



References and Article Grading

The Use of qSOFA in the Emergency Department

How does qSOFA perform as a diagnostic tool for ED patients who may have sepsis and/or septic shock? How does qSOFA perform as a prognostic indicator in ED patients diagnosed with sepsis and/or septic shock?

Relevant Papers Chosen for Review (13)

Publication	Grade	Quality	Comments	Supportive
Askim Å, Moser F, Gustad LT, Stene H, et al. Poor performance of quick-SOFA (qSOFA) score in predicting severe sepsis and mortality - a prospective study of patients admitted with infection to the emergency department. Scand J Trauma Resusc Emerg Med. 2017 Jun 9;25(1):56	C	Good	This was a prospective observational cohort study, of 1535 adult ED patients, presenting with symptoms or clinical signs suggesting infection. The aim of this study was to assess performance of qSOFA score in predicting severe sepsis and mortality. They found that the sensitivity of qSOFA ≥ 2 to identify severe sepsis on ED arrival was 32% compared with 72% for SIRS respectively, confirming that qSOFA fails to be an accurate diagnostic instrument for sepsis upon arrival in the ED.	Yes
Freund Y, Lemachatti N, Krastinova E, Van Laer et al. Prognostic Accuracy of Sepsis-3 Criteria for In-Hospital Mortality Among Patients With Suspected Infection Presenting to the Emergency Department. JAMA. 2017 Jan 17;317(3):301-308.	C	Outstanding	This paper was an international prospective cohort study. There were a total of 879 ED patients with suspected infection included in this study from 30 centers. The aim was to validate qSOFA prospectively as a mortality predictor. They found that qSOFA had greater accuracy for mortality with an AUROC of 0.8 compared with 0.65 for SIRS.	Yes
Haydar S, Spanier M, Weems P, Wood S, Strout T Comparison of QSOFA score and SIRS criteria as screening mechanisms for emergency department sepsis. Am J Emerg Med. 2017 Nov;35(11):1730-1733.	D	Good	This retrospective study reviewed data of 200 adult ED septic patients to ascertain the sensitivity of qSOFA score in diagnosing sepsis. They found that 94.5% of the study group met SIRS criteria while in the ED, and only 58.3% met qSOFA criteria. The authors concluded that qSOFA performed poorly as a screening tool for identification of sepsis in the ED.	Yes

Finkelsztein EJ, Jones DS, Ma KC, Pabón MA, et al. Comparison of qSOFA and SIRS for predicting adverse outcomes of patients with suspicion of sepsis outside the intensive care unit. Crit Care. 2017 Mar 26;21(1):73	D	Adequate	Register-based study of 152 patients admitted to the ICU from the ED or inpatients wards with suspected infection. Only 67% of patients were from the ED. The aim of this study was to compare the ability of qSOFA and SIRS to predict mortality. They found that the qSOFA score calculated prior to ICU admission had greater accuracy than SIRS for predicting mortality (qSOFA AUC 0.74 vs SIRS AUC 0.59).	Yes
Henning DJ, Puskarich MA, Self WH, Howell et al. An Emergency Department Validation of the SEP-3 Sepsis and Septic Shock Definitions and Comparison With 1992 Consensus Definitions. Ann Emerg Med. 2017 Oct;70(4):544-552.	D	Good	This was a secondary analysis of 3 prospectively collected, observational cohorts, which included 7637 ED patients with infections, to evaluate the performance of the SEP-3 definitions for mortality prediction. They found overall that 15.9% of study patients met qSOFA \geq 2 criteria, and 50.2% met SIRS criteria. For predicting mortality qSOFA was less sensitive (52% vs 83%), but more specific (86% vs 50%).	Yes
Williams JM, Greenslade JH, McKenzie JV, Chu K, Brown AFT, Lipman J. Systemic Inflammatory Response Syndrome, Quick Sequential Organ Function Assessment, and Organ Dysfunction: Insights From a Prospective Database of ED Patients With Infection. Chest. 2017 Mar;151(3):586-596.	D	Outstanding	A prospective observational database was used for this study. A total of 8871 ED patients with presumed or potential infection were included over 3 years. The primary aim of this study was to determine the prognostic impact of SIRS. They found that SIRS was present in 47.1% of patients (vs 10.2% for qSOFA). Further they found that although qSOFA \geq 2 is highly specific for sepsis-3 organ dysfunction and mortality (96.1% and 91.3% respectively), sensitivity was poor (29.7% and 49.1%) compared with sensitivity for SIRS \geq 2 (72.1% and 76.7% respectively).	Yes
April MD, Aguirre J, Tannenbaum LI, Moore et al. Sepsis Clinical Criteria in Emergency Department Patients Admitted to an Intensive Care Unit: An External Validation Study of Quick Sequential Organ Failure Assessment. J Emerg Med. 2017 May;52(5):622-631.	D	Adequate	This was a retrospective cohort chart review study to compare the prognostic value for predicting in hospital (IH) mortality for the qSOFA and SIRS criteria. There were 214 ED patients admitted to an ICU. They found that SIRS and qSOFA criteria had comparable prognostic value for IH mortality (AUROC value 0.65 and 0.66 for SIRS and qSOFA \geq 2 respectively).	Yes
Brabrand M, Havshøj U, Graham CA.	D	Adequate	This was a retrospective registry-based study on acutely admitted medical	Yes

Validation of the qSOFA score for identification of septic patients: A retrospective study. Eur J Intern Med. 2016 Dec;36:e35-e36			patients to validate qSOFA. They included 4931 patients presenting or discharged with suspected infection. Sensitivity for SIRS \geq 2 was 61.9% versus 32% for qSOFA. Specificity was 75.2% for SIRS versus 96.7% for qSOFA.	
van der Woude SW1, van Doormaal FF et al. Classifying sepsis patients in the emergency department using SIRS, qSOFA or MEWS. Neth J Med. 2018 May;76(4):158-166.	D	Good	This was a retrospective single center study. Medical records of 577 medical patients were selected at random. The aim of this study was to determine the effect of qSOFA and SOFA compared with MEWS and SIRS criteria on the identification of sepsis among ED patients with infection. SIRS diagnosed 71.2% as septic, vs 8.6% diagnosed as septic using combined qSOFA and SOFA score. Specificity for predicting IH mortality was 56.9% for SIRS, and 96.4% for qSOFA. Sensitivity was 61.9% and 33.3% for SIRS and qSOFA respectively.	Yes
Tusgul S, Carron PN, Yersin B, Calandra T, Dami F. Low sensitivity of qSOFA, SIRS criteria and sepsis definition to identify infected patients at risk of complication in the prehospital setting and at the emergency department triage. Scand J Trauma Resusc Emerg Med. 2017 Nov 3;25(1):108.	D	Good	This was a retrospective study. 887 patients with suspected or proven infection after ED workup were included. The aim was to measure sensitivity of the qSOFA, SIRS and sepsis definitions to identify the most serious sepsis cases. They found superior sensitivity of SIRS in all measured clinical outcomes, ICU admission and mortality (sensitivity for qSOFA and SIRS at ED triage for ICU admission and 48-hr mortality: 31.2% and 60% for qSOFA vs 58.8% and 80.0% for SIRS)	Yes
Rodriguez RM, Greenwood JC, et al. Comparison of qSOFA with current emergency department tools for screening of patients with sepsis for critical illness. Emerg Med J. 2018 Jun;35(6):350-356	D	Good	Multicenter retrospective cohort study of ED patients with presumed infection. They included 3743 patients into the study. The objectives were to assess the ability of qSOFA to detect patients with critical illness and 72-hr mortality and to compare to SIRS and former criteria. They found sensitivity for the composite outcome for SIRS was 86.7% and for qSOFA \geq 2 was 53.5%. Specificity was 45.6% for SIRS and was 89.1% for qSOFA.	Not
Rhee C, Klompas M. New Sepsis and Septic Shock Definitions: Clinical	E	Adequate	Expert opinion review comparing new sepsis and septic shock definitions, and their role as a screening tool for	No

Implications and Controversies. Infect Dis Clin North Am. 2017 Sep;31(3):397-413.			sepsis. Because of concern that new definitions may lead to treatment delay, authors concluded that new definitions should not change the basis of sepsis management.	
Singer M, Deutschman CS, Seymour CW, et al. The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). JAMA. 2016 Feb 23;315(8):801-10.	E	Good	Expert opinion to update sepsis and septic shock definitions. They proposed new definitions of sepsis as life-threatening organ dysfunction caused by dysregulated host response to infection, represented by SOFA score ≥ 2 .	No

AUROC- The Area under the Receiver Operating Characteristic

MEWS- The Modified Early Warning Score

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