Hypertension in Children and Adolescents

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Lifestyle Changes

Although evidence that supports the efficacy of lifestyle modifications on blood pressure reduction in children is “limited,” there is a significant amount of data showing a relationship between lifestyle and BP. Emphasis should be placed on weight reduction, regular physical activity, restriction of sedentary activity, and dietary modification. Identifying hypertension as a complication of obesity may help motivate patients toward weight loss goals. A goal of at least 30–60 minutes per day of physical activity should be established while reducing sedentary activities to a minimum. Fresh vegetables and fruits, fiber, and nonfat dairy products should be emphasized and sodium reduced.

Pharmacologic Therapy

Indications for antihypertensive drug therapy in children include symptomatic hypertension, secondary hypertension, hypertensive target-organ damage, diabetes (types 1 and 2), and inadequate response to lifestyle modifications. The goal BP for children with uncomplicated, primary hypertension without evidence for target-organ damage should be less than the 95th percentile. The goal BP for children with chronic renal disease, diabetes, or target-organ damage should be less than the 90th percentile. Antihypertensive classes that may be used in children include ACE inhibitors, angiotensin receptor blockers, β-blockers, calcium channel blockers, and diuretics. The choice of initial drug therapy must be individualized to each patient and may be impacted by concurrent medical conditions.

The Bottom Line

Starting at the age of 3 years, all children should have routine BP measurements at every visit. Elevated pressures need to be repeated on multiple occasions to confirm a diagnosis of hypertension. The diagnostic work-up that follows must distinguish primary from secondary hypertension and assess for the presence of target-organ damage.

Treatment of uncomplicated, stage 1 hypertension should begin with therapeutic lifestyle changes and progress to pharmacotherapy as needed.

CPR Study: Compression Rate Often Too Slow

Cardiopulmonary resuscitation is often improperly performed by rescuers who give too few chest compressions and the wrong amount of ventilation. These findings from two new studies that were presented first to precisely measure the performance of CPR in real-life situations inside and outside the hospital.

Although CPR guidelines are frequently revised, there has not been a reliable, objective way to measure how well it is being performed until now, said Lance B. Becker, M.D., a coauthor of the in-hospital study and a professor of emergency medicine and director of the Emergency Resuscitation Research Center at the University of Chicago.

“When we find that CPR is not being done very well,” he said. The two studies’ investigators used a new computerized device that can count how often compressions are given and how much pressure is exerted with each compression. The device, developed by a Norwegian company, records the rate of volume of ventilations.

In the in-hospital study, Dr. Becker and his colleagues examined the first 10, 30-second segments recorded by the device during 67 cardiac arrest rescue attempts made by CPR-trained rescuers.

CPR guidelines call for 100 compressions per minute and 16 ventilations per minute. In 28% of the cases, however, the average compression rate was less than 90 compressions per minute during the first 5 minutes of resuscitation. In 61% of the 30-second segments, the ventilation rate was more than 20 ventilations per minute. Moreover, 37% of the compressions were too shallow (JAMA 2005;293:305-10).

The out-of-hospital study looked at use of the device at the scene of cardiac arrest in three European cities. The researchers found that in 48% of the times that the rescuers were performing resuscitation, they were not actually giving compressions. When they did perform compressions during the CPR episode, they gave compressions at a rate of 121 per minute—closer to the European Union’s target values of 100–120 compressions per minute.

But the average number of compressions delivered in a minute was only 64. Rescuers gave an average of 11 ventilations per minute (JAMA 2005:293:309-314). Further study was able to look precisely at whether poor performance of the CPR affected patient survival, because neither had enough patients to make that determination. However, in the study performed by Dr. Becker and his colleagues, the investigators did note that patients who had longer intervals without chest compression had worse resuscitation results.