Title: Sepsis-Induced Coagulopathy as a Therapeutic Target: Translating Prognostic Algorithms into Practice

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When wounds occur, the human body must quickly prevent both blood loss and infection. This requires close interaction between coagulation and the innate immune system—that much so that they are often considered a single functional unit [1]. While this cooperation is beneficial at localized wound sites, it can become harmful in sepsis. Sepsis and septic shock, defined as "life-threatening organ dysfunction caused by a dysregulated host response to infection," represent the most severe forms of infection [2]. Coagulopathies are a key feature of sepsis [3]. To detect early-stage sepsis-induced coagulopathy (SIC), the International Society on Thrombosis and Hemostasis (ISTH) introduced the SIC score in 2017 [4,5]. This tool aims to identify SIC before it progresses to overt disseminated intravascular coagulation (DIC). A secondary analysis of two multicenter studies (2023) showed that 20–25% of patients with sepsis or septic shock developed SIC, which was linked to increased morbidity and mortality [7]. However, estimates of SIC prevalence vary widely (20–80%) depending on disease severity and study design, complicating patient recruitment and power calculations for randomized controlled trials (RCTs). This variability is one of several probable reasons why series of RCTs targeting coagulation in sepsis have failed. For example, a 2019 trial on recombinant thrombomodulin failed partly because ~20% of patients had spontaneous SIC remission before receiving the intervention [8]. Here, we present a multi-step approach to identifying sepsis patients at high risk for significant SIC—laying the groundwork for future interventional studies.

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CURRENT AND PAST POSITIONS:

Current Position: Senior physician in anesthesiology and intensive care medicine at Hôpital Kirchberg (Luxembourg) since 2021; research fellow at Essen University Hospital.

Research Focus: Sepsis-induced coagulopathy (lead investigator, INSIC-Trial, *DRKS00035249*), pathogen detection via Next Generation Sequenzing in pediatric sepsis (Next Gene-SiPS-Trial, *DRKS0001570*), and carbonyl stress in sepsis (DFG-funded *project number 392046647*).

Previous Positions: Senior physician at Essen (2020–2021) and Heidelberg (2018–2020) University Hospitals; residency in anesthesiology at Heidelberg (2013–2018).

EDUCATION:

Doctorate in medicine at the *Division of Neurosurgical Research, Department of Neurosurgery, University Hospital Heidelberg* (Heidelberg, 2016); medical studies in Heidelberg and Montpellier; board exams (2007, 2011).

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