

Survival of Sickest

PRAMOD JOG

National President, Indian Academy of Pediatrics, 2016. dr_pramodjog@yahoo.co.in

When a general pediatrician faces a critically ill child in outpatient department (OPD), he/she somehow wants to get rid of the patient. This attitude develops either out of lack of confidence (which is either due to lack of knowledge or skills), lack of infrastructure (due to non-availability of equipment or lack of trained staff), fear of patient's death and consequent impact on reputation, or fear of getting involved medicolegally in the event of an adverse outcome. A sick child is rarely taken to pediatric intensive care unit (PICU) directly; most of the times a family physician or a pediatrician is the first contact with the sick child. He/she needs to recognize the sick child, stabilize the child, and shift to a higher center at appropriate time, so that chances of survival are high, and justification is done to the respect we command in our noble profession. For recognizing and stabilizing a sick child, one requires knowledge, skills, manpower and equipments.

Most of the pediatricians practicing in periphery have small nursing homes, and do not have back-up of big multispecialty hospitals like in cities. Hence they have to manage various pediatric emergencies and critically ill children on their own. It is necessary to have the knowledge about Triage, ABC, Vitals, Emergency medications, Equipments, Emergency procedures and Transport of sick child. It is equally important to have skills related to airway and breathing management, vascular access, and some procedures like needle thoracotomy and intercostal tube insertion.

Survival of Sickest (SOS), which will be achieved through HOPE – (Handling Office Pediatric Emergencies), an IAP action plan 2016, is a part of our sincere efforts to empower a peripheral pediatrician to provide emergency services at the site of emergency.

Early management of emergencies in the first golden hour increases the chances of survival of critically ill children. For example, if an infection is suspected or etiology of shock is not clear, current guidelines recommend obtaining cultures (blood, urine and others as

indicated), and administering empiric broad-spectrum antibiotics within one hour of presentation [1]. Antibiotic therapy should not be delayed beyond one hour in order to obtain cultures if there is a concern for severe sepsis or septic shock. *One never gets a second chance to make the first impression!* Similarly, early institution of oral glucocorticoids reduces the duration of exacerbation of asthma, and can prevent hospitalization and relapse [2,3]. Time is essence and every minute counts. Rapid clinical assessment should be simultaneous with stabilization. The widely used definition of sepsis, which was based on the SIRS scoring, has recently been replaced by the SOFA scoring (Sequential Organ Failure Assessment). A simpler version of the 7 variable SOFA score has been proposed for prompt bedside identification of patients suspected of infections who are more likely to have a poor outcome. This has been named as the qSOFA score (quick SOFA) and uses 3 clinical parameters, assigning 1 point for low blood pressure (SBP <100 mmHg), high respiratory rate (RR >22/min) and altered mentation (GCS < 15). A qSOFA of ≥ 2 is an indication for prompt management on the lines of sepsis. Validation of a similar bedside scoring for the pediatric population will be beneficial. For stabilization of a critically ill child (before transporting), a pediatrician can do some bare minimum things. Once airway and breathing have been stabilized, he/she can at least secure intravenous (IV) or intraosseous access, and administer appropriate IV fluids or anticonvulsant medication, as per need. No child should die due to a lack of vascular access.

First dose of broad spectrum antibiotic (such as IV ceftriaxone) should be given in correct dose prior to transfer. In septic shock, one hour of delayed appropriate antibiotic administration increases mortality by 10%. Blood sugar level should be checked before transfer. If it is < 50 mg/dL, bolus of IV 10% dextrose should be given. Normothermia should be maintained. If the child is hypothermic, warm blankets should be used; and if hyperpyrexia, per rectal paracetamol suppository be used. Oxygen should be started in any patient with respiratory distress (tachypnea, retractions, cyanosis)

and shock. Nebulization is to be given if wheezing is noticed. In case of croup, one dose of IV or intramuscular dexamethasone (0.25 mg/kg) should be given.

Pediatrician should not panic, and must observe the child till transport arrives, inform the respective PICU (or neonatal intensive care unit), be in touch with the respective intensivist, and inform him/her condition of the child so that he/she can arrange for further care till patient reaches. It is important to inform all possibilities to the relatives in writing till the ICU care becomes available so that legal complications are avoided. Only shifting to ICU does not ensure the survival; proper pre-transfer care and safe transport increase the chances of survival. Effective communication with emergency medical services and assurance of safe transport to a higher level of pediatric care is important in management of sick child.

PEDIATRIC OFFICE PREPAREDNESS

Children with life-threatening illnesses are taken to primary care pediatricians' office by parents or caregivers because they are familiar and have trust in him/her. When this occurs, the office and staff need to be prepared to provide initial stabilization and life-saving care. The consequences of being not prepared are serious. The steps to prepare an office for handling a pediatric emergency includes development of a written response plan, training of all office staff, effective surveillance and triage for critically ill or injured children who come to the office, and immediate availability of appropriate pediatric resuscitation equipment and medications.

Nonclinical personnel (*e.g.* the receptionist) are often the first office staff to assess the patient. They should receive basic training regarding signs and symptoms of common pediatric emergencies, including those associated with respiratory distress, shock, seizures and altered mental status. Respiratory emergencies, seizures, infections (especially in young infants), shock/dehydration, traumatic injuries are the most common causes of emergency visits [4,5]. Thus, it is essential that pediatric offices are equipped with devices, medications, communication systems and trained personnel to manage these emergencies. Initial treatment provided in the office may mean the difference between life and death. Appropriate stabilization of pediatric emergencies and timely transfer to an appropriate facility for definitive care are important responsibilities of every medical provider who cares for children.

If the pediatrician's clinic is near to the facility where pediatric emergency care can be provided, the focus should be on brief stabilization of life-threatening condi-

tions and rapid transfer. If the facility is remote, the office staff need to be able to provide extended care. The responsibility of medical care rests on the referring doctor till the sick child is handed over to a critical care center. The child should be accompanied by a trained doctor in a well equipped ambulance. Delay in transfer of a sick child increases the mortality. If the referring pediatrician has an idea about availability of beds prior to referral, the parents of a sick child will not have to run from one hospital to other. Indian Academy of Pediatrics (IAP) is developing a mobile App to provide data about availability of the beds, blood/blood products *etc.*, to help the pediatricians, neonatologists, intensivists, parents and even ambulance drivers in that area.

The program SOS-HOPE (Survival Of Sickest through Handling Office Pediatric Emergencies) has taken a big leap forward in an attempt to reach maximum number of pediatricians, and innovative methods are being implemented to make it more useful in day-to-day practice for all pediatricians. The SOS-HOPE module was recorded in a film studio in Bangalore, and the presentations were given by the scientific committee which had prepared the module. A website (www.pedhope.com) has been created, and all modules of SOS-HOPE are available there. This would be an interactive website and every pediatrician can interact with the scientific team of SOS-HOPE to give suggestions and get involved. We have also created *Whatsapp* groups for facilitating interaction. SOS-HOPE App, released in Pedicon 2016, is a very useful mobile application to guide a pediatrician in handling emergencies in day-to-day practice, and follow evidence-based medicine. It has been developed to guide a pediatrician in Triage, ABC, vitals, emergency medications, dosages, equipments, emergency procedures, transport of a sick child, and several clinical conditions. Lectures and procedures related to the emergency (like suturing, inhaler demonstration, foreign body removal, cardiopulmonary resuscitation, laryngeal mask airway insertion, intraosseous insertion) can be viewed through the App. Most of these features can be used offline. Please download the App on your smart phone as soon as you finish reading this article!

IAP is planning to gift a kit containing basic equipments like bag and mask, endotracheal tubes, laryngeal mask airway, emergency medicines and contact reference for oxygen (giving information as to where oxygen is available in that area). We are also planning to involve Indian Medical Association for training of family physicians.

Friends, every activity starts with *Akriti* (planning)

with *Navanirmiti* (innovation). Then starts real *Kriti* (action). The action requires *Yuti* (team) and *Gati* (speed), and ultimately it leads to a *Kalakruti* (masterpiece) which is the *Falashruti* (achievement).

The program SOS-HOPE under 2016 IAP Action plan has taken a positive step to train 10000 pediatricians in recognition, stabilization and transport of sick children presenting to pediatric office. The program is reaching to the grass root level, and has definitely brought about some changes in the way our pediatricians practice. Pediatricians are adopting the features of the module into their day-to-day office practice. It has transformed pediatricians to have Triage system where sickest child gets preference. Most notable changes are that many pediatricians have started keeping oxygen in their office. Pediatricians are giving first dose of antibiotic in sepsis and septic shock, and are giving nebulizations through oxygen in acute severe wheeze. Pulse oximetry is regularly used. Pediatricians are prepared to handle emergencies by preparing their staff members and keeping emergency equipments in their office. They are referring the sick child in 108 or other ambulance, and not in their private vehicle. These changes, when practiced all over the nation, will result in improved chances of survival of the sickest, and will lift the standard of care in our office practice.

We always discuss about the infant mortality rate and the under-five mortality rate in India being far behind the developed countries. As pediatricians, we can make a remarkable difference by reducing the mortality rate by appropriate handling of office pediatric emergencies. I hope that the program helps our colleagues to sharpen their 'higher centers' before they refer children to higher centers. Let us help the sickest of the children in times of crisis, and enable them to survive like the fittest.

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