ISSN: 2582-7162

Review Article

Current Trends and Challenges in the Management of Sepsis in Adult Patients

Sahil Chaudhary[1], Ravi Kumar[2],J. SathyaShenbega Priya[3], Om Prakash Swami[4], Shiv Kumar Sharma[5]

[1]Prof. Cum Principal, GMS College of Nursing and Paramedical Sciences, UP
[2]Nursing Tutor, GCON BRD Medical College Gorakhpur, UP
[3]Principal, College of Nursing, Kannur medical College, Anjarakandy, Kannur, Kerala 670612
[4]Associate Professor, Mahatma Gandhi Nursing College, Sitapura, Jaipur
[5]Associate Professor, Mahatma Gandhi Nursing College, Sitapura, Jaipur

Corresponding Author:
Sahil Chaudhary,Prof. Cum Principal,
GMS College of Nursing and Paramedical Sciences, UP

E-mail:
scimpecable@gmail.com

How to cite this article:Chaudhary Sahil, Kumar R, SathyaShenbegaPriya, J. Swami OP, Sharma SK.Current Trends and Challenges in the Management of Sepsis in Adult Patients. GFNPSS-IJMR 2025; 6:09:3105-3107
Submitted: 20 September 2025: **Accepted:** 29 September 2025: **Published:** 10 October 2025

Abstract

Despite major advances in medical research, sepsis continues to be a major cause of morbidity and mortality globally. New diagnostic methods, treatment approaches, and a better comprehension of the pathophysiology of sepsis have all been made possible by recent advancements. Nevertheless, issues like patient heterogeneity, resource limitations, and delayed recognition still exist. In order to improve patient outcomes, this review attempts to clarify current trends in sepsis management, point out new difficulties, and suggest directions for further study.

Keywords: Sepsis, Adult patients, Management, Trends, Challenges, Diagnosis, Treatment, Mortality, ICU, Guidelines

Introduction

A dysregulated host response to infection causes the complex clinical state known as sepsis, which can culminate in potentially fatal organ failure. Sepsis is one of the top causes of death worldwide, with an estimated 11 million fatalities attributed to the condition each year. Despite advancements in critical care, the management of sepsis remains challenging due to its heterogeneous nature and the rapid progression to septic shock.

Epidemiology and Risk Factors

Globally, the prevalence of sepsis varies depending on a number of factors, including population demographics, infection control procedures, and healthcare infrastructure. People with immunocompromised conditions, chronic comorbidities, and older folks are more vulnerable. Academy of Family Physicians in America. The burden is increased in situations with inadequate resources since prompt tests and treatments are harder to get.

Pathophysiology

The infection and the host's immune system interact intricately during sepsis. An inflammatory reaction brought on by the initial infection can result in extensive endothelial dysfunction, microvascular thrombosis, and organ failure if left unchecked. BioMed Central. Different sepsis phenotypes, such as

https://doi.org/10.46376/ijmr/06.09.2025:3105-3107

immunosuppressive and hyperinflammatory profiles, have been discovered recently; these may call for specialized treatment strategies Frontiers.

Diagnosis

A precise and timely diagnosis is essential. The sensitivity and specificity of conventional biomarkers, such as procalcitonin (PCT) and C-reactive protein (CRP), are limited. New diagnostic techniques, such as proteomic and genomic profiling, hold promise for more quickly and precisely detecting sepsis. Furthermore, research is being done to forecast the start and course of sepsis using advances in artificial intelligence (AI).

Management Strategies

- Early Goal-Directed Therapy (EGDT): EGDT prioritized early fluid resuscitation, vasopressor support, and central venous oxygen saturation monitoring when it was first promoted as a key component of sepsis care. Nevertheless, later research has called into doubt its general applicability, resulting in a more customized strategy (journal .medtigo.com).
- Antibiotic Stewardship: It's critical to administer broad-spectrum antibiotics promptly. However, according to culture data, the emergence of antibiotic resistance calls for careful use and prompt de-escalation (BioMed Central).
- Hemodynamic Support: The first-line treatment for septic shock is still vasopressors, such as norepinephrine. Although the findings have been conflicting, recent research has examined the function of supplemental treatments including corticosteroids and vitamin C.
- Organ Support: Mechanical breathing, renal replacement treatment, and invasive monitoring are essential for treating organ dysfunction. Frontiers is looking into extracorporeal methods for refractory instances, such as hemadsorption and extracorporeal membrane oxygenation (ECMO).

Challenges in Sepsis Management

- **Delayed Recognition:** Because sepsis frequently manifests as vague symptoms, diagnosis and treatment are delayed.
- **Resource Limitations:** In low-resource environments, effective sepsis management is hampered by a lack of diagnostic tools, qualified staff, and infrastructure.
- **Patient Heterogeneity:** Since patients react differently to sepsis, individualized treatment plans are required, which MDPI does not yet offer.
- **Long-Term Outcomes:** According to the Society of Critical Care Medicine (SCCM), post-sepsis syndrome, which is typified by cognitive, psychological, and physical impairments, presents a major problem in long-term patient care.

Future Directions

- **Precision Medicine:** There is potential for better results when treatment is customized according to each patient's unique profile, including genetic and phenotypic traits.
- **Point-of-Care Diagnostics:** The creation of quick bedside diagnostic instruments can help in early identification and prompt treatment.
- **Global Health Initiatives:** It is crucial to work together to standardize sepsis care procedures and supply resources to underprivileged areas.

Financial support and sponsorship: Nil

Conflicts of interests: There is no conflict of interest

References

1. Guarino M. 2023 Update on Sepsis and Septic Shock in Adult Patients. PMC.

https://doi.org/10.46376/ijmr/06.09.2025:3105-3107

Available at: https://pmc.ncbi.nlm.nih.gov/articles/PMC10179263/

2. Santacroce E. Advances and Challenges in Sepsis Management. MDPI. Available at: https://www.mdpi.com/2073-4409/13/5/439
3. Chiscano-Camón L. Current perspectives in the management of sepsis and septic shock. Frontiers in Medicine. Available at: https://www.frontiersin.org/articles/10.3389/fmed.2024.1431791/full
4. Adrita SA. Recent Advances in Sepsis Management. Medtigo Journal. Available at: https://journal.medtigo.com/recent-advances-in-sepsis-management-from-early-goal-directed-therapy-to-biomarker-driven-approaches/
5. Carvey MMT, Glauser J. The Management of Severe Sepsis and Septic Shock: A Novel Update and Bedside Reference Guide. SpringerLink. Available at: https://link.springer.com/article/10.1007/s40138-025-00310-4
6. Schmidt GA. Evaluation and management of suspected sepsis and septic shock in adults. UpToDate. Available at: https://www.uptodate.com/contents/evaluation-and-management-of-suspected-sepsis-and-septic-shock-in-adults
7. Surviving Sepsis Campaign 2021 Adult Guidelines. SCCM. Available at: https://sccm.org/survivingsepsiscampaign/guidelines-and-resources/surviving-sepsis-campaign-adult-guidelines
8. Martin-Loeches I, et al. Management of severe sepsis: advances, challenges, and current status. Dove Press. Available at: https://www.dovepress.com/management-of-severe-sepsis-advances-challenges nbspand-current-status-peer-reviewed-fulltext-article-DDDT
9. Pant A. Advances in sepsis diagnosis and management: a paradigm shift. BMC Biomedical Science. Available at: https://jbiomedsci.biomedcentral.com/articles/10.1186/s12929-020-00702-6
10. Gauer R. Sepsis: Diagnosis and Management. American Family Physician. Available at: https://www.aafp.org/pubs/afp/issues/2020/0401/p409.html
11. Ibarz M. The critically ill older patient with sepsis: a narrative review. Annals of Intensive Care. Available at: https://annalsofintensivecare.springeropen.com/articles/10.1186/s13613-023-01233-7
12. Nofal MA. Recent trends in septic shock management: a narrative review. PMC. Available at: https://pmc.ncbi.nlm.nih.gov/articles/PMC11305747/
13. Jalal SM. Evaluating Sepsis Management and Patient Outcomes. MDPI. Available at: https://www.mdpi.com/2077-0383/14/10/3555
14. Thwaites L. Management of adult sepsis in resource-limited settings. SpringerLink. Available at: https://link.springer.com/article/10.1007/s00134-024-07735-7
15. NHS Watchdog Warns of Delayed Sepsis Diagnosis. The Guardian. Available at: https://www.theguardian.com/society/2025/jun/26/patients-dying-of-sepsis-because-medics-too-slow-to-spot-it-warns-nhs-watchdog
16. AI and Blood Test for Early Sepsis Detection. The Guardian. Available at: https://www.theguardian.com/society/2024/mar/29/sepsis-blood-test-combined-with-ai-could-offer-early-detection-tool

https://doi.org/10.46376/ijmr/06.09.2025:3105-3107