

Microbiological results, clinical course and case fatality rates of patients with bloodstream infections – results of the Thuringian prospective population-based registry AlertsNet



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INTRODUCTION

- AlertsNet aims at quality assurance in BC diagnostics in the German Federal State of Thuringia [Karch et al. 2015 BMJ Open 5(12) e009095]

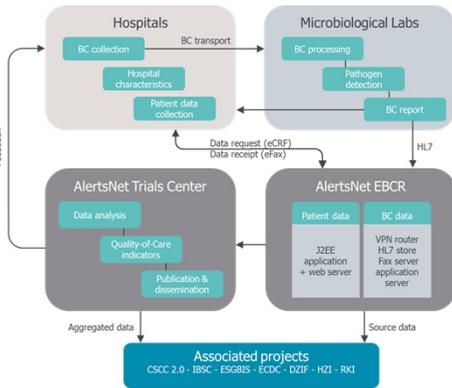


Figure 1: Data flow within the AlertsNet network. EBCR: electronic BC registry

OBJECTIVE

- To evaluate the microbiological and clinical spectrum of bloodstream infections in Thuringia during the first year of data collection in AlertsNet

METHODS

- We included data from 8 hospitals (with 5 associated labs) in Thuringia. Microbiological data of all BCs taken in the participating hospitals were immediately transferred into an electronic BC registry

RESULTS

- In total, 43,125 BC sets have been taken in the participating hospitals representing 10,710 patients
- After excluding negative BCs (35,053; 81.3%) as well as contaminants (1,414; 3.3%) and after merging positive BCs of the same patient taken within 96 hours, a total of 6,544 clinically relevant BC sets (15.2%) were identified representing 2,481 patients (58.8% male) with a median age of 71 (IQR: 60-79) years
- Disease progression in the 96 hours after BC sampling was heterogeneous and ranged from sepsis without organ dysfunction (62.5%) and severe sepsis (18.6%) to septic shock (18.9%) (Figure 2)

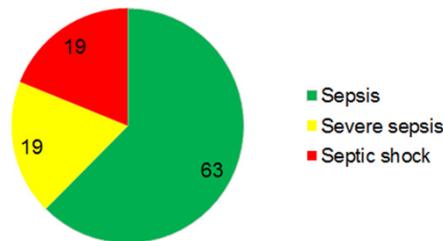


Figure 2: Relative frequency of severity of bloodstream infections

- The overall case fatality rate was 20.2% (sepsis 8.9%, severe sepsis 22.5%, septic shock 53.8%)
- Risk factors for death included the need for central lines (OR 2.11, 95% 1.36-3.28), mechanical ventilation (OR 3.23, 95% 1.91-5.46) and pneumonia being the primary focus of the bloodstream infection (OR 2.49, 95% 1.64-3.77)

- Pneumonia (21.2%) and urinary tract infections (24.2%) were the most common foci in the study population (Figure 3)

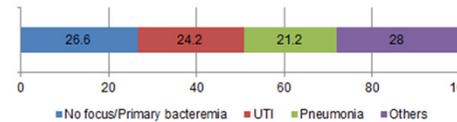


Figure 3: Relative frequency foci of bloodstream infections

- 40.7% of patients had a nosocomial BSI (29.0% detected on ICU, 71.0% in standard care); the remaining 59.3% were infected outside the hospital setting.
- The most common pathogens were *Escherichia coli* (25.1%), *Staphylococcus aureus* (14.5%), *Enterococcus faecium* / *E. faecalis* (12.0%) and *Staphylococcus epidermidis* (10.7%; confirmed by at least a second BC set) (Figure 4)

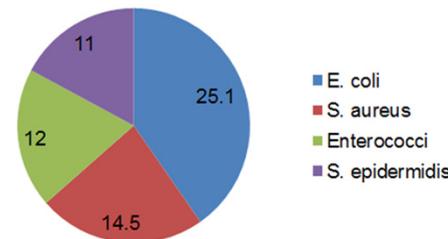


Figure 4: Relative frequency of pathogens responsible for bloodstream infections

- Coagulase-negative *Staphylococcus* spp. (CoNS) were the main cause of contamination (89.4%)

CONCLUSIONS

- Within the first 12 months of data collection, AlertsNet provided data on BC positive patients with a wide range of bloodstream infections
- Risk factors for a fatal outcome known from other studies could be replicated underlining the internal validity of AlertsNet
- Distribution of pathogens and underlying foci resembled the experience of previous studies in other countries

ACKNOWLEDGEMENTS

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