

**TITLE:** EVALUATION OF MICROORGANISMS ISOLATED IN HEMOCULTURES: DISTRIBUTION AND SENSITIVITY PROFILE TO ANTIMICROBIALS

**AUTHORS:** CANO N.O.B.; ALTAFINI D.D.; COSTA B.B.; EIRI G.N.; OKUMA J.K.; CHITOLINA F.C.; LEMOS A.A.; MAZUCHELI J.; TOGNIM M.C.B.

**INSTITUTION:** UNIVERSIDADE ESTADUAL DE MARINGÁ, PR/ CENTRO DE CIÊNCIAS DA SAÚDE (Av. Colombo, 5790 - Jd. Universitário, CEP 87020-900, MARINGÁ – PR, BRAZIL).

## **ABSTRACT**

Bloodstream infections (BSI) are defined by the presence of viable microorganisms in the blood, which can be confirmed by hemoculture. BSIs are among the main causes of hospital morbidity and mortality. Both BSIs caused by Gram-positive (BSI-GP) or Gram-negative (BSI-GN) bacteria are highly prevalent and can progress to sepsis. Rapid recognition of BSI and early initiation of therapy are essential to therapeutic success. However, the choice of the appropriate class antimicrobial has become complex due to increased bacterial resistance. So, the characterization of the etiological agent is extremely important to guide the choice of appropriate antimicrobial therapy. The objective of the study was to evaluate the prevalence and the sensitivity profile of the microorganisms that cause BSI-GP and BSI-GN. This retrospective study included medical records of patients who had a BSI between the years 2013 and 2018 at the University Hospital of Maringá, in the northwest region of Paraná, southern Brazil. Data from 13574 blood culture samples, equivalent to 6787 patients, were selected for inclusion in this study. 455 patients were analyzed, including 47.7% (217/455) GP cases and 52.3% (238/455) GN cases. The microorganisms most frequently detected in BSI-GP were *Staphylococcus aureus* (43.7%), *Staphylococcus epidermidis* (18.40%), *Enterococcus faecalis* (9.2%) and *Streptococcus pneumoniae* (6.9%). Among BSI-GN, *Escherichia coli* (26.5%), *Klebsiella pneumoniae* (19.7%), *Pseudomonas aeruginosa* (14.2%) and *Acinetobacter baumannii* (7.9%) were the most prevalent microorganisms. The frequency of *S. aureus* isolates resistant to methicillin (MRSA) was 26.3%, whereas for vancomycin, daptomycin and linezolid all isolates were sensitive. Among the Enterobacteriaceae analyzed, *Escherichia coli* and *Klebsiella pneumoniae* presented resistance rates to ceftriaxone of 35% and 48.9% respectively. *A. baumannii* was the pathogen with the highest rate of antimicrobial resistance, to carbapenems imipenem (68.4%) and meropenem (73.7%). Considering that rates of bacterial resistance have been increasing in recent years worldwide, the best way to achieve therapeutic success is to know the characteristics of the main BSI-causing bacteria as well as the antibiogram pattern locally.

**Keywords:** Bloodstream infections; Sensitivity profile; Prevalence; Bacterial resistance