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REVIEW

Efficacy of the Manchester Triage System: a systematic review



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ABSTRACT

Introduction: The growing number of patients in emergency departments can lead to overcrowding, often adding to organisational problems. Triage aims to predict the severity of disease, with the aim of organising patient flow. The aim of this study was to analyse the efficacy of the Manchester Triage System (MTS) for risk classification of patients.

Methods: A systematic review of the literature in Ebscohost, Pubmed and Scielo (2002–2013) was undertaken. Articles were selected independently by two researchers using selection criteria. Twenty-two articles were selected for inclusion in this review.

Results: The results support the applicability of the MTS, which has proven validity for use in children, adults, patients with coronary syndrome and patients with acute pulmonary embolism. The MTS was found to be inclusive, and to predict emergency department admission and death in the short term.

Conclusion: The majority of studies found that the MTS was useful in triage of patients in emergency departments, but sub-triage and super-triage (i.e. under and over classification of severity, respectively) still occur.

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1. Introduction

Globally, the number of patients presenting to emergency departments with a wide variety of problems, ranging from high clinical severity to minor injuries, is increasing (Bittencourt and Hortale, 2009). This may lead to overcrowding in emergency departments which often have other organisational problems, such as assisting patients based on order of arrival as opposed to the severity of their medical conditional (Souza et al., 2011).

Triage has emerged as a method to optimise attendance, and to minimise the damage caused by overcrowding, by identifying patients who need immediate care. Patients are classified according to clinical severity, level of suffering and risk to their own health. In this way, triage is defined as a dynamic process of patient clas-

sification that allows patients to be allocated to the most suitable service for faster treatment (Ganley and Gloster, 2011).

Triage scales predict disease severity, mortality rate and required resources, and should be easily understood, applicable and have high interobserver agreement (Christ et al., 2010).

Worldwide, various triage scales are used in emergency departments due to functional differences in services. There is a need for a uniform triage scale that is suitable for all services (Christ et al., 2010). There is no infallible measurement instrument, as measurement errors can arise due to personal factors, environmental situations, changes in the method of data collection and cultural adaptation processes (Souza et al., 2011).

The Manchester Triage System (MTS) is a classification system of priority and risk prediction for patients seeking emergency care, widely used in the European Union (Cooke and Jinks, 1999; Storm-Versloot et al., 2011). It aims to standardise the service, providing support and emplacement to decision-making when a patient enters the health service, such that patients are seen in order of

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Table 1
Inclusion and exclusion criteria of articles.

Inclusion	Exclusion
1-studies published in Portuguese, Spanish or English;	1-congresses and conferences abstracts;
2-studies published in the last ten years;	2-unpublished studies and theses;
3-studies that consider at least a variable related to implementation, evaluation or characterization of the Manchester Triage System;	3-studies that do not address the STM as the main focus of the work and do not respond to the research question.
4-studies who had as a research subject patients or records of risk classification or STM own.	

severity of their clinical condition rather than order of arrival at the emergency department (Storm-Versloot et al., 2011).

The MTS has a list of 52 pre-defined conditions or presentation flowcharts that are combined with the main complaint reported by the patient and recorded on a form by a nurse. Classification is divided into five colours: red (immediate), orange (very urgent), yellow (urgent), green (standard) and blue (non-urgent) (Speake et al., 2003).

Although theoretical and systematised perspectives have addressed the use of the MTS in emergency departments, it is extremely relevant to identify and analyse the scientific publications on the topic, as the MTS has been introduced into practice relatively recently. This will improve understanding of this triage system, and demonstrate the scientific indications for its implementation in different social contexts.

As such, the aim of this study was to assess the efficacy of the MTS for the risk classification of patients, and to describe and analyse its use in relevant articles identified.

2. Methods

Systematic reviews involve synthesis of the research related to a specific issue, and frequently involve the efficacy of an intervention (Sampaio and Mancini, 2007). This review aimed to reduce the risk of bias by using a rigorous search methodology for study selection, and evaluating the relevance and validity of the research, collection, synthesis and interpretation of data from the surveys (Galvão et al., 2004).

This systematic review assessed the level of evidence of each study in accordance with Sampaio and Mancini (2007): I, systematic review of randomised controlled trials with or without meta-analysis; II, randomized controlled trial; III, cohort study; IV, case-control study; V, quasi-experimental study; VI, descriptive study; VII, single case study or case series; and VIII, expert opinion or case report. Starting from the analysis of theoretical assumptions and defining efficacy as the ability of care, at its best, to improve health (Donabedian, 1990), the following research question was asked: "What is the efficacy of the MTS for risk identification in patients seeking a hospital urgency/emergency service?" Table 1 shows the inclusion and exclusion criteria for articles in this review.

On 29 January 2013, Pubmed, Scielo and Ebscohost were searched for relevant articles. Ebscohost includes the following databases:

Table 2
Distribution of keywords for database.

Palavra-Chave	Ebsco	Pubmed	Scielo
"Manchester Protocol" OR "Manchester system" OR "Manchester Triage"	98	70	3
"Manchester Protocol" OR "Manchester system" OR "Manchester Triage" AND "Triage"	98	55	02
"Manchester protocol" OR "Manchester System" OR "Manchester Triage" AND "risk assessment"	26	04	00
"Manchester protocol" OR "Manchester System" OR "Manchester Triage" AND "emergency service"	62	35	01
"Manchester Protocol" OR "Manchester system" OR "Manchester Triage" AND "triage" AND "risk assessment"	26	02	00
"Manchester Protocol" OR "Manchester system" OR "Manchester Triage" AND "triage" AND "emergency service"	62	34	01
"Manchester protocol" OR "Manchester System" OR "Manchester Triage" AND "risk assessment" AND "emergency service"	24	02	00
"Manchester Protocol" OR "Manchester system" OR "Manchester Triage" AND "triage" AND "risk assessment" AND "emergency service"	24	01	00

CINAHL Plus with Full Text, Database of Abstracts of Reviews of Effects, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, Cochrane Methodology Register, Library, Information Science Technology Abstracts, Nursing and Allied Health Collection: Comprehensive, Health Technology Assessments, MedicLatina, Academic Search Complete, NHS Economic Evaluation Database, Regional Business News, ERIC and Business Source Complete. This search was performed by two researchers who identified the same number of articles.

Scientific articles published between 1 January 2002 and the date of the survey (29 January 2013) were eligible for inclusion in this review. The researchers chose to review articles published only within the last 10 years as part of the selection criteria because it limits the studies to a specific time period. In order to identify relevant studies for inclusion in the review, a set of synonyms and related terms were used to restrict the search and meet the study objectives. The combinations of keywords used by both researchers in each database and the search results are shown in Table 2.

Initially, articles were selected independently by two researchers after reading the article titles. Disagreements between researchers were resolved by consensus. In total, 56 articles were selected using Inclusion Criteria 1 and 2, and Exclusion Criteria 1 and 2.

The abstracts of these 56 articles were read, with 28 articles selected by one investigator and 25 articles selected by the other investigator. Eleven of these studies were not selected by both reviewers, and following discussion, eight were withdrawn and three were retained. As such, 27 studies were selected using Inclusion Criteria 3 and 4, and Exclusion Criterion 3.

Information that was not clearly described in the abstract was obtained by reading the full article. Articles were retained or excluded based on consensus between the two reviewers using Inclusion Criterion 4. Ultimately, 22 articles related to the research question were included in this review.

For data analysis, articles were read repeatedly, and the most relevant elements of each study were extracted, namely: author(s), country of publication, study design, sample characterisation, level of evidence and conclusion (Table 2).

3. Results

Table 3 summarises the study details (author, year of publication and country) and levels of evidence of the articles in this review.

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