National Center for Emerging and Zoonotic Infectious Diseases

Upcoming NHSN HAI Reports

Presented by Members of CDC's Division of Healthcare Quality Promotion

This webinar is being recorded and will begin at approximately **2:10pm EST. We apologize for the delay.

December 19, 2017

Welcome!

Housekeeping

- All participants will be muted for the duration of the webinar
- You can use the chat box to ask questions at any time throughout the presentation
- Questions will be answered at the end of the webinar
- A copy of these slides were sent out on Monday, Dec 18th. Slides will be posted on NHSN webpage.
- Webinar is being recorded and will be posted on NHSN webpage. Posting details will be distributed.

<u>Agenda</u>

- Present an overview of three upcoming HAI reports
 - Various speakers, including analysts on the NHSN Methods and Analytics Team, and the Associate Director of Science for DHQP
- CDC's communication plan, timelines, and website updates

2015 National and State HAI Data Report

Rebecca Konnor

The 2015 HAI Data Report

- The scope of work for the 2015 report is different from previous reports
- The 2015 report uses the new 2015 baseline and risk adjustment calculations
- Report structure mimics the pattern of the rebaseline work. The report is produced by facility type:
 - Acute Care Hospitals (ACHs)
 - Critical Access Hospitals (CAHs)
 - Inpatient Rehabilitation Facilities (IRFs)
 - Long Term Acute Care Hospitals (LTACHs)
- Includes SIR data by nation and States, as well as national standardized utilization ratios (SUR)
- The report includes the HAIs for which we currently have a baseline
- No comparisons made between previous year data and current year data

List of HAI Measures Included in the 2015 HAI Data Report

HAI Type	ACH		САН		IRF		LTACH	
	National	State	National	State	National	State	National	State
CAUTI (by location)	\checkmark	✓	\checkmark	✓	\checkmark	✓	✓	✓
CLABSI (by location)	\checkmark	✓	\checkmark	✓	\checkmark	\checkmark	✓	✓
CDIFF (Facwidein)	\checkmark	✓	\checkmark	✓	\checkmark	\checkmark	✓	✓
MRSA (Facwidein)	\checkmark	✓	✓	✓	\checkmark	✓	✓	✓
SSI-All procedures for	\checkmark		\checkmark			1		
adults and pediatrics.								
Complex A/R Model								
only								
*SSI-adult procedures		✓		✓				
only, Top voluminous				COLO				
procedures/SCIP.				and				
Complex A/R Model				HYST				
only.				only				
VAE (by location)	✓	✓	✓	✓			 ✓ 	✓
IVAC Plus (by location)	\checkmark	✓	**	**			✓	✓
lational SURs	\checkmark		✓		\checkmark		✓	
LABSI, CAUTI, VAE								

2015 HAI Data Report Format

- Fact sheets (by facility type)
 - Summary of data presented in the detailed technical tables
 - National
 - State
- Detailed technical tables include:
 - Excel data tables detailing the national and state data for the various HAIs
 - There are five detailed technical excel documents for the 2015 report, one each for the four major facility types, and one for national SURs

The National Factsheet: (front) Acute Care Hospitals

NATIONAL

Healthcare-associated intections (HAIs) are intections patients can get while receiving medical treatment In a healthcare facility. Working toward the elimination of HAIs is a CDC priority. The standardized infection ratio (SRI) is a summary statistic that can be used to tack HAI prevention progress over time; lower SIRs are better. The infection data are reported to CDC's National Healthcare Safety Network (NHSN), HAI data for nearly all U.S. hospitals are published on the Hospital compare website. This report is based on 2015 data, published in 2017 and uses the 2015 Baseline and risk-adjusted modes.

CLABSIs

2015

CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS

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

- Among the 2,328 hospitals with enough data to calculate an SIR:
- 11% had an SIR significantly higher (worse) than 0.994, the value of the national SIR
- 11% had an SIR significantly lower (better) than 0.994, the value of the national SIR

CAUTIS

CATHETER-ASSOCIATED URINARY TRACT INFECTIONS

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

- Among the 2,597 hospitals with enough data to calculate an SIR:
 - 12% had an SIR significantly higher (worse) than 0.993, the value of the national SIR
 - 11% had an SIR significantly lower (better) than 0.993, the value of the national SIR

VAEs

VENTILATOR-ASSOCIATED EVENTS

When a medical problem makes it hard or impossible for a patient to breathe on their own, they may be placed on a special breathing machine called a ventilator to save their life. This usually involves placing a tube in the platents airway, and attaching the tube to the ventilator. Patients on ventilators are usually very sick, and they can develop problems related to their limes or related to being on a ventilator. This includes infections such as pneumonia or other problems such as fully building.

Among the 1,373 hospitals with enough data to calculate an SIR:

- 19% had an SIR significantly higher (worse) than 1.000,
- the value of the national SIR 26% had an SIR significantly lower (better) than 1.000, the value of the national SIR



THIS REPORT IS BASED ON 2015 DATA, PUBLISHED IN 2017, AND USES THE 2015 BASELINE AND RISK-ADJUSTED MODELS

SSIs

ACUTE CARE HOSPITALS

SURGICAL SITE INFECTIONS See pages 3-5 for additional procedures

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

SSI: Abdominal Hysterectomy

- Among the 614 hospitals with enough data to calculate an SIR:
 - 5% had an SIR significantly higher (worse) than 1.003, the value of the national SIR
 - 1% had an SIR significantly lower (better) than 1.003, the value of the national SIR

SSI: Colon Surgery

- Among the 1,811 hospitals with enough data to calculate an SIR:
 - 8% had an SIR significantly higher (worse) than 0.999, the value of the national SIR
 - 4% had an SIR significantly lower (better) than 0.999, the value of the national SIR

C. DIFFICILE EVENTS

LABORATORY-IDENTIFIED HOSPITAL-ONSET C. DIFFICILE EVENTS

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

- Among the 3,159 hospitals with enough data to calculate an SIR:
 - 14% had an SIR significantly higher (worse) than 0.993, the value of the national SIR
 - 15% had an SIR significantly lower (better) than 0.993, the value of the national SIR

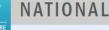
MRSA BACTEREMIA

LABORATORY-IDENTIFIED HOSPITAL-ONSET BLOODSTREAM EVENTS

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

- Among the 1,839 hospitals with enough data to calculate an SIR:
 - 8% had an SIR significantly higher (worse) than 0.998, the value of the national SIR
- 4% had an SIR significantly lower (better) than 0.998, the value of the national SIR

The National Factsheet: (back) **Acute Care Hospitals**



ACUTE CARE HOSPITALS

Healthcare-associated infection (HAI) data give healthcare facilities and public health agencies knowledge to design, implement, and evaluate HAI prevention efforts.

1 5	. 1

2015 DATA								
HAI TYPE	#HOSPITALS	201	2015					
NALTIPE	REPORTING *	MINIMUM MEDIAN		MAXIMUM	NAT'L SIR			
CLABSI	3,550	0.000	0.868	2.440	0.994			
CAUTI	3,658	0.000	0.872	2.369	0.993			
VAE	1,828	0.000	0.791	2.838	1.000			
SSI, Abdominal Hysterectomy	3,029	0.000	0.777	2.656	1.003			
SSI, Colon Surgery	3,140	0.000	0.823	2.631	0.999			
C. difficile Events	3,634	0.000	0.928	1.842	0.993			
MRSA Bacteremia	3,616	0.000	0.827	2.671	0.998			

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

¹These data represent the distribution of all hospital SIRs for each HAI type. The lowest facility SIR is represented by the "minimum", and the highest facility SIR is the "maximum". The median represents the middle of the distribution; half of all facilities fall below (and above) this SIR value. Distributions are only calculated when at least 20 hospitals had enough data to calculate an SIR.

For additional data points, refer to the technical data tables at www.cdc.gov/hai/progress-report/

LEARN HOW YOUR HOSPITAL IS PERFORMING: www.medicare.gov/hospitalcompare

AND USES THE 2015 BASELINE AND RISK-ADJUSTED MODELS



FOR ADDITIONAL INFORMATION:

- 2015 HAI Data Report: www.cdc.gov/hai/progress-report
- NHSN: www.cdc.gov/nhsn
- Preventing HAIs: www.cdc.gov/hai
 For more information on the 2015 Baseline and risk adjustment calculation, please visit: https://www.cdc.gov/ nhss/2015rebaseline/inder.html
- The new SIR Guide: https://www.cdc.gov/nhsn/pdfs/ ps-analysis-resources/nhsn-sir-guide.pdf

The State Factsheet: (front) Acute Care Hospitals

State's Name

ACUTE CARE HOSPITALS

ASSOCIATED INFECTIONS 2015 Healthcare-associated infections (HAls) are infections patients can get while receiving medical treatment in a healthcare facility. Working toward the elimination of HAls is a CDC priority. The standardized infection ratio (SIR) is a summary statistic that can be used to track HAI prevention progress over time; lower SIRs are better. The infection data are reported to CDC's National lealthcare Safety Network (NISN). HAI data for nearly all U.S. hospitals are published on the hospital Compare website. This report is based on 2015 data, published in 2017 and uses the 2015 Baseline and risk-diauted models.

State will be highlighted here

CLABSIS

CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS

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

- Among the 264 ACHs with enough data to calculate an SIR:
 - 1.3% had an SIR significantly higher (worse) than 0.994, the value of the national SIR.
 - 14% had an SIR significantly lower (better) than 0.994 the value of the national SIR.
- California reported lower (better) SIR compared to the value of the national SIR.

CAUTIS

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

- Among the 282 ACHs with enough data to calculate an SIR:
 - 17% had an SIR significantly higher (worse) than 0.993, the value of the national SIR.
 - 10% had an SIR significantly lower (better) than 0.993, the value of the national SIR.
- California reported higher (worse) SIR compared to the value of the national SIR.

VAEs

VENTILATOR-ASSOCIATED EVENTS

When a medical problem makes it hand or impossible for a patient to breathe on their own, they may be placed on a special breathing machine called a ventilator to save their life. This usually involves placing a tube in the patient's airway, and attaching the tube to the ventilator. The variations on ventilators are usually very sick, and they can develop problems related to their illness or related to being on a ventilator. This includes infections such as pneuronia or other problems such as failud buildup in the lungs.

- Among the 140 ACHs with enough data to calculate an SIR:
 - 15% had an SIR significantly higher (worse) than 1, the value of the national SIR.
 - 36% had an SIR significantly lower (better) than 1,
- the value of the national SIR.
- California reported lower (better) SIR compared to the value of the national SIR.



THIS REPORT IS BASED ON 2015 DATA, PUBLISHED IN 2017, AND USES THE 2015 BASELINE AND RISK-ADJUSTED MODELS

SSIs

SURGICAL SITE INFECTIONS

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

SSI: Abdominal Hysterectomy

- Among the 63 ACHs with enough data to calculate an SIR:
- 6% had an SIR significantly higher (worse) than 1.003,
- the value of the national SIR. 0% had an SIR significantly lower (better) than 1.003,
- the value of the national SIR.
- California reported higher (worse) SIR compared to the value of the national SIR.

SSI: Colon Surgery

- Among the 179 ACHs with enough data to calculate an SIR:
- 10% had an SIR significantly higher (worse) than 0.999, the value of the national SIR.
 5% had an SIR significantly lower (better) than 0.999,
- 5% had an SIR significantly lower (better) than 0.999, the value of the national SIR.
- California reported higher (worse) SIR compared to the value of the national SIR.

C. DIFFICILE EVENTS

LABORATORY-IDENTIFIED HOSPITAL-ONSET C. DIFFICILE EVENTS

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

- Among the 309 ACHs with enough data to calculate an SIR:
- 28% had an SIR significantly higher (worse) than 0.993, the value of the national SIR.
- 11% had an SIR significantly lower (better) than 0.993, the value of the national SIR.
- California reported higher (worse) SIR compared to the value of the national SIR.

MRSA BACTEREMIA

LABORATORY-IDENTIFIED HOSPITAL-ONSET BLOODSTREAM EVENTS

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

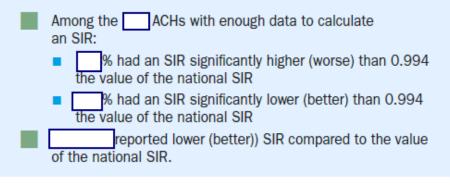
- Among the 203 ACHs with enough data to calculate an SIR:
- 6% had an SIR significantly higher (worse) than 0.998, the value of the national SIR.
- 2% had an SIR significantly lower (better) than 0.998, the value of the national SIR.
- California reported lower (better) SIR compared to the value of the national SIR.

The State Factsheet: (front) Acute Care Hospitals

CLABSIs

CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS

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



Sections for CLABSI, CAUTI, VAE, SSI (COLO/HYST), MRSA bacteremia LabID, CDI LabID

The State Factsheet: (back) **Acute Care Hospitals**

State's Name

ACUTE CARE HOSPITALS

HEALTHCAR Healthcare-associated infection (HAI) data give healthcare facilities and public health agencies knowledge to design, implement, and evaluateHAI prevention efforts.

INFECTIONS 2015

2015 DATA								
HAI TYPE	# ACHs REPORTING [*]	201	5 SIR DISTRIBUT	2015	2015			
NALITPE		MINIMUM	MEDIAN	MAXIMUM	STATE SIR	NAT'L SIR		
CLABSI	332	0.1000	0.934	2.189	0.971	0.994		
CAUTI	334	0.000	0.961	2.240	1.120	0.993		
VAE	160	0.000	0.565	2.075	0.769	1.000		
SSI, Abdominal Hysterectomy	298	_	_	_	1.055	1.003		
SSI, Colon Surgery	304	0.000	0.811	2.383	1.067	0.999		
C. difficile Events	336	0.508	1.125	1.837	1.161	0.993		
MRSA Bacteremia	335	0.000	0.794	1.992	0.980	0.998		

*The number of ACHs that reported to NHSN and are included in the SIR calculation. This number may vary across HAI types; for example, some hospitals do not use central lines or urinary catheters or ventilators. States with less than 5 facilities are suppressed.

"These data represent the distribution of all hospital SIRs for each HAI type. The lowest facility SIR is represented by the "minimum", and the highest facility SIR is the *maximum*. The median represents the middle of the distribution; half of all facilities fail below (and above) this SiR value. Distributions are only calculated when at least 20 hospitals had enough data to calculate an SIR.

For additional data points, refer to the technical data tables at www.cdc.gov/hal/progress-report/

LEARN HOW YOUR HOSPITAL IS PERFORMING: www.medicare.gov/hospitaicompare

FOR ADDITIONAL INFORMATION:

- 2015 HAI Data Report: www.cdc.gov/hai/progress-report
- NHSN: www.cdc.gov/nhsn
- Preventing HAIs: www.cdc.gov/hai
- For more information on the 2015 Baseline and risk adjustment calculation, please visit: https://www.cdc.gov/ nhsn/2015rebaseline/index.html
- The new SIR Guide: https://www.cdc.gov/nhsn/pdfs/ ps-analysis-resources/nhsn-sir-guide.pdf



THIS REPORT IS BASED ON 2015 DATA, PUBLISHED IN 2017, AND USES THE 2015 BASELINE AND RISK-ADJUSTED MODELS

Early Preparations for 2016 HAI Progress Report

Scott Decker

2016 HAI Progress Report

- Analyses have started for the 2016 HAI Progress Report
- Scope is similar to 2015 report; SIRs and SURs stratified by facility type and HAI type
- 2016 State Mandate and Validation survey is coming soon!
 - The survey will collect information about state reporting requirements and data validation practices that were in place for specific HAIs and facility types during 2016
 - Survey Monkey will be used
 - Survey will be sent to states on January 10th, 2018
 - Please complete the survey by February 2nd, 2018 (~ 3 weeks)
 - A full PDF of the survey with instructions will be distributed to states in advance
 - Responses can be edited prior to deadline. Please only edit and submit one survey per state.
- The survey will be sent to you by DHQP's State Support Unit: HAIAR@cdc.gov

New Report: National 2015 SIRs Using Historical Baselines

Lindsey Weiner

Purpose

- This report calculates national 2015 SIRs under original national baselines for acute care hospitals:
 - CLABSI
 - CAUTI
 - SSI: COLO and HYST
 - MRSA Bacteremia and C.difficile LabID
- Discussion of NHSN protocol changes in 2015 that impacted national data
- Statistical comparisons between 2014 and 2015 national SIRs
- Additional national metrics (2014 & 2015): device-utilization, pathogen distributions, inpatient community-onset prevalence rates

Executive Data Summary

• Executive summary & HAI-specific sections

National 2015 SIRs Calculated Under Historical Baselines*							
НАІ Туре	# Hospitals	# Reported Infections	# Predicted Infections	2015 SIR	Percent Change (%) from 2014 [‡]		
Catheter-associated Urinary Tract Infection (CAUTI)	4,165	27,029	47,497.17	0.569*	43.0% decrease		
Central Line-associated Bloodstream Infection (CLABSI)	3,935	27,313	45,279.51	0.603*	21.8% increase		
Surgical Site Infection (SSI)- Abdominal Hysterectomy	3,248	2,091	2,479.48	0.843*	no significant change		
Surgical Site Infection (SSI) - Colon Surgery	3,395	9,280	9,201.82	1.008	3.3% increase		
MRSA Bacteremia LabID Event	4,035	8,898	9,329.72	0.954*	9.9% increase		
C.difficile LabID Event	4,127	101,610	109,862.78	0.925*	no significant change		

Example: CAUTI

НАІ Туре	# Hospitals	# Reported Infections	# Predicted Infections	2015 SIR	Percent Change (%) from 2014 [‡]
Catheter-associated Urinary					
Tract Infection (CAUTI)	4,165	27,029	47,497.17	0.569*	43.0% decrease

- The 2015 national CAUTI SIR = 0.569
 - 43% significant decline in SIR compared to 2009 baseline
 - And, a 43% significant decrease compared to 2014 SIR
- CAUTI definition changes in 2015:
 - Exclude cultures in which all organisms were non-bacterial (e.g., yeast)
 - Exclude SUTIs with colony counts < 100,000 CFU/ml
- This report reviews changes in yeast reporting patterns
- Separate analysis removed yeasts from all CAUTI data to allow for a better comparison of CAUTI SIRs between 2014 – 2015
 - 17.1% decline in 2015 compared to 2014

New Report: Healthcare-Associated Infections in the United States, 2006-2016: A Story of Progress

Dr. Cliff McDonald

Healthcare-associated Infections in the United States: 2006-2016 A Story of Progress

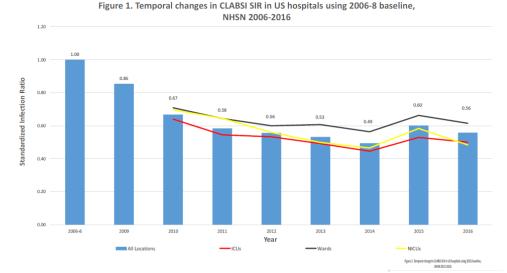
- High-level assessment, NHSN plus other data, several years
- To bridge understanding over 2014 to 2015: early look at 2016
 - Both historical and 2015 baselines
- Infections: CLABSI, CAUTI, SSI, CDI, and MRSA bacteremia
- Sections
 - Prevention highlights: topline messages
 - Background: HHS Action Plan goals, changes in SIR over time
 - Additional prevention data
 - EIP, Prevalence survey
 - Next steps
 - Major area(s) for increased or new focus
 - Example prevention resources, TAP strategy

CLABSI

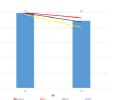
Central Line-Associated Bloodstream Infection (CLABSI)

Prevention Highlights

• Hospitals have made significant progress in preventing CLABSIs- nationally, there has been a roughly 50% drop in CLABSIs between 2008 and 2016 (Figures 1 and 2).



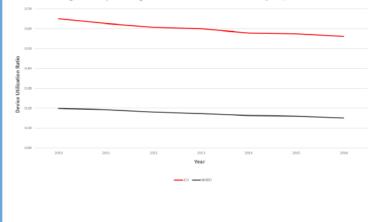
 This progress reflects outstanding collaborative efforts among healthcare providers, supported by national prevention efforts led by CDC, state health departments, the Agency for Healthcare Research and Quality (AHRQ) Comprehensive Unit Based Safety Program (CUSP), and Centers for Medicare and Medicaid Services (CMS) Quality Improvement Networks and Organizations and Hospital Engagement Networks.



CAUTI

SYNERGIZING PREVENTION

Combined with declining non-yeast CAUTI SIRs, which change in relation to the number of CAUTIs per urinary catheter days, declines in the device (i.e. urinary catheter) use ratio (Figure 8: measured as urinary catheter days per patient days) highlight the net benefit to patients afforded by both safer and reduced urinary catheter use. Reducing unnecessary urinary catheter use is a key prevention strategy for CAUTI. Figure 8. Temporal changes in catheter utilization ratio in US hospitals, 2010-2016

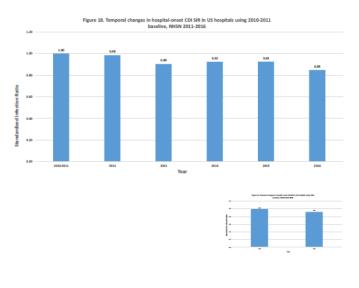


Measurement Background

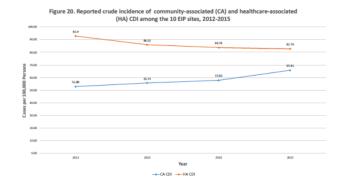
• The HAI Action Plan reduction target was a 5-year 25% reduction in SIR from the baseline to 2013 with the new metric set (with a 2015 baseline) for another 25% reduction by 2020 (https:// health.gov/hcq/prevent-hai-measures.asp).

• In 2015 there was a marked (i.e. 43%) decline from 2014 in the SIR calculated using the 2009 baseline (Figure 7). This decrease was caused by changes in the surveillance protocol as described in the report entitled "National 2015 Standardized Infection Ratios (SIRs) Calculated Using Historical Baselines"(link).

C. difficile



• Crude rates of healthcare-associated CDI are decreasing (Figure 20), which largely reflects declines in nursing homeonset infections (data not shown), along with some declines in hospital-onset CDI.



16.7% Discharged from reporting hospital < 4 weeks prior 50.8% Not recently discharged from reporting hospital

Figure 21. Proportion of CDI events by location of onset, NHSN 2015 (N=333,244)

• An assessment of CDI events reported to NHSN demonstrates that nearly 70% of reported events had their onset in the community in 2015 (Figure 21). Although a subset of community-onset events are used for risk adjustment, hospital-onset events are the outcome measured by the SIR.

Hospital Onset
 Community Onset

Surgical Site Infections

Additional Prevention Data

 Data from CDC's hospital HAI point prevalence surveys show significant reductions in overall SSI (i.e. not limited to 10 SCIP procedures or SSI following a specific procedure) prevalence between 2011 and 2015 (Magill S<u>et al.</u> <u>IDWeek 2017</u>).

Next Steps

- Building upon the historic and possibly ongoing impact of implementing general (i.e. SCIP) strategies to prevent SSIs broadly, future declines in SSI will require collaborative efforts with the surgical community to develop innovative prevention strategies directed at specific procedures.
- Resources to prevent SSIs include:
 - Resources for patients and links to strategies
 - Recent guidelines

Timeline and Communication Strategies

Where Can You Find the Reports?

- All reports will be available on the CDC NHSN website in January 2018
 - Web link: <u>www.cdc.gov/hai/surveillance</u>
- GovD notification will be sent when reports are available; sign up here: <u>https://www.cdc.gov/Other/emailupdates/</u>
- Notifications from NHSN: blast emails and/or quarterly newsletter
- DHQP will send follow-up email to HAI/AR Coordinators when reports are posted
- States with specific questions about the reports or their NHSN data should contact the NHSN helpdesk: <u>nhsn@cdc.gov</u>
 - Use subject line: "NHSN HAI Progress Report"



Send us your questions via Chat Box