International Journal of Health Science

ISSN 2764-0159 vol. 6, n. 2, 2026

ARTICLE 9

Acceptance date: 18/02/2026

MANAGEMENT OF SEPSIS IN ADULTS: A LITERATURE REVIEW

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Abstract: Introduction: Sepsis is a serious clinical condition associated with high morbidity and mortality, whose often delayed diagnosis contributes to the progression of organ dysfunction. It results from a dysregulated inflammatory response of the host to infection and can progress to septic shock, characterized by persistent hypotension, tissue hypoperfusion, and cellular hypoxia. Prognostic tools such as the q-SOFA score are useful in stratifying the risk of in-hospital mortality. The management of sepsis is based on early recognition and rapid administration of antibiotics, since delays in antibiotic therapy are associated with a significant increase in mortality, reinforcing the importance of immediate intervention. **Method:** This study is a narrative review that analyzed the literature on the management of sepsis in adult patients. Articles were selected from the PubMed databases using the keywords "management," "sepsis," and "adult patients." Inclusion criteria covered articles in English and Portuguese published in the last year. Studies with unclear methodology or irrelevant to the topic were excluded. A total of 5 articles were selected and analyzed. **Results and Discussion:** The analyzed literature consistently demonstrates that the treatment of sepsis should be structured in sequential and interdependent stages, including early recognition, rapid activation of response systems, initial resuscitation, timely antibiotic therapy, hemodynamic stabilization, continuous care, and post-sepsis rehabilitation. The results indicate that improved clinical outcomes depend on the integration of well-established protocols, multidisciplinary teams, and prepared health systems, reinforcing the time-dependent nature of sepsis. Recent evidence suggests that the order of initial antibiotic administration influences hospital mortality, with early infusion of β-lactams before vancomycin associated with lower mortality, even after adjusting for disease severity. In addition, studies have shown that the duration of antibiotic therapy guided by biomarkers, especially procalcitonin, reduces the time of antimicrobial use without increased mortality, therapeutic failure, or infectious recurrence, contributing to the rational use of antibiotics. With regard to microbiological investigation, more severe clinical signs were associated with a higher probability of positive blood cultures, while indiscriminate collection in low-risk patients had low diagnostic value and a higher contamination rate. Finally, the use of vasopressors via peripheral venous access in the early stages of sepsis proved to be safe and effective when performed under appropriate protocols, allowing for faster initiation of hemodynamic support and a low incidence of local complications. **Conclusion:** Although severe, sepsis has better outcomes when managed early and according to protocol. Timely recognition, adequate diagnostic investigation, and correct antibiotic therapy—considering not only the timing but also the sequence of administration—are crucial for therapeutic success.

INTRODUCTION

Sepsis is one of the most complex conditions faced in medical practice. In recent decades, great efforts have been directed toward understanding the mechanisms of the systemic inflammatory response that defines this syndrome. However, despite its high clinical relevance and significant consumption of health resources, diagnosis is still often delayed, favoring the development of multiple organ and system dysfunction. At the same time, the treatment

of sepsis has undergone significant changes in recent years and is currently guided by several recommendations based on evidence from studies conducted in the clinical context (Henkin et al., 2009).

Sepsis is defined as a serious and potentially fatal clinical condition resulting from an inadequate and dysregulated inflammatory response of the body to an infectious process. This exacerbated host response leads to complex pathophysiological changes that culminate in progressive organ dysfunction, compromising homeostasis and adequate tissue oxygenation. Within this spectrum, septic shock represents the most severe form of sepsis, being associated with higher mortality and intensive need for hemodynamic support. Clinically, it is characterized by persistent hypotension, even after adequate volume replacement, which results in reduced perfusion pressure to tissues and organs. This decrease in effective blood flow leads to cellular and metabolic hypoxia, a central element in the pathophysiology of shock, contributing to multiple organ failure (Srzić et al., 2022).

In terms of prognosis, the qSOFA score showed greater prognostic accuracy for in-hospital mortality than the previous criteria for SIRS or severe sepsis. Patients with qSOFA ≥2 had an in-hospital mortality rate of 24% compared to 3% for scores <2, indicating that simple clinical scores can stratify the risk of severe outcomes in sepsis (FREUND et al., 2017).

The key to managing sepsis is early recognition in order to start antibiotics as soon as possible. Later antibiotic administration (beyond 330 minutes after arrival) was associated with a significant increase in sepsis-attributable mortality at 3 and 30 days compared to those who received antibiotics earlier. These findings suggest that prolonged delays in antibiotic therapy increase the risk of death in sepsis and are consistent with guidelines that emphasize the importance of antibiotic treatment as soon as possible (LANE et al., 2024).

METHOD

The study is a narrative review conducted in six stages: selection of the theme and formulation of the research question; establishment of inclusion and exclusion criteria for the search; evaluation and critical analysis of the included studies; analysis and synthesis of the included studies with interpretation of the results; and presentation of the review.

This article is a narrative review that aims to analyze the current literature on the management of sepsis in adult patients. The research was conducted through the Regional Medical Library (BIREME) using the Virtual Health Library (VHL) and included databases such as PUBMED (National Library of Medicine).

Using the keywords "management," "sepsis," and "adult patients," without restriction of any criteria, 14,993 articles were found in the PubMed databases. When conducting the search, the inclusion criteria were: languages in English and Portuguese, published in the last year, complete and free articles, and the exclusion criteria were: publications in PowerPoint (PPT), those without a date, published prior to 2025, editorials, letters to the reader, letters to the editor without case reports, articles with unclear methodology, and publications that did not fit the desired focus. After applying the inclusion and exclusion criteria, 14,988 articles were excluded.

After excluding the aforementioned publications, we selected five scientific articles for analysis. Based on this selection, we classified, compiled, and directed the articles according to the objectives of constructing the final article. Subsequently, we synthesized the results found, taking into account the similarity of content.

RESULTS AND DISCUSSION

This article sought to analyze the literature's approach to the current evidence on the management of sepsis in adult patients. Through a careful review of the literature on the subject, it was observed that the management of sepsis should be organized in sequential and interdependent stages. Early recognition, rapid activation of response systems, adequate initial resuscitation, timely antimicrobial treatment, hemodynamic stabilization, continuous care, and post-sepsis rehabilitation are fundamental points in the outcome of these patients. Improved outcomes in sepsis depend not only on isolated interventions, but also on coordination between teams, well-structured protocols, and prepared health systems, as sepsis is a time-dependent condition that requires a multidisciplinary and continuous approach throughout the entire care pathway (Jorge L Hidalgo et al., 2025).

Still on the subject, the order of initial administration of broad-spectrum antibiotics influences mortality in patients with suspected sepsis. It was observed that the administration of β-lactam before vancomycin was associated with lower hospital mortality when compared to the reverse sequence, even after adjusting for disease severity and confounding factors. This finding suggests that early coverage of Gram-negative pathogens, often more related to the rapid progression of sepsis, may have a more relevant clinical impact in the early stages of treatment (KONDO et al., 2025).

According to Paul Dark et al., 2025, the duration of biomarker-guided antibiotic therapy, especially procalcitonin, could reduce the duration of antibiotic use in hospitalized patients with suspected sepsis without compromising clinical safety. The authors demonstrated that the biomarker-guided strategy was associated with a shorter duration of antibiotic therapy when compared to usual care, without a significant increase in mortality, therapeutic failure, or recurrence of infection. Biomarkers are useful tools to support decisions to discontinue antibiotics, contributing to the rational use of antimicrobials, reduction of adverse effects, and potential decrease in bacterial resistance, while maintaining similar clinical outcomes in the management of sepsis.

From the cohort presented by Gamazo del Río et al., 2025, it can be observed that signs of greater severity, such as hemodynamic instability, elevated inflammatory markers, and organ dysfunction, are associated with a higher probability of positive blood cultures, while indiscriminate collection in low-risk patients has low diagnostic value and a higher chance of false-positive results due to contamination. The study suggests that the request for blood cultures should be guided by clinical and severity criteria, integrating medical judgment and risk stratification tools, in order to optimize resources, reduce unnecessary tests, and improve therapeutic decision-making in the initial management of sepsis in the emergency room.

Finally, Munroe et al., 2025, evaluate the safety and efficacy of using vasopressors

via peripheral venous access in patients with sepsis-induced hypotension in the early stages of care. The authors demonstrate that, when appropriate protocols, appropriate choice of venous site, and rigorous monitoring are used, peripheral administration of vasopressors had a low rate of serious local complications, such as extravasation and tissue necrosis, in addition to allowing for a faster start of hemodynamic support. The study suggests that this strategy may reduce delays associated with central venous catheter placement, potentially improving early hemodynamic stability. Thus, the study supports the judicious use of peripheral vasopressors as a safe and efficient alternative in the initial management of sepsis-related hypotension.

CONCLUSION

This literature review reinforces that although sepsis is a serious health condition, when managed according to well-established protocols and guidelines, it presents a successful cure for the patient. Therefore, the evidence suggests that everything is essential for a good outcome in sepsis: early recognition, requesting the correct tests, not only the time to start antibiotic therapy, but also the sequence of administration of the chosen antimicrobials.

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