



Internal Data Validation

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Learning Objectives

At the conclusion of this session, participants will be able to

- **Define internal data validation and quality data**
- **Identify NHSN internal data validation resources**
- **Describe recommended internal data validation activities**

Internal Data Validation and Quality Data

Types of HAI Data Validation

Internal Data Validation

- Active efforts by a reporting facility to assure quality of NHSN data
- Built in as a routine facility process

External Data Validation

- Survey and audit process by external agency to assure accuracy of NHSN surveillance and reporting
- Requires additional resources

Quality Data

- **Complete**
- **Timely**
- **Accurate**
- **Consistent**

Why Is Quality Data Important?

- Monitor HAIs and the impact of prevention efforts
- Benchmark performance against risk-adjusted national data
- Fulfill state-mandated and CMS reporting requirements
- Ability to hold up during external scrutiny (external validation by State or CMS)

Internal data validation leads to high quality data.

Routine Internal Data Validation

- **Understanding of systematic weaknesses in HAI reporting**
- **Assurance that surveillance data are of high quality**
 - Complete, timely, accurate, consistent
- **Coordination and partnership building with stakeholders**
- **Confidence in your facility's data**

Why Should You Validate Your Own Data?

- **NHSN checks for implausible and incomplete data entries**
- **NHSN application cannot check for**
 - **Data not captured at the facility level**
 - **Data that was not entered accurately**
- **Assures stakeholders of data quality**
- **These are YOUR facility's data - you may be surprised at what you find!**

Internal Validation Guidance

Internal Validation Guidance and Toolkit

<https://www.cdc.gov/nhsn/validation/index.html>

🏠 NHSN
NHSN Login
About NHSN +
Enroll Here +
Materials for Enrolled Facilities +
2015 Rebaseline
Group Users
Analysis Resources +
Annual Reports
CMS Requirements +
National Quality Forum (NQF)
Newsletters
E-mail Updates
Data Validation Guidance
HIPAA Privacy Rule +

NHSN Data Validation

Internal Validation: Active efforts by a reporting facility to assure completeness and accuracy of NHSN data.

External Validation: Survey and audit process by external agency to assure quality of NHSN surveillance and reporting.



NHSN Validation Guidance and Resources for 2018

For Reporting Facilities: 2018 Internal Validation Guidance and Toolkit -

- [2018 Internal Validation Guidance and Toolkit](#) [PDF - 1 MB]

For Auditors: 2018 External Validation Guidance and Toolkit +

2018 Resources +

Sneak Preview: New Webpage

NHSN Data Validation

Internal Validation: Active efforts by a reporting facility to assure completeness and accuracy of NHSN data.



External Validation: Survey and audit process by external agency to assure quality of NHSN surveillance and reporting.

PATIENT SAFETY COMPONENT

2019

2018

2017

2019 PSC Data Validation Resources

For Reporting Facilities

[2019 Internal Validation Guidance and Toolkit](#)  [PDF - 1 MB]

On This Page

[2019 PSC Component Manual](#)

[2019 Operative Procedure Code Documents](#)

[Other Resources](#)

2019 PSC Component Manual

[2019 NHSN PSC Manual](#)  [PDF - 6 MB]

2019 HAI Internal Validation Toolkit

- **Guidance for planning data validation activities**
- **Data quality survey tools**
 - CLABSI/CAUTI Denominator Survey (with key)
 - Surgical Procedures and SSI Surveillance Methods Survey (with key)
 - LabID Event Surveillance Methods Survey (with key)
- **Data quality checklist for review prior to data submission**

Suggestions for Planning Data Quality Checks

- **Annual Checks**
- **Monthly Checks**
- **Weekly/Daily Checks**
- **“As needed” Checks**

Suggestions for Annual Data Quality Checks

■ **Annually**

- **Develop a facility level surveillance and data validation plan**
- **Determine surveillance program competencies**
- **Review accuracy of data collection processes and data sources (EMR system, laboratory data, ADT data, OR data, procedure coding)**
- **Review facility descriptors and location mapping**
- **Recruit partners**
- **Assess staff knowledge and training needs**

Recommended Annual Check

Teaching hospital status

Number of beds

Location mapping



Add Annual Survey

Mandatory fields marked with *

Facility ID: * ▼

Survey Type: * ▼

Survey Year: * ▼

Facility Characteristics (completed by Infection Preventionist)

Facility ownership: * ▼

Hospital Facility:

Number of Patient Days: *

Number of Admissions: *

Is your hospital a teaching hospital for physicians and/or physicians-in-training? * ▼

If Yes, what type: MAJOR GRADUATE UNDERGRADUATE

Number of beds set up and staffed in the following location types (as defined by NHSN):

a. ICU beds (including adult, pediatric, and neonatal levels II/III and III): *

b. All other inpatient locations: *

Total Number of Beds Set Up and Staffed: 0

Data Quality Survey Tools

Appendix C: CLABSI and CAUTI Denominator Counting Survey (with Key)

Instructions: Administer in person or by telephone, directly to individuals responsible for denominator counting. This form is divided into 3 sections for facilities where these tasks are performed by different persons. The first section, PATIENT DAYS, contains questions applicable to both CLABSI and CAUTI denominator collection (questions 1-9). The second section, CENTRAL LINE DAYS, contains questions applicable to CLASBI denominator collection (questions 10-21). The third section, INDWELLING URINARY CATHETER DAYS, contains questions applicable to CAUTI denominator collection (questions 22-27).

Facility OrgID:	Name/ID of individual interviewed:	Position: <input type="checkbox"/> IP <input type="checkbox"/> Clerical <input type="checkbox"/> Nursing <input type="checkbox"/> Other (explain)	Interviewer initials:	Date of survey:
(circle): CLABSI, CAUTI, BOTH		NHSN location(s) covered:		
PATIENT DAYS (for <u>both CLABSI and CAUTI</u> denominator counters)			Answer Key/Rationale:	
1. How are patient days usually collected? (choose one)				
Electronically (document the software system utilized and skip to Q8):				
Manually (daily/weekly)				
Some units electronic and some units manual				
Comment:				
2. Is there a specified time when the denominator count is taken?		<input type="checkbox"/> Yes <input type="checkbox"/> No	The answer should be Yes	
3. When is it done?			Counts should be done at a specific time daily, preferably at nearly the same time throughout the facility to avoid errors when patients transfer.	

Annual Check: Manual CLABSI/CAUTI Denominators

- **Manual daily count or sampled method (once/week)**
 - Are staff counting correctly
 - Missing or implausible data
 - # patient days > # beds
 - # catheter days > # patient days
 - Keep denominator logs of % of days in year when
 - Urinary catheter/central line days not collected
 - Patient days not collected
 - Internal data validation annually for one week for each location type, with concurrent dual assessment to test for accuracy

Manual to Electronic Counting of CLABSI/CAUTI Denominators

- Before you begin submitting electronic denominator counts, validate electronic counts with concurrent manual counts
 - Manual counts are considered the “Gold Standard”
 - Electronic counts should be within +/- 5% of manual counts for 3 consecutive months
 - If the electronic counts are outside the +/- 5% for any month, continue manual counts until 3 consecutive months are achieved
 - Work with IT to correct electronic counting problems
 - Denominator Validation Template provided in Internal Validation guidance document

Electronic to Electronic Counting of CLABSI/CAUTI Denominators

- When transitioning from one electronic counting system to another electronic counting system, validate electronic counts with concurrent manual counts
 - Manual counts are consider the “Gold Standard”
 - Counts for any electronic counting system should match within +/- 5% of manual counts for 3 consecutive months
- Current users: conduct spot checks of electronic data to assure continued good performance

Annual Check: SSI Denominator Data (Procedures)

- **Which NHSN procedures will be reported, inpatient or outpatient, surveillance period (30 or 90 days)**
- **Ensure denominator data are not missed**
 - Identify all data sources for ICD-10-PCS and/or CPT operative procedure codes
 - Cross referencing of multiple sources reduces missing procedure data
- **Annual (or more frequent) downloads to confirm procedure data from selected days/weeks were not missed during the interval**

Suggestions for Monthly Data Quality Checks

■ Monthly

- Validate Monthly Reporting Plan
- Conduct data quality checks before submission
 - Missing data (zero patient days, “no events”)
 - Implausible data (device days > patient days, BMI > 200)
 - Outliers (procedure duration < 5 minutes)
 - Incomplete data (SSI event not linked to procedure)
 - Inaccurate data (incorrect date of event)
 - Outstanding NHSN alerts (incomplete event, missing events)
- Review data prior to submission using NHSN Data Quality Checklists

Data Quality Checklists

Appendix I: Data Quality Checklist - SSI Events/Procedures

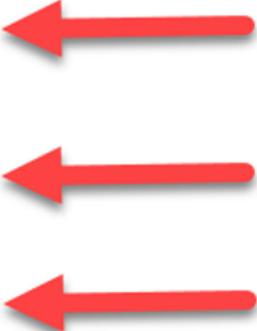
This checklist is intended to ensure completeness and accuracy of SSI Event and Procedure data entered into NHSN.

SSI Event (numerator)		
Indicator	Description/Action	Validated
i) All SSI events reported	Verify that all SSI events have been reported. (Go to NHSN Application → Analysis – Reports → Procedure-Associated (PA) Module → SSI → Line Listing – All SSI Events) Note: When generating the All SSI Events line list, choose the <u>Procedure Date</u> (procDate) as the Date Variable on the Time Period tab.	
ii) Missing numerator variables (Incomplete events)	Verify that all mandatory/required data fields are completed. (Go to NHSN Application → Alerts → Incomplete Events, Event Type: SSI)	
iii) SSI event is linked to procedure	Verify that SSI event is linked to the correct procedure. (Add Display Variables “linkedproc” to Line Listing – All SSI Events; refer to “All SSI events reported” above.)	

Data Quality Checklists

Appendix H: Data Quality Checklist - MDRO/CDI Data

This checklist is intended to ensure completeness and accuracy of LabID Event data entered into NHSN.

Summary Denominator Data – Validate Monthly/Quarterly		
Indicator	Description/Action	Validated
<p>iii) Verify denominator data accuracy for all reporting locations.</p> <p>Note: For 2015 and forward, FACWIDEIN excludes data reported for rehabilitation wards (IRF) and behavioral health/psych wards (IPF) that have a CCN that is different from the acute care hospital.</p>	<p>Generate Rate Tables to display summary data by location and month/year in a table format.</p> <p>Go to NHSN Application → Analysis → Reports → MDRO/CDI Module – LabID Event Reporting → All <i>C.difficile</i> (or MRSA) LabID Events → Rate Tables for CDIF (or MRSA) LabID Data</p> <p>OR</p> <p>NHSN Application → Analysis – Reports → Advanced → Summary-level Data → Line Listing → All Summary Data</p> <p>Alternative Method (this method requires you to search for each location/month/year individually): Go to NHSN Application → Summary Data → Find. Select Summary Data Type “MDRO and CDI Monthly Denominator” and enter Location Code, Month, Year.</p>	

Suggestions for Weekly/Daily Data Quality Checks

- **Review positive laboratory specimens**
- **Spot check denominator accuracy**
 - **Patient days, patient admissions**
 - **Device days**
 - **Surgical procedure capture**
 - **SSI risk-adjustment variables**

What Should Trigger “As Needed” Data Quality Checks

- **New patient care locations: accurately mapped?**
- **New data collection staff**
- **New or modified electronic medical record systems**
- **Unusual data**
 - Was denominator reporting complete?
 - Were all risk adjustment variables entered correctly?
 - Was there a change in testing method (such as CDI testing method)?

Additional Recommendations

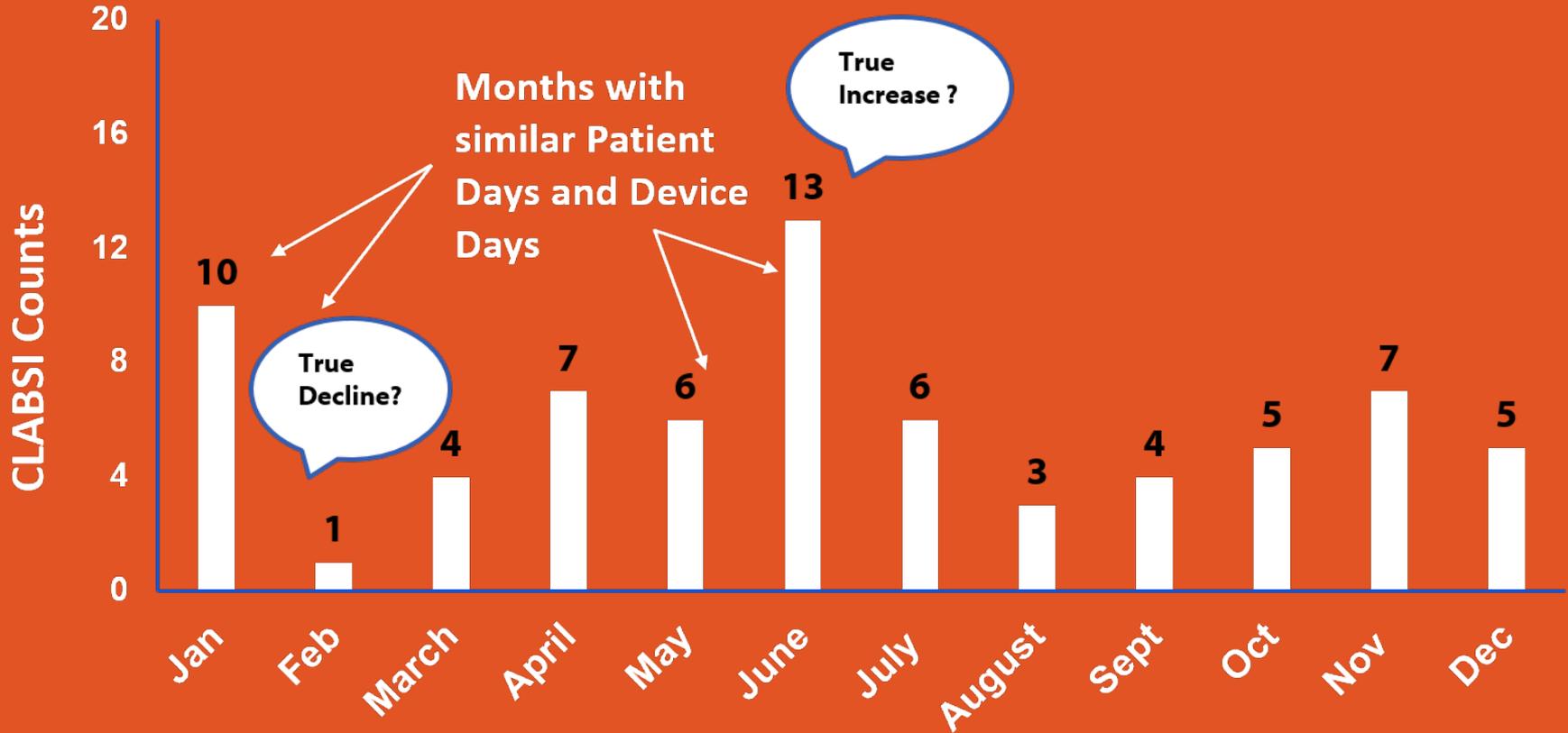
Recommended Case-Ascertainment Checks

- **Validation of case-ascertainment should include periodically reviewing list of candidate cases**
 - Use Medical Record Abstraction Tools (MRATS) to identify accuracy of case-ascertainment from a list of candidate cases
 - If candidate cases were ‘missed’ investigate why and how to fix it

Run Longitudinal Data Checks

- **Review longitudinal trends and assess errors**
 - Numerators by location and overall
 - Denominators by location and overall
 - SIRs by location and overall

Longitudinal Trends of CLABSI Events, LTAC Ward



How to Achieve Numerator Data Completeness

	Minimum Requirement
CLABSI	Review every positive blood specimen
CAUTI	Review every positive urine culture
SSI	<ul style="list-style-type: none">• Identify and monitor all post -op patients and hospital readmissions related to infections• Review wound cultures, but realize culture -based surveillance missed 50-60% SSI• Daily hospital rounds to identify infections not resulting in cultures
LabID event FacWideIN	<ul style="list-style-type: none">• Review all final lab test results (MRSA blood specimens, C. diff tests)• Assess labtests from ER and observation locations

How to Achieve Denominator Data Completeness

	Minimum Requirement
CLABSI/CAUTI	<ul style="list-style-type: none">• Review presence of central line/ indwelling urinary catheter and complete collection of device days
SSI	<ul style="list-style-type: none">• Review complete count of procedures based on ICD -10-PCS/CPTcodes
LabID event FacWideIN	<ul style="list-style-type: none">• Review total patient admissions/encounters for every location (including ERand observation locations)

Confidence In Your Data

- Facilities held accountable for following NHSN methods
- Up-to-date with NHSN surveillance definitions and criteria
- Apply definitions with confidence every time

Summary

- **Quality data is vital to HAI prevention**
 - **In the era of “publicly looking good” ongoing internal data validation is the key to improvement in prevention practices**
 - **Routine internal data validation will improve results in external data validation**
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Thank You!

Questions?

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For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

