External Validation:
What is it, and what does it mean for your facility?

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Learning Objectives

- Define purpose and goals for National Healthcare Safety Network (NHSN) External Validation
- Summarize the benefits of External Validation
- Explain role of Infection Preventionist (IP) in different components of External Validation process
- Describe how data collected from External Validation will be aggregated and disseminated

NHSN External Validation, Defined

External Validation is a survey and review process through which state health departments (SHDs) confirm their jurisdiction's healthcare-associated infection (HAI) data meet the pre-determined specifications and quality standards set by NHSN.

Why is it important?

- External validation is essential to ensure NHSN surveillance meets its intended requirements, reported facility outcomes are appropriate, NHSN data are credible and actionable.
- Accurate, high quality NHSN data are important for setting IP program priorities and measuring impact of prevention efforts.

Goals of External Validation

Evaluate **facility NHSN surveillance practices**

- Assess staff understanding of event protocol(s)
- Assess data collection and reporting methods
- Identify common barriers to complete accurate data collection and reporting

Educate **facility staff on NHSN HAI event surveillance**

- Improve understanding of methods and definitions of event protocol(s)
- Improve data collection and reporting practices
- Increase awareness of reporting resources

Goals of External Validation

Provide *feedback* to CDC to support continuous improvement of resources

- Improve Toolkits and corresponding documents
- Develop optimal and standardized data evaluation methods
- Improve existing NHSN event surveillance and reporting resources

Benefits of External Validation

In return for facility's participation, IPs will have the following opportunities:

- Obtain confidential feedback about facility's NHSN reporting
- Interact one-on-one with NHSN surveillance expert who can address any questions about reporting
- Provide feedback about experience with event data collection and reporting to help inform changes and improve future reporting efforts
- Prepare for Centers for Medicare and Medicaid Services (CMS) validation activities

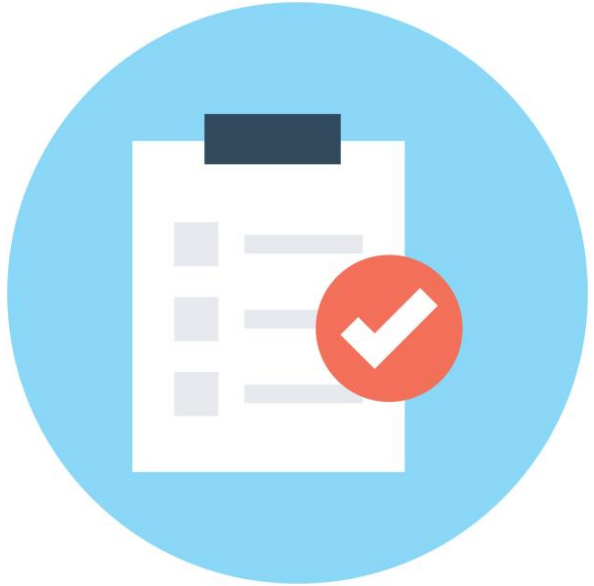
In-Person vs. Virtual External Validation

- **In-Person**
  - Provides optimal opportunity for validators to gain full access to documented information used by IPs when conducting surveillance
  - IPs expected to provide space/resources for validators to conduct chart review
    - Work station
    - Computer and electronic medical record (EMR) access
  - IPs may need to assist in navigation of EMR
- **Virtually**
  - EMR access will need to be made available to validators
    - IPs may have to work with medical records department to ensure availability to selected patient records
  - If EMR access not available, IPs should attempt to make arrangements to securely screenshare with validators and walking though the selected patient records

Note: Review of copied/faxed medical records is discouraged, as it lacks complete data access

Components of External Validation

1. Facility selection
2. Line list production
3. Medical record review
4. Surveillance and denominator surveys
5. Facility debrief



Facility Selection

- **Validators may choose whichever method aligns with their goals/priorities**
- **IPs will be notified if their facility was selected for external validation.**
  - **Method 1** – Targeted Sampling
    - Aims to identify and correct reporting errors in facilities with high patient volumes
  - **Method 2** – Cumulative Attributable Difference (CAD) approach
    - Aims to identify underreporting of HAIs (facilities with high predicted number of events, but few or zero events reported)
  - **Method 3** – Stratified Random Sampling
    - Aims to produce a representative sample of facilities

Facility Line List Production

IPs produce a line listing of positive laboratory specimens and/or surgical procedures during the validation timeframe.

- Line listing requirements vary depending on HAI being validated.
  - IPs may need to work with facility laboratory personnel to produce comprehensive line listing with required variables.
- Validators will use this list to select sample of medical records to validate during site visit.
- Establish mechanism for secure data transfer between facility and validators to ensure confidentiality of patient information.

Facility Line List Production

Example of blood culture line listing for CLABSI validation:

MRN	Facility Admission Date	Laboratory Specimen Number	Specimen Collection Date	Blood Organism Genus and Species	Specific surveillance patient Location	Sex	Date of Birth	First Name	Last Name

- Complete list of positive blood cultures taken during any stay in surveillance location (SL), the day of transfer from the SL, or the following calendar day after transfer.
- Facility should report positive laboratory results according to the date of specimen collection.
- List should be sortable and searchable and include facility information.

Medical Records Review

Validators will select a sample of medical records from the line lists provided by facility and notify IPs of which records will be reviewed during site visit.

- IPs should contact their medical records department to ensure selected patient charts are available to validators at the time of the site visit.
- Validators will review each selected chart and abstract relevant data to determine if an HAI should have been reported, using the Medical Record Abstraction Tool (MRAT).
- After medical records have been abstracted, events reported to NHSN will be revealed and any discrepancies between validator outcomes and reported outcomes will be discussed during the facility debrief.

MRAT Example

Section 2. List Positive Blood Cultures: *Enter the selected PBC in row 1. Then review the 14 days prior to the selected PBC and enter any additional PBCs found. If additional PBCs are found, review the next 14 days from the earliest culture. Repeat this until no additional PBCs are found or admit date is reached.*

PBC #	PBC Collection Date	Surveillance Location PBC?	Optional: CL on this date or day before?	Organism genus/species	P or CC	Infection DOE	RIT End Date
1	__/__/__	Y N	Y N			__/__/__	__/__/__
2	__/__/__	Y N	Y N			__/__/__	__/__/__
3	__/__/__	Y N	Y N			__/__/__	__/__/__

PBC=blood culture, CL= Central Line, P=pathogen, CC=common commensal, DOE=Date of Event, RIT= Repeat Infection Timeframe. Add rows if needed.

Section 3. Location and Central Line Presence

3a. Location: *Enter the facility location of attribution for the selected PBC.*

Admit/Transfer IN:	Discharge/Transfer OUT:	Location Name (including ED):
__/__/__	__/__/__	

3b. Central Lines: *Document any central line present the day of or day prior to the specimen collection date of the selected PBC.*

CL inserted or accessed	CL removed without replacement	Location housed with CL
__/__/__	__/__/__	
__/__/__	__/__/__	
__/__/__	__/__/__	
__/__/__	__/__/__	
__/__/__	__/__/__	

Section 4. Did the selected PBC's infection episode qualify as LCBI event? *Refer to Table 1 in the CLABSI MRAT Instructions for criteria.*

☐ No	*If No, LCBI definition was NOT met, go to Section 8, and select outcome (b) No LCBI and reason. If "Alternative primary source of BSI" is the selected reason, enter additional information in the subsequent box.*
☐ Yes	*If Yes LCBI, select the type of LCBI and proceed to Section 4.* LCBI Type (*select one*): ☐LCBI 1 ☐MBI LCBI 1 ☐LCBI 2 ☐ MBI LCBI 2 ☐ LCBI 3 ☐MBI LCBI 3

REDCap MRAT

Table 1a. List Positive Blood Specimens chronologically

Positive BC* #	Date BC Collection	Validation Location BC?	CL* on this date or day before?	Organism genus/species	Pathogen or CC*	Infection DOE*	RIT* End Date
1	Today M-D-Y	Yes / No reset	Yes / No reset			Today M-D-Y	Today M-D-Y
2	Today M-D-Y	Yes / No reset	Yes / No reset			Today M-D-Y	Today M-D-Y
3	Today M-D-Y	Yes / No reset	Yes / No reset			Today M-D-Y	Today M-D-Y

*BC=blood specimen, CL= Central Line, P=pathogen, CC=common commensal, DOE=Date of Event, RIT=Repeat Infection Timeframe

Table 1b instructions: Document all facility locations and dates sequentially for this episode of care, and indicate if location was a CLABSI VL.

Number of locations: 2

Surveillance Methods and Denominator Collection Validation

IPs to participate in survey regarding surveillance methods and/or denominator collection practices.

- Surveys are administered to IPs that oversee surveillance and denominator collection of the HAI being validated.
- Helps to identify surveillance and reporting errors and areas for improvement
- Surveys may include questions regarding methods of numerator and denominator collection
- Review of manual and/or electronic denominator collection practices

Facility Debrief

Validators and IPs go over findings from medical record abstraction and survey results

- If there are discordant results for difficult cases, CDC may be contacted for adjudication
- Validators may identify systematic errors that require correction of data in NHSN
- Facilities should view identified errors as learning opportunities including:
  - Areas for improvement of surveillance practices
  - Identifying topics where additional training may be useful

Facility Debrief

Facilities will receive a line list of any misidentified/misreported event, along with the reasoning and recommendation for how to correct the error(s).

Examples:

Pt. ID		Positive blood culture event: first culture date	Select One:			Event date (if LCBI)	If LCBI, MBI* LCBI?				
			Not candidate CLABSI	Alternative primary (specify)	LCBI1, LCBI2, LCBI3*		MBI Yes or MBI No	POA, HAI or neither	Central line >2d (y/n)	Location of attribution	CLABSI in Surveillance Locations (y/n)
	F										
	V										
Comment:											

Patient ID	RIT #	Outcome	Case Determination	Misclassification Reason(s)
1010100	0	(a) No candidate validation location (VL) CLABSI	Correctly Classified	
cmcmao122120	2	(a) No candidate validation location (VL) CLABSI	Over-reported HAI	(II) CLABSI criteria misapplied: (IIe) Secondary BSI incorrectly identified as a primary CLABSI
mjkm123	1	(f) VL CLABSI	Correctly Classified	
sfw43tv3535	0	(a) No candidate validation location (VL) CLABSI	Correctly Classified	
testptid321	1	(f) VL CLABSI	Under-reported HAI	(I) General HAI definition misapplication: (Ia) Incorrect location of attribution

Facility Debrief

Facilities will also receive a summary report that includes the overall findings from medical record review.

Example:

In this example, the facility and validator had the same determinations in 3 out of the 5 records reviewed (yes/yes and no/no), which yielded 60% agreement.

Your Facility CLABSI Event Validation Summary

Table 1. CLABSI Event Validation			
	Validator		
Facility	Yes	No	
Yes	1	1	2
No	1	2	3
	2	3	5
Percent Agreement = 60.0%			

An IP's "Day" in the Life… of External Validation

1) Validators arrive to facility

Ensure validators have the space and resources necessary for chart reviews.

2) Validators conduct chart reviews

IPs may be asked to be present for review and/or assist with EMR navigation.

3) IPs participate in denominator collection and surveillance methods surveys

Surveys may also be completed before or after site visit.

4) Facility debrief

Discussion of validation results and survey answers with validators. Resolve any discrepancies.

5) Post-validation

IPs make any corrections to NHSN data, as possible. Incorporate any lessons learned into surveillance and reporting practices.

Facility Infection Preventionist Role

- Provide facility line listings
- Review of medical records alongside validators
- Participate in surveillance methods and denominator collection practices surveys
- Facility debrief discussion
- Make corrections to NHSN data, as necessary

What’s next?

Data Aggregation and Dissemination

How is facility-level data used?

- **Data from each facility that participated in external validation are aggregated to create a jurisdiction summary report**
- **SHD may choose to publish/distribute their findings**
- **Each SHD to send de-identified data to CDC for further analysis**
  - Facility identifiers remain anonymous to CDC
- **Goal is for CDC to combine and analyze data for a national report**
  - Detect areas needing improvement in NHSN surveillance and reporting processes
  - Identify additional resources for CDC to provide to users to improve NHSN surveillance and reporting in the future

Example of SHD summary report: Washington State, 2022 CLABSI Validation

Washington State Healthcare-Associated Infection (HAI) External Validation of Acute Care Hospital HAI Data:

Central Line-Associated Bloodstream Infection (CLABSI)

According to the Centers for Medicare & Medicaid Services (CMS) and the Washington State Healthcare-Associated Infection (HAI) Reporting Statute, acute care hospitals must report certain healthcare- associated infections to the Centers for Disease Control's (CDC) National Healthcare Safety Network (NHSN). This data reporting improves patient safety. The Washington State Department of Health (DOH) Healthcare- Associated Infections (HAI) Epidemiology team reviews the data and can assist hospitals in reporting.

2022 HAI Validation: CLABSI

A central line (also known as a central venous catheter) is a catheter (tube) that doctors often place in a large vein in the neck, chest, or groin to give medication or fluids or to collect blood for medical tests. A central line-associated bloodstream infection (CLABSI) is a serious infection that occurs when germs (usually bacteria) enter the bloodstream through the central line.

In the US, CLABSI increases mortality by **12-25%**, and is associated with over **28,000** deaths yearly.

CLABSI can significantly increase the amount of time a person is hospitalized.

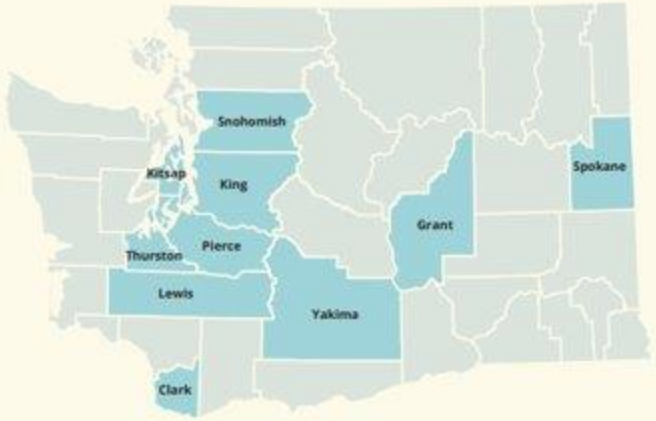
1

Methodology

The HAI Epidemiology team performed validation of 2022 CLABSI data that was reported to NHSN. There were 22 acute care hospitals in 10 counties that participated in the CLABSI event validation. The team selected hospitals according to the 2022 NHSN Toolkit and Guidance for External Validation. The process included reviewing up to 40 positive blood cultures for each hospital using a standardized tool. The team determined whether the events met reporting criteria and compared the determination with what the hospital reported to NHSN.

Validations by County

Washington counties where external CLABSI validations were conducted



The DOH epidemiologist(s) and the hospital Infection Prevention team settled any discrepancies. A discrepancy was defined as a situation where the DOH epidemiologists' and the hospital Infection Preventionists' reporting determinations were different.

Results

In total, 883 cases were reviewed across the 22 hospitals. Of the hospitals validated, 12 (54%) had no discrepancies. Of those facilities with discrepancies, most had fewer than 10% discrepancies; there were 20 (0.02%) total discrepancies.

10 Counties

22 Hospitals

883 Cases Reviewed

8 Remote Visits

14 Onsite Visits

98% State-wide Reporting Accuracy

95%
of CLABSIs were correctly identified

98%
of non-CLABSIs were correctly identified

Please contact HAI@doh.wa.gov with any questions.

DOH 420-549 October 2023
To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov.

References

- **NHSN Data Validation Guidance webpage**
  - Data Validation Guidance | NHSN | CDC
- **2023 Patient Safety External Validation Toolkit**
  - https://www.cdc.gov/nhsn/pdfs/validation/2023/patient-safety-external-validation-toolkit-508.pdf
- **2023 CLABSI Medical Record Abstraction Template**
  - https://www.cdc.gov/nhsn/pdfs/validation/2023/CLABSI-2023-MRAT-p.pdf
- **Washington State 2022 CLABSI External Validation Report**
  - HAI Annual Validation Report - 2022 (wa.gov)

For any questions or concerns, contact the NHSN Helpdesk

- **NHSN-ServiceNow** to submit questions to the NHSN Help Desk.
- Access new portal at **https://servicedesk.cdc.gov/nhsncsp**.
- If you do not have a SAMS login, or are unable to access ServiceNow, you can still email the NHSN Help Desk at nhsn@cdc.gov.

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