CL insertion-site characteristics in specifically designed flow sheets in the EMR. An ISI was counted every time ≥1 of the following signs were documented during CL assessments: edema, erythema, induration, tenderness, or drainage. A 1:2 case-control investigation was performed by matching nonmucosal barrier injury (non-MBI) CLABSI patients (cases) to patients without a CLABSI diagnosis (controls). We matched for age (±10 years), sex, date (±30 days), inpatient unit, central-line days, and central-line type (temporary vs permanent). The main exposure of interest was having an ISI on or before CLABSI onset. CLABSIs were determined using CDC NHSN definitions. We then created a metric: ISI days (defined as the number of days with ≥1 ISI documented) and plotted ISI incidence (ISI days per central-line days) to quantify the burden of ISIs and to determine whether ISI and non-MBI CLABSI incidences were collinear. An automated surveillance system for ISI was created using structured query language queries to the EMR data repository and Tableau software. **Results:** During 2015–2018, we detected 194 CLABSI cases that were matched to 338 controls. CLABSI patients had greater odds of having an ISI (OR, 2.3; 95% CI, 1.3–4.0). Over the study period, ISI incidence decreased from ~80 to ~50 ISI days per 1,000 CL days. Non-MBI CLABSI rates also decreased from ~1.5 to ~1.0 CLABSIs per 1,000 CL days. **Conclusions:** ISI incidence is associated with non-MBI CLABSI incidence. Because ISI incidence is higher than CLABSI incidence, surveillance for ISI could be a more sensitive indicator for monitoring the impact of CLABSI prevention practices. Automated surveillance for novel process metrics is a promising infection prevention tool.

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Interrater Reliability: Item Analysis to Develop Valid Questions for Case-Study Scenarios

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Background: Development of an interrater reliability (IRR) process for healthcare-associated infection surveillance is a valuable learning tool for infection preventionists (IPs) and increases accuracy and consistency in applying National Healthcare Safety Network (NHSN) definitions (1-3). Case studies from numerous resources were distributed to infection preventionists of varying experience levels (4-6). Item analysis, including item difficulty index and item discrimination index, was applied to individual test questions to determine the validity of the case scenarios at measuring individual mastery of the NHSN surveillance definitions (7-8). **Methods:** Beginning in 2016, a mandatory internal IRR program was developed and distributed to infection preventionists (IPs) of varying experience level. Each year through 2019, a test containing 30–34 case studies was developed with multiple-choice questions. Case studies were analyzed using 2 statistical methods to determine item difficulty and validity of written scenarios. *P* values for each test question were calculated using the item difficulty index formula, with harder questions resulting in values closer to 0.0. Point biserial correlation was applied to each question to determine highly discriminating questions, measured in a range from −1.0 and 1.0. **Results:** Between 2016 and 2019, 124 questions were developed and 145 respondents participated in the mandatory IRR program. The overall test difficulty was 0.70 (range, 0.64–0.74). Moreover, 17 questions (14%) were determined to have high "excellent" discrimination, 41 questions (33%) were determined to have "good" discrimination, 57 questions (46%) were determined to have "poor" discrimination, and 9 questions (7%) were found to have negative discrimination values. **Conclusions:** IRR testing identifies educational opportunities for IPs responsible for the correct application of NHSN surveillance definitions. Valid test scenarios are foundational components of IRR tests. Case scenarios that are determined to have a high discrimination index should be used to develop future test questions to better assess mastery of application of surveillance definitions to clinical cases.

				Item discrimination			
IRR	No. of participants	Total Questions	Overall Test Difficulty (closer to 0 = more difficult)	Questions calculated to have negative discrimination	No. of questions in 0%-24% range (neutral)	No. of questions in 25%-39% range (Good)	No. of questions in 40%-100% range (Excellent)
2016	41	30	0.74	1	16	9	4
2017	36	30	0.64	3	14	8	5
2018	36	30	0.71	1	13	12	4
2019	32	34	0.71	4	14	12	4
Totals	145	124	0.70	9	57	41	17

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