



# Acta Medica Europa

## Empirical Treatment in Burn Emergencies

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Dear Editor,

Burn injuries constitute a significant global health burden, demanding immediate and often lifesaving interventions. In the initial chaotic minutes and hours, empirical treatment decisions play a crucial role in stabilizing patients and preventing complications. However, navigating the complex interplay between time sensitivity, antimicrobial stewardship, and evolving resistance patterns presents a constant challenge for clinicians. In the immediate aftermath of a burn, the priority shifts from definitive diagnosis to rapid initiation of broad-spectrum antibiotics. This proactive approach aims to combat the early influx of microorganisms colonizing the compromised skin, potentially leading to life-threatening sepsis. Traditionally, vancomycin and piperacillin-tazobactam have been the mainstay empirical choices, offering coverage against a wide range of Gram-positive and -negative bacteria. (1-4).

However, the landscape of burn wound pathogens is constantly evolving. The emergence of multidrug-resistant organisms, particularly methicillin-resistant *Staphylococcus aureus* (MRSA) and *Pseudomonas aeruginosa*, necessitates a nuanced approach to empirical therapy. Local resistance data, burn depth and extent, and individual patient factors like comorbidities and prior antibiotic exposure should all guide antibiotic selection. Fortunately, advances in rapid diagnostic tools like burn wound cultures and polymerase chain reaction (PCR) testing offer the potential for faster identification of specific pathogens and tailoring of antibiotic regimens. This shift towards precision medicine in burn care promises to minimize unnecessary broad-spectrum antibiotic use, thereby contributing to the global fight against antimicrobial resistance. Beyond specific antibiotic choices, optimizing empirical treatment in burn emergencies involves a multipronged approach. Early and aggressive surgical debridement of burnt tissue reduces bacterial burden and promotes healing. Additionally, effective pain management, fluid resuscitation, and nutritional support all contribute to improved patient outcomes (4-7).

In conclusion, managing burn emergencies demands a delicate balance between swift action and judicious antibiotic stewardship. While broad-spectrum therapy remains crucial in the initial phase, embracing rapid diagnostics, local resistance data, and a patient-centered approach holds the key to minimizing unnecessary antibiotic exposure and optimizing outcomes. Continuous research and collaboration between clinicians, microbiologists, and burn care specialists are essential in refining empirical treatment strategies and ultimately reducing the devastating impact of burn injuries.

### REFERENCES

1. Strobel AM, Fey R. Emergency Care of Pediatric Burns. *Emerg Med Clin North Am.* 2018;36(2):441-458. doi:10.1016/j.emc.2017.12.011
2. Snell JA, Loh NH, Mahambrey T, Shokrollahi K. Clinical review: the critical care management of the burn patient. *Crit Care.* 2013;17(5):241. Published 2013 Oct 7. doi:10.1186/cc12706
3. Tolles J. Emergency department management of patients with thermal burns. *Emerg Med Pract.* 2018;20(2):1-24.
4. Baxter CR, Waecckerle JF. Emergency treatment of burn injury. *Ann Emerg Med.* 1988;17(12):1305-1315. doi:10.1016/s0196-0644(88)80356-1
5. Muehlberger T, Ottomann C, Toman N, Daigeler A, Lehnhardt M. Emergency pre-hospital care of burn patients. *Surgeon.* 2010;8(2):101-104. doi:10.1016/j.surge.2009.10.001
6. Williams JM, Ingle CL, Schauer SG, Maddry JK. Prehospital and Emergency Management. *Surg Clin North Am.* 2023;103(3):389-401. doi:10.1016/j.suc.2023.02.001
7. Stiles K. Emergency management of burns: part 2. *Emerg Nurse.* 2018;26(2):36-41.