

Role of triage in emergency care



OVERVIEW

There is a consensus on the fact that there has been a significant increase in traffic to emergency rooms which has resulted in rapidly growing demand on the limited resources of emergency rooms worldwide. In 1980, there were more than 82 million visits to hospital Emergency rooms in the USA, and a large percentage were for non urgent medical conditions. One reason for this trend is that people know they can get medical attention immediately in the Emergency departments without the long wait for appointments. This has led to very high load of patients visit to emergency rooms; a pattern that holds true globally for non urgent patient visits to most pediatric emergency rooms (Wilson FO etal).

Another reason given for overcrowding is the increase rural to urban migration of populations and also the increase in the standard of care provided in most emergency room.

However, the resulting increase in demand for emergency medical care has not been matched by availability of resources in most healthcare systems and hence there is need for emergency room managers to adopt or develop tools and protocols to prioritize the urgency and acuity of conditions to allocate appropriate level of care. If this is not done, then there is a likelihood that very ill patients may end up waiting long hours with increased risk of morbidity and some may even die as a result of delay in life saving treatment or interventions. (Mirjam van veen and Harriette a Moll)

DEFINITION

Triage as a term actually originates from the French verb ' trier', which translates ' to sort'. It was originally used by the military as a concept to deal with large number of casualties managed by very few human and material resources. The decision is made to prioritize who had the best chance of survival, and what level of care for the survivors (LE Slay, WG Rislán)

In the last 20 years, this concept has become applicable in response to the increasing traffic to the emergency rooms and several tools have been developed to assess, prioritize and sort patients coming to the emergency department according to a determined severity of illness or injury, the level of suffering, the likely prognosis and need for intervention with available resources.

It must be clarified, that triage in itself is not a diagnostic tool but a systematically structured and methodical way of assessing the severity of patients' conditions to determine their clinical priorities using their presenting symptoms and measurable physiological parameters and it aims to optimize the provision of emergency care efficiently to produce the best outcome for every patient by channeling patients to appropriate level and quality of care.

Hence the factors that are considered are severity of illness, level of urgency and impact of life saving intervention to reduce mortality, as well as level of care needed baring limited resources. These factors can be measured objectively using mortality rate, number of admissions to critical care unit and wards as well as patients referred to low urgency care services.

The development of different assessment scoring systems and other pediatric-specific scales were attempts to have an objective approach to the assessment of severity acuity and to help predict illness or injury outcomes in children. Hence the Pediatric Glasgow Coma Scale, the Yale Observation Scale, the Pediatric Trauma Score, the PRISM score (Pediatric Risk of Mortality score), different pain scales and various respiratory severity scoring systems were all attempts to provide common nomenclature and standardize the assessment of severity of sickness and to predict prognosis in the pediatric age group.

However in practice the emergency room triage nurse needs a comprehensive, simple and efficient acuity stratification of the severity, to make rapid and effective decisions (Dieckmann, 2002). These led to development of various decision making tools or triage scales.

Gerber Zimmerman and McNair had tried to describe triage as simply a rating of patients clinical urgency, that eventually evolved into 2 levels of urgent, and non urgent.

Triage scales are hence developed with the aim to rapidly identify very urgent cases requiring immediate or urgent life saving treatment, or efficiently direct them to appropriate level of care, and the variations of triage scales are due to functional differences in service provision as well as availability of resources.

Though there is no fail proof scale of stratification because invariably cultural adaptations, level of sophistication of data collection, personal and

environmental factors do influence every measurement tool. (Christ et al 2010 as per Azeredo et al)

Fitzgerald in his doctoral thesis in 1989, showed it is actually a far more complex decision making tool using defined criteria to classify patients as either a simple 3, 4 or 5 level urgency scale, pioneering the objective distinction of the earlier urgency scales(Fitzgerald GT. Emergency department triage. Department of Medicine. Queensland, Australia: University of Queensland, 1989.)

TRIAGE IN CHILDREN

Laskowski-Jones and Salati (2000) had strongly elucidated that children should not be seen as ' little adults' and must not be treated as such by healthcare professionals. This is because of obvious anatomical, physiological, as well as emotional and intellectual differences between children and adults which directly alter the presentation of this group of patients in the emergency department[Laskowski-Jones].

This makes it inapplicable to use adult triage criteria for children of pediatric age due to unique clinic-pathological characteristics that creates the potential for sudden and rapid deterioration when children present to the Emergency department, creating an absolute necessity for very accurate focused triage. There are evidence that in mixed emergency departments, adults tend to ' be seen earlier than equally ill children resulting in unacceptable waiting times for very ill children, therefore again creating a

need for specific pediatric triage scales.(Cain P, Waldrop RD, Jones J; improved pediatric patient flow in a general emergency department by altering triage criteria. Acad Emerg Med 3: 65-71, 1996)

The UKs Manchester Triage Systems MTS, the USAs Emergency Severity Index ESI, the Canadian Triage and Acuity Scale CTAS, and the Australian(National) Triage Scale, the most widely used triage scales and by consensus the most studied were all eventually modified to contain specific parts for children, are all also made of five level of triage urgencies (van Veen and Moll)

It is important to note that none of them had been developed ' de novo' specifically for the pediatric age group.

The initial three-level systems which predominated in the United States typically used either levels 1, 2, and 3 or emergent-urgent-nonurgent classification assignments. These methods are driven by the underlying question, " How long can patients wait?" When evaluated, these three-level methods had been found to be highly unreliable and have been criticized because they lack validation with clinical outcomes. (Travers DA, Waller AE, Bowling JM, Flowers D,)

The 5-level scales provided a better discriminated tool for pediatric patient triage in emergency department, which was shown to be more efficient in predicting resources utilizations including hospital admissions, length of stay, and resource utilization.(Chang, Hsu)

Though 5-level scales are similar to the adults, but they have pediatric clinic-pathological parameters.

Level 1 is critical, level 2 is emergent, level 3 is urgent, level 4 is non-urgent and level 5 is fast track.(O'Neil KA, Molczan K: Pediatric triage: a tier, 5-level system in the United States. *Pediatr Emerg Care* 19: 285-290, 2003)

The MTS is a five-level scale that incorporates the UK National Triage Scale. It was developed in 1996 and then revised ten years later after thorough input by various experts.(Mackway-Jones et al 2006). Though it was designed predominantly for adults, the MTS eventually adapted six flow charts that relate specifically to children and hence in 2007 it became endorsed by the Royal College of Pediatrics and Child Health.

WHAT IS ALREADY KNOWN?

What is already established is that the true functional capability of an effective triage system is determined by their reliability and validity.

Reliability is measured as both inter rater reliability which is a measure of the agreement between two or more separate individuals using the same scale. It is an affirmation that the agreement is beyond that presented by chance, and this can be statistically determined and analyzed using Cohen's kappa k . Where k is equal to 1 if the raters are in perfect agreement, and k is equal to 0 if their agreement is absolutely by chance. So k is rated from 0.1-0.9 (as poor to excellent agreement). Intra rater reliability measures the agreement of one triage rater agreeing on the same level of urgency when two different cases of same scenario present on separate occasions.

Validity is a determination that a conclusion of a true urgency is in fact the true value for every clinical presentation. Whereas internal validity measures of the ability of the triage system to predict this true urgency within a system, external validity measures its reproducibility in a different setting.

Hence experts agree that any triage has to have these characteristics to be seen as a legitimate tool of assessment and to perform as intended [Fernandez C].

It is also known that the four major triage scales, the MTS, ESI, CTAS, and ATS have been studied and validated for both internal validity and reliability in adults and have been used in ED triage by different health institutions.

Some studies reported that the MTS and the Pediatric-CTAS both seem to be valid and reliable to triage children in pediatric emergency care. (Ma, Gafni and Goldman) This has been confirmed by van Veen and Moll in another review in 2009.

The CTAS enables rapid stratification of patients at the time of first encounter based on 5 levels of urgency (risk and symptom severity). Each level has a targeted waiting period until the patient is examined by the doctor or to be reassessed again in the triage area to consider the possibility of waiting longer or to be seen immediately by the physician.

The standards recommended by CTAS is that waiting time is 0 minutes for level 1, 15 minutes for level 2, 30 minutes for level 3, 60 minutes for level 4, and 120 minutes for level 5. (Murray M, Bullard M, Grafstein E; CTAS National Working Group; CEDIS National Working Group. Revisions to the Canadian

Emergency Department Triage and Acuity Scale implementation guidelines.

CJEM 2004, 6: 421-427.)