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Assessment of Pre-Alert Compliance with National Pre-Alert Guidelines for Pre-Alerted Patients to the Emergency Department: A Cross-Sectional Study at University Hospital Waterford, Ireland

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ABSTRACT:
Introduction: Emergency departments (ED) are notified by the ambulance clinicians before their arrival; this notification is called a "pre-alert". Studies have shown that pre-alerting EDs for patients requiring time critical treatment have shown to improve initiation of early treatment and patient outcomes. appropriate use of pre-alerts can help to improve patient care and outcome. This study was conducted to determine the compliance of pre-alerts with pre-alert guidelines.
Methodology: This was a cross-sectional study conducted in the ED of University Hospital Waterford and data for 71 pre-alerts was evaluated. Data was collected via a pre-existing proforma. All the pre-alerts were evaluated against National pre-alert guidelines to see whether they were rightly meeting the pre-alert criteria or were potentially inappropriately pre-alerted. IBM SPSS V.20 was used to analyse the data.
Results: In the study population 38(53.5%) were males and the mean age of the patient was 63.28±25.1 years. The most common reason for pre-alert to the ED was stroke accounting for 31% of the pre-alerts. 16.9% of the pre-alerts were for patients with breathing problems. Analysis showed that 62(87.3%) of the requests had one or more than one criterion meeting the standards for pre-alert and hence were rightly pre-alerted, while 9(12.7%) pre-alerts were not meeting any physiological or diagnostic criteria for pre-alert.
Conclusion: This study demonstrates overall good compliance with the majority of pre-alerts in keeping with guidelines. However, almost a quarter of pre-alerts were not meeting clinical or diagnostic criteria for pre-alerts research is required to ascertain the reasons behind these calls.

KEYWORDS: Pre-alert, Emergency department, Pre-hospital notification.

INTRODUCTION

Paramedics often give advance notice to emergency department (ED) staff about patients who might benefit from urgent care immediately upon arrival at the ED. This notification is called a "pre-alert". Pre-alerts allow the ED to prepare, gather appropriate staff and call other specialties that might be needed to provide timely care.[1-5] Studies have shown that pre-alerting EDs for patients requiring time critical treatment such as myocardial infarction and stroke have shown to improve initiation of early treatment and patient outcomes.[1,6-8]

There are various guidelines used for pre-alerting patients through-out the world such as the AACE/RCEM Guideline in the UK, and the PHECC National Pre-alert guideline in Ireland. However, there is still a lack of understanding on this subject and very limited work has been done to look at the compliance of paramedics to these guidelines for pre-alerting patients.[9-11] On one hand the appropriate use of pre-alerts can help to improve patient care and outcome, however overuse or inappropriate use of pre-alerts can cause harm to, or influence the care of, other critically ill patients by redirecting ED resources.[1,5,6,12] Inappropriate use of pre-alerts can also lead to "pre-alert fatigue" whereby ED clinicians pay less heed to pre-alerts over time, which can seriously hamper patient care and outcomes.[13]

The literature regarding pre-alert use and adherence to pre-alert guidelines in Ireland is limited, therefore we conducted this study to determine the patient characteristics associated with pre-alerts, as well as the proportion of pre-alerts which are in compliance with guidelines.

METHODOLOGY

This was a cross-sectional study conducted in the ED of University Hospital Waterford from 1st Dec 2023 to 28th Feb 2024. Data was collected for 71 pre-alert calls received in the ED during this period. Pre-alerts for inter hospital transfers were excluded. Data was collected via a pre-existing pro-forma containing variables regarding patient demographics such as age and gender, reason for pre-alert, patient's vital signs and time of pre-alert.

Patients were also segregated on the basis of age of the patient and time of the pre-alert. Patients' vital signs recorded on pre-alert were considered either normal or abnormal using National pre-alert guidelines.

All the pre-alerts were also evaluated against the PHECC National Pre-alert Guideline to see whether they were rightly meeting the pre-alert criteria or were potentially inappropriately pre-alerted. All ethical considerations were observed in the study and the study was conducted in accordance with declaration of Helsinki.

IBM SPSS V.20 was used to analyse the data. Quantitative Data was presented in mean and standard deviation and percentages were used for qualitative data.

RESULTS

In the study population 38(53.5%) were males and 33(46.5%) were females. The mean age of the patient was 63.28±25.1 years. When patients were segregated on the basis of age it was found that 47(66.2%) of the patients were above the age of 60 years followed by 10(14.1%) patients between ages of 41-60 years. Among the rest of the patients 9(12.7%) belonged to age range of 16-40 years and 5(7%) patients were 15 years or below.

The most common reason for pre-alert to the ED was stroke accounting for 31% of the pre-alerts. 16.9% of the pre-alerts were for patients with breathing problems. Presenting complaints for rest of the pre-alerted patients are presented in **table 1**.

Table 1: Reasons for pre-alerts

Diagnosis	Frequencies (N, %)
Stroke	22 (31)
Breathing problem	13 (18.3)
Major trauma	7 (9.9)
Sepsis	6 (8.5)
Limb injury	4 (5.6)
Seizure	4 (5.6)
Collapse	3 (4.2)
Toxicology	3 (4.2)
Bradyarrythmia	2 (2.8)
Tacyarrythmia	2 (2.8)
Chest pain	1 (1.4)
DKA	1 (1.4)
Hemorrhage	1 (1.4)
Head injury	1 (1.4)
Vomitting	1 (1.4)

On analysing patient's vital signs, it was found that 22(31%) of the pre-alerted patients had an abnormal heart rate, 14(19.7%) patients had oxygen saturation lower than 92%, abnormal blood pressure was recorded for 12(16.9%) pre-alerted patients, respiratory rate was recorded abnormal for 13(18.3%) patients and abnormal GCS was recorded in 10(14.1%) cases.

Almost half of the pre-alert requests were received between 8-16 hours (35, 49.3%), over a quarter were received between 16:01-22:00 hours (19, 26.8%) and the rest were between 22:01-07:59 hours (17, 23.95%).

When we evaluated the pre-alert requests against National pre-alert guideline it was found that 62(87.3%) of the requests had one or more than one criterion meeting the standards for pre-alert and hence were rightly pre-alerted, while 9(12.7%) pre-alerts were not meeting any physiological or diagnostic criteria for pre-alert as per National pre-alert guidelines and potentially did not need a pre-alert call. However, the guideline allows for pre-alert for clinician concern and so, we cannot say that those not meeting diagnostic and physiological criteria for pre-alert and were unnecessarily pre-alerted, although there was no mention of the particular clinical concern in any of patients' records.

DISCUSSION

Research has shown that pre-alert plays a crucial role in providing care to the patients requiring time critical treatment, however no local literature is available to assess the characteristics and influencing factors for pre-alerts. This is the only study in Ireland assessing patient's characteristics of pre-alert patients and also assessing adherence to the guidelines for pre-alerting patients by ambulance staff.

In our study we found that Stroke was the most common reason for pre-alerts, accounting for almost one third (32.4%), followed by respiratory problems (18.3%) and suspected sepsis (12.7%). Sampson et al1, in their review of UK ambulance data for pre-alerts, showed suspected sepsis as the most common condition to be pre-alerted accounting for 15% of the all pre-alerts followed by unspecified medical conditions 11.8% and acute stroke 10.4%. Covid-19, respiratory problems and lower respiratory tract infections made up a further 15.4% of pre-alerts in their study. These findings were similar to ours, however trauma accounted for only 2% of the pre-alerts in the Sampson et al1 study compared to 12.7% of the pre-alerts in our study. One reason could be that our study was a single centre study compared to Sampson et al1 which included multiple hospitals. Another potential explanation for these findings may be that UHW is the regional orthopaedic centre with bypass protocols in place for suspected neck of femur fractures.

There appears to be controversy in the literature regarding the use of pre-alerts with some studies reporting over pre-alerting and others reporting under pre-alerting. In our study we found that 12.7% of the pre-alerts were not meeting any physiological or diagnostic criteria to be pre-alerted as per guidelines. Shepard et al6 noted that 53% of the patients were pre-alerted for acute stroke but only 29% of the patients met the criteria to be pre-alerted. On the contrary James et al4 in their review of pre-hospital trauma notification calls observed that 28.1% of the patients were not pre-alerted and concluded that these patients were under-triaged. Both over and under alerting of the patients can be detrimental as it might lead to diversion of care from other patients and can also cause pre-alert fatigue as reported in previous studies.

CONCLUSION

This study demonstrates overall good compliance with the majority of pre-alerts in keeping with guidelines. However, almost a quarter of pre-alerts were not in keeping with guidelines and further research is required to ascertain the reasons behind these calls. It may be that the pre-hospital practitioners have concerns not captured by guidelines or that local factors such as ambulance offload times play a role.

LIMITATIONS

One of the limitations of the study was that it was a single centred study - a multi- study would perhaps generate more robust data. Another limitation was that we only analysed the data for pre-alerts received by the ED, hence we were not able to see if patients who should have been pre-alerted were not.

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