

## **BRIAN K. SMITH, D.D.S., M.D., INC.**

### **Medical Emergency Preparedness Update May 2011**



In light of the recent death of a child in the area, we are unfortunately reminded of the incredible responsibility we have in treating patients let alone children. We will address issues relating to treating children in the dental setting. We have numerous challenges and risks in providing dental care for children. Our natural inclination is to treat children like small adults, however children physiologically and psychologically are unique relative to adults. It would be a difficult task for us to define the differences between treating children and adults. Interestingly, Basic Life Support and Pediatric Life Support are the prime sources of information in treating children. Also, the Internet is an excellent source for obtaining information on pediatric care.

In treating children, we must be acutely prepared as a team to treat the pediatric urgency or emergency. Physiologically, a child is basically defined as an individual who is less than 90 pounds and eight years old or less. Cardiovascular and respiratory differences between adults and children are relevant to emergency care. For instance, most children are diaphragmatic breathers. Children have much less respiratory reserve relative to adults, therefore, when a child arrests they will crash more quickly than an adult. A child has a more narrow subglottic region, the region just below the vocal cords of the trachea, which subjects a child to the potential for obstruction by a foreign body like dental materials. A child's cardiac output is generally heart rate driven, thus a low heart rate is an ominous sign of pending death. Additionally, the range of vital signs, appropriate cardiac rate, respiratory rate, and blood pressure changes from birth through the teenage years and can be significantly different from the adult. We must have available the average numbers as well as the critical numbers for the children's vital signs at various ages.



Children metabolize medications differently than adults, so medications must be given carefully to children with full knowledge of these metabolism differences, drug interactions, and appropriate dosages. Medications such as ciprofloxacin, tetracycline, epinephrine, and aspirin should be given with caution to children. In sedating children, the NPO status must be age appropriate. Local anesthetic toxic dosages are also easily reached in children, which may end in status epilepticus and may not be able to be stopped due to the local anesthetic blood levels. Vascular access can be extremely difficult in children, and pediatric basic life support poses various technical differences from an adult. Knowledge of pediatric life support coupled with the ability to perform these techniques is essential to safe daily practice of dentistry on children. For instance, most pediatric arrests are respiratory in contrast to cardiovascular events in adults. Therefore, we dentists must be aware and well-equipped to support a child's respirations. Many of the unfortunate pediatric cases may have been avoidable based on the dentist's inability to support a child's airway. Classic airway maneuvers of jaw thrust and head tilt/chin lift are easy maneuvers to master and can be used at the same time to support a child's airway. Maintaining a child's head in the sniffing position can also help a child breathe and never stop CPR in children due to their remarkable resiliency.

Pediatric emergencies are ever-looming in light of the challenges of treating children awake, sedated, and asleep. The responsibility in having a significant complication with a child in the dental setting cannot be imagined. Pediatric emergency review is an understandably overlooked topic amid our demanding schedules. This article is a brief review written to spur our dental teams to be prepared for pediatric and adult basic life support in case of the unthinkable.