



# Urgent need for reform: addressing the inadequate emergency care for headache patients under the Manchester Triage System

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### Abstract

The Manchester Triage System (MTS) has made a significant impact on emergency care globally, effectively prioritizing patient care. Its widespread adoption has improved workflow and safety in emergency settings. However, it faces challenges in handling severe headaches, such as migraine and cluster headache, which require quick, decisive care.

MTS classifies urgency primarily based on symptoms, which can underestimate the severity of conditions like migraine, where symptoms are less apparent but critically debilitating. On the other hand, it can lead to misclassifications, where serious conditions are not given the priority they require, resulting in longer wait times and potentially worsening outcomes. For example, cluster headache, known for its extreme pain, may not receive immediate care, significantly affecting patient well-being.

Moreover, MTS often overlooks psychological factors associated with migraine sufferers, such as anxiety, which can exacerbate the condition because of a substantial wait for the patient to be seen by the physician. Thus, a more holistic approach is needed to assess these patients accurately. Given these challenges, refining the MTS to better recognize and prioritize patients with headache is crucial. In conclusion, while MTS has enhanced emergency care globally, its approach to headache emergencies needs careful reevaluation to ensure timely and effective treatment, reflecting the complex needs of these patients and improving overall emergency care outcomes.

### Keywords:

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In the dynamic and often overloaded emergency services environment, the Manchester Triage System plays a crucial role in saving lives and optimizing care. Initially developed at the Manchester Royal Infirmary in 1997, this innovative system enhances care in emergency departments, ensuring that patients needing immediate attention receive the required priority.

Since its implementation in Manchester, the Manchester Triage System has improved workflows and patient safety and set a global standard. Its effectiveness has led to its adoption as a standard protocol in numerous hospitals across the UK and beyond (1). From 2000 onwards, health institutions worldwide have implemented this system, covering various geographic and population realities. The global expansion of the Manchester Triage System underscores its value and effectiveness, turning it into an essential component of emergency services worldwide (1, 2).

The Manchester Triage System was developed to enable medical professionals and nurses to assign a clinical priority to patients in acute situations quickly (3). The Manchester Protocol relies on categories based on signs and symptoms. It includes 55 flowcharts (53 for routine situations and two for multiple casualty incidents) selected based on the patient's presented complaint. Each flowchart contains discriminators that guide the collection and analysis of information to determine the patient's clinical priority. All discriminators are clearly defined beforehand to ensure consistency in understanding and applying these principles.

Patients are categorized into five priorities, each identified by a number, name, color, and target time for initial medical observation. The triage system in the Manchester Triage System categorizes patient urgency into five levels: Level 1 is labeled 'Immediate' and is reserved for life-threatening conditions. Level 2, known as 'Very Urgent,' is for situations that could become life-threatening. Level 3, termed 'Urgent,' applies to cases that are not life-threatening. Level 4, Standard or 'Semi-urgent,' also includes non-life-threatening situations with slightly less urgency. Finally, Level 5 is 'Non-urgent' and is used for cases that require treatment when time permits.

This classification helps to streamline the process in emergency departments, ensuring that patients receive care in a timely manner based on the severity of their conditions.

The process functions as follows: initially, a triage nurse assesses the patient and categorizes them into one of the levels or colors based on the urgency of their condition. After this initial assessment, the patient is directed to wait in the waiting area. Their wait duration depends on the emergency department's current busyness and the number of patients with more severe conditions requiring

prioritized attention. The patient remains in the waiting room until a physician can evaluate their situation.

Table 1 displays the classification of patients into one of five priorities, based on number, name, color, and target time for initial medical observation:

Table 1. The classification of patients into one of five priority levels based on the number, name, color, and target time for initial medical observation in the emergency department

Priority	Name	Color	Target Time (Minutes)
1	Immediate	Red	0
2	Very Urgent	Orange	10
3	Urgent	Yellow	60
4	Less Urgent	Green	120
5	Non-Urgent	Blue	240

The situation observed in some institutions highlights a significant ethical discussion regarding treating patients with headaches in emergency settings. The use of the Manchester Triage System, which categorizes headache patients as "Less Urgent" with a target time of 120 minutes for care, may not adequately reflect the severity and urgency of underlying conditions in some cases. In practice, the Manchester Triage System operates as follows: Upon arrival at the emergency department (ED), the patient's primary symptom dictates the selection from one of flowcharts. A concise, structured questionnaire is then employed to ascertain additional symptoms and initial discriminators, such as the potential for life-threatening conditions, fever, hemorrhage, consciousness level, and the suddenness and severity of pain. The responses from this questionnaire are crucial in determining the priority level assigned to the patient (4). This approach might underestimate the complexity and potential risks associated with headaches, especially when the cause is a severe condition (5, 6).

Classifying headaches as less urgent could be perceived as an undervaluation of the patient's experience of pain, a symptom that is often debilitating. Respecting patient autonomy and promptly responding to their pain are fundamental principles in any medical treatment (7-9).

Up to 20% of headaches treated in emergencies may be symptoms of critical conditions such as intracranial hemorrhage, meningitis, cerebral venous thrombosis, carotid or vertebral dissection, or chronic subdural hematoma (5). Delays in diagnosing and treating these conditions can result in serious consequences, including risk of death.

This scenario underscores the importance of re-evaluating the triage systems used in emergencies to ensure they are sensitive to patients' individual needs and potential severities of conditions.

Health institutions should regularly review their triage



protocols to ensure that they meet patients' clinical needs and reflect the best medical practices and evidence. Ongoing training and education about the diversity of headache presentations and their possible critical causes are essential for emergency professionals. Developing and implementing clinical guidelines for the rapid treatment of potentially serious headaches in emergencies can help to prioritize these cases appropriately. Establishing feedback channels where professionals and patients can report concerns about the triage process can help identify areas for improvement. This debate highlights the need for a balance between operational efficiency and meticulous attention to patients' clinical needs, especially in high-pressure environments like medical emergencies.

Migraine patients not only suffer from intense physical pain but also face significant social discrimination. This condition, one of the most common and debilitating ailments of the modern era, often does not receive adequate attention from public health bodies and is undervalued by the general population. According to Parikh and Young (10), individuals with migraine experience both severe physical symptoms and profound social stigma. In workplace settings, for instance, they may be stigmatized and ridiculed by colleagues and superiors, who often minimize their suffering through insensitive remarks or tasteless jokes (11). This lack of understanding can lead to severe consequences such as job loss, lower wages, and unfair competition for promotions, which in turn increases stress and further exacerbates the condition (12).

Additionally, migraine is the primary diagnosis found in patients with headache seeking emergency care, accounting for of all emergency visits (5). Despite its prevalence and the acute episodes that many sufferers experience, the response in emergency settings often adds insult to injury. The standard triage systems, which may not prioritize migraine sufficiently, reflect a broader misunderstanding of its severity and impact. This inadequate prioritization can delay treatment, prolonging pain and potentially leading to worsened outcomes.

These challenges highlight the need for greater awareness and understanding of migraines in public health policy and society at large. Educational programs are urgently needed to foster a more compassionate and informed approach towards those suffering from this debilitating condition. Moreover, adjustments in emergency medical protocols and training for healthcare professionals can ensure that migraine patients receive timely and effective care, thereby mitigating the physical and psychological toll of this condition.

In Addition, managing patients with cluster headache in emergency settings highlights critical flaws in the healthcare system, underscoring an urgent need for reform in triage protocols and treatment responses. Cluster headache pain is often described as one of the most severe pains possible,

sometimes referred to as "suicide headaches" due to the unbearable intensity of pain that leads some patients to consider suicide during episodes.

It is unacceptable for patients with cluster headaches to wait up to 120 minutes for treatment, especially when effective treatments like oxygen therapy or subcutaneous sumatriptan could alleviate their pain within minutes. This delay prolongs unnecessary suffering and can exacerbate the patient's condition.

Cases where agitated and desperate patients are poorly managed to the point of requiring police intervention illustrate a serious lack of training and empathy on the part of the healthcare professionals involved. Training in proper pain management and emergency care protocols should be mandatory.

The dilemma over whether a neurologist or a general practitioner should attend to these patients during crises in the emergency room reveals a significant gap in hospital on-call systems because no one wants to care for such patients. Clear guidelines can result in adequate or timely treatment.

Migraine patients often are discharged from the emergency department without a prescription for preventive medications, which are crucial for preventing future crises. This demonstrates a failure in continuity of care and long-term pain management planning. The challenge of scheduling appointments with neurologists through health insurance plans, especially when the complaint is a headache, perpetuates a cycle of recurrent emergency visits, reflecting an inefficiency in the healthcare system to provide continuous and specialized care.

It is alarming that a significant portion of headache patients give up after being admitted to the emergency department seeking treatment due to long waits, and this is seen as a positive outcome by emergency department coordination. Such a situation highlights deficiencies in the humanization and efficiency of the services provided.

García-Azorín and colleagues (13) conducted a study involving a series of consecutive patients who visited the emergency department with headache and presented some warning signs, defined as the presence of signs that led the physician to request an emergency neuroimaging study or evaluation by the on-call neurologist. The Manchester Triage System level assigned was evaluated, and warning signs were found that could imply a higher level than that assigned. During the study period, 1,120 emergency department visits for headache were recorded, and 248 patients (22.8%) were eligible for inclusion. Secondary headache was diagnosed in 126 cases (50.8% of the sample; 11.2% of the total), with 60 instances presenting high-risk secondary headache (24.2%; 5.4%). According to The Manchester Triage System, two patients



were classified as immediate (0.8%), 26 as very urgent (10.5%), 147 as urgent (59.3%), 68 as normal (27.4%), and five as non-urgent (2%). The percentage of patients undertriaged was 85.1% at the very urgent classification level and 23.3% at the urgent level. This study highlights a significant discrepancy between the assigned triage levels and the warning signs presented by patients, suggesting a need for review and possible adjustment of triage criteria used for headache patients in emergency departments (13).

Brigo and colleagues (14) evaluated the effectiveness of the Manchester Triage System in prioritizing non-traumatic headache patients in emergency departments. They assessed how The Manchester Triage System levels matched with severe neurological conditions requiring immediate care, such as ischemic or hemorrhagic strokes and central nervous system infections. Undertriage was defined as severe, urgent cases receiving lower urgency Manchester Triage System codes (green/yellow). Over 30 months, 3,002 headache triage assessments were conducted, making up 1.7% of all emergency department visits, with 2.3% diagnosed with severe neurological conditions. The Manchester Triage System showed good prioritization accuracy, with a ROC curve area of 0.734 (95% CI 0.668-0.799). The system's sensitivity for urgent conditions was 79.4% (95% CI 74.5-84.3), and specificity was 54.1% (95% CI 52.9-55.3). Incorrect triage predictions occurred in 6.3% of cases. The study concluded that while The Manchester Triage System is generally effective for prioritizing non-traumatic headache patients, it could benefit from refinements to better handle complex symptoms and accurately identify serious conditions (14).

Another study (6) evaluating the efficacy of the Manchester Triage System found that during the study period, at least one in ten patients visiting the emergency department for headaches was diagnosed with a secondary headache, and one in twenty had a high-risk secondary headache. The study concluded that The Manchester Triage System is frequently undertreated patients, particularly those with warning signs indicative of a potential emergency. This finding underscores the need for improvements in triage practices to better detect and prioritize patients with serious health risks (6).

The Manchester protocol is recognized as an effective tool for identifying patients requiring critical care upon their arrival at emergency services (15). According to the risk assessment by the Manchester protocol, 67% of patients who were eventually admitted to critical care areas had been classified as red or orange at their initial evaluation (16). However, the protocol has limitations in detecting patients whose conditions deteriorate after the initial risk classification (16). This finding highlights the importance of continuous reassessment of patients following their initial classification, ensuring they receive the necessary treatment as soon as their condition requires it (15). This

constant monitoring is crucial to addressing changes in patient conditions and ensuring timely intervention.

Severe pain is a parameter used to classify a patient as orange, and moderate pain as yellow within the triage system (17). However, it raises the question of whether headache pain is adequately considered within this framework. On a scale from 0 to 10 for headaches, pain levels are considered severe, while are deemed moderate. This differentiation is crucial in ensuring that severe headaches are appropriately prioritized in the emergency setting.

This situation is a serious indication that changes are necessary to ensure that patients with headaches, especially those with cluster headaches, receive ethical, prompt, and effective care. It is imperative that hospitals review and adjust their protocols and invest in training their professionals to improve the quality of care and ensure that patient rights are respected. The adoption of evidence-based practices and improvements in care coordination are essential to address these systemic deficiencies.

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