



My name is Jennifer Vinyard, the Epidemiologist for Texas Healthcare Associated Infections Reporting.

Welcome to the Texas Healthcare Safety Network or TxHSN (pronounced “Texan”) Facility Users Training Presentation! This is the third of 4 recorded presentations for TxHSN. In this presentation, I will discuss the reporting timeline as it relates to the Data Display Reports. These are the reports that will be posted on a website for the public to view. Then, I will discuss how the Standardized Infection Ratio or SIR calculation and SIR interpretation are determined.



# Texas' Reporting Time Line

Reporting Quarter	Q1: Jan 1 – Mar 31	H1: Jan 1 – June 30	Q3: July 1 – Sept 30	H2: July 1 – Dec 31
Data submission deadline (facility enters data into NHSN)	According to NHSN rules: ~within 30 days of end of reporting month			
Departmental data reconciliation (Data from NHSN –emails facility contacts ~15th)	1-Jun	1-Sep	1-Dec	1-Mar
Facility data corrections due (in NHSN)	30-Jun	30-Sep	31-Dec	31-Mar
<b>DSHS data summary to facilities (DSHS sends email to contacts)</b>	NA	<b>15-Oct</b>	NA	<b>15-Apr</b>
<b>Facility comment period (Facility enters comments into TxHNS)</b>	NA	<b>30-Oct</b>	NA	<b>30-Apr</b>
<b>DSHS review of comments</b>	NA	<b>15-Nov</b>	NA	<b>15-May</b>
<b>Public posting of summary (with approved comments)</b>	NA	<b>1-Dec</b>	NA	<b>1-Jun</b>

Twice a year, for each half year, TxHSN facility users will receive a second email AFTER the facility errors report notification email. This second email notifies them that their Data Display Report is ready to preview in TxHSN and that they have 15 days to review the report and may submit a comment for review to be posted along with their HAI data.



## 2<sup>nd</sup> Email: Review Data Display & Make Comments

- 1' & 2' Contacts will receive email
- Contacts may logon to TxHSN
  - Link to Run Preliminary Data Display Report
    - Brief – SIR and Interpretation
    - Extended – Numerator, Denominator, Expected # Infections, SIR, SIR Interpretation
  - Make comments on Data Display Report



Both the primary and secondary contact will receive the second notification regarding the data display reports.

They will be able to login to TxHSN to run their reports. For the data display report, there are two different versions:

1. One version of the report is a brief, simple report that shows the SIR and an interpretation.
2. The extended version shows the numerator (or # of infections), the denominator, the expected or predicted number of infections (based on national averages), along with the SIR and Interpretation.

After the comment deadline, DSHS will have 15 days to approve any submitted comments. All approved comments will be displayed on both versions of the report for the public.



# Log in and View Data Display Report

**Login**

Login Name:

Password:

Application:  ▼

[Reset your password](#)



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To view your data display report, log into TxHSN.



# Log in and View Data Display Report

**TxHSN - Main** Open Help Logout

Logged in as FacilityUser5

**Recent Records**

H19099R8563 60	TEST S	Facility	<a href="#">More...</a>
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**Activity Summary as of 03/15/2012 11:55 AM**

Type of Record	# Last Week	# Average Last 4 Weeks	# Last 52 Weeks
Facility	0	2	10
Primary Bloodstream Infection	0	0	1

**Resources & Support**

- [Log into IHSN](#)
- [Texas HAI Reporting Website](#)
- Texas Department of State Health Services  
PO BOX 149347  
Mailcode 1960  
Austin, Texas 78714-9347  
512.776.3773  
[HAITexas@dshs.state.tx.us](mailto:HAITexas@dshs.state.tx.us)



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Double click your facility record in the Recent Records box.



# Log in and View Data Display Report

**TxHSN - Main**

[Unload Record](#) Logged in as FacilityUser5

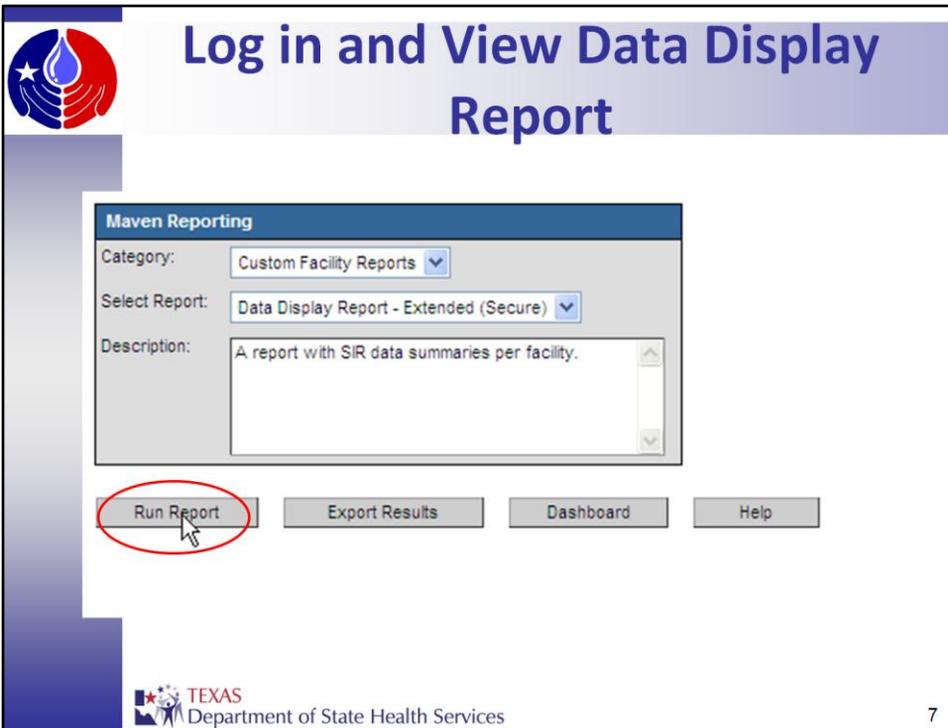
### Record Summary

Basic Information		Notes (Show My Notes)
Record ID:	N19099R856360	
Record Type:	Facility	
Primary Organization:	<a href="#">TEST S</a> Phone: (970) 556-4854	
Linked Records(s):	0 linked records(s)	
Linked Exposure Sites:	0 linked exposure site(s)	
Attachments:	0 attachment(s)	
Facility Links:	<a href="#">Brief Facility Data Display Report</a>	
	<a href="#">Extended Facility Data Display Report</a>	
	<a href="#">Facility Editors Report</a>	

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Click on either the Extended Facility Data Display Report or the Brief Facility Data Display Report. For this example, we will be looking at the Extended report.



The screenshot displays a web interface for "Maven Reporting". At the top left is a logo featuring a blue and red circular design with a white star and a water drop. The main heading is "Log in and View Data Display Report". Below this is a form with the following fields:

- Category:** Custom Facility Reports (dropdown menu)
- Select Report:** Data Display Report - Extended (Secure) (dropdown menu)
- Description:** A report with SIR data summaries per facility. (text area)

Below the form are four buttons: "Run Report", "Export Results", "Dashboard", and "Help". The "Run Report" button is circled in red, and a mouse cursor is pointing at it.

At the bottom left is the logo for the TEXAS Department of State Health Services. At the bottom right is the number 7.

Like the Errors Report, you will be able to Run an XML version of the report, or you may Export the report into an Excel spreadsheet.



## Example: Data Display Report (Extended Version)

**Texas General Hospital**  
1100 W. 49th St  
Austin, TX 78756

**Data Display Report**  
Summary data for 2011 H1-Final  
Report current as of: 07/15/2011 11:00 AM

Central-Line Associated Bloodstream Infection (CLABSI) Standardized Infection Ratio (SIR)					
Unit Type	Observed No. of CLABSI	No. of Central Line Days	Predicted No. of CLABSI	CLABSI SIR	Statistical Interpretation
NICU	15	2035	5.4	2.685	☹☹☹ Worse than the national experience
ICU-OTHER	5	2700	5.6	0.756	☺☺☺ About the same as the national experience

Surgical Site Infections (SSI) Standardized Infection Ratio (SIR)					
Surgery Type	Observed No. of SSI	No. of Procedures	Predicted No. of SSI	SSI SIR	Statistical Interpretation
<b>Knee prosthesis</b>					
Inpatient	1	15	0.025		☹☹☹ Not enough data
Outpatient	0	258	3.051	0.881	☺☺☺ Better than the national experience

**Facility Comments:**



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This is an example of a hospital's Extended Data Display Report. Please note the Report Current As of Date. Because we are analyzing a snapshot of your data, any changes that you make to the data in NHSN after this date will not be reflected in the report.

Another important thing to note is the Statistical Interpretation column. This value is based on the calculated SIR and the p-value. The P-Value tests for statistical significance... or the likelihood that the result occurred by chance.

1. If the P-Value (which is not shown) is greater than 0.05, the facility's infection rate is about the same as the national experience.
2. If the P-Value is less than 0.05 and the SIR is less than 1, the facility is better than the national experience.
3. If the p-value is less than 0.05 and the SIR is greater than 1, the facility is worse than the national experience.

These interpretations are shown visually using a star system... the more stars, the better the facility.

Please note that if the Predicted Number of Infections is less than 1, then NHSN will not calculate a SIR and therefore the interpretation is that there is not enough data to interpret/calculate a difference.



## SIR Interpretation

- What is interpretation if...?
  - P-value = 0.001 and SIR = 1.12
    - Worse than national experience (1 star)
  - P-value = 0.1 and SIR = 0.59
    - About the same as national experience (2 stars)
  - P-value = 0.04 and SIR = 0.90
    - Better than national experience (3 stars)
  - P-value = 0.3 and SIR = 4.0
    - About the same as national experience (2 stars)
  - Predicted number of Infections = 0.76
    - Not enough data to calculate (no stars)



Ok... so let's work through some examples:

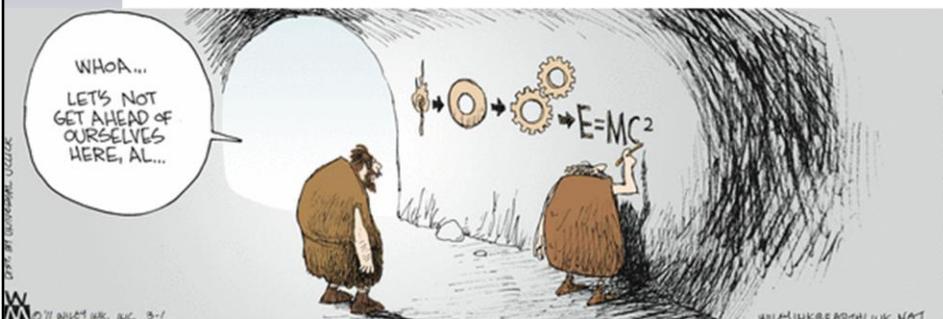
What is the SIR interpretation if:

- P-value = 0.001 and SIR = 1.12
  - The p-value shows significance and the SIR is greater than 1, so it is "Worse than the national experience"
- P-value = 0.1 and SIR = 0.59
  - The p-value is NOT significant so the interpretation is "About the same as the national experience"
- P-value = 0.04 and SIR = 0.90
  - The p-value is less than 0.05, so it is significant and the SIR is less than 1 so it is "Better than the national experience"
- P-value = 0.3 and SIR = 4.0
  - Here the p-value is greater than 0.05 and therefore not significant. Any time the p-value is greater than 0.05, the interpretation will be "About the same as the national experience" regardless of what the SIR value is.
- Predicted number of Infections = 0.76
  - Because the predicted number of infections is less than 1, NHSN will not

calculate a SIR and therefore the interpretation is that there is not enough data to calculate a difference.



## How do we calculate SIR?



So, now that we understand the interpretation of the SIR, we need to ask how is the SIR calculated?



## SIR Calculation

- SIR = Standardized Infection Ratio
  - Compares the actual number of HAIs with the predicted number, based on the baseline U.S. experience (i.e., standard population),
  - Adjusted for risk factors
- $SIR > 1$  = Higher rate than expected (i.e. Worse than national experience)
- $SIR < 1$  = Lower rate than expected (i.e. Better than national experience)
- P-value  $\leq 0.05$  indicates significance
  - If not significant, then the experience is about as expected (i.e. About the same as national experience)

The SIR or Standardized Infection Ratio is a number that compares the number of HAIs that occur in a facility to a predicted number of infections (based on the US data and adjusted for several risk factors).

As I stated previously:

If the SIR is  $> 1$ , a facility is worse than the national experience.

If the SIR is  $< 1$ , a facility is better than the national experience.

The p-value determines whether the SIR is significantly different from the national experience. If it does not indicate significance (by being greater than 0.05), then the facility is about the same as the national experience.



## Medical Cardiac Unit Example

Type of ICU	# CLABSI	# CL Days	CLABSI Rate	NHSN Rate
Medical Cardiac	2	550	5.26	2.0

- The calculation of CLABSI rate is expressed per 1,000 line days.

$$\frac{\text{Number of infections}}{\text{Central Line Days}} = \text{Rate} * 1,000$$

So... how do we calculate the SIR?

First, let's look at how to calculate a CLABSI rate. It is the number of infections divided by the number of central line days times 1000.



## Predicted Infections Calculation

- How many infections would your hospital have had if your rate were the same as the NHSN pooled mean?

$$\text{NHSN pooled mean} = \frac{X}{\text{Your CVC days}}$$

*When we solve for X the equation becomes...*

$$X = (\text{NHSN pooled mean}) * (\text{your hospital CL days})$$

Now... what is the predicted number of infections?

This is calculated by using the NHSN pooled mean (taken from US data from 2006 – 2008) and your facility's central line days in the rate calculation... then solving the equation for x.



## How to calculate Predicted?

Type of ICU	# CLABSI	# CL Days	CLABSI Rate	NHSN Rate
Medical Cardiac	2	550	5.26	2.0

- Predicted # of Infections =

$$X = (\text{NHSN pooled mean}) * (\text{your hospital CL days})$$

$$X = (2.0/1000) * (550)$$

*remember to divide the rate by 1,000*

$$= 1.1$$

When we plug in the numbers from our example, we get a predicted number of infections that equals 1.1.



## Calculation of SIR:

Type of ICU	# CLABSI	# CL Days	CLABSI Rate	NHSN Rate	Expected # CLABSIs
Medical Cardiac	2	380	5.26	2.0	1.1

$$SIR = \frac{\text{observed } (2)}{\text{predicted } (1.1)} = 1.82$$

- When the SIR > 1, the rate of infection is higher than the national rate and can be expressed as a percent.
  - The rate is 82% higher than the national experience.

To calculate the SIR we divide the number of infections observed (2) by the number of infections predicted (1.1) to get a SIR of 1.82. This SIR is higher than 1 and if the p-value shows significance then the interpretation would be “Worse than the national experience.” More specifically, it is 82% worse than the national experience.



## Contact Information

- General Reporting Questions
  - [HAITexas@dshs.state.tx.us](mailto:HAITexas@dshs.state.tx.us)
- HAI Data Questions: Jennifer
  - 512.776.3773
  - [Jennifer.Vinyard@dshs.state.tx.us](mailto:Jennifer.Vinyard@dshs.state.tx.us)
- User Names/TxHSN Questions: Jessica
  - 512.776.6488
  - [Jessica.Presley@dshs.state.tx.us](mailto:Jessica.Presley@dshs.state.tx.us)

This concludes the third presentation in this 4 part series. Please contact us if you have any questions or concerns. Our contact information is listed on this last slide.

Thank you for your time.