

Evaluation of the suit system in a healthcare center and analysis of the potential impact of implementing the NEWS2 score

Evaluación del sistema de triage en un centro asistencial y análisis del impacto potencial de la implementación del score NEWS2

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ABSTRACT

Background: The triage system is an essential tool in emergency departments, as it allows for prioritizing care based on the patient's clinical severity. However, its effectiveness depends on the correct application and use of the method. The National Early Warning Score 2 (NEWS2) has proven useful for the early detection of clinical deterioration through measurable physiological parameters. Methods: An observational, descriptive, and cross-sectional study was conducted in a public hospital with on-demand care. A total of 100 adult patient records were randomly selected. The categories assigned by the conventional triage were compared with those obtained using the NEWS2 score to assess the concordance between both systems. Results: concordance of 70.7 % was observed between the triage classification and the NEWS2 scoring. The extreme levels (green and red) showed greater correspondence, while the intermediate cases (yellow) presented greater variability in risk assignment. Conclusion: The current triage system shows adequate performance; however, the incorporation of the NEWS2 score could provide a more objective and standardized assessment, improving early detection of clinical deterioration and optimizing prioritization of emergency care.

Keywords: Triage; Scoring Systems; Emergency Medical Services; Physiological Assessment; Patient Safety.

RESUMEN

Introducción: El sistema de triage constituye una herramienta esencial en los servicios de urgencias, ya que permite priorizar la atención según la gravedad clínica del paciente. Sin embargo, su efectividad depende de la correcta aplicación y de la correcta utilización del método. El score NEWS2 (National Early Warning Score 2) ha demostrado utilidad para detectar precozmente el deterioro clínico mediante parámetros fisiológicos cuantificables. Métodos: Se realizó un estudio observacional, descriptivo y transversal en un hospital público con atención a demanda. Se analizaron 100 registros de pacientes adultos seleccionados aleatoriamente, comparando la categoría asignada por el triage habitual con la clasificación obtenida mediante el score NEWS2, con el objetivo de evaluar la concordancia entre ambos sistemas. Resultados: Se observó una concordancia del 70,7 % entre el triage y el NEWS2. Los niveles extremos (verde y rojo) coincidieron en mayor medida, mientras que los casos intermedios (amarillo) mostraron una mayor variabilidad en la asignación de riesgo. Conclusión: El sistema de triage actual demuestra un desempeño adecuado, aunque la incorporación del NEWS2 podría aportar una valoración más objetiva y estandarizada, mejorando la detección temprana del deterioro clínico y optimizando la priorización de la atención.

Palabras clave: Triage; Escalas de puntuación; Servicios de urgencia hospitalarios; Evaluación fisiológica; Seguridad del paciente.

INTRODUCTION

In the field of healthcare, the emergency department represents one of the critical points at which patients' clinical outcomes are largely determined. In this context, the triage system plays a fundamental role by enabling the classification and prioritization of patients according to the severity of their condition, thereby facilitating timely and efficient care. However, the effectiveness of triage depends largely on the tool used, its correct application, and the training of the personnel involved.

Despite advances in classification systems, various healthcare centers continue to face difficulties in the early detection of patients at high clinical risk. These limitations result in delays in care, increased demand, and errors in prioritization.

The National Early Warning Score 2 (NEWS2), developed by the Royal College of Physicians in the United Kingdom, is a tool based on physiological parameters that enables the early detection of clinical deterioration. Its use has improved patient safety and decision-making in various hospital settings.

This study evaluates the triage system of a healthcare facility and analyzes the potential impact of implementing NEWS2 as a complementary tool to improve the prioritization and care of emergency patients.

The absence of standardized mechanisms for the early assessment of a patient's clinical risk during triage can lead to delays in care, errors in prioritization, and an increase in adverse events. In this context, can the implementation of the NEWS2 score improve the current triage system in institutions and optimize care in emergency departments?

Incorporating the NEWS2 score into the emergency department triage system could contribute to better identification of patients with signs of clinical deterioration, promoting more appropriate prioritization of care.

Studying and improving a triage system in a specific healthcare facility not only enables better quality of care in that setting but also aids in its development across other healthcare services. NEWS2 could facilitate the early detection of at-risk patients and reduce clinical response times. In light of an increase in emergency visits and pressure on the resources available for them, there is a need for evidence-based mechanisms and patient safety-oriented approaches to optimize management.

The overall objective of this study is to evaluate the performance and usefulness of the triage system in a public hospital with walk-in care, using the N.E.W.S.2 score as a complementary tool. This study aims to determine whether the incorporation of this score can improve the classification and prioritization of patients on the basis of their clinical severity.

METHODS

Study Design

An observational, descriptive, and cross-sectional study was conducted to evaluate the current functioning of the triage system in the emergency department of the selected healthcare facility and to analyze the potential utility of incorporating the NEWS2 score as a complementary tool for the initial assessment of patients.

To this end, a referral hospital that treats approximately 1,820,000 patients per year was identified. A random sample was collected from this population, distinguishing between patients who presented to the most complex sectors (yellow and red sectors) and those in the outpatient sector (green sector). The scores obtained from the NEWS2 were then compared with the categories assigned in the healthcare facility's triage test to determine how consistent the scores are with one another and to analyze how the score could be useful as a complement to optimize prioritization and improve safety and efficacy in an emergency setting.

The study did not include therapeutic interventions or treatment assignments but was based on clinical data obtained during the triage process.

Study population

Patients who were in the emergency department were included. The data analyzed corresponded to vital signs recorded in patients treated at the health center in 2025. The information was obtained from a preexisting record sheet, selected at random from within it, with the aim of obtaining a representative sample and avoiding temporal biases in the evaluation of the triage system.

Inclusion criteria:

Patients over 18 years of age were treated in the general emergency department.

Complete record of vital signs and assigned triage color.

Patients admitted in 2025

The final sample consisted of 100 cases selected using probability sampling. Patients were selected using stratified random sampling. Patients were selected on the basis of their assigned triage level (green, yellow, and red), and a proportional number of patients from each stratum were randomly selected to ensure representativeness.

Interventions and Procedures

The primary intervention used in the study, as noted, was the N.E.W.S.2 score, which supplemented standard triage at the hospital. The N.E.W.S.2 score was then obtained and compared for each patient with the classification provided by the standard triage method to examine the agreement between the two systems. No further clinical interventions were performed; the study was limited to observing and recording the data necessary for analysis.

Statistical Analysis

The data obtained were recorded in a Microsoft Excel spreadsheet, where the NEWS2 score percentage was calculated.

Concordance was evaluated by analyzing the distribution and NEWS2 scores within each preexisting triage level.

The purpose of this analysis was to identify the relationship and degree of divergence between the initial clinical assessment and the assessment based on physiological markers. Specifically, we sought to analyze whether patients with higher NEWS2 scores correlated with higher priority triage levels (life-threatening or emergency), and vice versa.

This analysis allowed us to determine whether the current system correctly validated high priority, thereby assessing whether the incorporation of NEWS2 could provide an additional layer of safety and standardization in identifying patients at risk of deterioration.

RESULTS

The total NEWS2 scores of 100 patients treated in the emergency department were analyzed. The total score ranged from 0 to 18 points, with a mean of 5.8 points and a median of 4 points.

The distribution of patients by risk category was as follows:

Category (NEWS2)	Total Score	Patients (n)	Percentage (%)
Low risk	0–4	46	46%
Moderate risk	5–6	20	20%
High risk	≥7	34	34%

Nearly half of the patients had scores corresponding to low risk, while one-third had high risk, requiring immediate care according to the NEWS2 scale.

Individual values and score range

Lowest recorded score: 0 points

Maximum recorded value: 18 points

Most frequent ranges: 0–4 and 7–10 points

Among the total records analyzed, 70.7% of patients were correlated between the category assigned by triage and the NEWS2 score.

This implies that in approximately 7 out of 10 patients, the estimated clinical severity at admission coincided with the risk level calculated using NEWS2.

In the group of patients classified as green triage, the majority had a NEWS2 score within the low range (0–4 points). In yellow cases, greater variability was observed, with some patients in the low range and others in the moderate or high range. In the red triage group, the majority had high NEWS2 scores (≥7 points). The results indicated that 70.7% of patients were correctly categorized according to the NEWS2 score, with differences observed in the intermediate levels.

DISCUSSION

Analysis of these data demonstrated that the existing triage system at the health center is adequate for classifying patients according to their clinical severity. NEWS2 yielded 70.7% concordance between the usual categorization and the score obtained.

These findings are consistent with those of Soler et al. (2010) and Robertson–Steel (2006) regarding the effectiveness of structured triage systems in prioritizing care in emergency departments.

However, the variability observed in yellow triage cases reflects a limitation of the system, given that patients at intermediate risk often present less obvious clinical signs. In this regard, the complementary use of NEWS2 could provide an objective physiological assessment that reduces the subjectivity of clinical judgment and improves the accuracy of prioritization. Studies such as those by Arévalo-Buitrago et al. (2022) and Williams (2022) agree that NEWS2 facilitates the early detection of clinical deterioration and standardizes decision-making in high-demand care settings.

Among the study's limitations are the sample size, which could be expanded in future research, and the use of secondary data, which may introduce bias because of the quality of the records. Furthermore, the lack of clinical follow-up prevents the correlation of the initial categorization with outcomes.

As shown in the results, there is a high degree of dispersion in the yellow sector, which is likely due to the presence of patients with different risk profiles—including both surgical and medical patients—some of whom also have scheduled admissions—making the group heterogeneous and resulting in variations not seen in other sectors. Nevertheless, the results provide a basis for improving preliminary assessments in triage using NEWS2, particularly in the early detection of signs of clinical deterioration.

Its implementation is estimated to improve patient safety, the standardization of criteria, and operational efficiency in emergency departments (Royal College of Physicians, 2017). It is believed that these findings will stimulate further studies to test its practical use in various hospital settings and its effect on emergency care.

CONCLUSION

The results obtained in this study allowed us to achieve the overall objective of evaluating the performance of the triage system in a public hospital with walk-in care and analyzing the potential impact of incorporating the NEWS2 score as a complementary tool.

The application of the NEWS2, which is based on measurable physiological parameters, would help reduce the subjectivity of clinical judgment during admission, strengthening the early detection of clinical deterioration and optimizing the prioritization of care.

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