

# EPIDEMIOLOGY OF HEALTHCARE-ASSOCIATED INFECTIONS IN CHILDREN UNDERGOING HEMATOPOIETIC STEM CELL TRANSPLANTATION

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**Introduction.** Approximately half a century ago, allogeneic hematopoietic stem cell transplantation (HSCT) became an essential therapeutic option for treating severe conditions, thus offering a new chance at life for children with various hematologic and oncologic diseases.

**The purpose** of this study is to analyze the epidemiological peculiarities of HCAs in children undergoing HSCT.

**Materials and Methods.** A systematic review of the literature was conducted with an overview of epidemiological aspects of HCAs in children undergoing HSCT, related to the incidence and mortality of the disease, isolated pathogens and the risk factors that influence the development of IAAM.

**Results.** HCAs are major complications in children undergoing HSCT, with incidence rates ranging from 5% to 50%, being higher in allogeneic compared to autologous transplants.

Bloodstream infections (BSIs) are the most frequent, with an estimated incidence of 20%-44% and a mortality rate between 10% and 50%. HCAs caused by resistant Gram-negative bacteria increase mortality to 45%, while fungal infections raise it to 75%. Pneumonia and gastrointestinal infections, including *Clostridium difficile* infection, are other frequently encountered complications. Urinary tract infections are rare and are usually associated with the presence of a urinary catheter. A retrospective study conducted over 21 years showed that 41% of children who underwent HSCT developed at least one bloodstream infection. Another study reported an incidence of 28.2% of HCAs in children undergoing HSCT, with a proportion of 32.8% for BSIs. Of these, 93.4% were associated with central venous catheterization, and the mortality rate was 36.9%. A study conducted in Italy identified Coagulase-negative staphylococci and Enterobacteriaceae as the most frequent pathogens, each causing approximately 25% of BSI cases, followed by Enterococci and *Pseudomonas aeruginosa*. The main identified risk factors include: prolonged immunosuppression; severe and prolonged neutropenia; use of central venous catheters; mechanical ventilation and prolonged hospitalization.

**Conclusion.** Children undergoing HSCT have an increased vulnerability to HCAs due to a combination of risk factors related to immunosuppression and invasive medical procedures. Early identification of these factors and the implementation of rigorous strategies for infection prevention and control are essential to reduce the incidence and impact of these complications in this vulnerable population.

**Keywords:** hematopoietic stem cell transplantation, healthcare-associated infections, children, risk factors, microorganisms.