NEWS2 scale in estimating risk of deterioration in trauma patient admitted to Emergency Department – pilot results.

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INTRODUCTION
Trauma is 3rd cause of death in general population and first in group aged 1-44 years in Europe. [1,2] Because of high incidence rate trauma is a big challenge for emergency departments. Reduction of high mortality is one of the most important objectives and may be achieved by implementing intensive patient treatment in a proper time. That is why segregation and selection systems for patients admitted to Emergency Departments are crucial to identify those in serious condition. [3]

AIM OF THE STUDY
Aim of the study was to compare NEWS2 scores in trauma patients coded “yellow” according to hospital Manchester Triage System and estimate correlation with mortality and length of stay in hospital.

NEWS2 SCALE
Among many different in-hospital triage systems, in 2012 Royal College of Physicians (RCP) implemented NEWS2 score, based on measurements of basic physiological parameters (heart rate, respiratory rate, pulse oximetry, systolic blood pressure, need of oxygen supplementation, level of consciousness, temperature) as one of the most sensitive and specific in discriminating risk of clinical deterioration and acute mortality, becoming gold standard in primary triage and survey in emergency departments in Great Britain. [4]

The study was based on retrospective analysis of medical history of patients reported to regional Trauma Center (Copernicus Memorial Hospital in Łódź) between 01.01.2015 and 31.12.2017. Inclusion criteria covered: initial traumatic diagnosis, yellow “code” according to Manchester Triage System, age over 16 years old. For each patient NEWS2 score was calculated, according to RCP guidelines. Results were correlated with mortality, length of stay in hospital and need for intensive care. Statistical analysis was calculated by Statistica 10 software. Statistical significance was p<0.05.

RESULTS
Among 68 593 patients reported to Emergency Department of Regional Trauma Center Copernicus Memorial Hospital in Łódź between 01.01.2015 and 31.12.2017, in 17 817 (26%) cases initial diagnosis was trauma. Finally 704 patients fulfilled inclusion criteria, including 399 females (57%). Mean NEWS2 score was 1.37±1.56.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>LR group</th>
<th>SR group</th>
<th>MR group</th>
<th>HR group</th>
<th>TOTAL</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (%)</td>
<td>595 (85%)</td>
<td>75 (11%)</td>
<td>25 (4%)</td>
<td>9 (1%)</td>
<td>704</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>mortality; %</td>
<td>3%</td>
<td>9%</td>
<td>24%</td>
<td>67%</td>
<td>5.3%</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>mean length of stay in hospital (days)</td>
<td>7.68±8.3</td>
<td>7.2±7.1</td>
<td>10.2±13.1</td>
<td>23.3±31.8</td>
<td>7.95±9.4</td>
<td>0.036</td>
</tr>
<tr>
<td>need for ICU admission; n (%)</td>
<td>4 (0.7%)</td>
<td>0</td>
<td>3 (12%)</td>
<td>2 (22%)</td>
<td>9 (1.3%)</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

Table 1. Comparison between studied groups according to NEWS2 clinical risk.

CONCLUSIONS
NEWS2 is sensitive and specific tool to detect critically ill patients, including trauma patients. According to its score additional monitoring and vigilance should be implemented.

Large quantity of low risk group (LR) among trauma patients coded yellow according to Manchester Triage System may suggest overtriage in admission to Emergency Department.

Although all patients were coded “yellow” in Manchester Triage System there were fatalities and patients admitted to ICU. Routine practice of NEWS2 may improve alertness and prioritizing patients.

Local protocols and healthcare system organisation may result in lack of correlation between NEWS2 and patient length of stay in hospital.

REFERENCES

Keywords: Triage, Trauma, Emergency, Intensive Care, NEWS2.