

IMPACT OF EMPIRICAL ANTIBIOTIC ADEQUACY IN PATIENTS WITH SEPSIS DIAGNOSED IN THE EMERGENCY DEPARTMENT

F.J. ALONSO SALMERÓN¹, C. PUIVECINO MORENO², Y. CASTELLANOS CLEMENTE², C. GIL MORENO², E.M. GARCÍA REBOLLEDO²

¹HOSPITAL NUESTRA SEÑORA DEL PRADO

²HOSPITAL UNIVERSITARIO FUENLABRADA

HOSPITAL PHARMACY, SPAIN

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BACKGROUND AND AIM

- Sepsis is a life-threatening condition with high mortality
- Early empirical antibiotic therapy is crucial
- Inappropriate treatment is associated with worse outcomes
- Real-world data from emergency departments are limited

Primary aim

- To evaluate whether empirical antibiotic adequacy in the ED influences hospital mortality and ICU admission

Secondary objectives

- To analyse length of hospital stay
- To assess the impact of antibiotic adjustment after microbiological results

METHODS

- Retrospective observational study (January–December 2024)
- Patients diagnosed with sepsis in the Emergency Department

Data collected

- Demographics and infection source
- Adequacy of empirical therapy according to local/national guidelines
- Microbiological results
- Subsequent therapeutic adjustments

Outcomes

- Hospital mortality
- ICU admission
- Length of stay

Statistical analysis

- Chi-square test (categorical variables)
- Mann–Whitney U test (continuous variables)

RESULTS

Empirical Antibiotic Adequacy

- Adequate therapy: 26/51 (51.0%)
- Inadequate therapy: 25/51 (49.0%)

Hospital Mortality

- Overall mortality: 19.6% (10/51)

Adequate therapy:

- 3.9% (1/26)

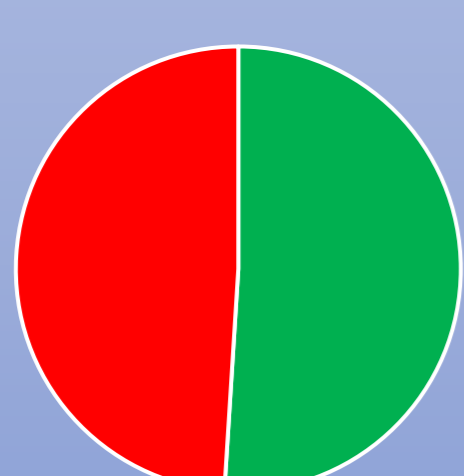
Inadequate therapy:

- 36.0% (9/25)

$p = 0.001$

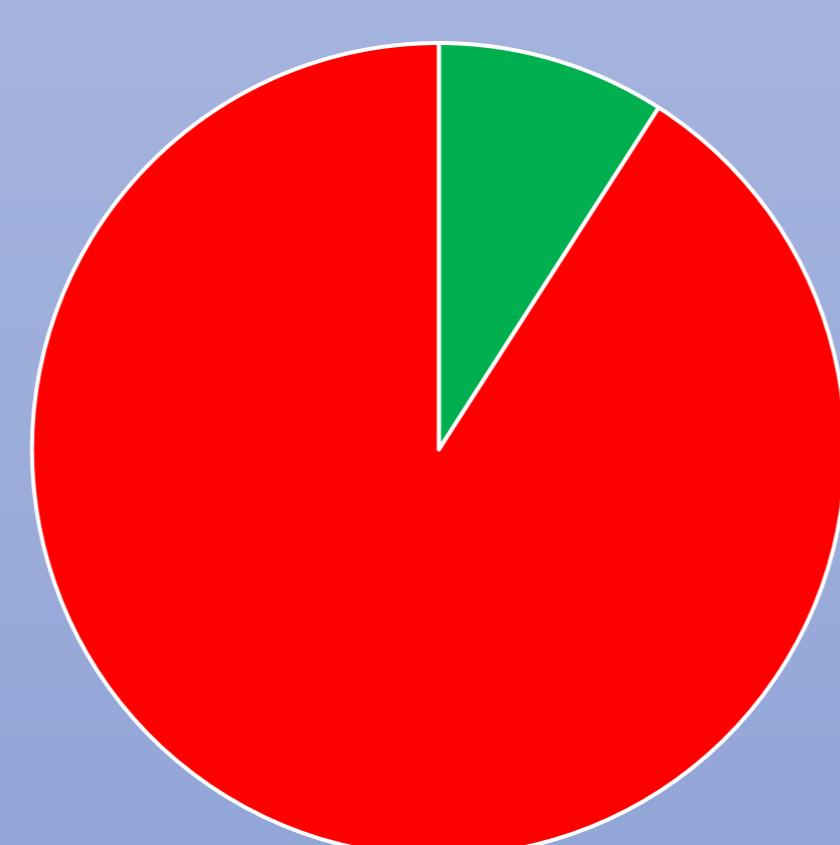
OR 0.07 (95% CI 0.01–0.41)

ADEQUACY



■ YES ■ NO

MORTALITY



■ ADEQUATE

■ INADEQUATE

↓ 89% relative mortality reduction

ICU Admission

- 3 patients (5.9%) required ICU admission
- 66.7% had received inappropriate empirical therapy
- No statistically significant difference ($p = 1.00$)

Length of Stay

- Median length of stay: 6 days in both groups
- No significant difference ($p = 0.66$)

Impact of Therapy Adjustment After Microbiology

After excluding initially adequate cases ($n = 36$):

- Therapy modified in 13 patients (36.1%)

Mortality comparison:

- Adjusted therapy: 7.7%
- Non-adjusted therapy: 52.2%

$p = 0.21$

OR 0.19 (95% CI 0.02–1.76)

Trend towards improved survival after therapeutic optimisation

CONCLUSIONS

- Appropriate empirical antibiotic therapy in the ED was significantly associated with lower hospital mortality
- Inadequate empirical treatment increased mortality nearly tenfold
- Adjustment after microbiological confirmation showed a survival benefit trend
- Early optimisation strategies in the ED are essential
- Structured antimicrobial stewardship interventions may improve clinical outcomes in sepsis

Optimising empirical antibiotic selection in the Emergency Department may significantly reduce sepsis-related mortality.