

# NEWS Scoring System

## Use in hematologic malignancies and cellular therapeutics patient populations

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**BACKGROUND:** Systemic inflammatory response syndrome (SIRS) criteria can be overly sensitive in detecting clinical deterioration in hematologic malignancies and cellular therapeutics (HMCT) populations. This may create inconsistency in activation of a rapid response team (RRT) with patient decline.

**OBJECTIVES:** The aim is to evaluate the implementation and use of the National Early Warning Score (NEWS) scoring system in the HMCT population.

**METHODS:** Retrospective data collection from 2016 to 2017 was used. NEWS scores were calculated every 4 hours for the 24 hours prior to RRT activation. The difference between the time of the first NEWS score of 5 or greater and the RRT activation time mean and median values were calculated for the pre- and postimplementation time frames.

**FINDINGS:** A statistically significant decrease in the mean time between patients meeting a NEWS score of 5 or greater and RRT activation was noted in the postimplementation group. An increase in frequency of escalation of care to the intensive care unit for patients with multiple RRT activations during admission was statistically significant.

### KEYWORDS

sepsis; transplantation; hematologic malignancies; cellular therapies

### DIGITAL OBJECT IDENTIFIER

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**THE UNIVERSITY OF KANSAS HEALTH SYSTEM (UKHS)** is a 910-bed academic, quaternary care center located in Kansas City, Kansas. The hematologic malignancies and cellular therapeutics (HMCT) program was established in 1977 and performs around 300 allogeneic and autologous transplantations per year. Patients are treated in a 49-bed inpatient HMCT unit. This unit is divided into a 20-bed protected environment area with an airlock used primarily for patients with allogeneic transplantation, post-transplantation readmissions, and chimeric antigen receptor (CAR) T-cell or immune effector cell (IEC) therapy, with an average length of stay of 12.71 days. The remaining 29 beds house patients receiving autologous transplantation and hematologic malignancy treatment, with an average length of stay of 7.91 days. HMCT diseases and treatment cause periods of severe immunosuppression, leading to increased susceptibility to sepsis and complication.

The rapid response team (RRT) has been in place health system-wide at UKHS since 2005 and includes healthcare providers who are notified of patient clinical deterioration on non-intensive care units (ICUs). Activation is subjective and guided by UKHS policy criteria; it can be done by a nurse, staff member, or visitor. The criteria are as follows: respiratory rate less than 8 or more than 25 for longer than 15 minutes; oxygen saturation (SPO<sub>2</sub>) less than 90% with supplemental oxygen; stridor; arterial blood gas with pH less than 7.3, HCO<sub>3</sub> less than 18, or PaO<sub>2</sub> less than 50; new or sustained heart rate less than 40 or more than 120; new or sustained systolic blood pressure less than 90 or more than 200; repeated or prolonged seizures or decrease in level of consciousness; temperature lower than 36°C or higher than 39°C; unexplained agitation for longer than 10 minutes; significant acute bleeding; skin color change; chest pain or equivalent symptoms; suspected anaphylactic reaction; concern for patient's deterioration condition; and unplanned transfer of patient from a non-ICU setting to an ICU (UKHS, 2019). The systemic inflammatory response syndrome (SIRS) criteria are monitored throughout the health system and also can be a trigger for an RRT activation.

### Background

The sepsis committee at UKHS uses the SIRS criteria for monitoring patients for deterioration. SIRS criteria use is facilitywide to monitor for development