

Comparison of risk prediction models in infarct-related cardiogenic shock

A. Freund¹, J. Poess¹, S. De Waha-Thiele¹, R. Meyer-Saraei², G. Fuernau², U. Zeymer³, H.J. Feistritz¹, M. Rubini¹, K. Oldroyd⁴, S. Windecker⁵, G. Montalescot⁶, S. Schneider⁷, D. Baran⁸, S. Desch¹, H. Thiele¹

¹Heart Center at University of Leipzig, Leipzig, Germany; ²University Heart Center, Luebeck, Germany; ³Klinikum Ludwigshafen, Ludwigshafen, Germany; ⁴Golden Jubilee National Hospital, Glasgow, United Kingdom; ⁵Bern University Hospital, Inselspital, Bern, Switzerland; ⁶Sorbonne University, Paris, France; ⁷Stiftung Institut fuer Herzinfarktforschung, Ludwigshafen, Germany; ⁸Sentara Cardiovascular Research Institute, Norfolk, United States of America

Funding Acknowledgement: Type of funding sources: Public grant(s) – EU funding. Main funding source(s): European Union, German Centre for Cardiovascular Research

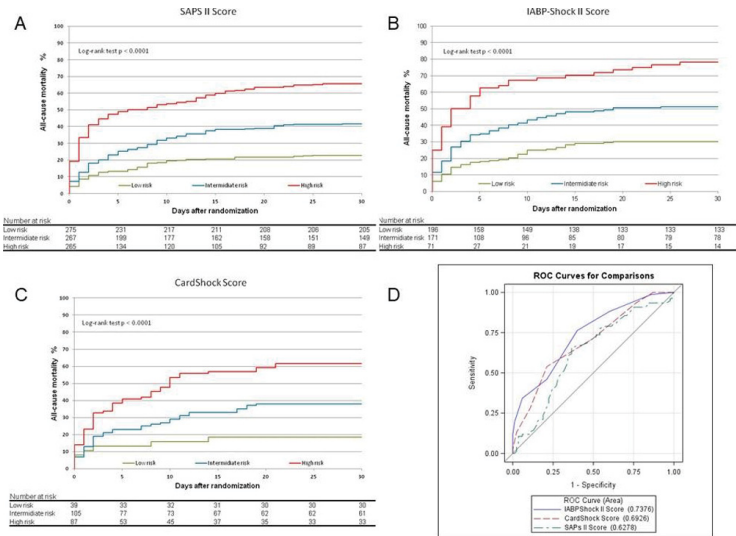
Background: Several prediction models have been developed to allow accurate risk assessment and provide better treatment guidance in patients with infarct-related cardiogenic shock (CS). However, comparative data between these models are still scarce.

Objectives: To externally validate different risk prediction models in infarct-related CS and compare their predictive value in the early clinical course.

Methods: The Simplified Acute Physiology Score (SAPS)-II Score, the CardShock score, the IABP-SHOCK II score and the Society for Cardiovascular Angiography and Intervention (SCAI) classification were each externally validated in a total of 1055 patients with infarct-related CS enrolled into the randomized CULPRIT-SHOCK trial or the corresponding registry. Discriminative power was assessed by comparing area under the curves (AUC) in case of continuous scores.

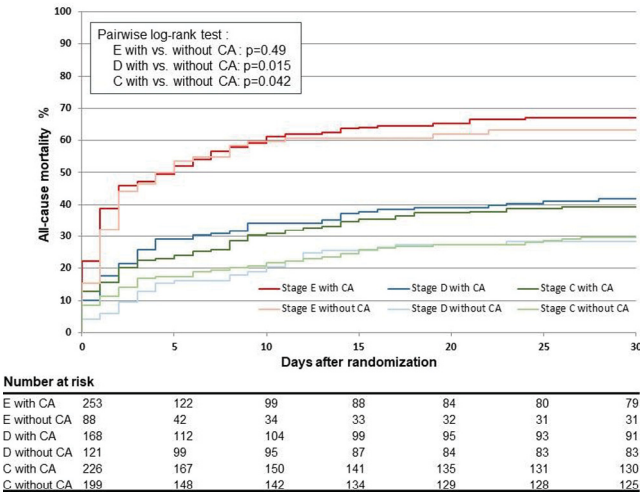
Results: In direct comparison of the continuous scores in a total of 161 patients, the IABP-SHOCK II score revealed best discrimination (AUC=0.74), followed by the CardShock score (AUC=0.69) and the SAPS-II score, giving only moderate discrimination (AUC=0.63). All of the three scores revealed acceptable calibration by Hosmer-Lemeshow test. The SCAI classification as a categorical predictive model displayed good prognostic assessment for the highest risk group (stage E), but showed poor discrimination between stages C and D with respect to short-term-mortality.

Conclusion: Based on the present findings, the IABP-SHOCK II score appears to be the most suitable of the examined models for immediate risk prediction in infarct-related CS. Prospective evaluation of the models, further modification or even development of new scores might be necessary to reach higher levels of discrimination.



Survival probabilities continuous scores

SCAI Classification with or without Cardiac Arrest



Survival probabilities SCAI