Comparison of different scoring tools in early detection of sepsis

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Keywords: sepsis, screening tools, early warning score, SIRS, qSOFA, TILT, NEWS, RETTS, risk factors
BACKGROUND AND AIM

**AIM**

1. To evaluate the clinical usefulness of qSOFA, SIRS, TILT and NEWS as early warning scores for sepsis and in prediction of mortality in patients with suspected infection admitted to the ED at UNN

2. To assess if a modification by including risk factors to the different scoring tools could improve early recognition of sepsis
MATERIALS AND METHODS

- **Study design:**
  - A retrospective study (October 1, 2017 – January 14, 2018)

- **Included:**
  - Patients received by The Emergency Medical Team (EMT) or later admitted to the Department of Infection
  - Yellow, orange or red triage according to the Rapid Emergency Triage and Treatment System (RETTS)
  - Clinically suspicion of or confirmed infection
  - Age ≥ 18

- **Statistics:**
  - Sensitivity and specificity, odds ratio (OR), Chi-square and area under the receiver characteristic curve (AUC)
RESULTS

The ability of the different screening tool to identify patients with sepsis in the Emergency Department, n

<table>
<thead>
<tr>
<th>Scoring system</th>
<th>Ability to identify sepsis n = 139</th>
<th>Sensitivity (95% CI)</th>
<th>Specificity (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>qSOFA ≥ 2</td>
<td>67 (48.2%)</td>
<td>0.48 (0.40-0.56)</td>
<td>0.95 (0.90-0.98)</td>
</tr>
<tr>
<td>SIRS ≥ 2</td>
<td>106 (76.3%)</td>
<td>0.76 (0.69-0.83)</td>
<td>0.47 (0.38-0.55)</td>
</tr>
<tr>
<td>TILT ≥ 4</td>
<td>81 (58.3%)</td>
<td>0.58 (0.50-0.66)</td>
<td>0.77 (0.69-0.83)</td>
</tr>
<tr>
<td>NEWS ≥ 4</td>
<td>109 (78.4%)</td>
<td>0.78 (0.71-0.84)</td>
<td>0.59 (0.50-0.67)</td>
</tr>
</tbody>
</table>

Abbreviations: CI; Confidence Interval., n = 139 cases of sepsis among 270 patients

RESULTS
- 391 screened, 270 patients were included and **139 had sepsis**.
- NEWS ≥ 4 had the highest sensitivity of 0.78 (95% CI: 0.71-0.84) and a specificity of 0.59 (95% CI: 0.50-0.67)
  - the ROC curve of qSOFA was higher than of NEWS in predicting sepsis
- Overall mortality was 38 (27 %). NEWS identified most patients who experienced death within 7-days, 30-days and 1-year
  - the ROC curve of qSOFA was higher than of NEWS in predicting mortality
- All modified screening tools demonstrated an increased ability to identify sepsis
DISCUSSION AND CONCLUSION

• Sepsis definitions
  • the local sepsis guideline (UNN)

• What is a good scoring system?

• Risk factors

CONCLUSION
• All scoring systems were able to recognize patients with sepsis
• NEWS was found to be of more clinical usefulness compared to qSOFA, SIRS and TILT in early identification of sepsis
• NEWS is at least equivalent or better than the other screening tools across most measures in predicting mortality
• Our finding suggests that the implementation of risk factors in different screening tools could increase their clinical usefulness