



## REVIEW ARTICLE

# Is this child sick? Usefulness of the Pediatric Assessment Triangle in emergency settings<sup>☆</sup>

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**KEYWORDS**

Pediatric Assessment Triangle;  
Pediatric assessment;  
Pediatric emergency department

**Abstract**

**Objective:** The Pediatric Assessment Triangle is a rapid assessment tool that uses only visual and auditory clues, requires no equipment, and takes 30–60 s to perform. It's being used internationally in different emergency settings, but few studies have assessed its performance. The aim of this narrative biomedical review is to summarize the literature available regarding the usefulness of the Pediatric Assessment Triangle in clinical practice.

**Sources:** The authors carried out a non-systematic review in the PubMed<sup>®</sup>, MEDLINE<sup>®</sup>, and EMBASE<sup>®</sup> databases, searching for articles published between 1999–2016 using the keywords “pediatric assessment triangle,” “pediatric triage,” “pediatric assessment tools,” and “pediatric emergency department.”

**Summary of the findings:** The Pediatric Assessment Triangle has demonstrated itself to be useful to assess sick children in the prehospital setting and make transport decisions. It has been incorporated, as an essential instrument for assessing sick children, into different life support courses, although little has been written about the effectiveness of teaching it. Little has been published about the performance of this tool in the initial evaluation in the emergency department. In the emergency department, the Pediatric Assessment Triangle is useful to identify the children at triage who require more urgent care. Recent studies have assessed and proved its efficacy to also identify those patients having more serious health conditions who are eventually admitted to the hospital.

**Conclusions:** The Pediatric Assessment Triangle is quickly spreading internationally and its clinical applicability is very promising. Nevertheless, it is imperative to promote research for clinical validation, especially for clinical use by emergency pediatricians and physicians.

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**PALAVRAS-CHAVE**

Triângulo de Avaliação Pediátrica; Avaliação pediátrica; Departamento de emergência pediátrica

**Esta criança está doente? Utilidade do Triângulo de Avaliação Pediátrica nas configurações de emergência****Resumo**

**Objetivo:** O Triângulo de Avaliação Pediátrica é uma ferramenta de avaliação rápida que utiliza apenas pistas visuais e auditivas, não necessita de equipamentos e leva de 30-60 segundos para realização. Ele tem sido utilizado internacionalmente em diferentes configurações de emergência, porém poucos estudos avaliaram seu desempenho. O objetivo dessa análise biomédica narrativa é resumir a literatura disponível com relação à utilidade do Triângulo de Avaliação Pediátrica na prática clínica.

**Fontes:** Realizamos uma análise não sistemática nas bases de dados do PubMed®, MEDLINE® e EMBASE® buscando artigos publicados entre 1999-2016 utilizando as palavras-chave “triângulo de avaliação pediátrica”, “triângulo pediátrico”, “ferramentas de avaliação pediátrica” e “departamento de emergência pediátrica”.

**Resumo dos achados:** O Triângulo de Avaliação Pediátrica demonstrou ser útil na avaliação de crianças doentes na configuração pré-hospitalar e na tomada de decisões de transporte. Ele foi incorporado, como um instrumento essencial na avaliação de crianças doentes, em diferentes cursos de suporte de vida, apesar de pouco ter sido escrito sobre a eficácia de ensino do Triângulo de Avaliação Pediátrica. Pouco foi publicado sobre o desempenho do Triângulo de Avaliação Pediátrica na avaliação inicial no departamento de emergência (DE). No DE, o Triângulo de Avaliação Pediátrica é útil para identificar, na triagem, crianças que exigem cuidado mais urgente. Estudos recentes avaliaram e provaram a eficácia do Triângulo de Avaliação Pediátrica também na identificação dos pacientes com doenças de saúde mais graves e, eventualmente, são internados no hospital.

**Conclusões:** O Triângulo de Avaliação Pediátrica está se difundindo rapidamente de forma internacional e sua aplicabilidade clínica é muito promissora. Contudo, é essencial promover pesquisa para validação clínica, principalmente para o uso clínico por pediatras e médicos de emergência.

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**Introduction**

Is this child sick? Should I begin any emergency intervention? Any provider should be able to answer quickly these questions whenever the provider comes in front of a child seeking for urgent medical attention (in the prehospital setting or emergency department [ED]).

Every day, thousands of children are brought to different emergency settings worldwide. Children account for about one-fourth of the visits to hospital EDs in the United States, and around 30 million children are assessed by general practitioners or pediatricians annually.<sup>1</sup> Infants younger than 12 months are the age group with the highest *per capita* rate of visits to the ED (91.3 per 100 infants in 2005). In the prehospital setting, 10% to 13% of ambulance transports are for children.<sup>2</sup> In Europe, in the UK, 25–30% of all Accident and Emergency attendances are children.<sup>3</sup>

In pediatric emergency medicine, stabilizing the patient must be performed before establishing a diagnosis; a problem solving approach is required. It is, therefore, essential to have a tool that allows a rapid initial assessment and identifies the problem that must be solved. Unfortunately, initial assessment of a critically ill or injured child is often difficult, even for the experienced clinician. Physical examination and vital signs assessment, the cornerstone of the adult assessment, may be compromised with a hands-on evaluation. Initial assessment of the child presenting to emergency should ideally be *via* an “across the room” assessment.<sup>4</sup>

**The Pediatric Assessment Triangle: definition**

In 2000, the American Academy of Pediatrics (AAP) published the first national pediatric educational program for prehospital providers, which introduced a new rapid assessment tool, called the Pediatric Assessment Triangle (PAT). The PAT is not a diagnostic tool, it was designed to enable the provider to articulate formally a general impression of the child, establish the severity of the presentation and category of pathophysiology, and determine the type and urgency of intervention.<sup>5</sup> The PAT somehow summarizes “gut feeling” findings, and promotes consistent communication among medical professionals about the child’s physiological status.

Intended for use in rapid assessment, the PAT uses only visual and auditory clues, requires no equipment, and takes 30–60s to perform. The three components of the PAT are appearance, work of breathing, and circulation to the skin (Fig. 1). Each component of the PAT is evaluated separately, using specific predefined physical, visual, or auditory findings. If the clinician detects an abnormal finding, the corresponding component is, by definition, abnormal. Together, the three components of the PAT reflect the child’s overall physiologic status, or the child’s general state of oxygenation, ventilation, perfusion, and brain function.<sup>2</sup>

Appearance is the most important component when determining how severe the illness or injury is, the need

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