

# STAPHYLOCOCCUS AUREUS

- a leading etiological agent of healthcare- and community-acquired bloodstream infections

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## ❖ Background

Bloodstream infections are characterised by severe clinical course, rising morbidity and high mortality of patients. For many years *Staphylococcus aureus* remains the leading etiological agent of healthcare-acquired (HA) and community-acquired (CA) bloodstream infections (BSIs), independently of geographical location.

## ❖ Aim of the study

The aim of the study was to evaluate the frequency and characteristics of *S. aureus* causing bloodstream infections in patients hospitalised in a tertiary care hospital in 2005, 2009 and 2015.

## ❖ Material and methods

Analysis comprised the results of blood cultures done in 2005, 2009 and 2015 in a tertiary care hospital (1200 beds) in Warsaw, Poland. Blood cultures were tested using Bact/Alert (Organon-Technika) and Bactec (Becton-Dickinson) systems. Bacterial isolates were identified with the use of ATB, VITEK (bio-Merieux) analysers and mass spectrometry method - MALDI-TOF MS (Bruker). Susceptibility of the isolates was evaluated according to the current national recommendations. Analysis comprised only nonrepetitive isolates.

## ❖ Results

The study comprised 958 cases of HA bacteraemia and 503 episodes of CA bacteraemia. Frequency of *S. aureus* isolation in the group of patients with HA bacteraemia was the following: 2005 - 56 (20.22%), 2009 - 60 (24.19%) and 2015 - 61 (14.09%). Frequency of *S. aureus* isolation in the group of patients with CA bacteraemia was 18 (16.22%), 17 (13.82%), 35 (13.01%), respectively. In the analysed period *S. aureus* was the most common etiological agent of HA bacteraemia and second most common in CA bacteraemia. Percentage of methicillin-resistant *S. aureus* (MRSA) strains in the HA bacteraemia group was 48.21%, 55.00% and 45.90%, respectively. No MRSA was detected in the CA bacteraemia group. All isolates were susceptible to vancomycin and linezolid.

Fig. 1 - 3  
Etiology of HA-BSIs  
2005, 2009 and 2015

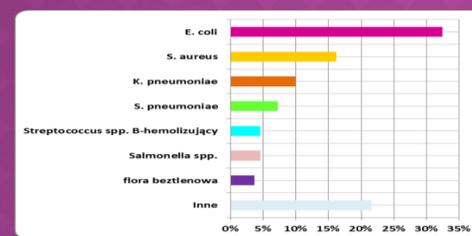


Fig. 1

2005 (n=277)

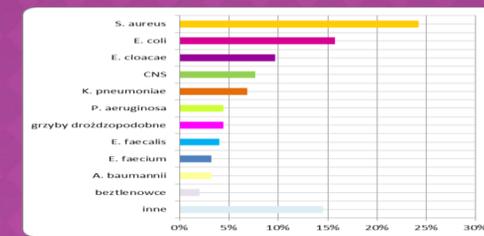


Fig. 2

2009 (n=248)

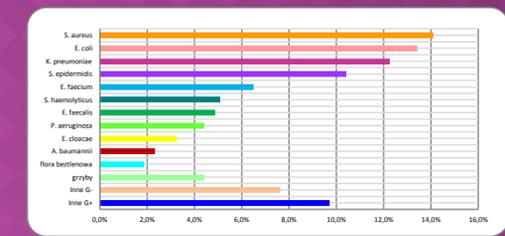


Fig. 3

2015 (n=433)

Fig. 4 - 6  
Etiology of CA-BSIs  
2005, 2009 and 2015

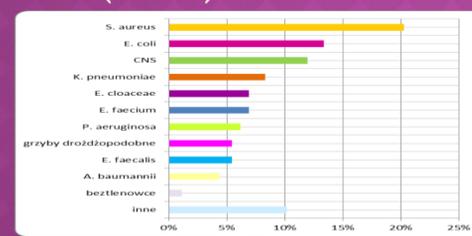


Fig. 4

2005 (n=111)

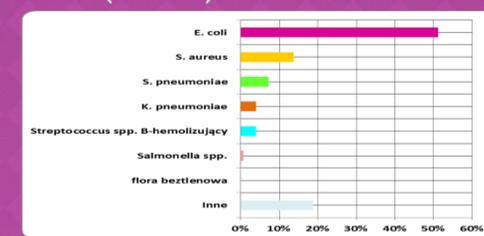


Fig. 5

2009 (n=123)

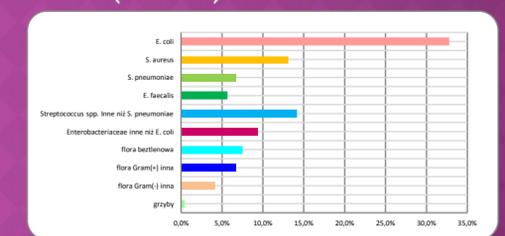


Fig. 6

2015 (n=269)

## ❖ Conclusions

1. In the analysed group of patients *S. aureus* remained the leading etiological agent of healthcare-acquired (HA) bloodstream infections, with MRSA constituting close to or more than 50% of strains.
2. It is necessary to intensify infection control programme procedures, directed at reduction of MRSA colonisation rate and infections.