.597	0.671	12%	No change	0.3706
Georgia	0.846	0.655	23%	No change	0.1814
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	1.350	1.084	20%	No change	0.1062
Indiana	0.921	0.937	2%	No change	0.9242
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	1.391	1.109	20%	No change	0.2481
Louisiana	0.799	1.026	28%	No change	0.0898
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.614	0.586	5%	No change	0.8224
Michigan	1.494	0.985	-34%	Decrease	0.0131
Minnesota	.	.	.	.	.
Mississippi	0.885	0.806	9%	No change	0.7283
Missouri	0.744	1.050	41%	No change	0.1464
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.522	0.229	-56%	Decrease	0.0056
New Hampshire	.	.	.	.	.
New Jersey	1.693	1.148	-32%	Decrease	0.0140
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	0.611	0.669	9%	No change	0.7041
North Dakota	.	.	.	.	.
Ohio	0.770	0.625	19%	No change	0.1497
Oklahoma	0.894	0.626	30%	No change	0.1156
Oregon	.	.	.	.	.
Pennsylvania	1.007	0.674	-33%	Decrease	0.0365
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.799	0.723	10%	No change	0.7146
South Dakota	.	.	.	.	.
Tennessee	1.032	0.859	17%	No change	0.4094
Texas	0.872	0.699	-20%	Decrease	0.0036
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	1.007	0.623	38%	No change	0.0843
Washington	.	.	.	.	.
West Virginia	.	.	.	.	.
Wisconsin	0.790	0.633	20%	No change	0.5066
Wyoming	.	.	.	.	.
All US	**0.865**	**0.771**	**-11%**	**Decrease**	**0.0003**

* Statistically significant, p < 0.0500

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

2. States without SIR either in 2018 and/or 2019 and therefore subsequent data not calculated

Table 8. Changes in state-specific standardized infection ratios (SIRs) between 2018 and 2019 from NHSN Long-Term Acute Care Hospitals

8b. Catheter-associated urinary tract infections (CAUTI), all locations[1]

	All Long-Term Acute Care Hospitals Reporting to NHSN				
	2018 SIR	2019 SIR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
Alabama	1.035	0.689	33%	No change	0.1388
Alaska	.	.	.	.	.
Arizona	0.619	0.808	31%	No change	0.3824
Arkansas	1.100	1.588	44%	No change	0.1000
California	0.824	0.592	-28%	Decrease	0.0004
Colorado	1.455	1.376	5%	No change	0.7450
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.659	0.667	1%	No change	0.9180
Georgia	1.153	0.840	-27%	Decrease	0.0319
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.970	0.921	5%	No change	0.7270
Indiana	1.003	0.604	-40%	Decrease	0.0158
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	1.066	1.001	6%	No change	0.7566
Louisiana	0.638	0.617	3%	No change	0.8381
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.770	0.966	25%	No change	0.2073
Michigan	1.337	1.299	3%	No change	0.8500
Minnesota	.	.	.	.	.
Mississippi	0.587	0.949	62%	No change	0.0633
Missouri	0.521	0.742	42%	No change	0.1914
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.647	0.674	4%	No change	0.8482
New Hampshire	.	.	.	.	.
New Jersey	0.886	0.788	11%	No change	0.5541
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	0.612	0.577	6%	No change	0.8138
North Dakota	.	.	.	.	.
Ohio	1.056	0.920	13%	No change	0.2732
Oklahoma	0.617	0.526	15%	No change	0.5174
Oregon	.	.	.	.	.
Pennsylvania	1.297	1.038	20%	No change	0.1804
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	1.191	1.361	14%	No change	0.5673
South Dakota	.	.	.	.	.
Tennessee	0.727	0.681	6%	No change	0.7950
Texas	0.709	0.600	15%	No change	0.0562
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.586	0.790	35%	No change	0.2672
Washington	.	.	.	.	.
West Virginia	.	.	.	.	.
Wisconsin	1.192	1.183	1%	No change	0.9813
Wyoming	.	.	.	.	.
All US	**0.877**	**0.795**	**-9%**	**Decrease**	**0.0013**

* Statistically significant, p < 0.0500

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

2. States without SIR either in 2018 and/or 2019 and therefore subsequent data not calculated

Table 8. Changes in state-specific standardized infection ratios (SIRs) between 2018 and 2019 from NHSN Long-Term Acute Care Hospitals

8c. Ventilator-associated events (VAE), all locations[1]

	All Long-Term Acute Care Hospitals Reporting to NHSN				
	2018 SIR	2019 SIR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
Alabama	1.039	0.000	-100%	Decrease	0.0003
Alaska	.	.	.	.	.
Arizona	.	.	.	.	.
Arkansas	.	.	.	.	.
California	0.660	0.599	9%	No change	0.4011
Colorado	0.256	0.591	131%	No change	0.1476
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.861	0.605	-30%	Decrease	0.0207
Georgia	1.161	0.552	-52%	Decrease	0.0058
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	1.165	0.973	16%	No change	0.2377
Indiana	1.675	0.278	-83%	Decrease	0.0000
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	1.071	1.835	71%	Increase	0.0195
Louisiana	1.787	1.075	40%	No change	0.4363
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.476	0.120	-75%	Decrease	0.0032
Michigan	1.045	0.572	45%	No change	0.0817
Minnesota	.	.	.	.	.
Mississippi	.	.	.	.	.
Missouri	1.150	2.370	106%	Increase	0.0145
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.066	0.148	124%	No change	0.4046
New Hampshire	.	.	.	.	.
New Jersey	0.565	0.272	-52%	Decrease	0.0124
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	.	.	.	.	.
North Dakota	.	.	.	.	.
Ohio	0.976	0.469	-52%	Decrease	0.0142
Oklahoma	2.285	0.512	-78%	Decrease	0.0127
Oregon	.	.	.	.	.
Pennsylvania	0.963	0.761	21%	No change	0.2203
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.530	1.273	140%	Increase	0.0040
South Dakota	.	.	.	.	.
Tennessee	0.424	0.454	7%	No change	0.8152
Texas	1.042	0.802	23%	No change	0.1225
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	.	.	.	.	.
Washington	.	.	.	.	.
West Virginia	.	.	.	.	.
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
All US	**0.841**	**0.591**	**-30%**	**Decrease**	**0.0000**

* Statistically significant, p < 0.0500

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

2. States without SIR either in 2018 and/or 2019 and therefore subsequent data not calculated

Table 8. Changes in state-specific standardized infection ratios (SIRs) between 2018 and 2019 from NHSN Long-Term Acute Care Hospitals

8d. Hospital-onset methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia, facility-wide[1]

	All Long-Term Acute Care Hospitals Reporting to NHSN				
	2018 SIR	2019 SIR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
Alabama	0.517	1.059	105%	No change	0.1691
Alaska	.	.	.	.	.
Arizona	.	.	.	.	.
Arkansas	.	.	.	.	.
California	1.374	1.195	13%	No change	0.3671
Colorado	0.797	0.381	52%	No change	0.2354
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	1.528	1.557	2%	No change	0.9129
Georgia	0.440	0.220	50%	No change	0.2817
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.884	0.498	44%	No change	0.1019
Indiana	0.270	0.956	254%	Increase	0.0232
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	0.808	1.809	124%	No change	0.0648
Louisiana	0.519	0.083	-84%	Decrease	0.0350
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.152	0.248	63%	No change	0.3233
Michigan	0.876	0.944	8%	No change	0.8350
Minnesota	.	.	.	.	.
Mississippi	.	.	.	.	.
Missouri	1.100	0.996	9%	No change	0.8406
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.253	0.646	155%	No change	0.2127
New Hampshire	.	.	.	.	.
New Jersey	0.698	0.444	36%	No change	0.2837
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	0.325	0.385	18%	No change	0.8208
North Dakota	.	.	.	.	.
Ohio	0.420	0.390	7%	No change	0.8853
Oklahoma	0.716	0.486	32%	No change	0.5932
Oregon	.	.	.	.	.
Pennsylvania	0.888	0.281	-68%	Decrease	0.0046
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.479	0.15	69%	No change	0.3189
South Dakota	.	.	.	.	.
Tennessee	1.022	0.852	17%	No change	0.6188
Texas	0.871	0.636	27%	No change	0.1174
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	.	.	.	.	.
Washington	.	.	.	.	.
West Virginia	.	.	.	.	.
Wisconsin	.	.	.	.	.
Wyoming	.	.	.	.	.
All US	**0.744**	**0.705**	**5%**	**No change**	**0.4551**

* 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 2018 and/or 2019 and therefore subsequent data not calculated

Table 8. Changes in state-specific standardized infection ratios (SIRs) between 2018 and 2019 from NHSN Long Term Acute Care Hospitals

8e. Hospital-onset *Clostridioides difficile* infection (CDI), facility-wide[1]

| | All Long Term Acute Care Hospitals Reporting to NHSN | | | | |
	2018 SIR	2019 SIR	Percent Change	Direction of Change, Based on Statistical Significance	p-value
Alabama	0.239	0.359	50%	No change	0.2273
Alaska	.	.	.	.	.
Arizona	0.525	0.638	22%	No change	0.4669
Arkansas	0.525	0.334	36%	No change	0.1507
California	0.928	0.754	-19%	Decrease	0.0020
Colorado	0.733	0.621	15%	No change	0.4133
Connecticut	.	.	.	.	.
D.C.	.	.	.	.	.
Delaware	.	.	.	.	.
Florida	0.600	0.527	12%	No change	0.1615
Georgia	0.402	0.333	17%	No change	0.3039
Guam	.	.	.	.	.
Hawaii	.	.	.	.	.
Idaho	.	.	.	.	.
Illinois	0.889	0.527	-41%	Decrease	0.0001
Indiana	0.647	0.574	11%	No change	0.5079
Iowa	.	.	.	.	.
Kansas	.	.	.	.	.
Kentucky	0.505	0.790	56%	Increase	0.0244
Louisiana	0.520	0.392	25%	No change	0.0636
Maine	.	.	.	.	.
Maryland	.	.	.	.	.
Massachusetts	0.327	0.367	12%	No change	0.3519
Michigan	0.592	0.527	11%	No change	0.4451
Minnesota	.	.	.	.	.
Mississippi	0.423	0.418	1%	No change	0.9709
Missouri	0.663	0.498	25%	No change	0.1588
Montana	.	.	.	.	.
Nebraska	.	.	.	.	.
Nevada	0.624	0.270	-57%	Decrease	0.0005
New Hampshire	.	.	.	.	.
New Jersey	0.586	0.570	3%	No change	0.8590
New Mexico	.	.	.	.	.
New York	.	.	.	.	.
North Carolina	0.676	0.517	24%	No change	0.1479
North Dakota	.	.	.	.	.
Ohio	0.699	0.408	-42%	Decrease	0.0000
Oklahoma	0.510	0.349	32%	No change	0.1050
Oregon	.	.	.	.	.
Pennsylvania	0.821	0.559	-32%	Decrease	0.0044
Puerto Rico	.	.	.	.	.
Rhode Island	.	.	.	.	.
South Carolina	0.546	0.282	-48%	Decrease	0.0178
South Dakota	.	.	.	.	.
Tennessee	0.493	0.283	-43%	Decrease	0.0163
Texas	0.754	0.728	3%	No change	0.5910
Utah	.	.	.	.	.
Vermont	.	.	.	.	.
Virgin Islands	.	.	.	.	.
Virginia	0.638	0.654	3%	No change	0.9050
Washington	.	.	.	.	.
West Virginia	.	.	.	.	.
Wisconsin	0.536	0.577	8%	No change	0.7741
Wyoming	.	.	.	.	.
All US	**0.628**	**0.527**	**-16%**	**Decrease**	**0.0000**

* 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 2018 and/or 2019 and therefore subsequent data not calculated

Appendix A. Factors used in NHSN risk adjustment of the device-associated HAIs (CLABSI, CAUTI, VAE) negative binomial regression models[1] 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 da

*** 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[1] from Long-Term Acute Care Hospitals

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

* 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
  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 3rd month of each quart
‡ Percent of beds located in single occupancy rooms is taken from the Annual LTACH Survey. It is ca
  rooms / total number of beds x 100.

ed as: (# admissions on a

/ total # admissions) x 100.

ter.
lculated as: # of single occupancy

<u>Additional Resources</u>

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

Technical Appendix (2019 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.