Triage and resuscitation tools for low and middle income countries: how to catch the killer?

Archives of Disease in Childhood - Education and Practice. 10 June 2021.

Background : Under 5 mortality remain high in Low Middle Income Countries(LMIC). **A major factor being failure to recognise critical illness early on first visit to hospital. In LMIC, children generally present late in their illness and often have progressed to some degree of multiorgan dysfunction.** Over 30% of deaths in children occur in the first 24 hours of hospital admission. **Problems add up when there are limited access to care, limited resources and overcrowding**. A systematic approach to Triage, Primary survey and Initial Stabilisation of the sick child can be very impactful in saving many lives. Effective triage is key to identifying the critically unwell child on arrival, and has been shown to save lives. **Triage models designed for High income countries are not suitable to the unique challenges of LMIC hence we need a triage model that suits our challenges followed by appropriate initial assessment and stabilization**.

Triage models: The WHO developed Emergency Triage Assessment and Treatment (ETAT), a triage system designed for LMIC settings. It triages children into three categories (emergency, priority and wait). Triage models validated on High Income Countries like Australasian Triage Scale, the Canadian Triage and Acuity Scale, the Manchester Triage System and the Emergency Severity Index categorise into five categories(Resuscitation, Emergent, Urgent, Less/Semi-urgent & Non-urgent). **The Paediatric Assessment Triangle (PAT) is a hands-off evaluation to assess the physiological status of a child in less than 30 seconds, endorsed by the American Academy of Paediatrics. In Tamil Nadu, India a stepwise approach designated as Pediatric Resuscitation and Emergency Medicine (PREM) is used which is adapted to the local resources and clinical setting.** This approach was developed since the standard primary survey failed to detect the subtle signs of multiorgan dysfunction, which are frequently seen in LMIC settings, from causes such as pulmonary oedema, cardiovascular dysfunction and NCSE.

ACADEMIC P.E.A.R.L.S

Pediatric Evidence And Research Learning Snippet

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Pediatric Resuscitation and Emergency Medicine Approach (PREM)-

Step 1 of PREM approach comprises of a series of targeted questions directed to mothers in waiting hall/ques to figure out subtle signs of hypoxia, shock, cardiovascular dysfunction or non-convulsive status epilepticus.

Scenario: Fever with or without a focus.

a) Altered level of consciousness?

► Infant: incessant cry? Lethargy? Not his usual self? More sleepy than usual?

► Child: agitation? combativeness

(Fever + altered level of consciousness = septic shock)

b) Breathlessness?

► Episodic? Or since birth? (to rule out asthma, recurrent aspiration and congestive heart failure or chronic lung disease).

(Fever + altered level of consciousness + first acute episode of breathlessness = septic shock with possible **pulmonary oedema** due to **acute lung injury** or **cardiac dysfunction)**

Step 2 of PREM advocates a primary survey that employs a 60-second modified Rapid Cardio- Pulmonary Cerebral Assessment. (mRCPCA) The clinical findings were incorporated around the PAT and renamed as the PREM triangle. Vital signs better than expected in a sick child indicates ominous sign that the compensatory mechanisms are exhausted. Ex: Normal respiratory rate(relative bradypnea) in a sick child with pneumonia indicates respiratory failure and needs immediate intervention.

Step 3 in the PREM approach summarizes the findings from the focused history and the mRCPCA (performed instead of the primary survey). The individual variables are recorded on a structured template and then collated around the PREM triangle, to understand the physiological status. The interventions are easy once the physiological status is derived.Repeated assessments following every intervention is the key to direct further management.

Example Summary (of a child in respiratory failure, see PREM triangle below) physiological status using the PREM triangle: **Airway:** unstable; **Breathing**: impending respiratory failure; **Circulation**: relative bradycardia, vasodilatory shock, cardiac dysfunction, SBP high, wide pulse pressure, low MAP; **Disability:** altered level of consciousness, non-convulsive status epilepticus.

EXPERT COMMENT

"Systematic Triage, followed by a structured Initial assessment of PREM approach can potentially detect any sick child presenting with impending or subtle signs of multisystem organ dysfunction. A brief summary of the assessment guides appropriate intervention and repeated assessments after each intervention can lead to therapeutic goals. This is the key to improved survival in LMIC settings."

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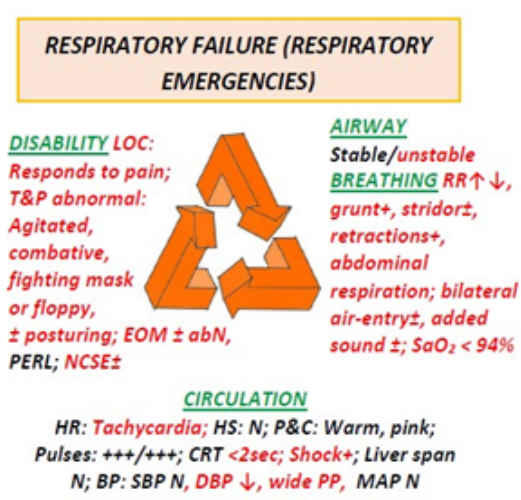

With warm regards,

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Reference

Santhanam I, Moodley P, Jayaraman B, Yock-Corrales A, Cheema B, Craig S, Jahn HK. Triage and resuscitation tools for low and middle income countries: how to catch the killer? Arch Dis Child Educ Pract Ed. 2021 Jun 10:edpract-2021-321981. doi: 10.1136/archdischild-2021-321981.