

# Children with ADHD should get heart tests before treatment with stimulant drugs

**Children with attention deficit hyperactivity disorder (ADHD) should get careful cardiac evaluation and monitoring – including an electrocardiogram (ECG) – before treatment with stimulant drugs, a new American Heart Association statement recommends.**

The scientific statement on Cardiovascular Monitoring of Children and Adolescents with Heart Disease Receiving Stimulant Drugs is published online in *Circulation: Journal of the American Heart Association*.

In 1999, concerns over potential cardiovascular effects of psychotropic drugs, especially tricyclic antidepressants, but including stimulants, prompted an American Heart Association Scientific Statement: Cardiovascular Monitoring of Children and Adolescents Receiving Psychotropic Drugs. However, no specific cardiovascular monitoring was recommended for the use of stimulant medications. Warnings from the U. S. Food and Drug Administration (FDA) about stimulant medications and public concern for the safety of using them have prompted the current statement.

Studies have shown that stimulant medications like those used to treat ADHD can increase heart rate and blood pressure. These side effects are insignificant for most children with ADHD; however, they're an important consideration for children who have a heart condition. Certain heart conditions increase the risk for sudden cardiac death (SCD), which occurs when the heart rhythm becomes erratic and doesn't pump blood through the body.

Doctors usually use a physical exam and the patient and family history to detect the risk for or presence of health problems before beginning new treatments, including prescribing medication. But some of the cardiac conditions associated with SCD may not be noticed in a routine physical exam. Many of these conditions are subtle and do not result in symptoms or have symptoms that are vague such as palpitations, fainting or chest pain.

That's why the statement writing group recommends adding an ECG to pre-treatment evaluations for children with ADHD. An ECG measures the heart's electrical activity and can often identify heart rhythm abnormalities such as those that can lead to sudden cardiac death.

"After ADHD is diagnosed, but before therapy with a stimulant or other medication is begun, we suggest that an ECG be added to the pre-treatment evaluation to increase the likelihood of identifying cardiac conditions that may place the child at risk for sudden death," said Victoria L. Vetter, M.D., head of the statement writing committee and Professor of Pediatrics at the University of Pennsylvania School of Medicine in Philadelphia.

Vetter also said doctors should evaluate children and adolescents already taking these medications if they were not evaluated when they started the treatment.

If heart problems are suspected after the evaluation, children should be referred to a pediatric cardiologist. Once stimulant treatment begins, children should have their heart health monitored periodically, with a blood pressure check within one to three months, then again at routine follow-ups every six to 12 months.

"Children can have undiagnosed heart conditions without showing symptoms," Vetter said. "Furthermore, a child's body changes constantly, with some conditions not appearing until adolescence."

If the initial ECG was taken before age 12 years, it may be useful to do a repeat ECG after the child is over

age 12 years, the statement says.

Widespread use of ECGs to detect heart abnormalities, including screenings for competitive athletes, is not routinely recommended by the American Heart Association. However, the writing group found using ECG screening in this specific population of children prescribed ADHD medication is medically indicated and reasonably priced. That said, however, lack of an ECG shouldn't mean that kids who need ADHD treatment can't get it.

"While we feel that an ECG is reasonable and helpful as a tool to identify children with cardiac conditions that can lead to SCD, if, in the view of their physician, a child requires immediate treatment with stimulant medications, this recommendation is not meant to keep them from getting that treatment," said Vetter, who added that some children may not have access to a pediatric cardiologist who can evaluate an ECG or perform a cardiology consultation.

In 2003, an estimated 2.5 million children took medication for ADHD. Surveys indicate that ADHD affects an estimated 4 percent to 12 percent of all school-aged children in the United States, and it appears more common in children with heart conditions. Studies report that, depending on the specific cardiac condition, 33 percent to 42 percent of pediatric cardiac patients have ADHD, Vetter said. The number of undiagnosed children with heart conditions is unknown as routine heart screening is not performed, but Vetter said that a recent pilot study she presented at the American Heart Association's 2007 Scientific Session indicated that up to 2 percent of healthy school aged children had potentially serious undiagnosed cardiac conditions identified by an ECG.

Data from the FDA showed that between 1999 and 2004, 19 children taking ADHD medications died suddenly and 26 children experienced cardiovascular events such as strokes, cardiac arrests and heart palpitations. Since February 2007, the FDA has required all manufacturers of drug products approved for ADHD treatment to develop Medication Guidelines to alert patients to possible cardiovascular risks.

Future studies are necessary to assess the true risk of SCD in association with stimulant drugs in children and adolescents with and without heart disease, Vetter said. However, studying SCD associated with drugs is difficult because the government's reporting system is voluntary, which means local data on these types of deaths isn't always reported nationally.

A registry of SCD events is necessary for further investigating this issue, the writing committee said. Such a registry would allow for a more accurate understanding of SCD, including the true incidence of it and the potential effectiveness of universal ECG testing and pre-participation screening questionnaires.

The statement writing committee said its recommendations are not intended to limit the appropriate use of stimulants in children with ADHD.

"Our intention is to provide the physician with some tools to help identify heart conditions in children with ADHD, and help them make decisions about the use of stimulant medications and the follow-up of children who take them," Vetter said. "The goal is to allow treatment of ADHD, while attempting to lower the cardiac risk of these products in susceptible children."

Source: American Heart Association

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