

Childhood Emergencies and its Care

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Emergency in the childhood is a nightmare of the parents, when alone at home, or even for the service providers when they are not well equipped with the knowledge or facility. A total of 5.4 million under five children died in 2017. The risk of a child dying before completing five years of age is still highest in the WHO African Region (74 per 1000 live births), around 8 times higher than that in the WHO European Region (9 per 1000 live births). Many countries still have very high under-five mortality – particularly those in WHO African Region, home to 5 of the 6 countries with an under-five mortality rate above 100 deaths per 1000 live births. In addition, inequities in child mortality between high-income and low-income countries remain large. In 2017, the under-five mortality rate in low-income countries was 69 deaths per 1000 live births – around 14 times the average rate in high-income countries (5 deaths per 1000 live births). Reducing these inequities across countries and saving lives of more children by ending preventable child deaths are most important priorities.¹

Globally, under-five mortality rate has decreased by 58%, from an estimated rate of 93 deaths per 1000 live births in 1990 to 39 deaths per 1000 live births in 2017. This is equivalent to 1 in 11 children dying before reaching the age five in 1990 compared to 1 in 26 in 2017.

With the end of the MDG era, the international community agreed on a new framework – the Sustainable Development Goals (SDGs) where the target is to end the preventable deaths of newborns and children under-five years of age. The goal for all countries is to reduce under-five mortality to at least as low as 25 per 1000 live births. About 117 Member States already met the SDG target on under-five mortality and if current trends continue, 26 countries are expected to meet the target by 2030.^{1,2}

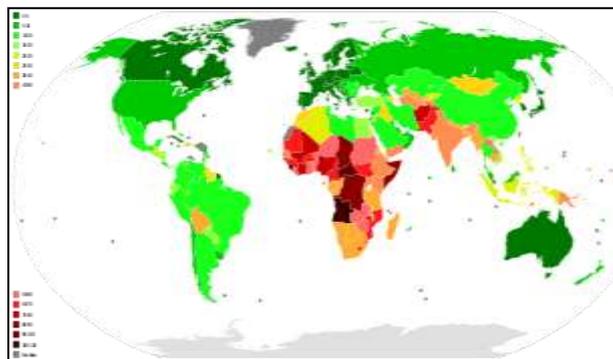


Fig. 1: Global trends of childhood emergencies

As shown in the map (Fig-1), most affected areas of the world are South East Asia and major part of Africa. In spite of the fact that sanitary conditions have improved much more in India the total effect of the share in Asian sub-continent of our country cannot be too emphatically denied.

The broad spectrum of diseases, the wide age range with the anatomical and physiological changes that occur in it, and the special psychological, emotional and communicative features of children make childhood emergencies a special challenge for emergency physicians. A mastery of basic emergency techniques including clinical evaluation of the child, establishment of venous access, airway management, resuscitation, and drug dosing is essential for the successful emergency treatment of children.³

Emergency conditions in children have never structured to our pediatric care units other than clinical emergencies. Thus the present report was planned to be documented. The major emergency conditions are as follows:

1. Airway obstruction (Mild and Severe)
2. Foreign body aspiration
3. Respiratory Failure/Arrest
4. Circulatory failure
5. Status Asthmaticus
6. Status Epilepticus
7. Drowning
8. Child abuse and neglect
9. Congenital Heart Disease
10. Neck stiffness
11. Fever with rash
12. Severe bleeding or head trauma
13. Burns
14. Electrocution
15. Congenital malformation
16. Severe diarrhoea and Severe pneumonia

Airway Obstruction

Airway obstruction can be caused by aspiration of foreign body, viral or bacterial infections (croup, epiglottitis, tracheitis), anaphylaxis, burns or trauma. Initially stable and partial obstruction sometimes may worsen and develop into a life-threatening emergency, especially in young children.

Management includes proper positioning of the children followed by continuous oxygen administration to maintain the SpO₂ between 94 and 98%. Monitoring the mental status, heart and respiratory rate and severity of obstruction and maintain the adequate hydration by mouth if possible or by i.v line if patient is unable to drink.

Foreign Body Aspiration

Most common among one to three years of age group as this group likely to put everything in their mouths. It leads to Acute airway obstruction (the foreign body either completely obstructs the pharynx or acts as a valve on the laryngeal inlet). Perform maneuvers to relieve obstruction only if the patient cannot speak or cough or emit any sound.

Management includes- Heimlich maneuver.

Place the infant face down across the forearm (resting the forearm on the leg) and support the infant's head with the hand. With the heel of the other hand, perform one to five slaps on the back in between the shoulder plates. If unsuccessful, turn the infant on their back and perform five forceful sternal compressions as in cardiopulmonary resuscitation. Use 2 or 3 fingers in the center of the chest just below the nipples. Press down approximately one-third the depth of the chest (about 3 to 4 cm). Repeat until the foreign body is expelled and the patient resumes spontaneous breathing (coughing, crying, talking). If the patient loses consciousness ventilate and perform cardiopulmonary resuscitation. Tracheostomy can be done if unable to ventilate.

Respiratory Arrest/ Failure

If airway obstruction proceeds further it often results as respiratory distress.

Management includes supportive respirations by performing mouth-to-mask ventilation. Administration of oxygen if available and begin the chest compressions if heart rate falls or absent.

Circulatory Failure

In children it is indicated by an increased heart rate, pale or bluish skin and changes in mental status and can further lead to cardiac arrest. It can be managed by supportive ventilations and oxygen administration.

Status Asthmaticus

It is the life threatening form of asthma which is defined as a condition in which a progressively worsening attack is unresponsive to the usual appropriate therapy that leads to pulmonary insufficiency. The combination of hypoxia, hypercapnia, and acidosis may result in cardiovascular depression and cardiopulmonary arrest. It can be managed by beta-agonist nebulizer, steroids and humidified oxygen in case of hypoxia and respiratory distress.

Status Epilepticus

It is a single epileptic seizure which lasts for more than five minutes or two or more seizures within five-minutes without the person returning to normal in between them.

Its management includes-

In First 30 min: Early Status Epilepticus – IV Benzodiazepine

In 20-120 min: Established Status Epilepticus – IV Anti-epileptics

>120 min: Established Status Epilepticus – treat with general anaesthesia. After 24 hours: Refractory Status Epilepticus

Congenital Heart Disease

Now a day's congenital heart disease is a common childhood emergency. Its major signs & symptoms are intercostal retractions, difficulty in breathing, tachypnea, tachycardia, cyanosis, altered level of consciousness, limpness of extremities, drowsiness, tires easily, irritable if disturbed, underdeveloped for age and cardiac arrest.

General management includes Monitoring of Airway Breathing and Circulation (ABC) & vitals and administration of oxygen. The mainstay of treatment is surgery.

Childhood Trauma

Trauma is the leading cause of death in children. Most commonly injured body areas are head, trunk and extremities. Head injury is the most common cause death in children aged 1-15 years. It accounts for 40% of injuries.

Burns

It is the second leading cause of childhood deaths. Scald burns are most common in case of children. Rule of nine is also different as each leg worth 13.5% and head worth 18% in children.

Child abuse and Neglect

It is physical, sexual and psychological maltreatment or neglect of a child or children, especially by a parent or a caregiver. It may include any act or failure to act by a parent or a caregiver that results in actual or potential harm to a child, and can occur in a child's home, or in the organizations, schools or communities the child interacts with. Step-children or adopted children are at higher risk. A key part of child abuse work is assessment which includes projective tests, clinical interviews and behavioral observations. For prevention a support-group structure is needed to reinforce parenting skills and closely monitor the child's well-being. Visiting home nurse or social-worker visits are also required to observe and evaluate the progress of the child and the caretaking situation.

Electrocution

Young children, particularly toddlers experience electric shock most often when they bite into electrical cords or poke metal objects such as forks or knives into unprotected outlets or appliances. These injuries can also take place when electric toys, appliances, or tools are used incorrectly or when electric current makes contact with water in which a child is sitting or standing. The best way to prevent electrical injuries is to cover all the outlets, make sure all wires are properly insulated, tuck wires away from your child's reach, and provide adult supervision whenever children are in an area with potential electrical hazards.

Shock

It is the state of not enough blood flow to the tissues of the body as a result of problems with the circulatory system. A child in early or moderate stages of shock will be able to maintain the perfusion. Once the child's compensatory systems fail, the child will fall quickly. It can be managed by maintaining the Airway Breathing and Circulation and improving the peripheral and central circulation. Fluid expansion is the mainstay of treatment which can be done by administration of 20 cc/kg isotonic saline or colloid as a bolus.

Acute Poisoning

It is still an important public health problem and represents a frequent cause of admission in emergency units. It is most commonly observed at 1–5 years of age and these children constitute 80% of all poisoning cases. Single-dose activated charcoal is the preferred method of decontamination in many cases. Gastric emptying is contra-indicated if the airway is unprotected or an overdose of corrosives or hydrocarbons has been taken.

Drowning

It is a major cause of death in children between the ages of 1 and 14. The less time the child spends submerged, and the more quickly he or she is resuscitated leads to the better outcome. Dry drowning occurs when a patient has a laryngospasm that prevents water from entering the lungs. The duration of the laryngospasm determines the extent of the hypoxemia. Death from dry drowning is the result of asphyxiation instead of aspiration. Its management includes securing the airway early with positive-pressure ventilation and rewarm the child as early and as possible.

Ocular Injuries

Often caused by sports or other physical activity. It can be serious and are usually quite painful. They are also a common cause of vision loss in children. Ocular injuries can range from corneal abrasions and chemical burns to bruising and having foreign bodies in the eye.

Severe Diarrhoea and Dehydration

Acute diarrhoeal diseases are among the leading causes of mortality in infants and young children in many developing countries. In most cases, death is caused by dehydration. Dehydration from diarrhoea can be prevented by giving extra fluids at home or it can be treated simply, effectively and cheaply in all age-groups but the most severe cases are

treated by giving patients by mouth an adequate glucose-electrolyte solution called Oral Rehydration Salts (ORS) solution.

Severe Pneumonia

It is also common among children all over the world, but its incidence and mortality rate are significantly higher in developing countries than in the industrialised world. It has been estimated that there are about 151 million new episodes a year among third world children aged <5 years, leading to an incidence of 0.29 episodes per child-year and a mortality rate of 1.3–2.6% or >2 million per year.^{2,4}

Children requiring emergency care have unique and special needs. This is especially so for those with serious and life-threatening emergencies. There are a variety of components of the emergency care system that provide emergency care to children that are not limited to children. With regard to hospitals, most children are brought to community hospital emergency departments (EDs) by virtue of their availability rather than to facilities designed and operated solely for children. Emergency medical services (EMS) agencies, similarly, provide the bulk of out-of-hospital emergency care to children.

Conflict of Interest: None.

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