

Central line-associated bloodstream infection in cancer patients: MBI-LCBI X non-MBI-LCBI

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Background: Central line-associated bloodstream infection (CLABSI) is the most prevalent healthcare associated infection (HAI) amongst oncology patients. In 2013, the Centers for Disease Control and Prevention / National Healthcare Safety Network (CDC / NHSN) introduced a new definition of mucosal barrier injury associated with laboratory-confirmed bloodstream infection (MBI-LCBI) in order to avoid misclassification of bloodstream infections caused by the intestinal / oral microbiota in cancer patients. This new definition also allowed a proper comparison between CLABSI rates at cancer and noncancer centers.

Objectives: To describe clinical and demographic characteristics of cancer patients with CLABSI and MBI-LCBI events, separately.

The Centers for Disease Control and Prevention definition of mucosal barrier injury-associated bloodstream infection improves accurate detection of preventable bacteremia rates at a pediatric cancer center in a low- to middle-income country Torres, D . et al. Am J Infect Control. V 44, I 4, 432 – 437. 2016.

Methods: Retrospective study of CLABSI surveillance from an adult oncology acute care hospital in southern Brazil with 228 beds. The review was conducted from January to December 2015. The MBI-LCBI definition by CDC / NHSN criteria was applied to determine and differentiate MBI-LCBI events from CLABSI rates and to compare clinical characteristics and outcomes.

Results: We identified 123 CLABSI events in 2015 (5.2 per 1,000 catheter-day). Of these events, 32 were MBI-LCBI (1.35 per 1,000 catheter-day) and 91- "non-MBI-LBI" cases (3.85 per 1000 catheter-day). Of the total sample, 51% (n = 62) males; 53% (n = 65) had a solid tumor and 29.8% (n = 37) had neutropenia in the CLABSI window (3 days before or 3 days after the event).

Table 1. Characteristics and outcomes MBI-LCBI versus non-MBI-LCBI.

Clinical and demographic characteristics	MBI-LCBI (n=32) n	Non MBI-LCBI (n=91) n
Male gender	18(54,5%)	44(48,8%)
Age (median)	51,5	51,5
Hematological disease	31(93,9%)	27(30%)
Solid tumor	2(6%)	63(70%)
Short term central line	30(91%)	81(90%)
Implanted central line	3(9%)	9(10%)
Outcome: death in setting	8(24,2%)	29(32,2%)

Escherichia coli and Klebsiella pneumoniae were the most frequent laboratory confirmed microorganisms. The 123 infections occurred in 100 patients; therefore, 12% had more than one CLABSI episode within a year.

Table 2. Organisms isolated from blood in MBI-LCBI and non-MBI-LCBI.

Microorganisms*	n	MBI-LCBI n(%)	Non MBI-LCBI n(%)
<i>Klebsiella pneumoniae</i>	21	08 (38,1)	13(61,9)
<i>Escherichia coli</i>	20	17(85,0)	03(15,0)
<i>Enterobacter sp.</i>	12	02(16,7)	10(83,3)
<i>Coagulase- negative Staphylococcus</i>	10	00(0,0)	10(100,0)
<i>Acinetobacter baumannii</i>	10	00(0,0)	10(100,0)
<i>Staphylococcus aureus</i>	10	00(0,0)	10(100,0)
<i>Candida albicans</i>	08	01(12,5)	07(87,5)
<i>Pseudomonas aeruginosa</i>	08	00(0,0)	08(100,0)
<i>Serratia marcescens</i>	07	01(14,3)	06(85,7)
<i>Enterococcus sp.</i>	06	01(16,7)	05(83,3)
<i>Candida não albicans</i>	05	01(20,0)	04(80,0)
<i>Streptococcus viridans</i>	02	01(50,0)	01(100,0)
<i>Corynebacterium sp.</i>	01	00(0,0)	01(100,0)
<i>Cupriavidus gilardii</i>	01	00(0,0)	01(100,0)
<i>Proteus mirabilis</i>	01	00(0,0)	01(100,0)
<i>Providencia stuartii</i>	01	00(0,0)	01(100,0)
<i>Raoultella ornithinolytica</i>	01	00(0,0)	01(100,0)
<i>Stenotrophomonas maltophilia</i>	01	00(0,0)	01(100,0)
<i>Streptococcus agalactiae</i>	01	00(0,0)	01(100,0)
<i>Streptococcus group mitis</i>	01	00(0,0)	01(100,0)
Total	127	32(25,2)	95(74,8%)

*CLABSI episode may contain more than one microorganism

Conclusion: Significant decrease in CLABSI rates were observed when MBI-LCBI events were separated from "non-MBI-LCBI". Many "non-MBI-LCBI" events were preventable, for this reason, the actions of permanent education in HAI prevention and control should be expanded. We encourage the performance of a Team of Vascular Accesses to act specifically in order to reduce the CLABSI. Aliquam suscipit est in urna cursus varius. Vivamus in urna ligula. Suspendisse tincidunt pellentesque bibendum. Suspendisse lobortis ornare velit, sed lobortis nunc sodales quis. Integer porttitor ipsum vitae nisi auctor blandit. Cras in nisl sed nulla laoreet sodales vel at ligula. Nulla in nunc massa, quis placerat metus. quis sodales diam.

