**THE RUMC INDEX: PREDICTING MORTALITY USING A COMBINED EWS AND NLR SCORING SYSTEMS**

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*Background*: The ability to accurately determine disease severity and patient mortality risk is essential to provide appropriate and timely patient care. The early warning score (EWS) and the neutrophil-to-lymphocyte ratio (NLR) are two independently proven mortality predictive scores. NLR (neutrophil % divided by lymphocyte %) has been most frequently utilized for patients with cardiac disease whereas EWS (grading the variables in the table below) has been widely used in the United Kingdom triage setting as a predictor of all-cause mortality.

*Objective*: To create a better mortality predictive score, the two indices were combined into a new one called the Richmond University Medical Center Index (RUMCI).

*Methods*: 330 medical records of patients who had expired within 30 days of admission were reviewed for the variables in the table to calculate the RUMCI by adding the scores allocated for individual variables.

*Results*: RUMCI ≥ 5 was able to identify 83% of the expired patients, as opposed to EWS (80%) or NLR (73%).

*Conclusion*: While EWS and NLR can act as an effective independent mortality predictor, the combination of the two values in RUMCI is superior.

**RUMC Index Table**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Variable Parameters** | **Score** | | | | | | |
| **3** | **2** | **1** | **0** | **1** | **2** | **3** |
| Respiratory  Rate (bpm) |  |  |  | 9-20 | 21-30 | 31-35 | ≥ 36 |
| SaO2 (%) | < 85 | 85-89 | 90-92 | ≥ 93 |  |  |  |
| Temperature (°C) | ≤ 33.9 | 34-34.9 | 35-35.9 | 36-37.9 | 38-38.9 | ≥ 39 |  |
| Blood Pressure (systolic) | ≤ 69 | 70-79 | 80-99 | 100-199 |  |  | ≥ 200 |
| Heart Rate (bpm) | ≤ 29 | 30-39 | 40-49 | 50-99 | 100-109 | 110-129 | ≥ 130 |
| Alertness |  |  |  | Alert | Verbal | Pain | None |
| NLR | < 1 |  |  | 1-4.69 | 4.7-11.19 | 11.2-12.99 | ≥ 13 |