2015 NHSN Rebaseline Webinar: New and Upcoming!

SCOTT GREGORY DECKER
REBECCA YVONNE KONNOR
LINDSEY WEINER

NHSN Methods and Analytics Team
Division of Healthcare Quality Promotion, CDC

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Objectives

- Preview of the new application interface
- New output options
- Putting the re-baseline into practice
- Annual surveys
- Upcoming events and planned documentation
NHSN HAS A NEW LOOK!!
Summary of New Measures:

- SIRs for critical access hospitals separate from acute care hospitals
- MBI SIRs
- VAE SIRs
  - Total VAE
  - IVAC Plus
- Pediatric SSI SIRs
- MRSA and CDI LabID SIRs for LTACHs and IRFs
- Standardized Utilization Ratios (SURs) for all device types
What Has Changed?

- Addition of new reports
- Separation of reports by facility type
- More user friendly (and intuitive)
- Visually different
  - Alerts
  - Data entry screen
  - Monthly reporting plans
  - Analysis reports/Analysis modify screen
- New variables
NHSN Patient Safety Component Home Page
Monthly Reporting Plans

Add Monthly Reporting Plan

Mandatory fields marked with *

- Facility ID: DHQP MEMORIAL HOSPITAL (ID 10018)
- Month:
- Year:
- No NHSN Patient Safety Modules Followed this Month

Device-Associated Module

- Locations
- CLABSI  VAP  CAUTI  CLIP

- Pedsurg_CC - Pedsurg_CC
- AMAU - Adult Mixed Acuity Unit

- Add Row  Clear All Rows  Copy from Previous Month

Procedure-Associated Module

- Procedures
- SSI  Post-procedure PNEU

- Colo - Colon surgery
- Hyst - Abdominal hysterectomy

- Add Row  Clear All Rows  Copy from Previous Month
Accessing Data Entry Screens
Generating Datasets

Generate Data Sets

Generate Patient Safety Analysis Data Sets

Datasets generated will include data for the 3 most recent full calendar years up until today's date for the Patient Safety Component. To include all years, check the box below.

For all other components, datasets generated will include all years. Note that any analysis options you run will be limited to the time period shown on the date range bar.

Include all data reported to NHSN for this component within the parameters of your report.

Don't forget to check the box to include all years of data!
Analysis Reports

Output Options are now called Analysis Reports!

NEW Features:

- Quickly access your desired reports by searching key words, such as CLABS1 SIR
- Expand all folders / Collapse all folders
- See the tree view of the report folders and sub folders
**Analysis Reports**

**Locating reports based on 2015 baseline:**
All folders displayed here, with the exception of the folder named Baseline Set 1, contain reports using the new 2015 baseline.

**Locating reports based on 'old' baseline:**
Please find reports using the old baseline here in the Baseline Set 1, also called BS1 folder. Reports are organized by HAI type.
Analysis Reports - New Reports

- Device-Associated (DA) Module
  - Central Line-Associated BSI
    - Line Listing - All CLAB Events
    - Frequency Table - All CLAB Events
    - Bar Chart - All CLAB Events
    - Pie Chart - All CLAB Events
    - Rate Table - CLAB Data for ICU-Other
    - Run Chart - CLAB Data for ICU-Other
  - Rate Table - CLAB Data for NICU
  - Run Chart - CLAB Data for NICU
  - Rate Table - CLAB Data for SCA/ONC
  - Run Chart - CLAB Data for SCA/ONC

- SIR
  - SIR - Acute Care Hospital CLAB Data
  - SIR - Critical Access Hospitals CLAB Data
  - SIR - Long Term Acute Care CLAB Data
  - SIR - Inpatient Rehab Facilities CLAB Data

- Custom Reports
  - TEST: Line Listing - All CLAB Events
Analysis Reports
Modifying Reports-SIR Reports

Modify "SIR - Acute Care Hospital CLAB Data"

- Show descriptive variable names (Print List)
- Title:
  - SIR for Central Line-Associated BSI Data for Acute Care Hospitals (2015 baseline)

Modify "SIR - Acute Care Hospital CLAB Data"

- Show descriptive variable names (Print List)
- Time Period:
  - Date Variable: [ ]
  - Beginning: [ ]
  - Ending: [ ]

- Clear Time Period

- Enter Date variable/Time period at the time you click the Run button

Run | Save... | Export... | Close
Modifying Reports - SIR Reports

Get a cumulative SIR for your specified time period.
Modifying Reports-Line Listing Reports
Modifying Reports-Line Listing Reports
Creating Custom Reports

Analysis Data Set:
- bs1_SIR_AllSISIProc
- bs1_SIR_AllSISISurg
- bs1_SIR_Cmpxs30dSISIProcPCH
- bs1_SIR_Complex30dSISIProc
- bs1_SIR_Complex30dSISISurg
- bs1_SIR_ComplexSSISIProc
- bs1_SIR_ComplexSSISISurg
- bs1_VAE_RatesICU_SCA
- bs1_VAE_RatesLTAC_CMS
- bs2_CAU_Rates_CMS
- bs2_CAU_RatesCAH
- bs2_CAU_RatesCAH_CMS
- bs2_CAU_RatesICU_SCA
- bs2_CAU_RatesRF
- bs2_CAU_RatesLTAC
- bs2_CAU_RatesNICA
- bs2_CAU_RatesONC
- bs2_CAU_TAP
- bs2_CAU_TAPIRF
- bs2_CAU_TAPTAC
- bs2_CLAB_Rates_CMS
- bs2_CLAB_RatesCAH
- bs2_CLAB_RatesCAH_CMS
- bs2_CLAB_RatesICU
- bs2_CLAB_RatesRF
- bs2_CLAB_RatesLTAC
- bs2_CLAB_RatesNICA
- bs2_CLAB_RatesONC
- bs2_CLAB_RatesSCA
- bs2_CLAB_TAP

Types:
- Bar Chart
- TAP
- Bar Chart Summary
- Frequency Table Summary
- Line Listing
- Run Chart
- Rate Table
- Pie Chart Summary
- Pie Chart
- SIR
- Frequency Table

New Report:
- Title/Format
- Time Period
- Filters
- Display Variables
- Sort Variables
- Display Options

Title:
- bs2_CAU_RatesCAH

Format:
- html
- pdf
- xls
- rtf
Published Reports

- SIR - MONTHLY Complex 30-Day SSI Data for CMS IPPS
- SSI Pathogen Issue
- Antibiogram - SSI Pathogen Issue
- SSI Events for CMS Output
- Procedures for CMS output
- **SLJ Line Listing for All LabID Events**
- Line Listing - All Events steve
- LA Feb 2013Line Listing - All SSI Events
- LA Feb 2013SIR - All SSI Data by Procedure
- HAI Freq Table test
- sho3 - Line Listing for All Patients for defect 2321
- Adult-TAR-3
- Adult-TAR-4
- Pediatric-TAR-3
- Pediatric-TAR-4
- SIR - Monthly CLAB Data for CMS IPPS
- CR 536 Verification (CLABSI SIR for IPPS)
- Line Listing - All CLAB Events
- Line Listing - All CLAB Events DEMO
- Line Listing - CLABSIs in ICU locations
Additional Changes to NHSN Application, Coming Soon

Lindsey Weiner
Running Analysis Reports in NHSN

- **New variables**
  - Indicator variables for SSI events
  - Exclusion variables for procedures

- **New names for existing variables**
  - Denominator of the SIR: number of predicted events
    - Previously called numExp; now called “numPred”
  - Total patient days from the annual survey
    - Previously called numPatDays; now called “numPatDaysSurv”
  - Total admissions from the annual survey
    - Previously called numAdmits; now called “numAdmitsSurv”

- **New naming convention for analysis datasets (exporting)**
  - Datasets are prefixed with “bs1” or “bs2”
    - BS1: original baseline
    - BS2: new baseline
Pooled Means (National Benchmark Rates)

- 2014 is the last year NHSN will publish device-associated national pooled means
  - Infection rate and device utilization ratio (DUR)
  - Moving forward, benchmarks will be published annually as SIRs

- Typically, rate tables provided the facility’s rate and DUR, with a comparison to national pooled means

- Pooled means will no longer appear in the default device-associated rate tables for 2015 data and forward
Rate Tables in “Baseline Set 1” Folder

- Review the comparison between your facility’s rates and the 2014 national pooled mean rates in the “Baseline Set 1” folder
  - 2015 + 2016 device-associated rates will be compared to 2014 national pooled mean

- Reminder: 2014 is the last pooled mean in the “Baseline Set 1” rate tables
- 2015 national pooled means will be available in the Rate Calculator
Rate Calculator

- *New* online tool launching next year, 2017
- Public website outside of the NHSN application
- User will enter risk factors as they apply to the facility/HAI of interest
  - e.g., bed size, medical school affiliation
- Calculator will produce a national pooled mean rate for the facility based on 2015 national data
  - No annual updates
- All HAI types (including SSI, MRSA & *C. difficile* LabID, etc.)
- More information will be provided next year
Analyzing SIRs Under the Updated Baseline

Interpretation, Graphical Display, Communication
Generating SIRs in NHSN: *C. difficile* Example

- Facility-wide inpatient (FACWIDEIN) *C. difficile* SIR, 2016 Q1
- Baseline year(s) are indicated in the report title
- New footnotes!
Interpretation of SIRs under the New Baseline

\[
\text{SIR} = \frac{\# \text{ Observed Events}}{\# \text{ Predicted Events}}
\]

- # predicted events is calculated from a regression model, using variables found to be statistically significant predictors of the HAI in 2015 national data
- SIR under the new baseline is still compared to 1!
- SIR > 1: 
  - more HAIs observed than predicted, based on 2015 national experience
- SIR < 1: 
  - fewer HAIs observed than predicted, based on 2015 national experience
- The SIR is only calculated when # of predicted infections is \( \geq 1 \)
- The # observed HAIs is significantly different than # predicted HAIs if:
  - \( p \)-value \( \leq 0.05 \)
  - 95% confidence interval does not include the value of 1
Interpretation of SIRs under the New Baseline

- Complete data from all 3 months of the quarter are included
- Facility observed 4 hospital-onset \textit{C. difficile} events
- Number of predicted events (numPred) = 6.627
- SIR = 0.604
  - Facility observed fewer CDI events than predicted, based on 2015 baseline
  - P-value and 95% confidence interval tell us the SIR is not statistically significant
Review of Available Time Periods for the SIR Calculation

- SIRs under the **new** baseline can be calculated starting with 2015 data
- SIRs under the **original** baselines* can continue to be calculated through 2016 data
  - Will be used by CMS: Hospital Value-Based Purchasing (HVBP) program
  - Can be used by NHSN users when comparing to prior years of data
- Starting with 2017 data, SIRs will only be calculated in NHSN under new risk models

Example: Review SIRs Under Original Baseline Through 2016

- Our example hospital has been tracking their CLABSI SIRs since 2011
  - Recently implemented a new CLABSI prevention measure in 2015
  - Any visible changes in the CLABSI SIR between 2015 and 2016?
Best Practices for Graphical Display of SIR

- SIRs have been labeled with the corresponding baseline
- Continuous SIR display stops at 2016; 2017 data must use the new baseline
- For descriptive purposes only
  - No statistical analyses were performed
Transition Period: Which SIRs Do We Use?

- If needed, continue reviewing SIRs under original baseline through 2016
  - Show effectiveness of prevention activities
  - Progress over time from the original baseline population
  - Review data that will be used in HVBP

- Begin reviewing SIRs under the new baseline from 2015 and forward
  - New starting place for measuring HAIs
  - Hospital Compare will display 2015 SIRs under the new baseline
  - 2015 SIRs under the new baseline will be used in future HVBP

- CDC will start using the new baseline with 2015 data
  - HAI Progress Report
  - National and state 2015 SIRs will use the updated risk models
SIR Display

- The following slides will show examples and recommendations for how to display and interpret SIRs during this transition period, calculated under either baseline.

- Basic principles of SIR display during transition:
  - Understand which time periods are available for each baseline
  - If displaying SIRs over time in a continuous line, the SIRs from all time periods must be calculated under the same baseline
  - SIRs under the new baseline cannot be directly compared to SIRs from the original baseline
  - When presenting or discussing your hospital’s SIRs, be sure to clearly label the baseline time period used

- There are MANY more ways to display SIR data!
Incorporate New Baseline

- Our example hospital has been tracking their CLABSI SIRs since 2011
- IP would like to continue monitoring SIRs on a single graph beyond 2016
  - Must incorporate new baseline!

*Note: SIR = 1 always represents the national baseline*
Incorporate New Baseline

- SIRs under new baseline cannot be compared to SIRs from original baseline!
- Acceptable to show SIRs under both baselines in a single figure, given:
  - Line graph is *not* connecting points between different baselines
  - Each baseline is clearly labeled

![Graph showing Hospital's CLABSI SIR: 2011-2018](image)
Alternative Example: Transition at 2015

- When presenting SIRs under new baseline for the first time, consider showing SIRs under the old baseline for context & as an indication of past progress
Talking Points: Discussing SIRs During Transition Period

- 2011 – 2014 SIRs under original baseline
  - 2014 SIR = 0.50
  - Interpretation: In 2014, our facility saw 50% fewer CLABSIs than predicted, compared to the 2006-2008 national experience

- 2015 SIR under new baseline-transition year
  - 2015 SIR = 1.20
  - Interpretation: In 2015, our facility saw 20% more CLABSIs than predicted, based on the 2015 national experience
Assessing Changes in HAI Experience Over Time

- SIRs under the original baseline cannot be directly compared to any SIRs calculated under the new baseline
  - Different risk adjustment, different baseline population

- When comparing SIRs from two time periods, both SIRs must have been calculated under the same baseline
  - 2014 vs. 2015 SIRs: original baseline
  - 2015 vs. 2016 SIRs: use either the new baseline or original baseline for both SIRs in the comparison
  - 2016 vs. 2017 SIRs: new baseline

- Perform statistical comparison of 2 SIRs directly in NHSN
Example

- Our hospital has been participating in a prevention collaborative for MRSA bacteremia

- IP would like to determine whether there was a significant change in MRSA bacteremia in 2016 compared to 2015

- SIRs calculated under either baseline could be used for this comparison. IP decided to use the 2015 national baseline:

  - 2015 MRSA bacteremia SIR = 1.216
  - 2016 MRSA bacteremia SIR = 0.771
NHSN Statistics Calculator

- Compare Two Proportions
- Compare Single SIR to 1
- Compare Two Standardized Infection Ratios
- Compare Two Incidence Density Rates
- Compare Single Proportion to a Benchmark
- Compare Single SIR to Nominal Value
Example - 2015 vs. 2016 SIR

- 2015 SIR: 9 observed / 7.401 predicted infections = 1.216
- 2016 SIR: 6 observed / 7.779 predicted infections = 0.771
- Optional fields: Group Labels, Title
NHSN Statistics Calculator

Interpretation: Is the 2016 SIR different from the 2015 SIR?

- P-value = 0.3995
- 95% confidence interval = (0.2, 1.8)
- Because the p-value is greater than 0.05, and the confidence interval crosses 1, we conclude that the 2016 SIR is not significantly different from 2015 SIR.
2016 Patient Safety Annual Survey

- 2016 Annual Survey for ACH’s, LTACH’s, IRF’s and ASC’s will be available at the beginning of the 2017 calendar year
- Complete survey on the NHSN application after the 8.6 release on January 7th, 2017
  - Please do not complete the survey until the release of NHSN 8.6
- Survey deadline: March 1, 2017
- CMS Certified IRF units within Hospitals have to complete additional supplemental survey
Survey FAQ’s/Reminders

- Medical school affiliation can include medical and/or nursing students for Undergraduate level

- Use data that was collected during the 2016 calendar year
  - Must wait until 2016 has passed in order to capture all data for the full calendar year
  - If changes to your facility were made during a calendar year and impact survey responses, use information that was in place for the majority of the year

- CDI Test Type— Question on survey, but not used for risk adjustment. NHSN uses quarterly summary reports (March, June, September, December) for this question

- Print a copy of the survey to review with hospital personnel that may answer certain questions before completing in NHSN

Review Survey in NHSN

- Use NHSN analysis options to check if 2016 survey is completed
  - Can also compare recent survey to ones completed in the past
Core Elements of Antibiotic Stewardship Line List

- New Output option using the PS Hospital Annual Survey responses
- Questions 23-33 on the Hospital Survey align with the 7 Core Elements of Hospital Antibiotic Stewardship Programs
  - Leadership
  - Accountability
  - Drug Expertise
  - Action
  - Tracking
  - Reporting
  - Education

More information about hospital antibiotic stewardship programs:
http://www.cdc.gov/getsmart/healthcare/implementation/core-elements.html
Core Elements Line List- New Report Option

- Located in the Advanced folder in NHSN where other survey data reports are found
- Only available for 2015 Surveys and later
- Select “Run Report” to obtain line list
Core Elements Line List

- Responses from questions 23-33 on survey will generate either a Yes (‘Y’) or No (‘N’) on the line list for each of the 7 elements
- Total number of ‘Y’ responses will be summed for the ‘coreElementsMet’ variable

<table>
<thead>
<tr>
<th>orgID</th>
<th>surveyYear</th>
<th>Leadership_CE</th>
<th>Accountability_CE</th>
<th>DrugExpertise_CE</th>
<th>Action_CE</th>
<th>Tracking_CE</th>
<th>Reporting_CE</th>
<th>Education_CE</th>
<th>coreElementsMet</th>
</tr>
</thead>
<tbody>
<tr>
<td>10018</td>
<td>2015</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>6</td>
</tr>
<tr>
<td>10018</td>
<td>2016</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>2</td>
</tr>
</tbody>
</table>

- The above table indicates that in 2015 6 out of 7 core elements were achieved in 2015, but only 2 out of 7 in 2016
- Resource guide for this output will be made available prior to new release
Upcoming Change with Survey Data

- NHSN currently uses the most recent PS Annual Survey for all risk adjustment calculations:

<table>
<thead>
<tr>
<th>Quarterly SIR Report</th>
<th>Survey Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015 Q1 CLABSI</td>
<td>2015 PS Annual Survey</td>
</tr>
<tr>
<td>2014 Q4 CLABSI</td>
<td>2015 PS Annual Survey</td>
</tr>
</tbody>
</table>

- Upcoming release will align the year of data with the corresponding survey year:

<table>
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</tr>
</tbody>
</table>

- Where survey is missing for a particular year, most recent survey in NHSN will be used for risk adjustments
Quick Data Quality Reminder!

- Entry or deletion of events
- Changes to numbers of patient days, device days, admissions
- Removal or addition to monthly reporting plans
- Change in admission date, previous discharge date on LABID events
- Changes to relevant factors in the annual survey (e.g., medical school affiliation, facility bedsize)
- Resolution of “Report No Events” alerts

All can have a potential impact on your facilities SIR!
Places to Look for Data Quality Issues

- Monthly reporting plans
  - “Are all my “Active” locations here?”
  - “Have I selected all my appropriate procedures?”
  - “Have I selected the appropriate lab specimens to collect for LABID data?”

- Annual Survey
  - “Did I update the number of beds from the previous survey year?”
  - “Has our hospital’s medical school affiliation changed?”

- Using NHSN Analysis
  - “Did I generate new datasets?”
  - “Did I enter new events after I ran my analysis?”
Upcoming events and planned documentation
Upcoming Events/ Links to Other Training Materials

- **2017 NHSN Training**: March 20-24, 2017 at Centers for Disease Control and Prevention, Atlanta, GA
  - Entire week of presentations will live streamed on the web
  - Information about registration will be forthcoming via email

- **NHSN Rebaseline Website**
  - Updated information about what to expect with the upcoming rebaseline (FAQ documents, training videos, timelines, and definitions)

- **NHSN Rebaseline Webinar, Part 1**
  - [http://streaming.cdc.gov/vod.php?id=6c0af6b3c0105fd24878aafe5065005920161101143220038](http://streaming.cdc.gov/vod.php?id=6c0af6b3c0105fd24878aafe5065005920161101143220038)

- **Analysis Resource Documents and Guidelines**: Being updated at present and are either available now or will be by the time of release
Thank You!

NHSN@cdc.gov
QUESTIONS?