

Prospective validation of quick Sequential Organ Failure Assessment (qSOFA) for mortality among patients with infection admitted to an emergency department

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Background: Only few prospective studies have evaluated the new quick Sequential (Sepsis-Related) Organ Failure Assessment (qSOFA) score in emergency department (ED) settings. The aim of this study was to determine the prognostic value of qSOFA compared to systemic inflammatory response syndrome (SIRS) in predicting 28-day mortality of infected patients admitted to an ED.

Methods: A prospective observational cohort study of all adult (≥ 18 years) infected patients admitted to the ED of Slagelse Hospital during 01.10.2017 to 31.03.2018. All patients with suspected or documented infection on arrival to the ED, and treated with antibiotics, were included. Admission variables included in the SIRS- and qSOFA criteria were prospectively obtained from triage forms. Information regarding 28-day mortality was obtained from the Danish Civil Registration System. The diagnostic performance of qSOFA and SIRS score for predicting 28-day mortality was assessed by analyses of sensitivity, specificity, positive predictive value (PPV), negative

predictive value (NPV), and area under the receiver operating curve (AUC) with 95% confidence intervals (CI).

Results: A total of 2,168 patients (47.42% male) were included. A total of 181 (8.35%) met at least two qSOFA criteria, and 1,046 (48.25%) met at least two SIRS criteria on admission. The overall 28-day mortality was 7.47% (95% CI 6.40-8.66%). Unadjusted odds ratio of qSOFA and SIRS for 28-day mortality was 2.93 (95% CI 1.92-4.47) vs 1.27 (95% CI 0.92-1.74), respectively. A qSOFA score of at least two for predicting 28-day mortality had a sensitivity of 19.10% (95% CI 13.40-26.00%), a specificity of 92.50% (95% CI 91.30-93.60%), a PPV and NPV of 17.10% (95% CI 11.90-23.40%) and 93.40% (95% CI 92.20-94.50%), respectively. A SIRS score of at least two for predicting 28-day mortality had a sensitivity of 53.70 (95% CI 45.70-61.60%), a specificity of 52.20% (95% CI 50.00-54.40%), a PPV and NPV of 8.32% (95% CI 6.72-10.20%) and 93.30% (95% CI 91.70-94.70%), respectively. The AUC for qSOFA and SIRS was 0.56 (95% CI 0.53-0.59) vs 0.53 (95% CI 0.49-0.57).

Conclusion: Use of qSOFA had improved specificity, but with poor sensitivity, in predicting in 28-day mortality. qSOFA and SIRS showed similar discrimination potential for mortality.