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# PCT-guided Antibiotic Stewardship can Reduce Length of Treatment in ICU Patients

[Papp M, Kiss N, Baka M, Trásy D, Zubek L, Fehérvári P, Harnos A, Turan C, Hegyi P, Molnár Z. Procalcitonin-guided antibiotic therapy may shorten length of treatment and may improve survival - a systematic review and meta-analysis. Crit Care. 2023;27\(1\):394 doi:10.1186/s13054-023-04677-21021-7](#)

The inappropriate use of antibiotics has resulted in the emergence of antibiotic resistance, which caused nearly 700,000 deaths worldwide in 2014. Antibiotic resistance is predicted to be the leading cause of death worldwide by 2050. Procalcitonin (PCT)-guided antibiotic stewardship can potentially optimize antibiotic treatment and reduce antibiotic-related complications. A recent systematic review and meta-analysis of randomized controlled trials examined the effects of PCT-guided antibiotic therapy in critically ill patients compared to standard of care (SOC).

## Results

- 26 articles ( $n = 9048$  patients) were included in the meta-analysis.
- **Length of antibiotic therapy was reduced by 1.79 days** in the PCT-guided group
- **28-day mortality was 16% lower in the PCT group** (OR 0.84, 95% CI: 0.74-0.95,  $P = .008$ )
- **Infection recurrence was 36% higher in the PCT group** - 99/2070 patients vs. 75/2080 patients in the SOC group (OR 1.36, 95% CI: 1.10-1.68,  $P = .033$ )
- Length of intensive care unit (ICU) and hospital stay were not significantly reduced in the PCT group compared with the SOC group

## Conclusions

- This systematic review confirms the findings of previous meta-analyses that **PCT-guided antibiotic therapy can reduce the length of antibiotic therapy in ICU patients**
- The PCT group had a higher infection recurrence rate, but this did not lead to longer ICU or hospital stays.
- There is a lack of standardization in the SOC, and different institutions apply various antibiotic guidelines, potentially leading to different durations of antibiotic therapy.
- This systematic review and meta-analysis highlights the **need for better designed studies investigating the role of PCT-guided AB stewardship in critically ill patients**



*“PCT-guided AB therapy may be associated with reduced AB use, lower 28-day mortality but higher infection recurrence, with similar ICU and hospital length of stay.”*