



American Academy of Emergency Medicine Clinical Practice Statement

The Use of qSOFA in the Emergency Department

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

Co-Chairs: Steve Rosenbaum, MD FAAEM
Michael Abraham, MD FAAEM

Authors: Grzegorz Waligora, MD PhD
Lisa Mills, MD FAAEM
Amy Church, MD FAAEM

The authors disclosed no commercial relationships or conflicts of interest.

Reviewers: Michael Gottlieb, MD FAAEM RDMS
Sharon Swencki, MD FAAEM FACEP
Jason May, MD FAAEM FACEP

Reviewed and approved by the AAEM Board of Directors (3/10/2019)

Recommendation:

The quick Sequential Organ Failure Assessment (qSOFA) tool performs poorly in comparison to Systemic Inflammatory Response Syndrome (SIRS) as a diagnostic tool for Emergency Department (ED) patients who may have sepsis or septic shock. However, qSOFA is a good prognostic indicator in ED patients diagnosed with sepsis or septic shock.

Introduction:

The concept of sepsis has recently been redefined by an International Task Force. The task force recommended the use of the qSOFA score instead of SIRS criteria to identify patients at high risk of mortality from sepsis outside of the ICU, including in Emergency Departments. However, there are concerns from ED clinicians using qSOFA in ED septic patients in that it may not reflect the ED population at large. The primary outcome for qSOFA is mortality which is not the only outcome measure considered in the ED. From the ED perspective, the priorities are to identify the septic patient and then initiating time-sensitive interventions.

A systematic review was performed using The AAEM CPC Statements on Protocols for literature search/grading process to identify articles that could answer the following questions: (1) How does qSOFA perform as a diagnostic tool for ED patients who may have sepsis or septic shock?, (2) How does qSOFA perform as a prognostic indicator in ED patients diagnosed with sepsis or septic shock?

Executive summary:

A structured review was performed of the medical literature using PubMed. Based on this review, 13 unique articles were identified. After screening and author review, the 11 highest grade articles (C and D) were utilized for this clinical practice statement, and the two low grade articles were excluded (E) (Rhee, et al., and Singer et al). Studies utilized in the final review were limited to meta-analysis, prospective cohort studies and retrospective cohort studies that evaluated the performance of qSOFA and SIRS in the Emergency Department adult septic patient.

Studies consistently demonstrated superior sensitivity of SIRS criteria in all measured clinical outcomes when compared to qSOFA \geq 2 criteria. However, specificity for ICU admission, in-hospital mortality, and organ dysfunction was higher for qSOFA \geq 2 criteria when compared to SIRS.

In the Emergency Department, the priority is to detect sepsis as soon as possible in order to initiate time-critical sepsis management (including antibiotics and fluids). To correctly and rapidly identify those ED patients with sepsis, a simple tool that is highly sensitive in the ED setting must be used. qSOFA was designed by non-emergency physicians in a non-ED setting, with the intention to identify critically ill patients with sepsis who need a higher level of care. It was not designed to diagnose sepsis from undifferentiated ED patients presenting with symptoms of infection.

Nearly 30,000 patients were included in our review but it was not clear if some of these patients were included in more than one study. The metanalysis found that qSOFA consistently performed poorly as a screening tool for the identification of sepsis in the ED but performed better for specificity in predicting the need for ICU admission, organ dysfunction, and in-hospital mortality than other clinical tools, (e.g. SIRS). The inclusion criteria, clinical tools used, and populations demonstrated some variability, but were overall at low risk for bias. Clinical suspicion or proven infection was a requirement to be entered into all of the studies in the meta-analysis. All of the studies aimed to ascertain the diagnostic sensitivity of the qSOFA score for sepsis in the ED and to assess the performance of qSOFA as a predictor of sepsis-3 organ dysfunction and in-hospital mortality. Throughout the meta-analyses, sensitivity of the qSOFA score in diagnosing sepsis was lower than other clinical tools (58.3% vs 94.5% for SIRS, n=200 and 32% vs 72% for SIRS, n=1535 prospective patients). Specificity in predicting mortality was consistently higher for qSOFA than for SIRS (with the range of 86%-96.7% for qSOFA and 45.6%-75.2% for SIRS throughout the studies).

One retrospective study of 214 patients found comparable prognostic value for in-hospital mortality for SIRS and qSOFA criteria (AUROC value 0.65 and 0.66 for SIRS and 2+qSOFA) (April, et al.).

The single prospective validation study published (Freund, et al.) was consistent with the suggested meta-analyses findings. The authors found a strong prognostic accuracy of qSOFA for mortality with AUROC of 0.8 vs 0.65 for SIRS.

Conclusion:

Based on multiple retrospective and few prospective studies it appears that qSOFA performs poorly in comparison to SIRS as a diagnostic tool for ED patients who may have sepsis or septic shock. However, qSOFA does have a strong prognostic accuracy for mortality in those ED patients already diagnosed with sepsis or septic shock.