

Original Research Article

COMPARING MORTALITY OF PATIENTS TRANSFERRED TO ONCO CRITICAL CARE BASED ON CLINICIANS' DISCRETION VERSUS NEWS QUESTIONNAIRE IN RESOURCE LIMITED SETTINGS

Rumpa Manna¹, Monalisa Singh², Dibyadip Mukhopadhyay², Meenal Aggarwal², Deepa Chakrabarti³, Trina Ghora⁴

¹Assistant Professor, Department of Critical Care Science, Haldia Institute of Health Sciences, West Bengal, India.

²Assistant Professor, Department of Anaesthesia and Critical care, Chittaranjan National Cancer Institute (CNCI), Kolkata, India.

³Professor, Department of Anaesthesia and Critical care, Chittaranjan National Cancer Institute (CNCI), Kolkata, India.

⁴Assistant Professor, Department of Critical Care Science, B.P. Podder, West Bengal, India.

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Corresponding Author:

Dr. Dibyadip Mukhopadhyay,
Assistant Professor, Department of
Anaesthesia and Critical care,
Chittaranjan National Cancer Institute
(CNCI), Kolkata, India.
Email: drdibyadip@gmail.com

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ABSTRACT

Background: Increasing ICU demand requires standardized admission criteria, as clinician discretion may cause variability. NEWS provides objective assessment of deterioration and timely intervention, but evidence in oncology ICU settings remains limited. This study evaluates NEWS versus clinician discretion for ICU transfer in oncology patients, comparing clinical outcomes. Primary objective is mortality at 24 hours, 48 hours, and 7 days. Secondary objective is SOFA score comparison at ICU admission and 48 hours post-admission.

Materials and Methods: Retrospective cohort study in CNCI ICU (May–Sept 2024) compared NEWS-based screening versus clinician discretion. Primary outcome was mortality at 24, 48 hours, and 7 days; SOFA assessed organ dysfunction.

Results: The study showed comparable age and gender distribution between groups, with hypertension as the most common comorbidity. Neutropenia was lower in NEWS group (24.1% vs 35.7%), and 7-day mortality slightly reduced (27.1% vs 31.0%).

Conclusion: The use of NEWS may improve long-term survival in oncology ICU patients, although it shows limited effect on short-term mortality and organ failure progression. However, it helps reduce variability in ICU admission decisions and resource utilization. Overall, this study supports the use of standardized tools like NEWS to optimize ICU admissions and improve resource allocation and outcomes in oncology critical care settings.

Keywords: ICU admission, NEWS score, clinician discretion, oncology, mortality, organ dysfunction, SOFA score, critical care, resource utilization.

INTRODUCTION

In recent years, the demand for intensive care unit (ICU) resources has increased significantly due to rising rates of critical illness and an aging population.^[1] This surge in demand has highlighted the need for effective patient transfer criteria to optimize ICU resource utilization and improve patient outcomes. Historically, clinicians have relied heavily on their discretion when determining which patients require ICU admission. While clinician judgment is important, it is often subjective,

potentially leading to variations in care and inconsistent decisions.^[2] In contrast, standardized scoring systems like the National Early Warning Score (NEWS) have been developed to offer a more objective framework for identifying patients at risk of deterioration, enabling earlier intervention and improving overall care.^[3] The primary objective of this study is to evaluate the impact of different admission criteria on mortality rates at various intervals post-admission: 24 hours, 48 hours, and 7 days. This analysis will provide valuable insights into the effectiveness of each admission criterion in

predicting patient outcomes and guiding clinical decision-making. By comparing the mortality outcomes at these time points, the study aims to assess whether the use of structured scoring systems, such as NEWS, leads to better survival rates compared to relying on clinician judgment alone.^[4] Understanding the mortality trends associated with different admission criteria can offer evidence to support the implementation of more standardized protocols in ICU admissions. In addition to mortality outcomes, the study's secondary objective is to compare the Sequential Organ Failure Assessment (SOFA) score at ICU admission and 48 hours post-admission.^[5] The SOFA score is a tool used to assess the extent of organ failure in critically ill patients, and it can provide important insights into the progression or recovery of organ systems. By examining the SOFA score at two critical time points, this study seeks to understand how early interventions impact the trajectory of organ failure and whether patients' conditions improve or deteriorate over time.^[6] This aspect of the study could help identify whether a structured approach to ICU admission improves the potential for organ recovery and survival. Previous research has consistently shown that early interventions in critically ill patients can significantly impact survival rates, particularly when escalated care is initiated promptly.^[7] Despite this, variations in ICU admission practices persist, contributing to delays in treatment and suboptimal outcomes for some patients.^[8] The NEWS tool, which triggers early escalation of care based on objective measures such as respiratory rate, oxygen saturation, and blood pressure, may improve the early identification of deteriorating patients.^[3] If NEWS is found to be effective in improving mortality rates and enhancing organ recovery, it could become a key component of ICU admission protocols. By analyzing both mortality outcomes and SOFA scores, this study aims to determine whether a structured screening approach, such as the use of NEWS and SOFA, offers advantages over traditional clinician judgment alone.^[9] The findings of this study are expected to shed light on the effectiveness of different patient transfer criteria and may inform future policy changes and clinical guidelines. Standardizing ICU admission criteria could ensure that critical care resources are allocated more efficiently, ultimately benefiting patients in need of intensive care.^[10] Given the increasing complexity of patient presentations and the limited availability of ICU beds, the findings of this study could significantly enhance clinical decision-making. By refining ICU admission protocols, healthcare providers may be able to deliver more effective and timely care, leading to improved patient management, better survival rates, and reduced mortality in ICU settings.^[11] This study evaluates the impact of NEWS versus clinician discretion for ICU transfer in oncology patients, focusing on outcomes. The primary objective is to compare mortality at 24 hours, 48 hours, and 7 days post-ICU transfer between the two groups. The

secondary objective is to compare SOFA scores at ICU admission and 48 hours after admission.

MATERIALS AND METHODS

Study design: Retrospective, observational, cohort study.

Study setting: Critical Care unit of a Regional Cancer Care Hospital in Eastern India catering to geographical regions of predominantly urban population.

Place of study: Chittaranjan National Cancer Institute (Campus 2), Critical Care unit.

Period of study: May - September, 2024.

Study population: Patients transferred from ward to ICU during the given study period, satisfying the inclusion and exclusion criteria.

Sample size: 101 Patients

Inclusion criteria:

- Age (15-90)
- Co-morbidity <3
- Oncology patient

Exclusion criteria:

- Pregnant women
- Paediatric patient (<15 years)
- Repeated ICU transfer patient
- Any recent surgical intervention patient

Study variable:

- age
- gender
- Type of tumour /cancer
- Total length of stay
- Co-morbidity
- Neutropenia
- Stage of disease
- Stage of treatment
- SOFA score
- NEWS score
- ECOG scoring
- Initial lactate
- Intubation consent
- Any therapeutic option available
- Mortality status
- BMI
- Death in which place
- Number of ICU transfer

Statistical Analysis: For statistical analysis data were entered into a Microsoft Excel spreadsheet and then analyzed by SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and Graph Pad Prism version 5. Data had been summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. Z-test (Standard Normal Deviate) was used to test the significant difference of proportions. Once a t value is determined, a p-value can be found using a table of values from Student's t-distribution. If the calculated p-value is below the threshold chosen for statistical significance (usually the 0.10, the 0.05, or 0.01 level), then the null hypothesis is rejected in favor of the alternative hypothesis. P-value ≤ 0.05 was considered for statistically significant.

RESULTS

Table 1: Age-wise distribution of patients before and after NEWS implementation

Age Group	After NEWS (n)	Before NEWS (n)
15–24	4	2
25–34	1	5
35–44	4	2
45–54	14	7
55–64	18	12
65–74	12	11
75+	6	3

Table 2: Distribution of Gender and Study Groups

		Frequency (n)	Percentage (%)
Gender	Female	46	45.54
	Male	55	54.46
Group (B/A)	After (A)	59	58.42
	Before (B)	42	41.58

Table 3: Age distribution

	After NEWS (Mean ± SD)	Before NEWS (Mean ± SD)
Age (years)	57.34 ± 15.17	56.07 ± 16.17

Table 4: Distribution of comorbidities in study population (After vs Before NEWS)

Comorbidity	After NEWS (A)	Before NEWS (B)
Hyperthyroidism	0	1
ACS	1	0
AKI	1	1
CAD	0	1
COPD	1	0
Hepatitis B	0	1
HF with EF	0	1
Hypertension	33	18
T2DM	16	16
DM	3	0
CKD	3	1
Dyslipidemia	1	0
Hypothyroidism	7	5
Post PPM	3	0
IHD	1	1
AE COPD	0	1
OAD	0	1
LBP	0	1

Table 5: Association of Neutropenia with Before/After NEWS (B/A)

Before / After NEWS (B/A)	Neutropenia (No)	Neutropenia (Yes)
After (A)	44 (75.9%)	14 (24.1%)
Before (B)	27 (64.3%)	15 (35.7%)

Table 6: ICU Outcomes at 24 hours, 48 hours and 7 days (Before vs After NEWS)

Outcome	Before NEWS (n=42)	After NEWS (n=59)
Total patients	42 (100.0%)	59 (100.0%)
Survivors at 24 hrs	41 (97.6%)	54 (91.5%)
Mortality at 24 hrs	1 (2.4%)	5 (8.5%)
Survivors at 48 hrs	40 (95.2%)	51 (86.4%)
Mortality at 48 hrs	1 (2.4%)	3 (5.1%)
Survivors at 7 days	29 (69.0%)	43 (72.9%)
Mortality at 7 days	13 (31.0%)	16 (27.1%)

Age-wise distribution of patients before and after NEWS implementation

Results: The age distribution showed that the majority of patients were in the 55–64 years age group (18 in After NEWS and 12 in Before NEWS), followed by 65–74 years (12 vs 11) and 45–54 years (14 vs 7). Other age groups showed relatively lower frequencies with a comparable distribution between both groups.

Interpretation: The age distribution was broadly similar in both groups, indicating that the study

population was well matched in terms of age. This ensures comparability between Before and After NEWS cohorts for outcome assessment.

Distribution of Gender and Study Groups

Results: The study population consisted of 55 males (54.46%) and 46 females (45.54%). Group distribution showed 59 patients (58.42%) in the After NEWS group and 42 patients (41.58%) in the Before NEWS group.

Interpretation: The gender distribution showed a slight male predominance. The proportion of patients

in both study groups was adequate, allowing balanced comparison between Before and After NEWS cohorts.

Age distribution (Mean $\pm$ SD)

Results: The mean age in the After NEWS group was 57.34 ± 15.17 years, while in the Before NEWS group it was 56.07 ± 16.17 years.

Interpretation: The mean age was comparable between both groups, indicating no significant demographic difference. This supports uniform baseline characteristics across study cohorts.

Distribution of comorbidities in study population

Results: Hypertension was the most common comorbidity in both groups (33 in After NEWS vs 18 in Before NEWS), followed by T2DM (16 in both groups). Other comorbidities such as CKD, hypothyroidism, COPD, and CAD were present in smaller proportions.

Interpretation: The comorbidity profile was largely similar in both groups, although hypertension was more frequently observed in the After NEWS group. Overall, the baseline clinical characteristics were comparable.

Association of Neutropenia with Before/After NEWS

Results: Neutropenia was present in 24.1% of patients in the After NEWS group compared to 35.7% in the Before NEWS group. The proportion of patients without neutropenia was higher in the After NEWS group (75.9% vs 64.3%).

Interpretation: A lower proportion of neutropenia was observed in the After NEWS group, suggesting improved early risk identification and triaging with NEWS-based assessment.

ICU Outcomes at 24 hours, 48 hours and 7 days

Results: At 24 hours, mortality was higher in the After NEWS group (8.5%) compared to the Before NEWS group (2.4%). At 48 hours, mortality remained higher in the After NEWS group (5.1% vs 2.4%). However, at 7 days, mortality was slightly lower in the After NEWS group (27.1% vs 31.0%).

Interpretation: Early mortality was higher in the NEWS group, possibly due to early identification of critically ill patients requiring ICU transfer. However, a slight improvement in 7-day survival suggests potential long-term benefit of NEWS-based triage in improving overall outcomes.

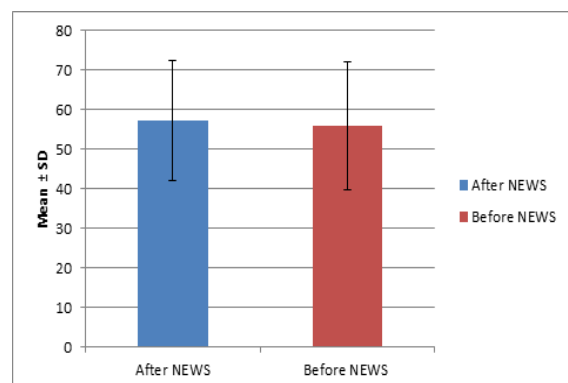


Figure 1: Age distribution

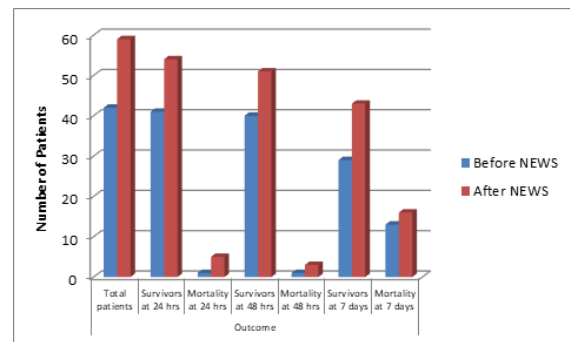


Figure 2: ICU Outcomes at 24 hours, 48 hours and 7 days (Before vs After NEWS)

DISCUSSION

The present study compared ICU admission and outcomes between patients triaged using the National Early Warning Score (NEWS) and those admitted based on clinician discretion in an oncology critical care setting. The demographic analysis demonstrated that most patients belonged to the 55–64 years age group, followed by 65–74 years, indicating that critically ill oncology patients requiring ICU care are predominantly middle-aged and elderly. Similar age patterns have been reported in previous ICU-based oncology studies, where advanced age is associated with increased risk of critical illness and ICU admission.^[11] Gender distribution showed a slight male predominance, which is consistent with prior epidemiological observations in critically ill cancer populations.^[12] Baseline characteristics, including age and comorbidity profiles, were largely comparable between the two groups, ensuring adequate comparability for outcome assessment. Hypertension and diabetes mellitus were the most common comorbid conditions, reflecting the typical burden of non-communicable diseases in ICU populations. Similar findings have been reported in previous studies where cardiovascular and metabolic comorbidities significantly contributed to ICU admissions in cancer patients.^[13] In the present study, neutropenia was more frequently observed in the clinician-discretion group compared to the NEWS-based group. This suggests that structured triage systems may improve early identification of high-risk patients and facilitate more timely ICU referral. Previous studies have shown that early warning scoring systems can enhance recognition of clinical deterioration and reduce delays in escalation of care.^[14] NEWS has been widely validated as a sensitive tool for detecting early physiological decline, particularly in hospital ward settings.^[15] Regarding outcomes, the present study demonstrated higher early mortality (24 and 48 hours) in the NEWS group, while 7-day mortality was slightly lower compared to the clinician-discretion group. This apparent paradox may be explained by the fact that NEWS-based triage identifies more severely ill patients earlier, leading to earlier ICU admission of high-risk cases that might otherwise be delayed under

subjective clinical judgment.^[16] Similar findings have been reported in studies evaluating early warning scores, where improved triage sensitivity led to increased ICU admissions of critically ill patients but improved overall survival trends in longer follow-up periods.^[17] The SOFA score trends (as evaluated in the broader study context) suggest that early physiological deterioration can be objectively captured using structured scoring systems, which aligns with established literature validating SOFA as a strong predictor of organ dysfunction and mortality in ICU patients.^[18] The integration of NEWS with organ dysfunction scoring systems such as SOFA has been suggested to improve risk stratification accuracy in critically ill patients.^[19] Overall, the findings of this study support the utility of standardized scoring systems like NEWS in reducing variability in ICU admission decisions and improving early identification of deterioration. However, clinician judgment remains essential, particularly in oncology patients with complex clinical trajectories. The combination of structured tools and clinical expertise may offer the best balance for ICU triage decisions.^[20]

CONCLUSION

The present study demonstrates that the use of the National Early Warning Score (NEWS) for ICU triage in oncology patients provides a more structured and objective approach compared to clinician discretion. Although early mortality at 24 and 48 hours was higher in the NEWS group, likely due to earlier identification of critically ill patients, a trend toward improved 7-day survival suggests potential long-term benefit. Baseline characteristics, including age, gender, and comorbidities, were comparable between groups, supporting valid outcome comparison. Additionally, NEWS-based assessment was associated with better identification of high-risk conditions such as neutropenia, highlighting its role in early risk stratification. Overall, NEWS appears to reduce variability in ICU admission decisions and may contribute to improved resource utilization and patient outcomes in oncology critical care settings, especially when used alongside clinical judgment and organ dysfunction scoring systems like SOFA.

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