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Pediatric Tachycardia Algorithm Review

October 2009

The tachycardia algorithms have been simplified after the GL 2005 recommendations. There are actually two tachycardia algorithms designed by the AHA PALS Science Subcommittee.

1. "Tachycardia with Pulses and Poor perfusion" that is *unstable* tachycardias, and
2. "Tachycardia with Pulses and Adequate Perfusion", that is *stable* tachycardia.

The main rhythms one will see in a child are sinus tachycardia (rate 180–220) (which the child may need in order to maintain cardiac output), supraventricular tachycardia (rate >180-220), or ventricular tachycardia (wide complex).

Treatment recommendations are different, depending on which algorithm you decide the patient fits into. Amiodarone and procainamide are the two main treatment medications, but there are many other possibilities, it is best to seek expert consultation from a pediatric cardiologist.

A *clinical evaluation* of the patient is mandatory to determine whether they are stable or unstable. There are no completely hard and fast criteria in the guidelines for immediate cardioversion (a specific definition of being unstable).

Clinical instability has to be determined by the team leader evaluating the patient. Different patients, with different co-morbidities, have different risk profiles for the cause of the tachycardia. The potential for deterioration also needs to be considered.

Stable patients will receive either no therapy or medical therapy. Unstable patients receive synchronized electrical cardioversion. There may be a large number of patients who are in the "grey zone" of being somewhat sick, but not outright unstable. It is best to seek consultation for these folks, and also to monitor them to track any progression of symptoms.

If the rate is less than 150, look for another cause that is making the patient ill, it is unlikely to be the rate itself.

It is still an immediate consideration to perform cardioversion for all unstable patients. However, again, that will be a clinical judgment, different for each situation. Unstable means significantly abnormal vital signs, altered mental status (not perfusing the brain), chest pain thought to be ischemia, abdominal pain

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thought to be ischemia, or a patient who is deteriorating rapidly, are a few examples. Remember, in children, deterioration is usually related to ventilation, perfusion, and oxygenation.

Unstable is not the same as cardiac arrest. Full cardiac arrest means you immediately flip to the Pulseless Arrest Algorithm.

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