

AD/HD and the National Institute of Mental Health: Where are we now and where are we going?

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Purpose

The National Institute of Mental Health (or NIMH) is the nation's leading agency responsible for supporting and conducting research on mental illness in children and adults. As part of this mission, NIMH is supporting and conducting new research on Attention-Deficit/Hyperactivity Disorder (AD/HD). The NIMH helps to increase knowledge about AD/HD and its treatment by funding the best possible research at universities or other institutions, conducting studies at its Bethesda campus, sponsoring meetings or conferences on AD/HD, and offering guidance to scientists about unanswered questions. The NIMH is responsible for helping to push science to learn more about the causes of AD/HD, its symptoms in children and adults, the best and safest treatments, and the delivery of effective services. In working towards these goals, the NIMH is currently supporting at least 50 different research projects related to AD/HD in children, adolescents or adults. Supporting high quality research helps us to learn more about how to help individuals with AD/HD and their families. In this article, I hope to share with you a number of exciting recent activities at the NIMH related to AD/HD, information on a handful of studies conducted with NIMH support, and finally discuss where we are planning to go in the future.

Where are we now:

Understanding Causes and Diagnosis The NIMH funds many different types of research to look at what may cause AD/HD. For instance, we are currently supporting research that looks closely at how children learn to pay attention in different situations, the parts of the brain that are linked to AD/HD symptoms (e.g., prefrontal cortex), and animal studies that look at brain chemicals we now know are related to being able to pay attention and control behavior (e.g., dopamine). We are also supporting studies that look at whether certain genes may make a person more vulnerable to AD/HD. In fact, NIMH is helping to sponsor a network of over 25 scientists who meet five times a year to plan the best ways to use molecular genetics to understand AD/HD. These scientists have agreed to share their data and their discoveries. By talking together and sharing information, scientists can make sure future genetics studies on AD/HD have large enough samples to answer complicated questions and that future research builds on past findings. Due to many of these efforts, we are learning more and more about the pathways to AD/HD symptoms. For instance, in a study partly funded by NIMH, Faraone and his colleagues (1999) found that the AD/HD children of parents diagnosed with AD/HD were more likely to have certain parts of a dopamine gene (DRD4 alleles) than their family members without AD/HD. We have known for a while that AD/HD symptoms were more common across generations in certain families; studies like this help us more clearly understand this family pattern. The study of genes as they relate to AD/HD is complicated since it is unlikely that one single gene explains the occurrence of AD/HD. In fact, it is more likely that multiple genes also influenced by a person's environment

lead to the occurrence of AD/HD symptoms. As information increases about the causes of AD/HD, interventions can be developed that more directly treat the roots of AD/HD symptoms.

The NIMH also supports research on the course of AD/HD, how its symptoms look in both boys and girls, as well as how these symptoms change as individuals age. Since we know much less about girls with AD/HD than boys, NIMH is supporting Drs. Joe Biederman and Russell Barkley to study a large number of girls diagnosed with AD/HD from elementary school into adolescence. Research by Biederman and colleagues (1999) has found that it is not only boys with AD/HD who have problems in school, with peers and within their families. Girls diagnosed with AD/HD were much more likely than other girls their age to have problems with anxiety, poor school achievement, and negative peer relationships. Until recently, we also knew very little about AD/HD in young children; however, recent research has found that AD/HD symptoms can reliably be diagnosed in children four to six years old (Lahey et al, 1998). It also appears that these young children diagnosed with AD/HD are much more likely to have problems with hyperactivity than inattention. Adolescents with AD/HD are less likely to be hyperactive than young children and obviously have different difficulties. For instance, adolescents are much more likely to have co-occurring disorders, or other diagnoses in addition to AD/HD.

Distinguishing between these disorders and deciding on best treatments is important, but can be confusing. For instance, research shows that individuals diagnosed with AD/HD and those with Bipolar Disorder each appear distractible and hyperactive; however, recommended treatments for the two disorders are different. Barbara Geller and her colleagues (1998) have provided some insight into what characteristics distinguish Bipolar Disorder from AD/HD in adolescents. Long periods of overly elevated mood, a decreased need for sleep, and frequent racing thoughts were all much more common in teenagers with Bipolar Disorder than those with AD/HD. Learning more about what symptoms to look for in younger and older children, or girls and boys, will help doctors, teachers and counselors make better decisions about diagnosing and treating AD/HD.

Where are we now:

Understanding Treatments We are learning more and more all the time about what works when treating children diagnosed with AD/HD. NIMH funds many studies looking at behavioral and medical interventions for AD/HD. In fact, the NIMH recently supported the largest study to date looking at the effects of medication and behavioral treatments for children diagnosed with AD/HD. This study is called the multimodal treatment study of children with Attention-Deficit Hyperactivity Disorder (MTA). The MTA study for the first time demonstrates the safety and helpfulness of two treatments for AD/HD, medication and strong behavioral intervention (helping parents manage their child's behavior problems, helping children develop more appropriate social skills, and a school behavior management program) for up to 14 months (MTA Cooperative Group, 1999). This study found that children treated with carefully doctor-supervised medicine alone or

a combination of carefully supervised medicine and behavioral intervention showed fewer AD/HD symptoms than those who received only behavioral treatments or regular treatment in the community. Most of the children receiving regular treatment in the community were prescribed medications for AD/HD, but their medication was not carefully watched by doctors supervising the MTA study. It appears that the careful monitoring of medication is a very important part of positive outcomes for children diagnosed with AD/HD. In other areas important to the child's well-being such as anxiety symptoms and academic performance, the combination of both medication and behavioral interventions was consistently more helpful for most children than either only medication or behavioral interventions alone. This study also showed that there is no single treatment that fits every child diagnosed with AD/HD. We are learning that designing a suitable treatment for AD/HD requires that each child's needs, personal and medical history be carefully considered. More "questions and answers" about the MTA study may be found at: <http://www.nimh.nih.gov/events/mtaqa.ctm>.

Many children and adults with mental disorders in the United States are treated with several different medications at the same time, even though there is not much information on how well these medications work together. Since many children with AD/HD also have co-occurring disorders, such as oppositional behavior or anxiety, it is not unusual to find a child diagnosed with AD/HD on two or more medicines. This is particularly true of children with both AD/HD and mood disorders. Consequently, the NIMH is currently funding a large study to collect information on how well two medications (methylphenidate and fluvoxamine) work for treating AD/HD and anxiety in children and adolescents. The results of this study will help us understand the effects when the two medicines are used together as well as the proper, safest combined dosages necessary to produce the most positive outcomes.

Where are we going?

AD/HD continues to be one of the most frequently studied childhood behavior disorders; however, there are several areas where we still need to learn more. For instance, most research on medical (e.g., Ritalin) or behavioral treatments (e.g., social skills training, school-based behavior modification) for AD/HD end after less than a year. Since many individuals diagnosed with AD/HD take medications for much longer than a year, the NIMH recognizes the critical need to study the long-term effects and safety of treatments. Although beginning results from the NIMH multi-site treatment study for AD/HD have been released, the NIMH plans to fund research to continue to follow the children and families involved in this study for several more years. This will give us a chance to learn even more about the long-term effects of 14 months of carefully planned medication and behavioral treatment.

A recent study funded by NIMH found a dramatic increase from 1991-1995 in the amount of psychotropic medication prescribed to preschool children for AD/HD symptoms (Zito et al., 2000). Despite a lot of research on commonly used stimulant medications in school-age children, very little has been done to examine the effects of these same drugs in young children. Dr. Zito's findings among others support NIMH's

commitment to learning more about the safety and effects of medications in young children. In December of 1999, the NIMH hosted a meeting on the long-term effects of stimulant medication to increase scientists' awareness of different ways to study the effects of these drugs on the brain.

A summary and recommendations from this meeting can be found at: <http://www.nimh.nih.gov/AD/HDworkshop.cfm>. Results from this meeting will be used to help NIMH make decisions about research which will best shed light on where, when and why certain medications are or are not appropriate for use in children.

Despite the amount of research on helpful services, many children with AD/HD still do not receive the kinds of interventions or frequent medication check-ups that research shows work best. Consequently, the NIMH plans to encourage future research on how to improve the quality of care for individuals diagnosed with AD/HD and their families. In particular, the NIMH is looking at ways to better address AD/HD in physician offices and schools. For instance, the NIMH just issued a request for applications to researchers to develop new treatments for use in primary medical care or school settings. Many researchers have proposed research to do just such a thing and NIMH is currently reviewing their applications.

Finally, the NIMH recognizes the need to involve many different types of scientists to help us understand what causes AD/HD symptoms and how they can be treated or maybe even eventually prevented. This includes scientists who study the way people think (e.g., cognitive psychologists), genes (geneticists), and brain systems (e.g., neuroscientists) in both people and animals. NIMH is making an effort to interest these scientists in studying areas relevant to AD/HD and to link their work to other researchers in mental health (e.g., clinical psychologists and psychiatrists). In March of this year, NIMH gathered a small group of scientists from 10 different research areas to talk about unanswered AD/HD-related questions that they might be able to address by working together. The NIMH believes that helping scientists see how different areas of research inform each other will help us learn more about good treatments, ways to identify particular children who are at risk for AD/HD, develop early interventions and ultimately prevention efforts.

Additional Resources

As NIMH continues to fund research to increase our understanding of AD/HD, other organizations use the latest research to help professionals make decisions on how to diagnose and treat AD/HD. Most recently, the American Academy of Pediatrics (or AAP) published guidelines for the diagnosis and evaluation of a child with AD/HD. These guidelines outline recommendations for how pediatricians should go about assessing children for AD/HD. They include recommendations for pediatricians to use the complete diagnostic criteria for AD/HD, get information from both parents and teachers about the child's symptoms as well as other problem areas (such as school or peers), and the need to completely assess for other mental health problems (such as depression or conduct problems). Although these guidelines are written for doctors, they

could also be used to help parents understand what has been suggested to their pediatricians for appropriate care. The full guidelines can be found on the internet at: <http://www.aap.org/policy/ac0002.html>.

This article simply provided you with an overview of NIMH activities and research on AD/HD. Additional information on AD/HD may be found on the NIMH website at <http://www.nimh.nih.gov>, with specific information on child and adolescent mental health at <http://www.nimh.nih.gov/publicat/childmenu.cfm>. Several of these documents may be printed off of the Internet and/or ordered in bulk quantities. Examples of available topics include: "Your Child and Medication," "Genetics and Mental Disorders: AD/HD Fact Sheet," and more information on the multi-site treatment study for children diagnosed with AD/HD. This website is updated routinely with the latest information on NIMH activities and information for use by parents, service providers, researchers and others. We are learning more about diagnosing and treating AD/HD with every research project. It is important for individuals with AD/HD, parents, advocates and/or service providers to learn about research related to AD/HD and participate in its development whenever possible. Your use of this information and insight into necessary next steps for learning more will be important in helping improve the lives of those diagnosed with AD/HD and their families.

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Note: The opinions and assertions contained in this paper are the private views of the author and are not to be construed as official or as reflecting the views of the Department of Health and Human Services or the National Institute of Mental Health.

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