

## Effective communication for patient safety: transfer note and Modified Early Warning Score



*Comunicação efetiva para a segurança do paciente: nota de transferência e Modified Early Warning Score*

*Comunicación efectiva para la seguridad del paciente: nota de transferencia y Modified Early Warning Score*

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### ABSTRACT

**Objective:** To analyze the registry of the Transfer Note (NT) and the emission of the Modified Early Warning Score (MEWS) performed by the nurse in adult patients transferred from the Emergency Service as an effective communication strategy for patient safety.

**Method:** A cross-sectional retrospective study developed at a teaching hospital in the South of Brazil that evaluated 8028 electronic medical records in the year 2017. A descriptive analysis was performed.

**Results:** NT reached the institutional target of 95% in January and February, falling below the target in other months. The MEWS measurement was performed in 85.6% (n = 6,870) of the medical records. Of these patients, 96.8% (n = 6,652) had unchanged MEWS.

**Conclusion:** NT and MEWS are inserted in the work of the nurse, however, actions are needed to qualify patient safety, improving effective communication and therefore reducing the possibility of occurrence of adverse events.

**Keywords:** Critical care. Emergencies. Nursing. Quality indicators, health care. Patient safety.

### RESUMO

**Objetivo:** Analisar o registro da Nota de Transferência (NT) e a emissão do Modified Early Warning Score (MEWS) realizados pelo enfermeiro em pacientes adultos transferidos do Serviço de Emergência como estratégia de comunicação efetiva para a segurança do paciente.

**Método:** Estudo transversal retrospectivo desenvolvido em um hospital de ensino no Sul do Brasil que avaliou 8028 prontuários eletrônicos no ano de 2017. Procede-se a análise descritiva.

**Resultados:** A realização da NT atingiu a meta institucional de 95% nos meses de janeiro e fevereiro, ficando abaixo da meta nos demais meses. A mensuração do MEWS foi realizada em 85,6% (n=6.870) dos prontuários. Destes pacientes, 96,8% (n=6.652) possuíam MEWS não alterado.

**Conclusão:** A NT e o MEWS estão inseridos no trabalho do enfermeiro, no entanto, são necessárias ações com vistas a qualificar a segurança do paciente, melhorando a comunicação efetiva e, por conseguinte, diminuindo a possibilidade de ocorrências de eventos adversos.

**Palavras-chave:** Cuidados críticos. Emergências. Enfermagem. Indicadores de qualidade em assistência à saúde. Segurança do paciente.

### RESUMEN

**Objetivo:** Analizar el registro, realizado por el enfermero, la Nota de Transferencia (NT) y la emisión del Modified Early Warning Score (MEWS) en pacientes adultos transferidos del Servicio de Emergencia como estrategia de comunicación efectiva para la seguridad del paciente.

**Método:** Estudio transversal retrospectivo desarrollado en un hospital de enseñanza en el sur de Brasil que evaluó 8028 históricos electrónicos en el año 2017. Se llevó a cabo el análisis descriptivo.

**Resultados:** La realización de la NT alcanzó la meta institucional del 95% en los meses de enero y febrero, quedando por debajo de la meta en los demás meses. La medición del MEWS se realizó en el 85,6% (n = 6.870) de los históricos. De estos pacientes, el 96,8% (n = 6.652) poseía MEWS no alterado.

**Conclusión:** La NT y el MEWS están insertos en el trabajo del enfermero, sin embargo es necesario acciones con miras a calificar la seguridad del paciente, para mejor la comunicación efectiva y, por consiguiente, disminuir la posibilidad de ocurrencia de eventos adversos.

**Palabras clave:** Cuidados críticos. Urgencias médicas. Enfermería. Indicadores de calidad de la atención de salud. Seguridad del paciente.

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## INTRODUCTION

Patient safety is one of the great challenges of healthcare in the 21st century. It is a focus of discussion, both nationally and internationally, given its importance to the health system and the repercussions for society in general<sup>(1-2)</sup>.

The recognition of the occurrence of incidents and adverse events in health care mobilized the World Health Organization in the creation of strategies that can be used as a resource for the prevention of these situations<sup>(1-2)</sup>. In 2004, the World Alliance for Patient Safety was created to facilitate the development of patient safety practices and policies in several countries. With the purpose of promoting specific improvements in areas that are problematic in the care assistance, some international goals have been defined, among which the goal that refers to the effective communication is highlighted. This objective is to improve the effectiveness of communication among caregivers by ensuring that verbal and recorded information is accurate and complete<sup>(3)</sup>.

In Brazil, Ordinance 529, dated April 1, 2013, which created the National Program of Patient Safety, defines communication in the health services environment and the transfer of patients between care points as basic health care protocols<sup>(4)</sup>.

The effective communication and the work of the multi-professional team are understood as determinants of quality and safety in the care of individuals. Failures in communication among health professionals have been one of the main factors that contribute to the occurrence of adverse events and, consequently, a decrease in the quality of care<sup>(5)</sup>. Health care professionals have difficulties in maintaining communication that favors teamwork and the continuity of intra- and extra-hospital health care, either due to lack of time, lack of staff, lack of standardization, total lack of knowledge or lack of knowledge of the importance of this action<sup>(1,5)</sup>.

The health institution on this research is a hospital accredited by the *Joint Commission Internacional* and adopts effective communication as a strategy in its role of actions to implement an organizational culture for patient safety and quality of care. In order to improve the work processes and change in the institution's safety culture, the Risk Management Commission (RG) was established, which was created by a demand focused on the expansion of the quality management of patient care and safety.

Effective communication occurs between health professionals and/or appropriate areas when they give or receive information in a complete and accurate manner, recording it and rereading it to their transmitter, and the transmitter needs to confirm the accuracy of the data. Effective communication takes place in the institution in

cases of patient transfers between sectors, transmission of information by phone calls and verbal reports directly between professionals, forms and notes of patient transference, verbal guidance in emergencies or emergencies and alarming laboratory data by telephone to the nurse responsible and/or the attending medical staff.

It is considered that the emergency setting constitutes a critical environment and potential risks to patients regarding the characteristics of care, severity of clinical cases and increase in health problems due to external causes. Thus, the work process in these environments is linked to the execution of numerous procedures - with continuous interruptions of activities - and to work overload, conditions that reflect in the quality of care provided. In addition to this, other factors, such as insufficient physical resources, physical spaces and operational processes for assistance that compromise the safety of users, may lead to adverse events<sup>(6)</sup>.

Simple and effective actions, through compliance with specific protocols and the adoption of safety barriers in the care system, can prevent situations of risk and adverse events. In this direction, in 2015, the teaching hospital, research setting, adopted the Transfer Note (NT) - pre-established steps carried out by nurses before transfers - and the *Modified Early Warning Score* (MEWS) to assist in the communication and continuity of care among the health teams of patients transferred from the Adult Emergency Sector to other care areas of the institution. Actions to ensure care coordination and follow-up after transfer of patients contribute to user safety, ensure sequential health systems, promote improved care delivery, reduce costs and show an effective strategy for reducing adverse events<sup>(7)</sup>.

MEWS is a tool applied by health professionals to identify the clinical deterioration of unstable patients, and can be considered a safety barrier in care, besides being a subsidy for clinical judgment. The score is composed of five physiological parameters: systolic blood pressure, heart rate, respiratory rate, axillary temperature and level of consciousness. Any value above or below these parameters is scored between one and three points, increasing according to the severity of the total, ranging from zero to 14 points<sup>(8)</sup>. This tool is used to improve communication between teams during the transfer, adjusting the reassessment or intervention according to the result of the score that indicates the patient's severity.

In view of the exposed problem of effective communication as a strategy for patient safety, the following question is raised: Are the NT and the issuance of the MEWS in the Adult Emergency Service in the teaching hospital being carried out in accordance with the guidelines proposed by the institution?

An organizational culture based on strategies and actions with effective communication configurations will positively reflect the care processes and, consequently, the quality of services and patient safety. In this way, it will be possible to initiate health education actions within the scope of adherence to the use of tools, contribute to the reduction of mortality associated with serious adverse events during the transfer and improve the quality of care of patients.

The purpose of this article is to analyze the record of the Transfer Note and the issuance of the Modified Early Warning Score performed by the nurse in adult patients transferred from the Emergency Service as an effective communication strategy for patient safety.

## METHOD

This is a research from a monograph<sup>(9)</sup>, with a quantitative, cross-sectional and retrospective approach. A descriptive analysis was carried out. Data were collected from the electronic records of patients admitted to the Adult Emergency Service of a teaching hospital in the southern region of Brazil. The Service has 41 beds for the Clinical, Gynecological and Surgical specialties. It is a hospital for the care of patients of the Unified Health System (SUS) in situations that lead to immediate death or debilitation, obeying the organization of the Health Care Network (RAS). The study sample consisted of all adult patients transferred from the Emergency Service in 2017, totaling 8028 medical records.

All patients who needed to be transferred from the Emergency Service from January 1, 2017 to December 31, 2017 were included. Restricted records were excluded because they were unavailable for consultation.

The exit of the user, definitive or temporary, from the Emergency Service to other units of this institution is understood as a transfer. For the transfer of patients to the Ambulatory Surgical Center and Hemodynamics, nurses use a temporary NT script, which includes as basic items the neurological regulation, presence of vascular access, serum therapy, fasting, vital signs including oxygen saturation, allergies, MEWS and the patient's destination. For the transfer to the hospitalization units, the Intensive Care Unit (ICU) and the Surgical Block, the definitive NT script is used, adding, in addition to the aforementioned items, the presence of mechanical restraint, oxygenation, feeding and hydration, skin mucosal integrity, evaluative scale, physical activity and safety, scale of risk of falls, eliminations and presence of multiresistant germ. As to completeness, NTs were considered complete when all fields were filled and incomplete when there was no information.

Regarding the MEWS (Chart 1), the score is applied only prior to care transfers in conjunction with the NT script in electronic registration. If the MEWS score is up to four points, classified as unchanged, the patient only needs nursing technicians to accompany him during the transport, and in the case of a result equal to or greater than five points, classified as changed MEWS, the patient needs a multidisciplinary team of doctors and nurses to transport him/her.

Variables	Scores						
	3	2	1	0	1	2	3
Heart rate (bpm)		≤40	41-50	51-100	101-110	111-120	>120
Respiratory rate (rpm)		<9		9-14	15-20	21-29	≥30
Systolic blood pressure (mmHg)	≤ 70	71-80	81-100	101-199		≥200	
Level of consciousness				Alert	Confused	Pain response	Unconscious
Temperature (°C)		≤35		35.1-37.8		>37,8	

**Chart 1** – Modified Early Warning Score (MEWS)  
Source:<sup>(8)</sup>

In June 2015, the institution under study created the Indicator of Safety and Quality Assurance - Presence of the Transfer Note and the MEWS score in the medical records of adult patients transferred from the Emergency Service - to measure the use of the definitive and temporary NT

script, setting a target of 90% in the first year and 95% from the second-year post-implantation. For the MEWS emission, the targets were 85% and 90%, respectively<sup>(10)</sup>.

Approval was obtained from the Research Ethics Committee of the institution under CAEE: 74261317.6.0000.5327

and opinion number 2.316.852. The ethical aspects for human research in Resolution 466/2012 of the National Health Council were taken into consideration<sup>(11)</sup>.

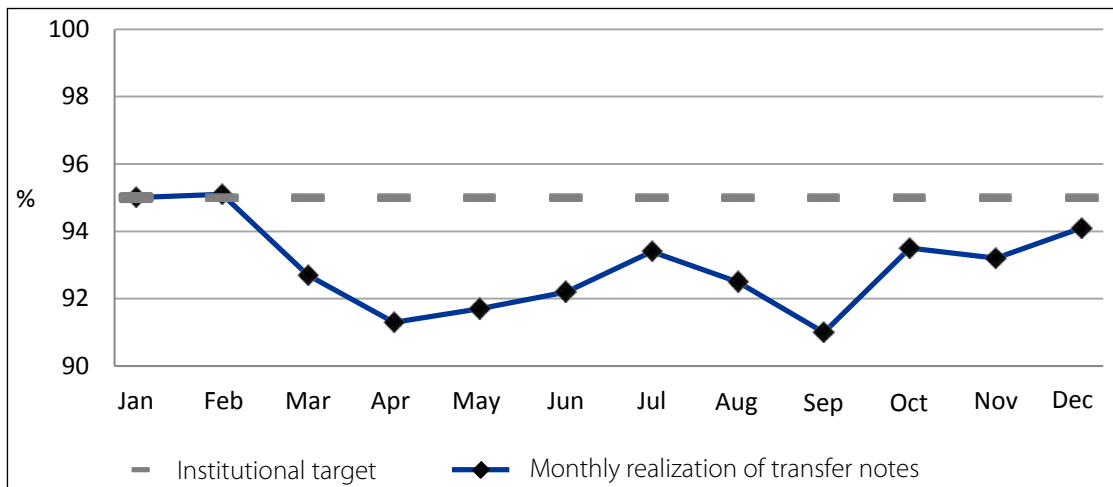
## RESULTS

In 2017, the Emergency Service under study served 30721 patients and 8028 (26.1%) of them required transfer. This service maintained an annual average bed occupancy rate (n=41) at 205.3%, ranging from 184.3% (lower in January) to 246.3% (higher in June).

In the evaluation of NT emission, it was evidenced that the Emergency Service reached the Institutional target

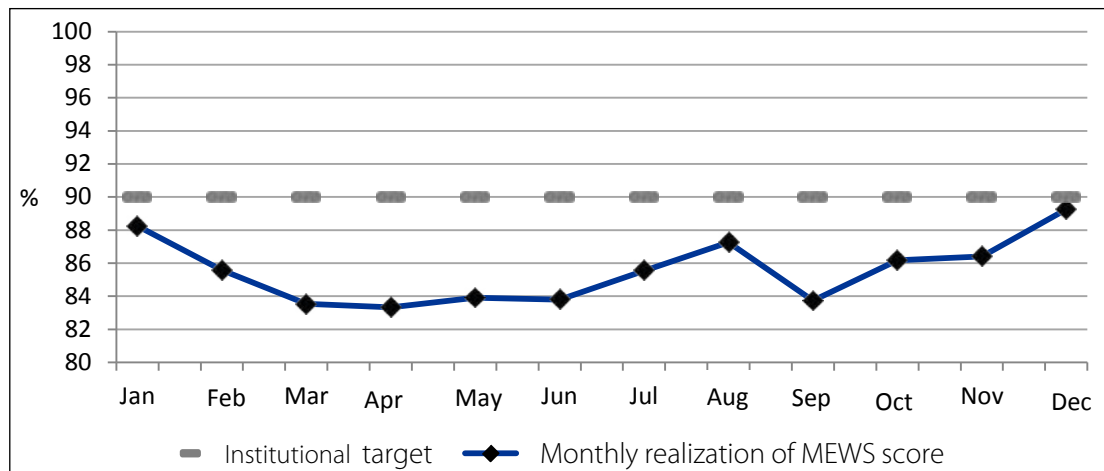
(95%) in January and February, below the target in the other months of that year (Figure 1). Regarding filling, 98.2% of NT were classified as complete because all fields were filled, and 1.8% were classified as incomplete because they lacked some information. Temporary NT issuance totaled 2.6%. The month of June had the lowest percentage of temporary transfers (1.65%) and November had the highest percentage (4.1%).

Regarding the issuance of MEWS, the institutional goal, which proposed 90% of the score in transferred adult patients, was not reached, January and December being the months in which the goal was closer to the target (Figure 2).



**Figure 1** - Realization of Transfer Note according to the month in medical records adult patients transferred (n=8028) from the Emergency Service, RS, 2017

Source: Research data, 2017.



**Figure 2** - MEWS achievement according to the month, in the medical records of adult patients transferred (n=8021\*) from the Emergency Service, RS, 2017

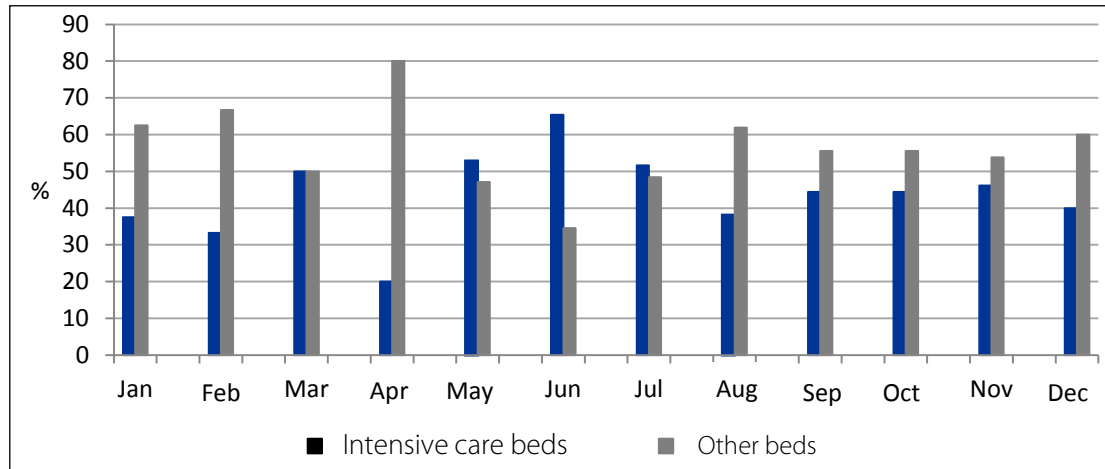
Source: Research data, 2017.

\*Seven medical records were unavailable for consultation.

Out of the 8021 patients transferred from the Emergency Department, 85.6% (n=6870) had their score measured. Out of these patients, 96.8% (n=6652) had unchanged MEWS.

Regarding the transfer destination, out of the 218 patients (3.2%) who had MEWS change ( $\geq 5$  points) (Figure 3),

there was a predominance of transfers to beds that were not specialized in Intensive Care in most months, except in May, June and July. In March, there was an equal percentage as to the destination of patients with MEWS change, i.e., 50% of the patients were transferred to Intensive Care beds and 50% to other beds.



**Figure 3** – Destination of Patients (n=218) with MEWS changes according to the month, in medical records of adult patients transferred from the Emergency Service, RS, 2017

Source: Research data, 2017.

## ■ DISCUSSION

It was found that the Emergency Service remained overcrowded throughout 2017, in which the average monthly occupancy rate exceeded double the capacity. In care settings, overcrowding can compromise care, generate work overload, and make it impossible for the severely ill patients to meet their immediate needs, leading to delays in interventions and increased mortality<sup>(8)</sup>.

The literature highlights the existence of risk of adverse events during the transfer of unstable patients, so it is imperative to create strategies so that the professional's error does not affect the patient, such as the implantation of Patients Transfer Protocols<sup>(3)</sup>. A study on intra-hospital transport revealed several clinical alterations that the patient may present during transportation, among them, increased heart rate, altered blood pressure, acute myocardial infarction, changes in respiratory rate, decreased oxygen saturation, obstruction of the airways by secretions, agitation, bleeding and even cardiorespiratory arrest<sup>(12)</sup>.

It is observed that the institutional goal for NT emission was only reached in the first two months of 2017, which, coincidentally, are the months with the lowest occupancy rates. However, the institution's Emergency Service remained close to the amount stipulated during

the year, ranging from 91% to 94%, indicating a good adhesion, given the occupation above capacity and the characteristics of this service, although the goal expected to be higher.

As for the difficulties of the nurse's adherence to the pre-established and standardized script, it is possible that they are related to the lack of computerization of NT in the institution under study, making the process time-consuming and subject to incomplete information.

However, the lack of essential data on arrival at the receiving unit leads to greater complications in the admission, stress of the professionals, as well as hindering the continuity of care<sup>(3)</sup>. Similarly, loss or lack of information during daily activities means inadequate mobilization of resources and personnel<sup>(12)</sup>.

The second International Patient Safety Goal advocates improved communication among health professionals. This goal aims at improving the effectiveness of communication among caregivers by ensuring that verbal information regarding patients is accurate and complete, as well as how to record such information, so that it occurs clearly and opportunely, without ambiguity, with the certainty of the correct understanding on the part of the receiver of the information, assuring a correct communication in the transference of the care<sup>(3)</sup>.

The use of standardized, clear and objective registers, preferably computerized ones, is considered one of the most effective ways to communicate effectively and accurately<sup>(3)</sup>. A study on the transport of critical patients showed that most of the adverse events were related to the lack of knowledge of the professional and the lack of communication between the team that transfers the user and the team that will receive him<sup>(12)</sup>. In this study, considering that there was a registry in most transfers, only a small contingent of patients transferred during 2017 lacked some information in their records. Considering the overcrowding of the Service and the need to have an agility in the transfer of services, this is considered an aspect to be improved.

In May one of the months with the highest occupancy rate in the Emergency Department, this percentage doubled its average value, reaching 4%. Patient safety is weakened when necessary patient information is not transferred<sup>(13)</sup>. Correct communication techniques, with pre-structured protocols, are the basis for the promotion of a patient safety culture. It is still important to highlight that the lack of communication presents the highest number of adverse events associated with the human factor<sup>(3)</sup>. However, it should be emphasized that this is an overcrowded emergency, where professionals develop their activities to double the capacity of patients, and it is necessary to list priorities in this service.

Regarding the temporary transfers, a low annual percentage was observed, where less than 3% were transfers to the Ambulatory Surgical Center and Hemodynamics for specialized examinations or procedures and returned to the Emergency Department. On the other hand, the definitive transference of the Emergency happened in most situations, which is considered positive and is consistent with the immediate and temporary care characteristic, expected from emergency units. Thus, the Emergency Service has generally functioned as a tertiary entry point for the Health Care Network, where users are stabilized and follow the care flow to the specific area, they need to continue their treatment.

In addition to transmitting the information correctly, it is important to assess whether the user has clinical conditions to perform the transfer. To this end, in addition to the indicator, the institution has instituted the Standard Operational Protocol (POP) for Emergency Care Transfer, which specifies in detail how each professional should act during the transfer of care, encompassing the nursing, medical and administrative staff. It also contains a flowchart capable of ordering care to the user, in case the latter presents altered MEWS<sup>(10)</sup>.

Using MEWS, it is possible to identify promptly the physiological worsening. Its main purpose is to intermedi-

ate the communication between the nursing and medical teams for early intervention, when the worsening of the patient's state becomes apparent in the scoreboard of this score. The use of this tool, before the in-hospital displacement, allows the identification of the worsening of the patient's health status, as well as helps in the clinical decision making by the team regarding the need for stabilization prior to transfer. When the transfer is necessary, even in the cases of modified MEWS, this should be conditioned to the accompaniment of trained multidisciplinary team<sup>(14)</sup>.

The average monthly percentage of completion of the MEWS prior to the transfers remained at a high level, above 80%, and it can be observed that in the months of January and December the institutional goal was approached. Although there was a decrease in the occupation rate in January, it was still not possible to reach the target set by the institutional indicator, which was 90%. This fact may be related to an underestimation of the importance of measurement as a barrier to reduce adverse events related to physiological decompensation during transport.

A study carried out in five wards of a General Hospital in the Netherlands showed a similar adherence to the MEWS protocol, approaching 89%, and the score was measured every morning. The most recurrent reasons for non-compliance were related to unmeasured vital signs, patients who were not in the unit at the time of measurement or were in palliative care<sup>(15)</sup>. In addition, the reality of other hospitals outside Brazil where the calculation is automatic and computerized is shown as a strategy for adherence of use in health institutions, in which the vital signs of the patient are checked routinely, and a result of the MEWS is generated automatically when vital signs are inserted into the system<sup>(16)</sup>. In addition, the MEWS sequential measurement is more useful than a single cross-sectional view, since the patient's frame can rapidly worsen by changing the parameters and summation of said Score<sup>(17)</sup>.

MEWS equal to four may be a predictor of clinical severity, mortality, the type of transport the patient needs and the use of ICU resources<sup>(8-16)</sup>. It is known that, daily, nursing is more closely related to the patient, being able to observe small changes in its clinical picture. In front-line positions, nurses are challenged by complex clinical situations that require skillful application of decision-making knowledge and appropriate action limits in order to avoid serious adverse events.

A study carried out with nurses at a hospital in Norway showed that after an education program on MEWS, the tool improved its ability to distinguish changes in the patient's condition and helped them in their clinical decision making, and that, when they found a score altered and the

need for intervention, gained greater credibility among the medical staff<sup>(18)</sup>.

A higher MEWS score correlates with a higher risk of in-hospital death, cardiorespiratory arrest (CRP), and physiological deterioration, which also correlates with the increased need for hospitalization in intensive care units and longer hospital stays<sup>(8-16)</sup>, and survival after cardiac arrest was associated with low MEWS values at hospital admission<sup>(15)</sup>.

Studies have shown an increase in ICU admissions for early identification of this need, as well as the decrease in deaths due to CRP after adherence to the protocol in health services, as well as evidence of benefits in identifying poor prognosis<sup>(8-16)</sup>. For the medical team, the calculated MEWS shows in real time, through the graph of observations, the clinical decline of the user, even when the patient is not at the bedside. For the nursing team, it has autonomy in its decisions, when the protocol for attendance to the altered MEWS is updated and implemented<sup>(18)</sup>.

Despite the benefits on the use of MEWS, 14.4% of patients transferred in 2017 at the institution under study were exposed to no identification of physiological degradation, with a higher risk of CRP and non-identification of bed needs, only because they did not have their MEWS Scores checked prior to leaving the Emergency.

The serious patient is threatened to have his clinical condition aggravated at any moment, needing specialized assistance, organized environment, with appropriate technology and resources. The use of the MEWS is an objective and rapid incentive for the identification of unstable patients in the emergency requiring a fast ICU admission because it was originally designed for the detection of critically ill patients at risk of catastrophic deterioration<sup>(14)</sup>. It was also demonstrated that the time spent in this Unit and hospitalization time was lower in critical patients transferred directly to the ICU when compared to those who stayed in nursing beds. A study of critical patients revealed that the MEWS value was greater than three over 72 hours prior to admission to the critical care unit and that this value increased 24 hours before death<sup>(8)</sup>.

Therefore, it is recommended that the user with MEWS greater than or equal to five should not be transferred, with the risk of not resisting transport, except when the transfer is to intensive care beds. In the present study, the mean monthly transfer rate of patients with altered MEWS was only 3.2%, and in June there was the highest percentage of the year (4.7%). occupation in the Emergency Service. This fact may be indicative of the need to transfer a larger number of patients to the usual beds of hospitalization due to overcrowding, even if they were with the score changed, which happened for most of the users in these conditions.

The lack of beds in the Intensive Care Unit, or even when the transfer is compulsory, as, for example, in cases where the user needs an urgent procedure or surgery or even when in palliative care, requires a conditional transfer the monitoring and/or release of specialized medical staff and activation of the Rapid Response Team (RRT). However, it is possible that this clinical instability causes an adverse event during transport, which reinforces the need for minimal clinical stabilization of the patient before its transfer, in order to protect its safety.

## ■ CONCLUSION

This study analyzed the use of NT and MEWS by the Emergency Service of a teaching institution in the South of Brazil in 2017. The results of adherence of more than 80% in relation to NT and MEWS, despite not achieving the institutional goals, show that these tools are part of the nurses' work and are in the process of systematizing their use.

Increased adherence to the application of NT and MEWS is envisaged in order to improve patient safety regarding improving effective communication and, consequently, reducing the possibility of occurrences of Adverse events. There is also a worsening of the results in the months with the highest occupancy rates, showing that overcrowding is a factor capable of weakening patient safety and quality of care.

The results found foster the need for discussions of the managers of the Emergency Service with the nursing team and the Risk Management Committee of the institution of the present study, in order to plan for continuous improvement actions focused on in-service education that can to revert in greater adhesion and also in the reformulation of assistance protocols, in order to be more in keeping with the institutional reality with a perspective of involvement of the care team.

Some limitations in this study deserve to be considered when interpreting their results. Among them, the intrinsic nature of secondary data is highlighted, and, in addition, there were some cases of transfers that could not be computed and analyzed because of medical records unavailable for consultation.

In addition, studies on MEWS prior to the transfers involve this interhospital modality, and usually the Score is not applied as an indicator for a reliable comparison with this study. In the hospital under study, the score is not used to its full potential, and if it were applied routinely it could be able to improve communication, decrease mortality rates, increase early admissions in intensive care, increase RRT drives, facilitate the identification of clinical deterioration and reduce adverse events.

Thus, the daily use of the MEWS, along with the measurement of vital signs and systematized automatic calculation, is suggested. Likewise, the standardization and computerization in the electronic medical record of the NT script can be a facilitator of the adherence to the tool by the nurses.

In order to have an impact on patient safety, regarding quality of care, effective communication and reduction of unexpected events in the transfer of care, NT and MEWS need to be widely implemented and used systematically by the teams from of care protocols.

It is recommended to incorporate these tools into good practices in favor of effective communication and the management of patient transfer in a secure manner in other care settings. Regarding health education, the importance of focusing on strategies to promote patient safety is reinforced by envisioning the potential of effective communication to ensure safe and quality patient care.

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