

## Articles

### ***Pediatric Airway Management***

Physiologically, pediatric patients have three significant differences from adults (at least, regarding airway management); these differences should be the fundamental guides for your care. First, pediatric patients haven't had a lifetime of french-fries, bacon, and deep-fried Snickers® to give them coronary artery disease. Instead, hypoxia is their main life threat. Second, their metabolism burns oxygen much faster than yours; ever try to keep up with a two year old? Third, kids are little vagal-monsters. Almost anything will trigger their vagal tone.

Pediatric patients go into cardiac arrest from hypoxia. Anytime you care for a pediatric patient, your assessment from the doorway should tell you whether or not to put the child on high flow oxygen. Although most anecdotal evidence and some early research suggests that most EMS calls for children could have been handled without an ambulance, nonetheless, when a child is sick, you cannot miss the diagnosis. Any ill child must be immediately assessed for airway patency, breathing adequacy, and cardiovascular status, and you need to start oxygen without hesitation. Even if the patient does not have a primary respiratory disease process, cellular hypoxia can occur due to children's elevated metabolism, particularly in the face of fever and dehydration. Never hesitate to administer oxygen to a pediatric patient, and never hesitate to support the patient with bag-valve-mask ventilation; even if she's still breathing (we'll talk about these techniques in a later discussion).

Remember that the 10<sup>th</sup> cranial nerve, the vagal nerve, is easily stimulated in a pediatric patient and can cause significant bradycardia, even asystole from the ridiculous vagal tone. Hypoxia and airway manipulation (particularly laryngoscopy) are both known vagal stimulators, and so any ill, hypoxic child in shock is a set-up for a vagal disaster. For the BLS provider, the key is oxygen and respiratory support early. For ALS providers, consider administering a dose of atropine prior to laryngoscopy for any pediatric patients (also remember that your minimum dose is 0.1 mg; otherwise, atropine can cause a paradoxical bradycardia). But probably the most important thing for the ALS provider to remember is Gaucher's work in 2000<sup>1</sup>. Using a randomized, controlled study format, she demonstrated that, at least in the urban setting, pediatric patients who received non-intubated bag-valve-mask ventilation did as well as pediatric patients who were intubated.

Although one can argue "it's not my system," "that's not how we do it," "I'm better at managing an airway than that," at least consider the fact that it just makes sense. If children do poorly because of hypoxia and do with oxygen, then as long as you provide good non-intubated airway management, they should do well. This is, in fact, the cornerstone of the next topic we'll discuss, the algorithmic approach to airway management.

Anyway, as you look at your next pediatric patient, remember that although the odds are in your favor that nothing you do will help him, also consider that, for the ill pediatric patient, an aggressive and oxygen-rich approach may be the difference between life and death. Sick pediatric patients can be terrifying, but remember, they usually only have one thing wrong (as opposed to your adult patients); support their airway and cardiovascular status and their amazing bodies will usually take care of rest. Until next time, stay safe.

#### **Reference:**

- 1) Gaucher M, Lewis RJ, Stratton SJ et al. Effect of out-of-hospital pediatric endotracheal intubation on survival and neurological outcome: A controlled clinical trial. JAMA. 2000;283:783-90