Table 1. Definitions and Clinical Examples

CLABSI Type	Definition	Clinical Example
Preventable (pCLABSI)	CLABSI meeting standard NSHN definitions.	Patient in the ICU for cardiogenic shock, who has a new fever without any other localizing symptoms and found to have an *S. aureus* bloodstream infection.
End-of-life (EOL-CLABSI)	CLABSIs that were determined clinically as caused by underlying disease processes in patients who were nearing the end of their lives due to a progressive comorbidity but who meet standard NSHN CLABSI definitions.	Patient in the ICU with advanced end-stage liver disease due to alcoholic cirrhosis with ongoing goals of care discussions, who develops ischemic bowel and grows *Enterococcus* from blood cultures.
Definition-based (dCLABSI)	CLABSIs that meet NHSN criteria but, based on the pathogen and the clinical situation, were caused by factors unrelated to end of life or the patient's central line.	Patient with advanced hematologic malignancy and neutropenic fever, with *Neisseria mucosa* bacteremia but who does not meet NHSN criteria for MBI or secondary CLABSI.

Note. CLABSI, central-line–associated bloodstream infection; ICU, intensive care unit; NHSN, National Healthcare Safety Network; MBI, mucosal barrier injury.

when management of any infection was likely futile for extending life. Unfortunately, central lines are commonly placed, and infections are frequently present in our most critically ill patients. Additionally, blood cultures are frequently sent as a part of a sepsis bundle as patients clinically decline. However, in our EOL-CLABSIs, these reflexive behaviors by our medical professionals likely diagnosed as a bloodstream infection that was nearly unpreventable due to a patient's underlying comorbidities and very likely would not change the outcome of the patient. We believe that specifically differentiating EOL-CLABSIs from dCLABSIs forces us to reflect on the number of patients who would benefit from early goals of care discussions instead of the reflexive medicine that we are taught to practice.

Our analysis had several limitations. The CLABSI assignments were subjective. However, categorizations between the 2 reviewers were 100% consistent. Having additional institutions apply similar subgroup classifications would be useful to determine the overall preventability of NHSN-defined CLABSIs. Nonetheless, these proposed definitions are meant to be a starting point that should be refined over time as more institutions attempt similar analyses.

In conclusion, although the majority of CLABSIs appear to be preventable, our analysis shows the presence of a large minority that are either related to patient's underlying disease process or are associated with the rigidity of standard NHSN definitions and are not preventable with standard infection prevention strategies.

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Patient-centered care to the detriment of the standardized infection ratio

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To the Editor—The Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN) uses an indirect standardization method for risk adjustment of surgical site infections (SSIs) by which procedures performed at a given

Table 1. Hysterectomy SSI Denominator Data for Calendar Years 2017–2021

Variable	Calendar Year				
	2017 (n = 373)	2018 (n = 389)	2019 (n = 381)	2020 (n = 394)	2021 (n = 456)
Hysterectomy procedures					
Same-day discharge exclusion for complex 30-d model, no. (%)[a]	13 (3)	17 (4)	49 (13)	125 (32)	222 (49)
Procedures included in complex 30-d model, no. (%)	360 (97)	372 (96)	332 (87)	269 (68)	234 (51)
Predicted infections					
Complex 30-day hysterectomy SIR model	2.88	3.07	2.88	2.27	2.03
Including same-day discharges	2.97	3.19	3.25	3.27	3.86
Increase in SIR per SSI, %[b,c]	3	4	13	44	90

Note. SSI, surgical site infection; SIR, standardized infection ratio.
[a]χ^2 for trend $P < .01$.
[b]$(SIR_{\text{with same day discharge}} - SIR_{\text{Complex 30-day}})/SIR_{\text{with same day discharge}}$ where SIR = 1 SSI/predicted infections.
[c]Pearson correlation coefficient = 0.987, comparing same day discharge exclusion to increase in SIR per SSI.

hospital are assigned a risk of SSI using a logistic regression model derived from a large standard population based on historical NHSN data from 2015, or the 2015 baseline.[1] The sum of these risks yields the expected number of SSIs, and the quotient of the observed SSIs (ie, numerator) and expected SSIs (ie, denominator) yields the standardized infection ratio (SIR). This SIR is 1 of 6 performance measures used to calculate the hospital acquired condition score, which can have severe financial repercussions for hospitals in the lowest performing quartile.

In assessing what appeared to be an increasing SIR for abdominal hysterectomy SSI for our hospital, we noted that from calendar years 2017 through 2021, the number of abdominal hysterectomy procedures reportable to the Centers for Medicare and Medicaid Services had drastically decreased from 360 to 234 procedures.[2] We attributed this to a patient-centered initiative by the department of obstetrics and gynecology for patients to be discharged home on the date of surgery if the patient is undergoing a low-risk gynecological procedure (eg, laparoscopic abdominal hysterectomy with no comorbidities). This resulted in a significant increase in our outpatient abdominal hysterectomies as defined by the NHSN (ie, where surgery and discharge occur on the same calendar day) from 3% to 49% (χ^2 for trend $P < .01$), all of which were excluded from our hysterectomy SIR per the complex 30-day SIR model of the NHSN.[1] Comparing calendar year 2021 to 2017, this resulted in a 30% decrease in our hysterectomy SSI denominator, corresponding to a 42% increase in our hysterectomy SIR per SSI. For calendar year 2021, exclusion of the same-day discharge procedures resulted in a 47% decrease in our hysterectomy SSI denominator, corresponding with a 90% increase in our hysterectomy SIR per SSI (Pearson correlation coefficient, 0.987, comparing same-day discharge exclusion to increase in SIR per SSI). These metrics are summarized in Table 1.

We respectfully question the NHSN risk adjustment model for hysterectomy SSI. Specifically, the exclusion of all outpatient abdominal hysterectomy as defined by the NHSN may create an inaccurate distinction between facilities that discharge on the same day versus the next day for procedures with similar SSI risk. The unintended consequence of this exclusion criterion is to bias the SIR to be higher for hospitals with a high proportion of same-day discharges. Instead, we propose that the NHSN consider patient-specific covariates in lieu of the outpatient exclusion criterion. For example, patients undergoing laparoscopic hysterectomies have a lower risk of SSI than vaginal or abdominal hysterectomies[3] and are considered to be the best candidates for same-day discharge.[4,5] Morgan et al[6] also highlighted that categorizing open and laparoscopic procedures in the same stratum was a major shortcoming of the NHSN model. Thus, the NHSN might consider whether the exclusion of laparoscopic hysterectomy or stratification on laparoscopic versus other hysterectomy might provide a more accurate representation of SSI risk, rather than the calendar date of discharge following surgery.

Our department of obstetrics and gynecology will continue to advocate for same-day discharge for select gynecological procedures, as supported by mounting evidence of the safety of this practice, better stewardship of inpatient hospital resources, and most importantly, the preference of patients to be at home on the night of surgery. However, we are concerned that the NHSN has not accounted for this critical aspect of patient-centered care in their statistical model, and we propose that the implications of the exclusion of outpatient procedures be reconsidered.

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