

Session: P101 What is hot in *Staphylococcus aureus* bloodstream infection ?

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Low predictive value of the Pitt bacteraemia score in *Staphylococcus aureus* bloodstream infection

Jan A. Roth^{*1}, Sarah Tschudin Sutter², Marc Dangel³, Reno Frei⁴, Manuel Battegay¹,
Andreas F. Widmer⁵

¹*University Hospital Basel; Division of Infectious Diseases & Hospital Epidemiology*

²*Universitätsspital Basel, Infektiologie und Spitalhygiene; Division of Infectious Diseases and Hospital Epidemiology*

³*Universitätsspital Basel*

⁴*University Hospital Basel; Klinik für Infektiologie & Spitalhygiene; Asdf*

⁵*University Hospital Basel; Division of Infectious Diseases and Hospital Epidemiology; Infectious Diseases & Hospital Epidemiology*

Background: In *Staphylococcus aureus* bloodstream infections (BSIs), the Pitt Bacteraemia Score (PBS) has repeatedly been described as good estimate for short-term mortality, but little is known about its overall predictive performance. We therefore aimed to externally validate the PBS in a very homogenous dataset of methicillin-susceptible *S. aureus* (MSSA) BSIs from the University Hospital Basel, an 800-bed tertiary care centre.

Material/methods: All consecutive patients aged ≥ 18 years with a first MSSA BSI between January 2008 and December 2013 were eligible for the study. We excluded patients with a missing PBS at BSI onset. We extracted relevant data from our prospective in-house BSI database. BSI onset was defined as day of first positive blood culture. For prediction of 30-day all-cause mortality, we measured the overall discriminative power of the PBS at BSI onset by receiver-operating characteristics analysis; the calibration of the PBS was assessed using the Hosmer-Lemeshow goodness-of-fit statistic.

Results: 329 patients were included in the final analysis: 7 of 336 eligible patients were excluded because of a missing PBS at onset of MSSA BSI. The crude 30-day mortality was 13%. At BSI onset, 52% (170/329) and 19% of patients (63/329) had a PBS of 0 and 1 points, respectively; the concomitant specificity for 30-day all-cause mortality was 0% (PBS, 0 points) and 55% (PBS, 1 point). The overall performance of the PBS in predicting the 30-day all-cause mortality was lower than published with an area under the curve of 0.711 (95% confidence interval, 0.614–0.807; $P < 0.001$); Hosmer-Lemeshow statistics revealed a good calibration of the PBS with an insignificant P-value (chi-square goodness-of-fit test = 2.91, $P = 0.234$).

Conclusions: The PBS had a low performance for prediction of short-term mortality in a homogenous patient population with MSSA BSI: There is a need for an improved clinical score to better predict mortality. We speculate that the performance of the PBS is even lower, if used in a heterogeneous population with all types of gram-positive and -negative BSIs.