

Canadian Paediatric Triage and Acuity Scale: Implementation Guidelines for Emergency Departments

1. Introduction and Background

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What is Triage and why do we do it? What is a Triage and Acuity Scale? Triage in the simplest terms, is the sorting or prioritizing of items (e.g., clients, patients, tasks). Some form of triage has been in place, formally or informally since the first emergency department (ED) opened. In some instances triage occurs during the registration process and, in others, specifically trained health care providers perform triage after registration.

The *Canadian Emergency Department Triage and Acuity Scale: Implementation Guidelines* (CTAS) were introduced to assist Canadian health care workers with the process of ED triage. Specific issues and concerns were identified regarding their applicability to the paediatric population. This supplement was developed as a partner document to the CTAS guidelines to facilitate the triage of children. The original style and format have been maintained and there are no substantive differences from the original CTAS guidelines. Specific differences reflect the circumstances and unique conditions of children.

Efficient ED management requires a team of providers capable of correctly identifying patients' needs, setting priorities, and implementing appropriate treatment, investigation and disposition. Throughout childhood there are changes in size, development, normal physiologic parameters and significance of presenting symptom complexes. Each child must be triaged with age, developmental stage and acuity in mind. Family dynamics, cultural and social variables are also important considerations that influence triage decisions.

The Canadian ED triage and acuity instrument attempts to define patients' needs for timely care and helps EDs to evaluate their acuity level, resource needs and performance relative to specific operating "objectives." Three important concepts were considered in the design of this scale: utility, relevance and validity.

The *Canadian Paediatric Triage and Acuity Scale: Implementation Guidelines for Emergency Departments* (PaedCTAS) were developed to facilitate application of the CTAS to children. This process requires that paramedics or triage personnel carry out a 3-step assessment:

- initial impression of illness severity
- evaluation of the presenting complaint
- assessment of behaviour and age-related physiological measurements.

Patients may be assigned to Level I (Resuscitation) or Level II (Emergent) categories after a limited assessment; however, patients assigned to lower triage categories should undergo a full triage evaluation to avoid missing subtle presentations of serious illness, particularly in infants.

Community demographics, cultural differences, disease patterns and health care resources (e.g., walk-in clinics, emergency medical services [EMS] support, transfer agreements) will influence the case mix seen at any given hospital or health care centre. The mix of patients in each triage and acuity level will be the fingerprint of that individual ED.

Operational objectives

The primary operational objective of the triage scale relates to time to see a physician. This is because most decisions about investigation and treatment occur after a physician has examined the patient or has the preliminary information necessary to recommend a course of action.

Time objectives (see Table 1)

The PaedCTAS suggested time responses are ideals (objectives) and not standards. Whenever possible, suggested time responses were based on the need for timely interventions that improve outcomes (e.g., endotracheal intubation for respiratory failure, bronchodilators for acute severe asthma, intravenous fluids and antibiotics for septic shock). In all cases, however, suggested time responses are patient focused; they are what most of us would want for our own children. The validity of these time objectives is uncertain. The effect of time delays on relevant outcomes is not always clear, and it must be understood that important differences in patient outcome may only be detected in studies that evaluate treatment effects in very large patient samples. There is a need for more research on the effect time delays have on patient outcomes, and future CTAS revisions will consider these data.

Table 1. Suggested time goals, fractile response rates and admission rates, by triage level

	Triage level				
	I	II	III	IV	V
Time to medical care	Immediate	15 min	30 min	60 min	120 min
Fractile response	98%	95%	90%	85%	80%
Admission rates	70–90%	40–70%	20–40%	10–20%	0–10%

Several factors will influence a centre's ability to meet suggested time goals. These factors include bed availability, diagnostic and therapeutic resources, adequacy of staffing, system design (i.e., physical layout, computerization), efficiency of care processes (e.g., use of guidelines and protocols), ability to transfer patients, and the extent of overcrowding.

Recognizing that demand for care varies widely and that "ideals" cannot always be achieved without unlimited resources, each triage level is given a "fractile" response objective. The 95% fractile response objective for Level II patients means that, while Level II patients should ideally be seen within 15 minutes, this may only occur 95% of the time. There are many practical reasons this might occur. For example, several high acuity patients could arrive simultaneously. Consequently, centres that occasionally make Level II patients wait 30 minutes or more may still be in compliance with the fractile response objective. Although Level V patients have been given a time response objective of 2 hours, the fractile of 80% means that patients may wait over 6 hours on occasion.

Most paediatric patients present with easily identified symptom complexes (e.g., fever, wheezing, diarrhea with or without vomiting). Rapid appropriate response to a defined symptom complex can be based on well-designed advanced medical directives and patient care plans. A protocol-based approach enables triage staff to initiate care and will help ensure that paediatric patients receive timely appropriate intervention. This is particularly true in medically underserved areas, but also in busy EDs where prolonged waits for physician attention are common. Care plans and protocols may help hospitals and health care centres meet suggested CTAS time goals.

Fractile response

The fractile response is a way of describing how often a system operates within its stated objectives. A "fractile response" is the proportion of patient visits for a given triage level where the patients were seen within the CTAS time frame defined for that level. For example if 85% of Level III patients were seen by the physician within 30 minutes in the previous month, then the fractile response for that institution over that time period would be "85%."

Fractile response does not deal with whether the absolute delay for an individual patient is reasonable or acceptable.

Fractile response data may be used in a number of ways. Ongoing inability to meet operating objectives implies a need for changes in the process of care, system design or sometimes reconsideration of validity of the objective.

Assigning the triage level

Triage assignment is based on the "usual presentation," but triage level is not entirely dictated by the presenting complaint. The care provider's experience and intuition (does the patient look sick?) and other information (e.g., parents' or caregivers' opinion and intuition) also help quantify illness severity and can modify the triage decision.

Several symptom complexes appear in different triage levels. For example, depending on modifying factors, vomiting, fever and head injury may be considered Level II, Level III or Level IV problems. It is, therefore, essential to take into account the child's age, immune status, comorbidity, past health, and the events leading up to the illness or injury, before assigning a triage level. Physiological parameters, especially level of consciousness, respiratory rate and effort, heart rate and perfusion, must be evaluated, since tachypnea and tachycardia may be the only measurable signs of early shock related to respiratory failure, sepsis, hypovolemia, or myocardial dysfunction. As care plans, guidelines and protocols are introduced, the assignment of triage level will become more objective and reliable.

Reassessment of waiting patients

All paediatric patients in the ED require scheduled reassessments. This is important because the PaedCTAS is not 100% accurate and patients will occasionally be placed in lower than ideal triage categories. In addition, illnesses may progress and patients who initially appeared stable may deteriorate. Sick children, particularly infants and toddlers may deteriorate rapidly. Triage staff should expect changes, re-evaluate patients and treat deterioration as quickly as possible. Progression of illness during the waiting period must be anticipated and should not automatically be considered a failure of the triage process.

To prevent unfair or unsafe "bumping" of patients with lower triage scores, it is often reasonable to see these patients ahead of more recent arrivals with higher triage scores. For example, if a Level IV patient has waited more than 1 hour or a Level V patient more than 2 hours, these patients should be seen ahead of stable patients at higher triage levels who have waited shorter times. Electronic ED tracking systems are especially suited to this type of operational change. Case mix and acuity data can be summarized using a combination of triage level, final diagnosis, procedures performed, and length of stay.