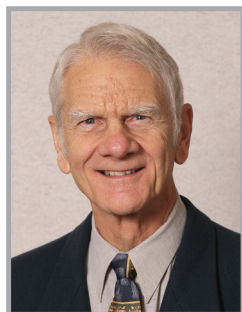
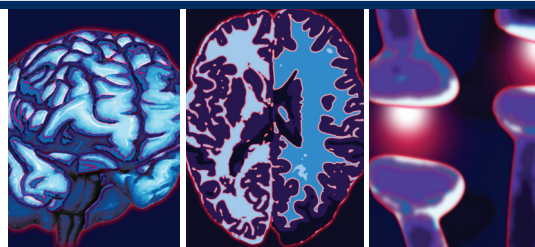


## ASK THE EXPERTS

# How can we improve the diagnosis of attention deficit/hyperactivity disorder?



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Network. He has over 40 years' experience in child psychiatric research, including the multisite National Institute of Mental Health Multimodal Treatment Study of Children With Attention Deficit Hyperactivity Disorder, for which he continues as executive secretary and current chair of the steering committee. For his work on the Multimodal Treatment Study of Children With Attention Deficit Hyperactivity Disorder he received the NIH Director's Award. A particular interest is alternative and complementary treatments for attention deficit hyperactivity disorder. His publications include nine books, over 60 chapters and over 200 articles.

**Q** What are the major challenges in diagnosing attention deficit hyperactivity disorder & should there be any changes to the current guidelines?

One of the challenges is the ruling out of other disorders as a better explanation of the symptoms (5th criterion). This is the most time consuming part of the diagnostic criteria, and often neglected. None of the symptoms of attention deficit hyperactivity disorder (ADHD) are pathognomonic; all of them can occur in other disorders. In fact, they may occasionally occur to a mild degree in everyone. ADHD is a quantitative diagnosis, not qualitative, like blood pressure. Everyone has a blood pressure, but too much of it can be a problem. Blood pressure elevation can occur for many reasons other than essential hypertension, for example exercise, hyperthyroidism, anxiety, fright or kidney failure. Those other conditions

need to be ruled out before diagnosing essential hypertension; similarly other disorders with ADHD-type symptoms need to be ruled out as the cause of the apparent ADHD before diagnosing ADHD.

Another challenge is the changing manifestation over time. With maturation, the hyperactivity and impulsiveness tend to be muted to a feeling of restlessness, minor fidgeting and impatience, but the inattentive symptoms tend to persist. This changing manifestation is complicated by the normal developmental calming and increased attention span with maturation of typically developing children. Thus each symptom has to be evaluated in reference to the stage of development.

In some cases, especially with adults and even adolescents, there is some difficulty tracing the symptoms prior to 7 years of age. Bright children, in particular, may sail through the first few years of school

## News & Views

News

Journal Watch

Ask the Experts

“...other disorders with ADHD-type symptoms need to be ruled out as the cause of the apparent ADHD before diagnosing ADHD.”

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without apparent difficulty, only to run aground when the work becomes more detail-demanding with longer projects. Raising the age-of-onset criterion to 12 rather than 7 years should solve that problem considerably; this is reportedly planned for Diagnostic and Statistical Manual of Mental Disorders (DSM)-V.

**Q Has the improved understanding of ADHD over the last 10 years influenced the diagnostic criteria?**

The understanding of ADHD and the diagnostic terminology for it have both evolved over the last 50 years. One insight, occurring in the late 60s and early 70s, was the realization that inattentive symptoms were as important as the excess activity level. About the same time, recognition of the central role of impulsiveness also emerged. Appreciation of the full spectrum allowed diagnosis of subtypes at the opposite poles of the spectrum: inattentive type at one end, hyperactive-impulsive type at the other end, and combined type showing the full spectrum of symptoms. The realization that the syndrome persists lifelong in some people has led to recognition that the current criteria, well-suited to elementary school children, is not developmentally sensitive for adults and preschoolers. Therefore, a current push for age-specific criteria may influence the DSM-V criteria.

**Q Is there a different approach to diagnosing the condition in adults & children?**

In children, diagnosis is made mainly by history from caregivers, usually parents and teachers; child self-report is notoriously invalid, children usually being oblivious to their role in their own problems. In adults there is more dependence on self-report, and presumably more insight to make the self-report more valid. In many cases parents are not available or do not have enough contact to give valid current information. Sometimes a significant other, coworker, or employer may provide a third-party confirmation of symptoms. A major difference, of course, is that children are usually brought for diagnosis by parents, but adults either come on their own or with encouragement of a friend or significant other.

**Q Are there any specific comorbid conditions that can affect the accuracy or influence the diagnosis?**

Anxiety and mood disorders have many ADHD symptoms and can either mimic or additively aggravate ADHD symptoms. Oppositional-defiant disorder and conduct disorder, frequent comorbidities, often involve aggression, which influences teacher ratings of hyperactivity: teachers tend to rate hyperactivity higher in the presence of aggression.

**Q To what extent does the diagnosis of the disorder have an impact on the potential therapy (pharmacological or psychosocial) used by the clinician?**

The background of the clinician may have more to do with the therapy implemented than the diagnosis. A busy pediatrician or family practitioner may not have time for more than prescribing a US FDA-approved drug. A mental-health clinician without prescribing privileges does not have the option of prescribing, but has expertise in behavioral treatments and the time to implement them and is likely to initiate those. A psychiatrist has more time per patient than other physicians in addition to prescribing ability, and if there is an interest, may implement several kinds of treatment. To some extent the patient/family's preference may determine which treatment is implemented, even to the extent of which discipline they choose to seek help from. For example, they may go to a psychologist or social worker/counselor in an effort to avoid medication; or they may feel that a prescription from the child's regular doctor is less stigmatizing than seeing a mental health professional.

**Q Do you see a role for genetic & imaging testing of patients in the future?**

Yes, eventually these can be developed into useful diagnostic tools, but at this time they are not reliable and valid enough. Although we can detect differences in certain allele frequencies and find significantly smaller cerebella, right frontal cortex, and anterior cingulate gyrus in ADHD patients compared with normal controls, there is so much overlap that we cannot classify diagnostically yet. The NIMH push for

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research domain criteria (see below) may eventually result in diagnoses made on such biological bases superseding the current phenomenological criteria.

**Q Are there any recent findings that may influence the understanding, diagnosis & treatment of ADHD?**

The rapidly emerging findings in brain imaging and genetics have set the stage for a better understanding of endophenotypes. For mental disorders in general, NIMH is now encouraging more biologically-based research domain criteria that cut across current diagnostic categories. For example, some people with depression, some with anxiety, and some with ADHD may respond to certain antidepressants. If a biological endophenotype could be discovered that identifies patients who would respond to a particular treatment regardless of depression, anxiety or ADHD, a diagnosis based on that endophenotype would be more useful to clinicians (and investigators) than the current diagnostic slicing and dicing.

Another recent trend is the emerging appreciation that treatments that work well at one age or developmental stage may not work so well or be practical at another age/stage. For example, medication and parent training are well established as efficacious in the elementary school age, but

adolescents tend to stop medication (~10% per year) and parent training is not likely to be very effective for this more independent stage. On the other hand, cognitive-behavioral therapy, not very impressive at the elementary school age, appears to show significant benefit in late adolescence and young adulthood.

On a different front, an increasing number of reports are implicating environmental pollutants as possibly contributing to ADHD symptomatology. These include insecticide residues on fruits and vegetables, and such industrial, construction, and consumer product chemicals as PCBs and fluoroalkyl residues. These may interact with the genetic vulnerability of certain individuals. A better understanding of these issues could lead to more effective prevention and treatment.

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