

[REVIEW]

# Adult ADHD



# Diagnosis, Differential Diagnosis, and Medication Management

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**A**ttention deficit hyperactivity disorder (ADHD) persists into adulthood in approximately 10 to 60 percent of individuals diagnosed in childhood. Expression of symptoms changes in the adult assessed for the disorder. The symptoms of adult ADHD resemble the symptoms of childhood ADHD, but symptom intensity, especially hyperactivity, may decrease over time. A childhood history of ADHD is requisite for a diagnosis of adult ADHD, although full DSM-IV criteria for the childhood disorder need not be met as long as there exists impairment in multiple settings (i.e., academic, relationship, and occupational). There is a high probability of co-morbid disorders, as well as the likelihood that the adult with ADHD has developed coping mechanisms to compensate for his or her impairment. Pharmacologic treatments and multiple types of psychotherapy are available for adults with ADHD.

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## SIGNS AND SYMPTOMS OF ADULT ADHD

- Difficulty getting started on tasks
- Variable attention to details
- Difficulties with self-organization and with prioritization
- Poor persistence in tasks that require sustained mental effort
- Impulsivity and low frustration tolerance (to varying degrees)
- Hyperactivity (less salient symptom in adults)
- Chaotic life-styles
- Associated psychiatric comorbidities (in some patients)
- Disorganization
- Substance abuse (in some patients)

### WHAT IS ADULT ADHD?

Attention deficit hyperactivity disorder (ADHD) historically was considered to be a disease of childhood, affecting 4 to 12 percent of school age children.<sup>1,2</sup> It is now thought to persist into adult life in 10 to 60 percent of cases<sup>3,4</sup> and is present in about 4.5 percent of adults.<sup>5</sup>

Signs and symptoms of ADHD in adulthood<sup>2</sup> include difficulty getting started on tasks, variable attention to details, difficulties with self-organization and with prioritization, and poor persistence in tasks that require sustained

presentations of ADHD.<sup>3</sup> Adults who present in primary care settings often have chaotic life-styles, associated psychiatric comorbidities,<sup>5</sup> may appear to be disorganized, and may rely on drugs and alcohol to “get by.”<sup>2</sup>

There are no specific criteria for ADHD in the DSM-IV-TR that are exclusively applicable to adults. Adults commonly complain of impairment in work and at home and in relationships with other people due to impulsiveness, hyperactivity, and difficulty paying attention. They often have an associated psychiatric disorder, such as depression, anxiety, bipolar disorder, substance abuse, or a learning disability.<sup>2</sup>

ADHD is not an acquired disorder of adult life. To qualify for ADHD as an adult, one must have had it as a child, although some of the symptoms of ADHD can occur in adults due to brain injuries or other organic causes. Symptoms are present consistently since childhood, and do not occur episodically.

Impairments in function are global not selective. The impact of ADHD is generally noticeable in all spheres of life, to a greater or lesser degree. Although adult

result in impaired occupational functioning and interpersonal and legal difficulties. ADHD in adults is associated with higher separation and divorce rates and more frequent job changes.<sup>3,9</sup> Pharmacological treatment is the mainstay of therapy for adult ADHD.

ADHD is thought to be caused by a complex combination of environmental, genetic, and biological factors,<sup>2</sup> and the precise etiology in a given patient may be unknown and may differ among individuals. There are well-defined prenatal and perinatal risk factors for ADHD. These include exposure to cigarettes and alcohol *in utero*, low birth weight, and brain injuries occurring *in utero*.<sup>12</sup> Family, twin, adoption, and gene segregation analysis studies suggest that genetics play a major role in ADHD.<sup>2,13-17</sup> Approximately half of parents who have been diagnosed with ADHD themselves will have a child with this disorder.

The most widely accepted gene association is with the D4 dopamine receptor gene (DRD4 7).<sup>18,19</sup> Norepinephrine and epinephrine also influence the amount of available dopamine at this receptor site, and this is

**APPROXIMATELY HALF OF PARENTS** who have been diagnosed with ADHD themselves will have a child with this disorder.

mental effort.<sup>6-9</sup> Impulsivity and low frustration tolerance may be present to varying degrees. Hyperactivity tends to be a less salient symptom in adults compared to childhood

ADHD is a relatively common disorder, only one third to one half of adults who believe they have ADHD actually meet formal DSM-IV-TR criteria.<sup>11</sup> Untreated or under-treated adult ADHD may

purportedly why medications affecting norepinephrine or epinephrine also can influence the dopamine system and thereby improve the symptoms of a person with ADHD.

## WHAT ARE THE SYMPTOMS AND SIGNS OF ADULT ADHD? WHAT IS THE DIFFERENTIAL DIAGNOSIS?

Adult ADHD patients complain of difficulty with concentration, attention, and short-term memory.<sup>20</sup> The most common psychiatric conditions that may have overlapping symptoms with adult ADHD include mood disorders, anxiety disorders, substance use disorders, antisocial personality disorder, borderline personality disorder, developmental disabilities or mental retardation, and certain medical conditions.<sup>2</sup>

As outlined elsewhere,<sup>2</sup> individuals with major depressive disorder may show signs of inattention and become easily upset; however, they have also experienced at least two weeks of depressed mood or loss of interest or pleasure in most activities and they complain of fatigue, loss of energy (rather than hyperactivity), and an appetite disturbance.<sup>2</sup>

Adults with bipolar disorder have clear episodic mood impairments, including periods of elation, severe anger and irritability, grandiosity, decreased need for sleep (and not feeling tired), hypersexuality, and racing thoughts.<sup>2,21</sup> They may have psychotic symptoms, such as delusions.

Patients with anxiety disorders<sup>2</sup> may show hyperactive behavior, such as fidgeting and inattentive behaviors, but these behaviors are accompanied by persistent fear and worries and somatic symptoms of anxiety. In substance abuse disorders, symptoms are directly related to intoxication with substances and associated withdrawal if physiologic dependence is present.<sup>2</sup>

Patients with antisocial personality disorder differ from ADHD by exhibiting persistent

antisocial behavior, such as lying, cheating, stealing, and a pervasive pattern of disregard for and violation of the rights of others. They also have frequent arrests and more serious legal issues.<sup>2</sup>

Although there also are similarities in symptoms of borderline personality disorder and ADHD, which include impulsivity, affective lability, and angry outbursts, the impulsivity and anger in ADHD is usually thoughtless and brief, while symptoms in the borderline patient are more goal-directed and ongoing. Unlike patients with borderline personality disorder, patients with ADHD do not have intensely conflicted relationships, suicidal preoccupation, self-mutilation, identity disturbances, or feelings of abandonment.<sup>2</sup>

An adult with developmental disabilities or mental retardation may present with some of the symptoms seen in ADHD patients, but rarely will have presented for initial consultation during adulthood, and psychological testing will reveal significant neurocognitive deficits.<sup>2,22</sup>

Medical conditions that may at first appear to be adult ADHD include hyperthyroidism, seizure disorder, lead toxicity, hearing deficits, hepatic disease, sleep apnea, drug interactions, and head injury.<sup>2,23-25</sup> Adult ADHD often presents with psychiatric comorbidities, including affective disorders, anxiety disorders, substance abuse disorders, learning disabilities, and borderline and antisocial personality disorders.<sup>2,26-29</sup>

## THE MOST COMMON PSYCHIATRIC CONDITIONS

that may have overlapping symptoms with adult ADHD include mood disorders, anxiety disorders, substance use disorders, antisocial personality disorder, borderline personality disorder, developmental disabilities or mental retardation, and certain medical conditions.

## PERFORMANCE TESTING AND PSYCHOLOGICAL TESTING

Usually, the diagnosis of adult ADHD can be made from the history of childhood and adult symptoms. However, one DSM-IV-based rating scale for adults that may help the clinician affirm the diagnosis is the clinician-rated Conner's Adult ADHD Rating Scale.<sup>30</sup> There also are self-report behavior rating scales that may be helpful. These include the Copeland Symptom Checklist for Adult ADHD, a three-point severity rating scale for a broad range of cognitive, emotional, and social symptoms filled out by the patient;<sup>31</sup> the Wender Utah Rating Scale, a retrospective five-point severity rating scale of childhood ADHD symptoms filled out by the patient;<sup>32</sup> the Brown Adult ADHD Scale, a four-point frequency rating scale for cognitive symptoms associated with difficulty initiating and maintaining optimal arousal

**PSYCHOSTIMULANTS REMAIN A FIRST-LINE TREATMENT** for adult ADHD, and they improve both behavioral and cognitive aspects of the disorder in the majority of patients. Unfortunately they are Schedule II drugs and have an addiction and abuse potential, and a number of adult ADHD patients have co-occurring substance use disorder.

level completed by the patient;<sup>33</sup> and the Pilot Adult ADHD Self-Report Scale (ASRS), which is a frequency-based scale that matches the 18 items in the DSM-IV, has adult-specific language, and includes situational “context” for describing symptoms.<sup>5</sup>

### **ASSESSING FOR PHARMACOLOGICAL INTERVENTION**

There are no laboratory studies currently available to diagnose adult ADHD. However, the psychiatrist should monitor liver function studies and a CBC (complete blood count) both prior to initiation of treatment with medication and serially thereafter. Hyperthyroidism should be ruled out.

Seizure history would be a relative contraindication to the use of stimulants because they can

lower the seizure threshold. If there are focal neurological findings on physical examination or if there is a history of traumatic brain injury, further neurological workup and radioimaging studies would be indicated, but otherwise they are not necessary.<sup>2</sup> A referral can be made to a neuropsychologist if there are concerns over learning disabilities or if it is difficult to determine if the disorder had a childhood onset.<sup>34,35</sup> Neuropsychological testing may include tests of vigilance by continuous performance testing (CPT) because vigilance has been found to be abnormal in adults with ADHD.<sup>34,35</sup> Also, there is evidence that persons with adult ADHD

have abnormalities in perceptual-motor speed, working memory, verbal learning, semantic clustering, and response inhibition. A neuropsychologist also may look for a learning disability by testing in several sensory modalities (e.g., visual vs. auditory presentation of stimuli) to determine if the person has a deficit in one modality but not the other.

### **AVAILABLE PHARMACOLOGICAL TREATMENTS**

The purpose of medications used in the treatment of adult ADHD is to obtain enhanced attention, better academic performance, and facilitated working memory.<sup>34</sup> Medications also can reduce psychomotor activity, decrease aggression, and decrease disruptive behavior. Residual symptoms may persist at a lower level, however.<sup>2</sup> Stimulants and

medications that inhibit norepinephrine reuptake are the most widely used treatments for adult ADHD.<sup>26–29,35,38</sup>

Psychostimulants remain a first-line treatment for adult ADHD, and they improve both behavioral and cognitive aspects of the disorder in the majority of patients.<sup>34,39</sup> Unfortunately, they are Schedule II drugs and have an addiction and abuse potential, and a number of adult ADHD patients have a co-occurring substance use disorder.<sup>38</sup> Also, there may be a risk of cardiovascular side effects with stimulants. These medications have been associated with increases in heart rate and blood pressure, which potentially could result in an increased risk of heart attack, stroke, and sudden death.<sup>39</sup>

A non-stimulant drug that has demonstrated some efficacy in the treatment of adult ADHD is atomoxetine, which has an effect on norepinephrine systems alone.<sup>40,41</sup> Atomoxetine is the first non-stimulant drug approved by the FDA for the treatment of ADHD in children and adolescents, and the efficacy, safety, and tolerability have been well-established.<sup>41,42</sup> Since this medication has a low potential for abuse, it recently has been used with good results in adults. Other medications include those tricyclic antidepressants that are known to have an effect on norepinephrine and serotonin systems, and bupropion (which affects norepinephrine and dopamine systems).<sup>43–46</sup> These drugs, although sometimes used in the management of adult ADHD symptoms, are not yet approved by the FDA for this purpose.

### **CONCLUSION**

ADHD is now understood to be a disorder that persists into adulthood in some persons and has global effects on their daily lives,

affecting social, occupational, and relational functioning. Evidence-based pharmacologic, psychosocial, and psychotherapeutic interventions are available for effective treatment.

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## Treatment Methods of Adult ADHD

- Stimulants alone
- Stimulants with other psychotropic medication
- Nonstimulant psychotherapeutic medications alone
- Supportive psychotherapy
- Behavioral interventions/psychotherapy

**SINCE ATOMOXETINE, A NON-STIMULANT, has a low potential for abuse, it recently has been used with good results in adults.**

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**OTHER MEDICATIONS** [used to treat adult ADHD] include those tricyclic antidepressants that are known to have an effect on norepinephrine and serotonin systems, and bupropion (which affects norepinephrine and dopamine systems). These drugs...are not yet approved by the FDA for this purpose.

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