PERFORMING DATA QUALITY CHECKS FOR GROUP DATA IN NHSN: *C. DIFFICILE* INFECTION (CDI) LABID EVENT REPORTING

This document was prepared by the CDC LTCF NHSN support team to provide information for group users on how to review the data submitted by the nursing homes in their groups. Data quality checks are important to ensure that the information entered into HNSN is accurate and complete. This verification will prevent misrepresentation of disease trends. This document discusses the steps and reports available in NHSN that can help in verifying data accuracy for facilities participating in *C. difficile* infection (CDI) LabID event reporting.

National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion

Contents

WHEN ARE DATA CONSIDERED COMPLETE IN NHSN?

Data are considered complete in NHSN once facilities do **ALL** of the following:

- Complete the Annual Facility Survey
- Complete a monthly reporting plan to indicate which module(s) and event(s) a facility plans to report for each month in which facility plans to perform surveillance and submit data to NHSN
- Submit event data to NHSN using the NHSN Multidrug-Resistant Organism & *Clostridium difficile* Infection (MDRO/CDI) Module protocols
- Indicate "no events" on monthly summary data page if no CDI events were found for the month
- Submit monthly summary data to NHSN
- Resolve all outstanding alerts

STEPS FOR PERFORMING QUALITY CHECKS OF NHSN DATA

The NHSN application has several analysis reports that can be accessed to validate completeness and accuracy of data being submitted to NHSN, including: (1) Facility Survey Data Line List; (2) Monthly Reporting Plan Line List; (3) Event Level Data Line List; and (4) Summary Level Data Line List.
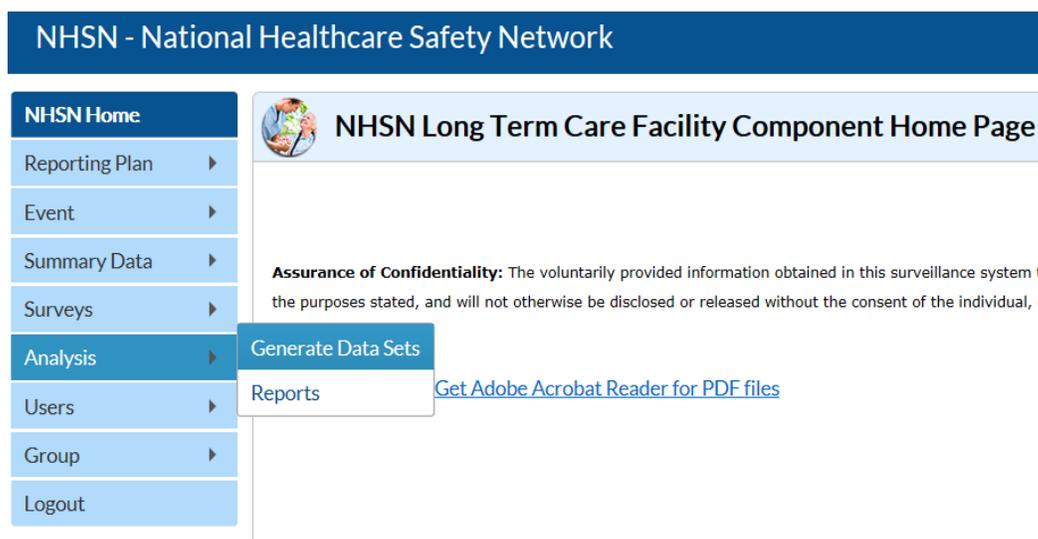
Generating Datasets

Before accessing analysis reports in NHSN, datasets must be generated to ensure the most recent data are included in the reports. Generating datasets will take a snapshot of the data that have been submitted.

Remember: Datasets must be generated prior to analyzing the data or the data will not be current.

To generate datasets:

On your NHSN landing page, select *"Analysis"* then *"Generate Data Sets"*

You will see a page titled "Generate Data Sets." Next, check the box highlighted in the green circle below, before selecting *"Generate New."* Generating datasets may take a few minutes; however, you can still navigate within the NHSN application while the dataset is generating.

Analysis

Once your dataset has been successfully generated, select *"Analysis"* then *"Reports."*

Remember: Make sure that you have generated a new dataset before completing this step or you will risk analyzing an older dataset without the most recent updates.

To analyze NHSN data:

On your NHSN landing page, select *"Analysis"* then *"Reports"*

*** Please note: The reports shown below are generated from test facilities and are hypothetical.**

HOW TO VERIFY FACILITY LEVEL INFORMATION?

Facility Survey Data Line List. To verify facility level information, a report can be generated that summarizes data from the Annual Survey. The report is a line list of facility survey data and contains information such as CCN, facility affiliation, number of beds, and average daily census.

To create a line list of facility survey data, navigate to the "Advanced folders": Open the "Facility-level data" folder
1. Select "Line listing – Facility survey data"
2. Select "run report"

Remember: Make sure that you have generated a new dataset before completing this step or you will risk analyzing an older dataset without the most recent updates.
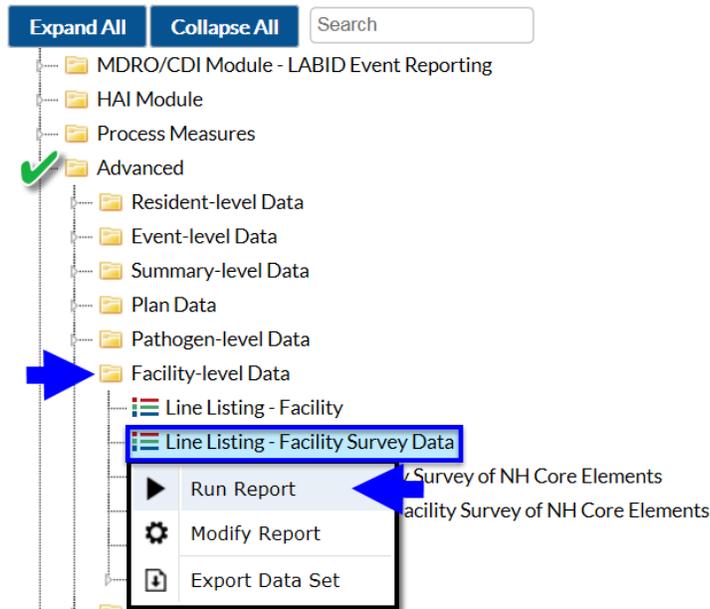
Data Source: Annual survey

Line Listing of Facility Survey Data
As of: October 26, 2017 at 1:32 PM
Date Range: All LTC SURVEY

Facility Org ID	Survey Year	CMS Certification Number	Certification	Affiliation	Average Daily Census	Number of Beds	Primary C. dif Test Method
39455	2014	324569	DUAL	IFS	50	34	EIA
39455	2015	324569	MCARE	IFS	77	92	NAAT
39455	2016	324569	MCARE	IFS	100	200	ToxiCul
41141	2014		DUAL	IFS	88	100	EIA
41141	2016		DUAL	IFS	95	100	NAAT

Common Errors in Annual survey data include:
- Incorrect or missing CCN number
- Incorrect census data (example: average daily census greater than number of beds)
- Incorrect CDI test method -- verify that "other" or "toxigenic culture" has not been selected as primary testing method

HAVE THE FACILITIES CORRECTLY COMPLETED THE MONTHLY REPORTING PLAN?

Monthly Reporting Plan line list. This report summarizes the monthly plans reported by each facility in your group. The monthly reporting plan line list allows group-users to review the organisms that the facilities plan to report monthly. Additionally, this report allows group-users to verify that a completed monthly reporting plan has been submitted for each month.

> To create a line list of monthly reporting plans, navigate to the "Advanced folders":
> 1. Open the "Plan data" folder
> 2. Select "Line listing – Monthly Reporting Plan"
> 3. Select "run report"

Remember: Make sure that you have generated a new dataset before completing this step or you will risk analyzing an older dataset without the most recent updates.
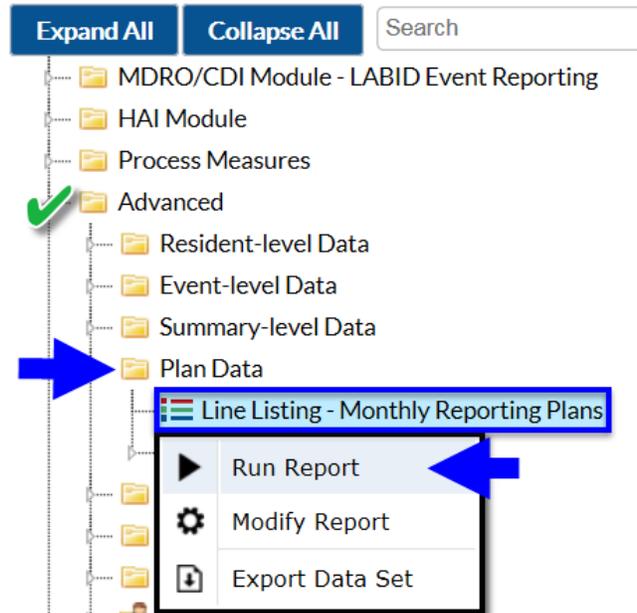
Data Source: Monthly Reporting Plan form

Line Listing of Monthly Reporting Plans
As of: October 26, 2017 at 2:07 PM
Date Range: LTCPLAN planYM 2017M01 to 2017M04

orgID	planYM	ltcfNoPlan	utiPlan	mrsa_labID	vre_labID	acine_labID	cephRKleb_labID	creEcoli_labID	creEntero_labID	creKleb_labID	cdif_labID
39455	2017M01		Y	Y		Y	Y	Y	Y	Y	Y
39455	2017M02		Y	Y							Y
39455	2017M03		Y	Y	Y	Y	Y	Y	Y	Y	Y
39455	2017M04		Y	Y							Y
41141	2017M01			Y				Y	Y	Y	Y
41141	2017M02										Y
41141	2017M03										Y
41141	2017M04										Y

Common Errors in Annual survey data include:

- CDI reporting plan missing for one or more months
- Incorrect organism selected for surveillance (example: an organism such as VRE or creEcoli selected for one month but missing for other months)

HAVE THE FACILITIES CORRECTLY ENTERED CDI EVENTS IN NHSN?

Line Listing – All events. The line listing of an event allows group-users to view all of the events reported by each facility each month.

To create a line list of all events, navigate to the "Advanced folders":
1. Open the "Event-Level Data " folder
2. Select "Line listing – All Events"
3. Select "run report"

Remember: Make sure that you have generated a new dataset before completing this step or you will risk analyzing an older dataset without the most recent updates.

Report: Line List for all Events
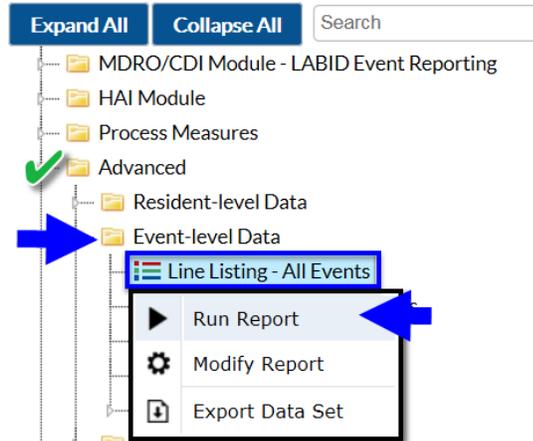
Data Source: LabID Event Form

National Healthcare Safety Network
Line Listing for All Events
As of: October 26, 2017 at 3:00 PM
Date Range: LTCEVENTS eventDateYM 2017M01 to 2017M12

Facility Org ID	Event ID	Event Date	Event Type	Location
39455	8218	01/10/2017	LABID	4 GEN
39455	8944	01/24/2017	LABID	4 GEN
39455	9255	02/08/2017	LABID	4 GEN
39455	10383	02/14/2017	LABID	3 REHAB
39455	10382	02/28/2017	LABID	3 REHAB
39455	10380	03/01/2017	LABID	1 SOUTH
39455	10397	03/04/2017	LABID	3 REHAB
39455	10381	03/20/2017	LABID	1 SOUTH
39455	10670	04/07/2017	LABID	4 GEN
39455	10671	04/12/2017	LABID	3 REHAB
39455	10699	04/12/2017	LABID	4 GEN
39455	11309	04/19/2017	LABID	4 GEN
39455	11325	04/19/2017	LABID	4 GEN

Common Errors in Event level data include:

- Missing reporting month -- If a facility does not enter an event for a given month, that month will not appear in the line list of events. Missing months should be further investigated to verify whether there were no events to report for the month or if a facility has incomplete reporting for the month.

Assess accuracy of '0' events reported 6 months or more

- If no event reported, follow-up with NH and ask:
  In the past month……
    - a) Did you submit any stool specimens for C. diff testing to lab?
    - b) Did you start any residents on treatment for CDI?

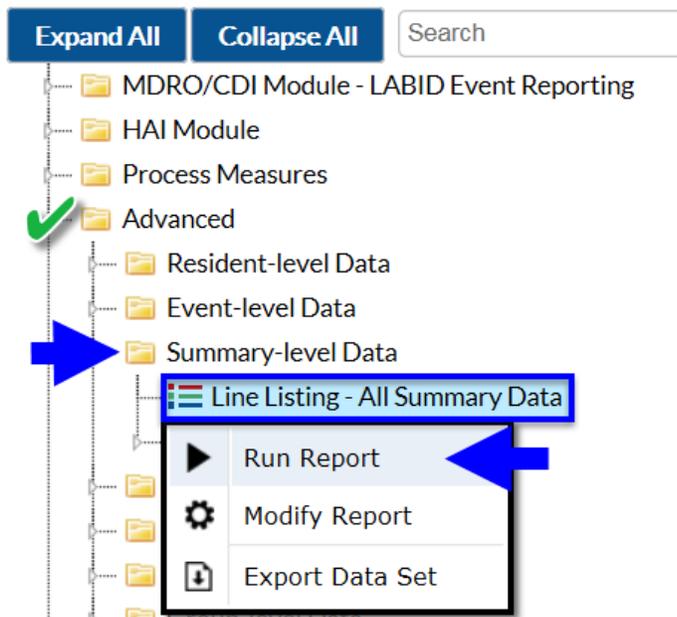## HAVE THE FACILITIES CORRECTLY ENTERED DENOMINATOR DATA INTO NHSN?

All Summary Data line list. The line list for all summary data allows group users to view the denominator data entered by each facility in a group by month including the number of resident days and number of admissions on CDI treatment. Even if a facility has no events for a given month, the monthly summary data form is still required and provides further information on the events entered by the facility. Therefore, this table can be used along with the line listing of events to verify that all events have been entered correctly in NHSN.

To create a line list of all summary data, navigate to the "Advanced folders":
1. Open the "Summary-Level Data " folder
2. Select "Line listing – All Summary Data"
3. Select "run report"

Remember: Make sure that you have generated a new dataset before completing this step or you will risk analyzing an older dataset without the most recent updates.

Report: Line List for all Summary Data

Data Source: Monthly Summary Data Form

National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion

Line Listing for All Summary Data
As of: October 26, 2017 at 3:35 PM
Date Range: LTCSUMMARY summaryYM 2017M01 to 2017M04

Facility Org ID	Summary Year/Month	Event Type	Number of Resident Days	Admissions on C. diff Treatment	No Events
39455	2017M01	CDIF	5,700	1	N
39455	2017M02	CDIF	5,450	3	N
39455	2017M03	CDIF	5,350	3	N
39455	2017M04	CDIF	5,895	120	
41141	2017M01	CDIF	2,800	10	N
41141	2017M02	CDIF	2,800	8	Y
41141	2017M03	CDIF	0	5	N
41141	2017M04	CDIF	3,000	3	N

Common Errors in Monthly Summary data include:

- Number of resident days =0
- Incorrect number of residence days (see section analysis tip)
- Missing events :
  - "No Events" column:
    - NoEvents = N – Events entered into NHSN for the month
    - NoEvents = "Y" – No events to report for the month
    - No Events= " " – Incomplete or missing event for the month
- CDI event incorrectly entered as part of the " Number of Admissions on C. diff Treatment,"
  - Look for possible inconsistencies for example: number of admissions on C. diff treatment that is greater than the number of beds (see **Facility Survey Data Line List).**

ANALYSIS TIPS:

HOW TO CALCULATE AN ESTIMATE FOR THE NUMBER OF RESIDENT DAYS USING NUMBER OF BEDS IN A FACILITY?

The number of beds from the "Facility Survey Data Line List" is helpful in calculating an estimate of the number of resident days reported in the summary data line list.

Variables used:

Number of beds: Obtained from facility survey line list
Occupancy: How many beds are occupied in the facility? You can choose between 50% - 100% in order to estimate the resident days when the facility is between at half capacity to full capacity.
100% = 1
50% = 0.50
Number of days: 30 days (1 month)

Estimated number of resident days = number of beds * occupancy* number of days

1. Look up the number of beds reported for the 2016 survey year. In this example, we will look up the number of beds for OrgID 39455 for the 2016 survey year.

National Healthcare Safety Network
Line Listing of Facility Survey Data
As of: October 26, 2017 at 1:32 PM
Date Range: All LTC SURVEY

Facility Org ID	Survey Year	CMS Certification Number	Certification	Affiliation	Average Daily Census	Number of Beds	Primary C. dif Test Method
39455	2014	324569	DUAL	IFS	50	34	EIA
39455	2015	324569	MCARE	IFS	77	92	NAAT
39455	2016	324569	MCARE	IFS	100	200	ToxiCul
41141	2014		DUAL	IFS	88	100	EIA
41141	2016		DUAL	IFS	95	100	NAAT

2. Plug in the number of beds in the calculation above:

   Estimating resident days for a facility at full capacity:
   200 * 1 * 30 days = 6000 resident days

   Estimating resident days for a facility at half capacity:
   200 * 0.5 *30 days = 3000 resident days

3. The estimated resident days is between 3000 – 6000 days. We can use this estimate to assess the number of residence days reported by the facility.

Line Listing for All Summary Data
As of: October 26, 2017 at 3:35 PM
Date Range: LTC SUMMARY summaryYM 2017M01 to 2017M04

| Facility Org ID	Summary Year/Month	Event Type	Number of Resident Days	Admissions on C. diff Treatment	No Events
39455	2017M01	CDIF	5,700	1	N
39455	2017M02	CDIF	5,450	3	N
39455	2017M03	CDIF	5,350	3	N
39455	2017M04	CDIF	5,895	8	
41141	2017M01	CDIF	2,800	10	N
41141	2017M02	CDIF	2,800	8	Y
41141	2017M03	CDIF	0	5	N
41141	2017M04	CDIF	3,000	3	N

The number of resident days reported by the facility (orgID 39455) from January – April 2017 is 5,350 – 5,895 resident days. This is within the range for our estimate of 3,000 – 6,000 resident days.

HOW TO ACCESS FACILITY NAME AND ORGID?

Facility Users Line list. At this time, the tables listed above only display the facility orgID and it can be difficult to look up the orgID for each facility in a group. The facility-user line list allows users to create a table that includes the facility orgID, CCN, Name and address information.

To access the facility user line list:
1. Open the "Facility level data" folder
2. Select "Line listing-Facility Users"
3. Select "run report"
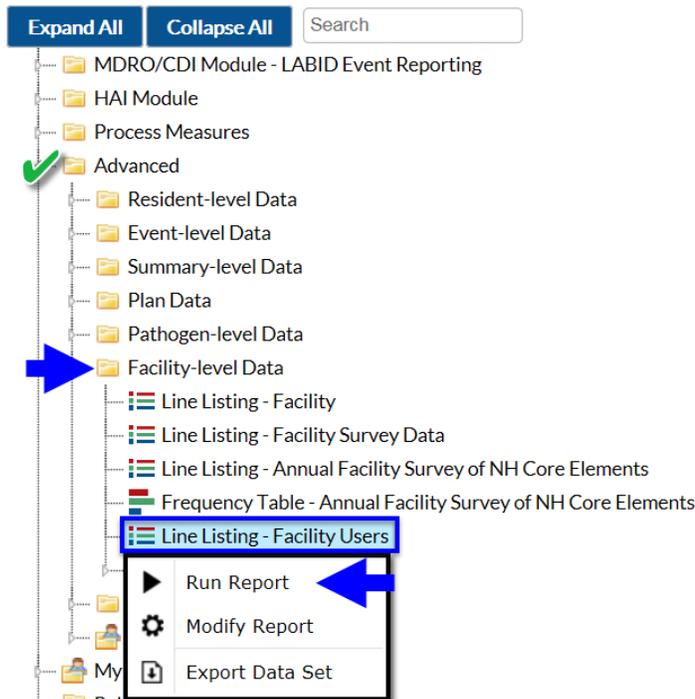
National Healthcare Safety Network
Line Listing - Facility Users
As of: October 31, 2017 at 9:51 AM
Date Range: All LTCFACILITY_USERS

CMS Certification Number	Facility Name	Facility Org ID	City	State
324569	Angela LTCF Test Facility	39455		
324569	Angela LTCF Test Facility	39455		
324569	Angela LTCF Test Facility	39455	Atlanta	GA
324569	Angela LTCF Test Facility	39455		
324569	Angela LTCF Test Facility	39455		
324569	Angela LTCF Test Facility	39455		
324569	Angela LTCF Test Facility	39455		
324569	Angela LTCF Test Facility	39455		
324569	Angela LTCF Test Facility	39455		
324569	Angela LTCF Test Facility	39455		
324569	Angela LTCF Test Facility	39455		
	GVB3_test	41141	Atlanta	GA
	GVB3_test	41141		

DEFINITIONS

Users are required to enter data about the total number of "short-stay" and "long-stay" residents when completing the Annual Facility Survey. The respective NHSN definitions may differ from your facility's billing data. Therefore, we encourage you to adhere to the outlined NHSN definitions, which are described in the Table of Instructions for completing the LTCF Component Annual Facility Survey and below. If you have questions about collecting this information, consider consulting the facility administrator, MDS coordinator, business office, or billing personnel at your facility.

NHSN definition of total number of long stay residents

Total number of unique residents who stayed > 100 days in the previous calendar year.

NHSN definition of total number of short stay residents

Total number of unique residents who stayed ≤ 100 days in the previous calendar year. NOTE: If a resident starts as short stay but converts to long-stay, then count the resident in the total number of long-stay.