Original Contribution

Comparison of SIRS, qSOFA, and NEWS for the early identification of sepsis in the Emergency Department

Omar A. Usman, MD, MBA\textsuperscript{a,b}, Asad A. Usman, MD, MPH\textsuperscript{c}, Michael A. Ward, MD\textsuperscript{d,}*  

\textsuperscript{a} Center for Health Policy, Primary Care and Outcomes Research, Stanford University, 117 Encina Commons, Stanford, CA 94305-6006, United States of America  
\textsuperscript{b} Center for Innovation to Implementation (C2i2), VA Palo Alto Health Care System, Palo Alto, 795 Willow Road (152-MPD), Menlo Park, CA 94025, United States of America  
\textsuperscript{c} Department of Anesthesiology and Critical Care, University of Pennsylvania, 3400 Spruce Street, Philadelphia, PA 19104, United States of America  
\textsuperscript{d} Department of Emergency Medicine, University of Wisconsin-Madison, 800 University Dr. Suite 310, Madison, WI 53705, United States of America

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A B S T R A C T

Objectives: The increasing use of sepsis screening in the Emergency Department (ED) and the Sepsis-3 recommendation to use the quick Sepsis-related Organ Failure Assessment (qSOFA) necessitates validation. We compared Systemic Inflammatory Response Syndrome (SIRS), qSOFA, and the National Early Warning Score (NEWS) for the identification of severe sepsis and septic shock (SS/SS) during ED triage.

Methods: This was a retrospective analysis from an urban, tertiary-care academic center that included 130,595 adult visits to the ED, excluding dispositions lacking adequate clinical evaluation (n = 14,861, 11.4%). The SS/SS group (n = 930) was selected using discharge diagnoses and chart review. We measured sensitivity, specificity, and area under the receiver-operating characteristic (AUROC) for the detection of sepsis endpoints.

Results: NEWS was most accurate for triage detection of SS/SS (AUROC = 0.91, 0.88, 0.81), septic shock (AUROC = 0.93, 0.88, 0.84), and sepsis-related mortality (AUROC = 0.95, 0.89, 0.87) for NEWS, SIRS, and qSOFA, respectively (p < 0.01 for NEWS versus SIRS and qSOFA). For the detection of SS/SS (95% CI), sensitivities were 84.2% (81.5–86.5%), 86.1% (83.6–88.2%), and 28.5% (25.6–31.7%) and specificities were 85.0% (84.8–85.3%), 79.1% (78.9–79.3%), and 98.9% (98.8–99.0%) for NEWS ≥ 4, SIRS ≥ 2, and qSOFA ≥ 2, respectively.

Conclusions: NEWS was the most accurate scoring system for the detection of all sepsis endpoints. Furthermore, NEWS was more specific with similar sensitivity relative to SIRS, improves with disease severity, and is immediately available as it does not require laboratories. However, scoring NEWS is more involved and may be better suited for automated computation. qSOFA had the lowest sensitivity and is a poor tool for ED sepsis screening.

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1. Introduction

1.1. Background

Sepsis is a high-risk condition that carries considerable morbidity and mortality. There has been interest in the rapid detection of sepsis in the Emergency Department (ED) given the benefit of early intervention [1–3]. Early intervention is key for treating most life-threatening diseases, including myocardial infarction, stroke, and cardiac arrest [4]. However, compared to these diseases, the diagnosis of sepsis is often more complex and lacks a rapid test, exam finding, or clinical decision tool that has emerged as a reliable predictor [2,3,5–11]. Furthermore, there has been significant debate concerning the most appropriate method to evaluate sepsis in the ED [10,12–14].

The Sepsis-1 [15] and Sepsis-2 [5] guidelines established the definition of sepsis and related conditions that many clinicians currently use in practice. However, the Systemic Inflammatory Response Syndrome (SIRS) has been criticized for its lack of specificity, prognostic value, and utility [11,16–18]. Due to these concerns, the recent Sepsis-3 guidelines encourage the use of the quick Sepsis-related Organ Failure Assessment (qSOFA) when screening for sepsis [12]. Studies have shown that in non-ICU settings, qSOFA is a better predictor for mortality than SIRS [19–22].

1.2. Importance

The Surviving Sepsis Campaign [1] recommends the use of sepsis screening, which has been shown to reduce treatment time and improve outcomes [2,23,24]. Many severity scores have been developed to identify critically ill patients and EDs are turning to these tools to screen for sepsis. “Track and trigger” systems such as the National...
Early Warning Score (NEWS) have gained widespread adoption for detecting clinical deterioration for inpatients and are now being extended to the ED [25-29].

1.3. Goals of this investigation

The increased use of sepsis screening systems in the ED and the recommendation to use qSOFA suggests the need for comparison and external validation of these scoring systems [30-32]. The use of electronic medical records (EMR) and availability of large clinical data sets allows for comparison of different scoring systems. This study reviewed the viability of NEWS as an early predictor of severe sepsis and septic shock (SS/SS) in an ED triage setting and evaluated its performance against SIRS and qSOFA.

2. Methods

The Institutional Review Board (IRB) at the University of Chicago approved this study and consent was waived by the IRB.

2.1. Study design, setting, and eligibility

This was a retrospective data analysis from January 1, 2014 to April 30, 2015 and from February 1, 2016 to December 31, 2016. Data identifying positive sepsis cases were originally collected as part of a quality improvement initiative and were not available between these dates. We collected data from all adult patients (age ≥ 18 years) who presented to the ED at an urban tertiary-care academic center with approximately 60,000 visits per year. This ED serves predominantly African-American patients, who constitute approximately 73% of all visits. We excluded dispositions that did not allow for full calculation of scores or adequate clinician evaluation (Fig. 1) and patients with a left ventricular assist device (unless their lactic acid was N2.0 mmol/L).

2.2. Data collection and quality control

All data were queried from a repository of records aggregated from the EMR (Epic Systems, Verona, WI). We gathered variables recorded at triage, including vitals, Glasgow Coma Scale (GCS), and oxygen supplementation, in addition to demographics, leukocyte count, bands, disposition, and in-hospital mortality. Physiologically impossible or implausible values were removed, which affected <1% of the data (see A. Data Quality Control in the Online Supplementary Appendix).

2.3. Sepsis diagnosis

Severe sepsis was defined as two or more SIRS criteria, concern for infection, and any of the following: lactic acid >2.0 mmol/L, systolic blood pressure (SBP) <90 mm Hg, mean arterial pressure (MAP) <65 mm Hg, creatinine 0.5 mg/dL above baseline, INR >1.5 (for patients not on anticoagulation), platelets <100 × 10^9/L, or total bilirubin >2 mg/dL (that was not a previous baseline) [5,15]. Septic shock was defined as having severe sepsis plus one of the following: persistent hypotension (SBP <90 mm Hg or MAP <65 mm Hg) despite a one-liter crystalloid fluid challenge, lactic acid >3.9 mmol/L, or need for vasopressor within 8 h of ED arrival. All-cause in-hospital mortality included death during that visit’s hospitalization. ED = emergency department; L + D = labor and delivery; ICD = International Classification of Diseases.
the following: persistent hypotension (SBP < 90 mm Hg or MAP < 65 mm Hg)\(^1\) despite a one-liter crystalloid fluid challenge, lactic acid > 3.9 mmol/L, or need for vasopressor within 8 h of ED arrival [33].

2.4. Endpoints

Our primary endpoint was the diagnosis of severe sepsis inclusive of septic shock (SS/SS) within 8 h of ED arrival (as described above). Secondary endpoints were severe sepsis, septic shock, and sepsis-related (in-hospital) mortality. The derivation of secondary endpoints can be found in C. Derivation of Secondary Endpoints in the Online Supplementary Appendix.

2.5. Sepsis scoring systems

Our target measure was the ability for scoring systems to discriminate patients with SS/SS. Three scoring systems were selected for statistical comparison: (1) SIRS [15], (2) qSOFA [12, 19], and (3) NEWS [34, 35] (Table 1). Previous studies have identified NEWS as high-performance, easily calculable in the ED, and useful for both inpatients and ED patients [27–29, 36]. The Mortality in Emergency Department [9], Sequential Organ Failure Assessment [12], Multiple Organ Dysfunction Score [15], Acute Physiology and Chronic Health Evaluation II, and Simplified Acute Physiology Score II scores are included for comparison; however, these scoring systems were not viable as early predictors for sepsis in an ED triage setting due to the timing of their constituent variables.

We calculated scores using triage variables and, if present, the next available WBC and bands (see D. Calculation of Scoring Systems in the Online Supplementary Appendix). We conducted a complete case analysis and 96.7% of the records allowed for calculation of all scoring systems (we did not require lab values for the calculation of SIRS). SIRS includes PaCO\(_2\) measurement, but we did not collect data on this variable as arterial blood gases were rarely collected near the time of ED arrival [15].

The AVPU (Alert, Voice, Pain, Unresponsive) scale is required for the calculation of NEWS; however, our data only included GCS scores. We calculated an AVPU equivalent using GCS as described in E. Calculation of AVPU from GCS in the Online Supplementary Appendix.

2.6. Statistical analysis

Data analysis was conducted in R (R Foundation for Statistical Computing, 2017) [37] and the ROCR [38] and cvAUC [39] packages were used. We assessed predictive ability using the area under the receiver-operating characteristic (AUROC) curves. Due to correlation between scoring systems, we employed the method described by Hanley and McNeil when comparing AUROCs [40, 41]. A two-tailed \(p\)-value < 0.05 was required for statistical significance. Sensitivities and specificities are reported with 95% Confidence Intervals (CI) using the Wilson Score interval. Baseline characteristics were compared using two-sample t-tests and chi-squared tests.

3. Results

3.1. Study population

We evaluated 130,595 ED visits comprising of 64,995 unique patients (Fig. 1). We excluded 11.4% dispositions (\(n = 14,861\)) with “Left Without Being Seen” constituting 71.7% of all excluded cases (\(n = 10,657\)). Of the remaining 115,734 patients, 72.5% were discharged (\(n = 83,961\)) and 25.6% were admitted (\(n = 29,658\)). There were 930 cases of SS/SS (~8 cases per 1000 visits). There was an 11.5%, 17.6%, and 21.2% mortality rate for severe sepsis exclusive of septic shock, SS/SS, and septic shock, respectively.

3.2. Baseline characteristics

Table 2 shows the SS/SS group had higher mortality (17.6 vs 0.6%), proportionally fewer women (50.8 vs 62.1%), required more supplemental oxygen (55.4 vs 9.6%), and were older (63.0 [17.0] vs 46.5 [19.7] years) compared to all patients presenting to the ED, \(p < 0.001\) for all comparisons.

3.3. Endpoint prediction

The AUROCs for the detection of SS/SS were SIRS = 0.88 (95% CI 0.867–0.897), qSOFA = 0.81 (95% CI 0.780–0.839), and NEWS = 0.91 (95% CI 0.903–0.926) (Table 1 and Fig. 2). Pairwise comparisons were then conducted between NEWS, SIRS, and qSOFA. For predicting SS/SS (Fig. 2), NEWS outperformed both SIRS (AUROC 0.91 vs 0.88, \(p < 0.001\)) and qSOFA (AUROC 0.91 vs 0.81, \(p < 0.001\)). Prediction results for our secondary endpoints of septic shock, sepsis-related mortality, and overall mortality is shown in F. ROC Curves for Secondary Endpoints in the Online Supplementary Appendix. For predicting septic shock, NEWS outperformed both SIRS (AUROC 0.93 vs 0.88, \(p < 0.001\)) and qSOFA (AUROC 0.93 vs 0.84, \(p < 0.001\)). For predicting sepsis-related mortality, NEWS outperformed both SIRS (AUROC 0.95 vs 0.89, \(p < 0.001\)) and qSOFA (AUROC 0.95 vs 0.87, \(p < 0.01\)). For predicting all-cause mortality, NEWS outperformed both SIRS (AUROC 0.88 vs 0.79, \(p < 0.001\)) and qSOFA (AUROC 0.88 vs 0.79, \(p < 0.001\)). SIRS outperformed qSOFA in predicting SS/SS (Fig. 2, AUROC 0.88 vs 0.81, \(p < 0.001\)) and septic shock (AUROC 0.88 vs 0.84, \(p < 0.05\)), while there was no difference in the prediction of sepsis-related mortality (AUROC 0.89 vs 0.87, \(p > 0.1\)).

3.4. Test characteristics

Sensitivities and specificities for detecting sepsis endpoints are shown in Table 3. Previous studies have evaluated NEWS cutoffs of ≥4 and ≥8 for moderate and high-risk categories [27–29, 36]. For the detection of SS/SS, using a NEWS cutoff of ≥8 provides a sensitivity of 43.3% (95% CI 39.9–46.7%) and a specificity of 97.6% (95% CI 97.5%–97.7%). For the detection of SS/SS, the positive predictive value (PPV) of SIRS ≥2 is 3.3%, qSOFA ≥2 is 19.6%, NEWS ≥4 is 5.1%. For the detection of SS/SS, the negative predictive value (NPV) of SIRS ≥2 is 99.9%, qSOFA ≥2 is 99.3%, NEWS ≥4 is 99.8%.

Based on our institution's volume and sepsis prevalence, for the detection of SS/SS relative to NEWS (cutoff ≥4), qSOFA (cutoff ≥2) would have missed approximately 5 positive cases per week and SIRS (cutoff ≥2) would have inappropriately flagged approximately 9 cases per day.

3.5. Sepsis severity

We report AUROCs across the spectrum of illness severity in Fig. 3 [15]. We found that qSOFA, while inferior in predicting less severe illness, improves with illness severity. SIRS shows no sizeable improvement across severity. NEWS shows no statistically significant difference compared with SIRS in predicting severe sepsis exclusive of septic shock yet improves in predicting more severe illness and death. NEWS is superior to qSOFA in predicting outcomes across all illness severities.

4. Discussion

We found that NEWS is more accurate when compared with both SIRS and qSOFA for the early detection of SS/SS, septic shock, and sepsis-related mortality in an ED triage environment. SIRS is superior to qSOFA for prediction of SS/SS and septic shock alone but show no
Table 1
Scoring systems’ characteristics and variables.

<table>
<thead>
<tr>
<th>Scoring System</th>
<th>Location</th>
<th>Population</th>
<th>Intended Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIRS</td>
<td>Non-ICU</td>
<td>Sepsis</td>
<td>Diagnosis</td>
</tr>
<tr>
<td>qSOFA</td>
<td>Non-ICU</td>
<td>Sepsis</td>
<td>Screening</td>
</tr>
<tr>
<td>NEWS</td>
<td>Inpatient</td>
<td>All</td>
<td>Deterioration</td>
</tr>
<tr>
<td>MEDS</td>
<td>ED</td>
<td>Sepsis</td>
<td>Prognosis</td>
</tr>
<tr>
<td>SOFA</td>
<td>ICU</td>
<td>Sepsis</td>
<td>Prognosis</td>
</tr>
<tr>
<td>MODS</td>
<td>ICU</td>
<td>All</td>
<td>Prognosis</td>
</tr>
<tr>
<td>APACHE II</td>
<td>ICU</td>
<td>All</td>
<td>Prognosis</td>
</tr>
<tr>
<td>SAPS II</td>
<td>ICU</td>
<td>All</td>
<td>Prognosis</td>
</tr>
</tbody>
</table>

Table 2
Baseline characteristics.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Included patients (n = 115,734)</th>
<th>SS/SS (n = 930)</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (SD), years</td>
<td>46.5 (19.7)</td>
<td>63.0 (17.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Gender, no. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>43,808 (37.9)</td>
<td>458 (49.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Female</td>
<td>71,925 (62.1)</td>
<td>472 (50.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Vital signs, mean (SD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart rate, beats/min</td>
<td>88.4 (17.7)</td>
<td>112.0 (24.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Respiratory rate, breaths/min</td>
<td>18.1 (2.6)</td>
<td>21.5 (6.5)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Temperature, °C</td>
<td>36.3 (0.7)</td>
<td>37.0 (1.5)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>SBP, mm Hg</td>
<td>132.6 (23.1)</td>
<td>111.5 (27.9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>DBP, mm Hg</td>
<td>77.8 (16.1)</td>
<td>66.1 (22.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>MAP, mm Hg</td>
<td>94.1 (16.4)</td>
<td>79.8 (21.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Oxygen saturation, %</td>
<td>98.3 (2.8)</td>
<td>95.6 (5.6)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Any supplemental oxygen, %</td>
<td>9.6</td>
<td>55.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>GCS, mean (SD)</td>
<td>14.9 (0.8)</td>
<td>13.5 (3.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Laboratory values, mean (SD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WBC, per mm³</td>
<td>8.8 (6.4)</td>
<td>14.6 (10.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Bands, %</td>
<td>N/A</td>
<td>16.2 (13.3)</td>
<td></td>
</tr>
<tr>
<td>Lactic acid (mmol/L)</td>
<td>N/A</td>
<td>3.5 (2.8)</td>
<td></td>
</tr>
<tr>
<td>Disposition, no. (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admitted</td>
<td>29,657 (25.6)</td>
<td>916 (98.5)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Expired in ED</td>
<td>186 (0.2)</td>
<td>10 (1.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>In-hospital mortality</td>
<td>730 (0.6)</td>
<td>164 (17.6)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Scoring systems, mean (SD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIRS</td>
<td>0.9 (0.8)</td>
<td>2.5 (1.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>qSOFA</td>
<td>0.1 (0.4)</td>
<td>1.1 (0.9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>NEWS</td>
<td>1.9 (2.0)</td>
<td>7.1 (3.5)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Fig. 2. ROC curves for SIRS, qSOFA, and NEWS. Shows receiver operating characteristic (ROC) curves and associated area under the ROC (AUROC) for the detection of severe sepsis and septic shock (SS/SS) for SIRS, qSOFA, and NEWS. SIRS = Systemic Inflammatory Response Syndrome; qSOFA = quick Sepsis-related Organ Failure Assessment; NEWS = National Early Warning System.

Table 3
Comparing the baseline characteristics of all patient visits versus patients with ED-onset severe sepsis and septic shock. SS/SS = severe sepsis and septic shock, ED = emergency department, OR = odds ratio, CI = confidence interval.

<table>
<thead>
<tr>
<th>Variable</th>
<th>SS/SS</th>
<th>ED All Prognosis</th>
<th>p-Value</th>
</tr>
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<tr>
<td>Age, mean (SD), years</td>
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<td>16.2 (13.3)</td>
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<tr>
<td>Lactic acid (mmol/L)</td>
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<td></td>
</tr>
</tbody>
</table>

Fig. 1. Receiver operating characteristic (ROC) curves for SIRS, qSOFA, and NEWS. Shows how each of these tools performs in detecting the presence of severe sepsis and septic shock (SS/SS) in ED patients. SIRS = Systemic Inflammatory Response Syndrome; qSOFA = quick Sepsis-related Organ Failure Assessment; NEWS = National Early Warning System.

**Statistical significance**: The NEWS score of ≥ 4 is more specific and sensitive compared to SIRS and qSOFA for detection of SS/SS, septic shock, and sepsis-related mortality. Additionally, NEWS is immediately available at triage as it does not require laboratories like SIRS. qSOFA’s low sensitivity compared to NEWS and qSOFA makes it a poor choice as a screening tool.

Scoring systems are tools that may heighten the clinical suspicion for sepsis and encourage physicians to perform time-critical interventions.
Therefore, scoring systems employed in the ED must have a low enough sensitivity to SIRS [10,35]. Another notable advantage of NEWS is that it has no reliance on laboratory values and is fully calculable at the time of triage. SIRS reliance on laboratory values may delay the recognition and treatment of sepsis [2,29,44].

NEWS was developed for the detection of clinical deterioration in in-patients and not for the detection of sepsis in the ED and, therefore, not fully suited for the role to which it has been appropriated [45,46]. This is reflected in some of the NEWS components that may be inappropriate in the context of sepsis. We hypothesize that adjusting some of these variables or deriving a de novo sepsis scoring system may lead to improvement [47,48].

In contrast to most studies, we calculated scores for unsel ected patients versus only for those with suspicion for infection [9,10,19,21,22,36,42,43,48,49]. Additionally, we calculated scores using values available at the time of triage instead of using only the worst values over a period of time [19,21,22,36]. Our approach is more suitable for screening at triage, when there is little information and the clinician has not evaluated the patient. We first ask, “what is the score?” and then ask, “based on this score, is there a concern for infection?” This was not the intended use of qSOFA, which first asks, “is there a concern for infection” and then asks “is the qSOFA ≥ 2?” [12,19]. Our strategy carries a lower pretest probability and results in lower PPVs and higher NPVs compared with previous studies.

We limited our endpoints to manifestations of sepsis within 8 h of ED arrival, which differs from most other studies that do not hold this time constraint. This distinction resulted in higher sensitivities, specificities, and AUROCs for our study. It has been previously shown—and is intuitive—that predicting short-term events is easier and will increase overall accuracy [31,34]. A recent study by Keep et al. supports the external validity of our results since they had similar patient and endpoint selection methods and showed comparable sensitivity of 92.6% versus 91.3% in our study and specificity of 77.0% versus 74.7% in our study for NEWS ≥ 3 [29].

Our reported mortality rate for SS/SS of 17.6% and septic shock of 21.2% was in line with other reports of between 12% and 30% for SS/SS and 18% and 46% for septic shock [2,3,6,8,9,18,20,21]. Our mortality AUROCs were generally larger than previously reported [21,22,31,42,44,50-53]. This is due to our minimal inclusion criteria; studies that include sicker patients have shown worse accuracy for mortality prediction [22,30,43].
We chose the diagnosis of SS/SS as our primary endpoint rather than mortality. Researchers have encouraged the validation of qSOFA and NEWS for outcomes other than mortality [19,22,35]. Many mortality-based scoring systems were created for risk stratification of inpatients and not for clinical decision-making in the ED [69,52,53]. Mortality prediction for sepsis in the ED was proposed by many during the era of early goal-directed therapy and drotrecogin-alfa in order to determine which patients should receive these aggressive and expensive treatments [47,9,53]. However, with the subsequent de-emphasis of these treatments, more importance is placed on the decision to treat sepsis. Once this decision has been made, prognostication may not significantly affect the ED mainstays of sepsis treatment: early antibiotics, source control, and cardiopulmonary optimization [1].

5. Limitations

Our study was retrospective, which may increase risk for misclassification biases and confounding. By calculating scores at triage, we diminished the effect of confounding actions by clinicians. However, endpoint determination is still subject to reviewer bias as it was established retrospectively and unblinded. Our findings may not apply to clinical areas outside of the ED as we limited our endpoints to manifestations within 8 h of presentation.

Our determination of severe sepsis is based on Sepsis-2 guidelines which may result in an incorporation bias favoring SIRS. However, Sepsis-2 organ-dysfunction is a subset of Sepsis-3 organ-dysfunction [10,12], mitigating this effect.

This is a single-center study with a predominately African-American population; multi-center inclusion would improve external validity. Given that most EDs routinely gather the inputs necessary for this analysis, our study should be easily reproducible at other institutions.

6. Conclusions

From our retrospective analysis at one academic ED, we found that NEWS is more accurate than both SIRS and qSOFA for the early detection of SS/SS. Furthermore, NEWS is calculable at the time of triage, improves in prediction with increasing illness severity, and may better allow for risk stratification. While a handful of studies have compared qSOFA with SIRS for mortality prediction, this is the first study to compare SIRS, qSOFA, and NEWS for the early identification of sepsis in the ED.

All three of the scoring systems we analyzed showed the ability to identify sepsis. This result argues in favor of more EDs adopting sepsis screening systems, as recommended by the Surviving Sepsis Campaign [1]. Indeed, such systems have increasingly been incorporated into the triage process [52]. At our institution, we have adopted NEWS as an initial screen for sepsis. We use a two-tier system: any score greater than six automatically flags the patient as potential severe sepsis and any score greater than three flags the patient as potential severe sepsis if deemed to be a high-risk for infection, including reported fever, history of immunocompromise, indwelling catheter, or triage nurse concern for infection.

We hope that this study will encourage other EDs to employ similar sepsis detection strategies by incorporating a scoring system that is easily calculable, available at triage, and highly sensitive. In turn, these interventions may increase the emergency physician’s clinical suspicion for sepsis, reduce missed cases, and decrease the time to critical treatment.

Previous presentations


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Conflict of interest disclosures

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Appendix A. Supplementary data

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References


