Providing RAPID AST results for gram-negative bacteremia leads to early adaptation (escalation and downgrading) of the empirical therapy

Rapid AST results for gram-negative bacteremia and the time to effective and optimal antimicrobial therapy

L. De Bus [1]; J. De Waele [1]; AS. Messiaen [2]; S. Vandendriessche [2]; P. Schelstraete [3]; K. Timmermans [4]; K. Decommer[4]; D. Huis In't Veld [4]; J. Boelens [2]

1 Intensive care, Ghent University Hospital, Ghent, Belgium; 2 Medical Microbiology, Ghent University Hospital, Ghent , Belgium; 3 Pediatrics, Ghent Unversity Hospital, Ghent, Belgium; 4 Infectious diseases, Ghent University Hospital, Ghent , Belgium

INTRODUCTION

Early reporting of antimicrobial susceptibility testing (AST) results for patients with bacteremia remains an important challenge for microbiology labs. Available solutions are incomplete, not always adapted to local antimicrobial resistance epidemiology, labor-intensive or expensive. Recently, growth-based AST systems for gram-negatives from positive blood cultures have become commercially available. We studied the **clinical impact** in antimicrobial decisions following acquisition of rapid AST results obtained with the **ASTar-system** (Q-linea, Uppsala, Sweden).

OBJECTIVES

To investigate the impact of reporting fast MIC-results of gram-negative blood stream infections with the ASTar system on the adaptation of empirically started antimicrobial therapy.

METHODS

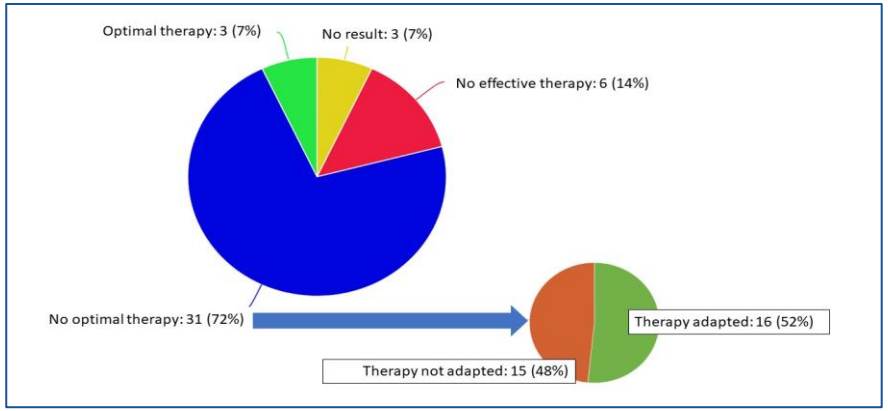
- a prospective real-life clinical study in a +800 beds tertiary care teaching hospital (consecutive patients with gram-negative bacteremia)
- ASTar generated MIC-values reported in real-time in the electronic medical record of the patient in combination with active antimicrobial stewardship interventions
- the interval to effective and optimal antimicrobial therapy was studied
- effective therapy = susceptibility against the isolated gram-negative rod
- optimal therapy = the least broad antimicrobial, without unnecessary anaerobic or *Pseudomonas* coverage, or when a suitable oral option was administered

CONCLUSIONS

The implementation of more fast AST reporting for gram-negative bacteremia in combination with the multidisciplinary approach and multi-modal communication resulted in the initiation of effective antimicrobial therapy within a median time of one hour and 13 minutes after communication of the ASTar results and the adaptation to optimal therapy after a median time of 3 hours and 40 minutes.

RESULTS

- 40 patients (22 males, 0-91 years) with 1 or 2 episodes of gram-negative bacteremia
- 43 episodes of bacteremia, 40 successful AST results (2 episodes with insufficient growth and 1 episode with *Acinetobacter junii*
- antimicrobial resistance for the empirical antimicrobial therapy was detected in 6 patients (15 %). In this group effective antimicrobial therapy was started within a median time of one hour and 13 min after releasing the result (12 min - 6 h 22 min).
- in 31 episodes, the ASTar susceptibility results allowed for downgrading the empirical antimicrobial therapy.
- the advice for downgrading was followed in 16 cases (40 %) after a median time of 3 hours and 40 minutes.
- reasons for not downgrading therapy included the lack of source control, unknown focus of infection or neutropenia.
- in 3 episodes, no adaptations were made as the empirical therapy was considered optimal, following the definition in the methods section (8%).



ACKNOWLEDGEMENTS

We thank Q-linea for providing the ASTar and the reagents needed for this study.

CONTACT INFORMATION

Jerina.boelens@uzgent.be

Poster presented at ESICM in Barcelona, 2024.