

# Reassessing Pathogens Eligible for the Centers for Disease Control and Prevention's (CDC's) National Healthcare Safety Network (NHSN) "Mucosal Barrier Injury-Laboratory Confirmed Bloodstream Infection" Criteria

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## Background

- Central line-associated bloodstream infections (CLABSIs) are among priority types of healthcare-associated infections<sup>1</sup>
- Hospitals are required to report CLABSI to CDC's National Healthcare Safety Network (NHSN) for reimbursement from Centers for Medicare & Medicaid Services (CMS)<sup>2</sup>
- NHSN introduced definition for Mucosal Barrier Injury-Laboratory Confirmed Bloodstream Infection (MBI-LCBI) in 2013<sup>3</sup>
  - MBI-LCBIs are excluded from CLABSI reporting to CMS
- The definition intends to identify BSI caused by selected pathogens common in GI tract by translocation across non-intact GI tract mucosa
- NHSN users have requested other pathogens, including *Pseudomonas aeruginosa* (PA), be added to MBI-LCBI definition
- In response, we compared pathogen-specific CLABSI distributions in three NHSN patient location groups

## Methods

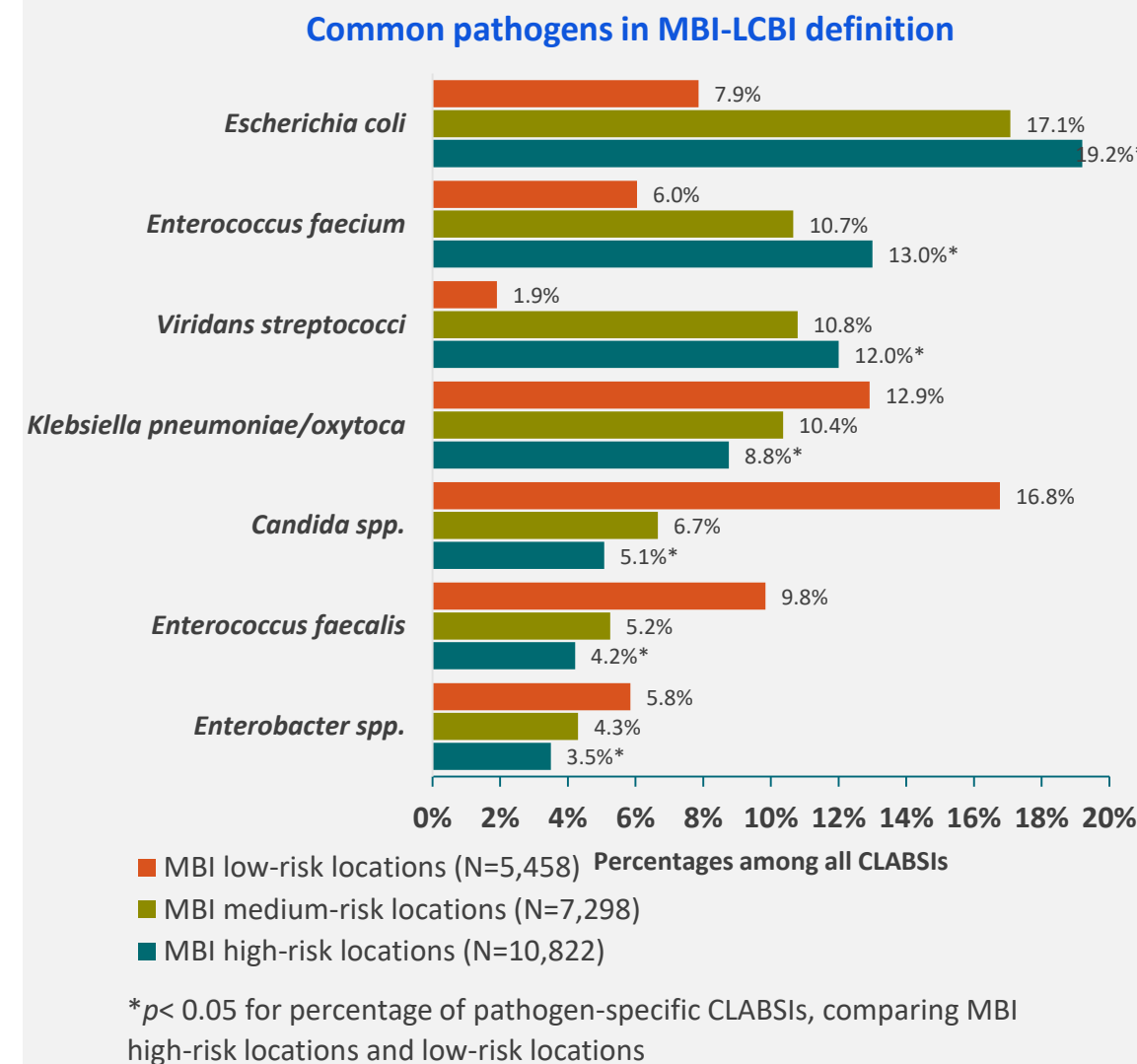
- Included CLABSI data from general acute care or cancer hospitals
  - ≥1 month of data from January 2014–December 2018
  - ≥1 MBI high-risk location (leukemia, lymphoma, and adult and pediatric hematopoietic stem cell transplant wards)
- In these hospitals, NHSN Locations were classified into three groups
  - MBI high-risk locations (as above)
  - MBI medium-risk locations (solid tumor and adult and pediatric hematology-oncology wards)
  - MBI low-risk locations (adult and pediatric medical, surgical, and combined medical-surgical wards)
- Calculations
  - CLABSI rate = no. CLABSIs/no. central line (CL)-days x 1,000
  - Device utilization ration (DUR) = no. CL-days/no. patient-days
  - Percentage of pathogen-specific CLABSIs = no. CLABSIs caused by a specific pathogen or pathogen group/no. of all CLABSIs x 100
- Rates and pathogen-specific CLABSI distribution comparison
  - χ<sup>2</sup> tests (OpenEpi version 3.01)
  - Statistical significance at  $P \leq 0.05$

## Results

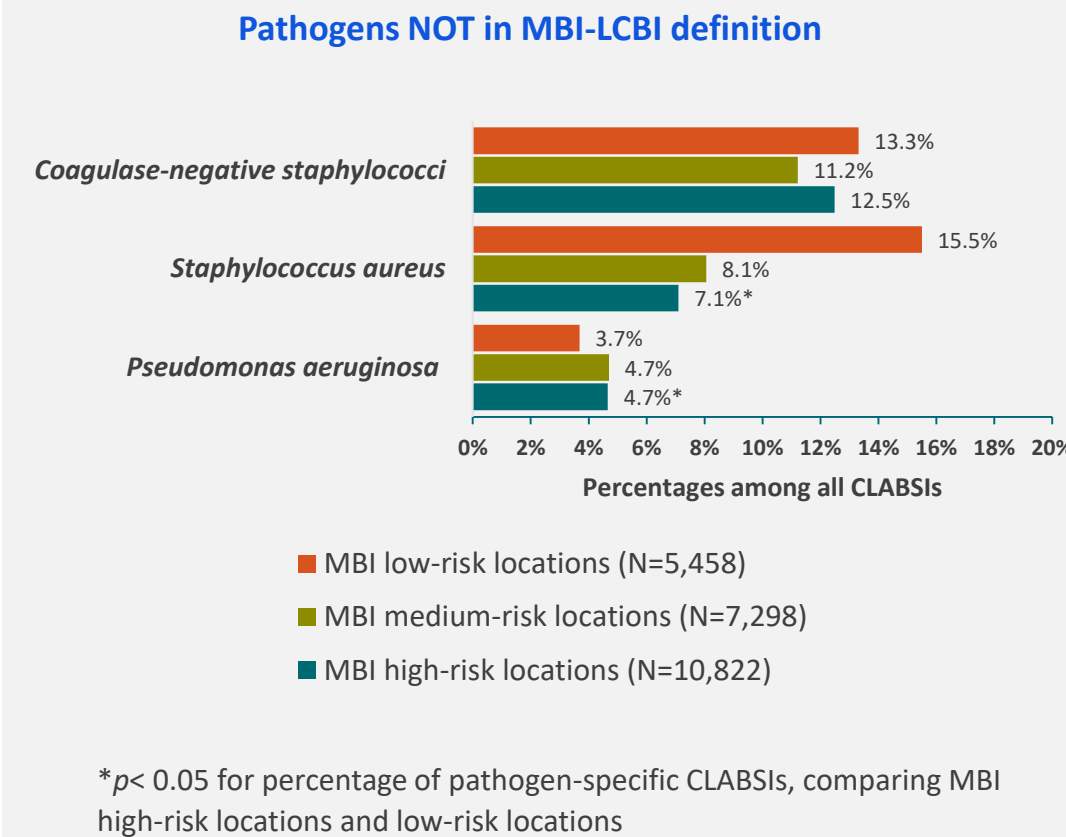
### 1. CLABSIs attributed to MBI high-risk, medium-risk, and low-risk locations, NHSN, 2014–2018

	MBI high-risk locations	MBI medium-risk locations	MBI low-risk locations	All locations
No. hospitals included in analysis	122	122	122	122
No. inpatient locations	151	145	353	649
No. CLABSI events	10,822	7,298	5,458	23,578
No. pathogens	12,050	8,132	6,238	26,420
No. central line (CL)-days	3,263,475	3,761,996	5,936,450	12,961,921
No. patient-days	3,891,347	6,709,371	28,895,520	39,496,238
Pooled mean CLABSI rate per 1,000 CL-days	3.32	1.94	0.92	1.82
Device utilization ratio (DUR)	0.84	0.56	0.21	0.33

### 2. Percentages of Pathogen-specific CLABSIs in MBI high-risk, medium-risk, and low-risk locations, NHSN, 2014–2018



### 3. Percentages of pathogen-specific CLABSIs in MBI high-risk, medium-risk, and low-risk locations, NHSN, 2014–2018



## Conclusions

- Differences in percentages of CLABSIs due to MBI-LCBI pathogens between MBI high-risk and low-risk locations are evident in national surveillance data
  - Lower percentages of *Klebsiella* and *Candida* spp. in high-risk locations might be partially explained by antimicrobial prophylaxis practices in oncology patients
- Although PA caused a significantly higher percentage of CLABSIs in high-risk locations, the magnitude of the difference was modest relative to differences observed for pathogens already included in MBI-LCBI
- Additional analyses are needed to inform changes to the pathogens included in MBI-LCBI criteria

## References

- CDC National and State Healthcare-Associated Infections Progress Report, published October 2018, available at <https://www.cdc.gov/hai/data/portal/progress-report.html>
- Operational Guidance for Acute Care Hospitals to Report Central Line-Associated Bloodstream Infection (CLABSI) Data to CDC's NHSN for the Purpose of Fulfilling CMS's Hospital Inpatient Quality Reporting (IQR) Requirements <https://www.cdc.gov/nhsn/pdfs/cms/Final-ACH-CLABSI-Guidance-508.pdf>
- NHSN v7.1 Release Notes. The Centers for Disease Control and Prevention Web site <http://www.cdc.gov/nhsn/pdfs/commup/Release-Notes-v7-1.pdf>. Published February 2013 Accessed October 7, 2020.

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