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ORIGINAL ARTICLE

CLARIPED: a new tool for risk classification in pediatric emergencies

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KEYWORDS
Triage;
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Abstract
Objective: To present a new pediatric risk classification tool, CLARIPED, and describe its development steps.
Methods: Development steps: (i) first round of discussion among experts, first prototype; (ii) pre-test of reliability, 36 hypothetical cases; (iii) second round of discussion to perform adjustments; (iv) team training; (v) pre-test with patients in real time; (vi) third round of discussion to perform new adjustments; (vii) final pre-test of validity (20% of medical treatments in five days).
Results: CLARIPED features five urgency categories: Red (Emergency), Orange (very urgent), Yellow (urgent), Green (little urgent) and Blue (not urgent). The first classification step includes the measurement of four vital signs (VIPE score); the second step consists in the urgency discrimination assessment. Each step results in assigning a color, selecting the most urgent one for the final classification. Each color corresponds to a maximum waiting time for medical care and referral to the most appropriate physical area for the patient's clinical condition. The interobserver agreement was substantial (kappa=0.79) and the final pre-test, with 82 medical treatments, showed good correlation between the proportion of patients in each urgency category and the number of used resources (p<0.001).
Conclusions: CLARIPED is an objective and easy-to-use tool for simple risk classification, of which pre-tests suggest good reliability and validity. Larger-scale studies on its validity and reliability in different health contexts are ongoing and can contribute to the implementation of a nationwide pediatric risk classification system.
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PALAVRAS-CHAVE
Triagem;
Serviços médicos de emergência;
Pediatria

CLARIPED: um novo instrumento para classificação de risco em emergências pediátricas

Resumo
Objetivo: Apresentar um novo instrumento de classificação de risco pediátrico, o CLARIPED, e descrever as etapas de seu desenvolvimento.
Métodos: Etapas do desenvolvimento: (i) primeira rodada de discussão entre especialistas, primeiro protótipo; (ii) pré-teste de confiabilidade, 36 casos hipotéticos; (iii) segunda rodada de discussão para ajustes; (iv) treinamento da equipe; (v) pré-teste com pacientes em tempo real; (vi) terceira rodada de discussão para novos ajustes; (vii) pré-teste final de validade (20% dos atendimentos de cinco dias).
Resultados: O CLARIPED apresenta cinco categorias de urgência: Vermelha (emergência), Laranja (muito urgente), Amarela (urgente), Verde (pouco urgente) e Azul (sem urgência). A primeira etapa da classificação inclui a aferição de quatro sinais vitais (escore VIPE); a segunda etapa consiste na avaliação de discriminadores de urgência. Cada etapa resulta na atribuição de uma cor, selecionando-se a de maior urgência para a classificação final. Cada cor corresponde a um tempo máximo de espera pelo atendimento médico e ao encaminhamento à área física mais adequada à condição clínica do paciente. A concordância interobservador foi substancial (*kappa*=0,79) e o pré-teste final, com 82 atendimentos, evidenciou boa correlação entre a proporção de pacientes em cada categoria de urgência e o número de recursos usados (p<0,001).
Conclusões: O CLARIPED é um instrumento para classificação de risco simples, objetivo e de fácil uso, cujos pré-testes sugerem boa confiabilidade e validade. Estudos em maior escala sobre sua validade e confiabilidade em diferentes contextos de saúde estão em curso e podem contribuir para a adoção de um sistema de classificação de risco pediátrico em âmbito nacional.
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Introduction

In the last two decades, a major challenge in health care has been to find solutions to the increased overcrowding in emergency service hospitals. One of the strategies adopted in many countries to deal with this problem was the implementation of triage systems used to classify each patient's degree of clinical urgency shortly after his/her arrival to the Emergency Department (ED), establishing a waiting list based on clinical risk, and not in order of arrival, to undergo medical evaluation and treatment.

The Australian Triage Scale (ATS), Canadian Triage & Acuity Scale (CTAS), Manchester Triage System (MTS), and Emergency Severity Index (ESI) are the tools for triage in emergency services most used worldwide, all with five levels of urgency.[1,2]

In Brazil, the risk classification system developed by the Ministry of Health in the Qualisus Program has only four emergency categories, does not address the pediatric group peculiarities, and has not achieved significant national adherence.[3,4] On the other hand, those developed in Europe, North America, and Australia are complex, which hinders large-scale adoption in a heterogeneous health context as the Brazilian. Moreover, there are insufficient literature on the validity and reliability of the pediatric versions of these triage systems.

The aim of this study is to present a new risk classification tool, the CLARIPED, for pediatric emergencies and describe the steps of its development. The intent is to obtain a reliable and valid tool that is best suited to the Brazilian health context.

Method

The development of the CLARIPED tool was performed in seven steps: (i) meetings of experts to discuss the new instrument up to the proposal of a prototype (first half 2013); (ii) first pre-test, with the prototype application in 36 hypothetical cases, submitted to 9 professionals of the emergency service after 3h of training (August 2013) and evaluation of the agreement among them (kappa-statistic measure); (iii) new round of discussions on the results of the first pre-test, which yielded changes in the prototype; (iv) new training of triage professionals, with supervision and discussion of real cases by a specialist (September 2013); (v) second pre-test performed in real time with the participation of all triage team, using the second prototype after obtaining written informed consent from all guardians (October and November 2013); (vi) new round of discussions and the final version presentation with the incorporation of the proposed modifications; (vii) final pre-test to evaluate the association between emergency categories and a proxy outcome of urgency (number of resources used); for such, the final CLARIPED version was applied retrospectively in a systematic sample of 20% of cases attended in five days of December 2013; urgency levels were compared with the number of diagnostic and/or therapeutic resources used; triage and clinical data were obtained through medical

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