

Unrecognized Attention-Deficit/ Hyperactivity Disorder in Adults Presenting with Other Psychiatric Disorders

By Russell A. Barkley, PhD, and Thomas E. Brown, PhD

ABSTRACT

Many adults with a diagnosed psychiatric disorder also have attention-deficit/hyperactivity disorder (ADHD). In many cases, comorbid ADHD is unrecognized and/or undertreated. Differential diagnosis of adult ADHD can be challenging because ADHD symptoms may overlap with other psychiatric disorders and patients may lack insight into their ADHD-related symptoms. Current ADHD diagnostic criteria in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Text Revision* may prevent appropriate diagnosis of many patients with significant ADHD symptoms. Adults may not be able to provide a history of onset of symptoms during childhood, and it may be difficult to confirm that ADHD symptoms are not better accounted for by other comorbid psychiatric conditions. Comorbid ADHD is most prevalent among patients with

FOCUS POINTS

- Attention-deficit/hyperactivity disorder (ADHD) often persists across the lifespan and is increasingly recognized as a disorder marked by impaired executive function.
- ADHD may often be unrecognized in adult patients with an already diagnosed psychiatric disorder; it is frequently seen in patients with mood, anxiety, substance use, and impulse-control disorders.
- Comorbid ADHD can compromise adherence to a medication regimen and destabilize daily functioning, leading to poor outcomes.
- In patients who have ADHD and comorbid psychiatric disorders, the ADHD is as likely to respond to ADHD medications as in those patients without comorbid psychiatric disorders.
- Treating comorbid ADHD may have a positive impact on adherence to treatment regimens, daily functioning, and quality of life.

mood, anxiety, substance use, and impulse-control disorders. ADHD can negatively affect outcomes of other comorbid psychiatric disorders,

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and ADHD symptoms may compromise compliance with treatment regimens. Furthermore, unrecognized ADHD symptoms may be mistaken for poor treatment response in these comorbid disorders. In these individuals, ADHD pharmacotherapy seems to be as effective in reducing core ADHD symptoms, as it is in patients who have no comorbidity. Limited evidence further suggests that ADHD therapy may help to improve symptoms of certain psychiatric comorbidities, such as depression. Therefore, management of ADHD may help to stabilize daily functioning and facilitate a fuller recovery.

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INTRODUCTION

Attention-deficit/hyperactivity disorder (ADHD), which had been considered as a disorder limited primarily to childhood, is now regarded as a persistent neurodevelopmental disorder impairing executive functioning (EF), or the "management system" of the brain, that usually persists into adulthood.^{1,2} ADHD is estimated to affect as many as 5% to 12% of children worldwide,³⁻⁵ with ~15% to 65% of these showing persistence of ADHD symptoms into adulthood.⁶ This range is largely due to the definition of persistence, which includes individuals with partial remission. Overall, ADHD is estimated to affect 4.4% of adults in the United States,⁷ but it frequently remains undiagnosed, with ~10.9% of eligible patients currently receiving treatment.⁷

One reason that ADHD in adults is not adequately treated is that it may not be recognized. Patients may have symptoms that do not fit those traditionally associated with ADHD, or their ADHD symptoms may be seen as aspects of another diagnosed psychiatric disorder.⁸ For example, some symptoms of ADHD may be mistaken for symptoms of other disorders (ie, bipolar depression, anxiety disorder). Some other symptoms may not be in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision*¹ (eg, problems with executive function), while some are separate disorders that have increased risk when one is diagnosed with ADHD (eg, substance use).⁹

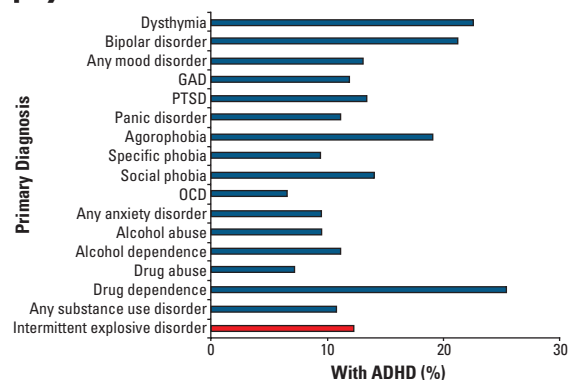
Patients may also lack insight into their problems and assume that their ADHD symptoms are person-

ality or character traits. They may not understand the manner in which ADHD symptoms appear in an adult. For these or other reasons, patients may fail to mention ADHD symptoms to their healthcare provider unless they are specifically asked.

In a sample of individuals in the US diagnosed with any psychiatric disorder within the preceding 12 months, between 6.5% and 25.4% also met criteria for adult ADHD (Figure).^{7,10,11} The four most prevalent psychiatric disorders linked to elevated rates of comorbid ADHD include drug dependence, agoraphobia, dysthymia, and bipolar disorder.^{7,11} Given these high rates of comorbidity, clinicians should routinely screen for ADHD in every diagnostic evaluation.

The possibility of comorbid ADHD should be considered during the course of treatment when a patient does not respond adequately to the usual interventions for a diagnosed disorder. Nonresponse may be due to noncompliance, which may be associated with ADHD.¹² Patients with ADHD may be forgetful or too impulsive to be compliant with a regular treatment regimen for their comorbid disorder. They may also become dissatisfied because of a perceived lack of improvement in their symptoms and decide to stop the treatment. Partial response, refractory symptoms, or patient noncompliance may be related to the presence of unrecognized ADHD.

FIGURE.
Prevalence of adult ADHD among National Comorbidity Survey replication respondents (N=3,199) with a psychiatric disorder⁷



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ADHD=attention-deficit/hyperactivity disorder; GAD=generalized anxiety disorder; PTSD=posttraumatic stress disorder; OCD=obsessive-compulsive disorder.

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Proper recognition and treatment of comorbid ADHD may help patients better adhere to treatment regimens and may resolve refractory symptoms, boosting therapeutic benefits and enhancing quality of life. However, appropriate treatment of comorbid ADHD is often not provided.

TABLE.**Proposed DSM-V Criteria for ADHD in Adults¹**

Six (or more) of the following symptoms persisting for at least 6 months to a degree that is maladaptive and developmentally inappropriate

1. Often easily distracted by extraneous stimuli or irrelevant thoughts
2. Often makes decisions impulsively
3. Often has difficulty stopping activities or behaviors when they should do so
4. Often starts a project or task without reading or listening to the directions carefully
5. Often shows poor follow-through on promises or commitments made to others
6. Often has trouble doing things in their proper order or sequence
7. Often more likely to drive a motor vehicle much faster than others (excessive speeding)

Alternate symptom for adults with no driving experience: often has difficulty engaging in leisure activities or doing fun things quietly

8. Often has difficulty sustaining attention in tasks or play activities
9. Often has difficulty organizing tasks and activities

- Some symptoms that caused impairment were present in childhood to adolescence (before 16 years of age)

- Some impairment from the symptoms is present in ≥2 settings (eg, work, educational settings, home life, community functioning, social relationships)

- There is clear evidence of clinically significant impairment in social, educational, domestic (eg, dating, marriage, cohabitation, financial, driving, childrearing), occupational, or community functioning

- The symptoms do not occur exclusively during the course of a pervasive developmental disorder, schizophrenia, or other psychiatric disorder, and are not better accounted for by another mental disorder (eg, mood disorder, anxiety disorder, dissociative disorder, a personality disorder)

DSM-V=Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition; ADHD=attention-deficit/hyperactivity disorder.

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KEY FACTORS FOR DIAGNOSING COMORBID ADHD IN ADULTS**Diagnostic Criteria and Symptom Presentation for Adult ADHD**

Clinicians should be familiar with the various presentations of ADHD in adults.¹ Clinicians should also be aware that the *DSM-IV-TR* requirement that adult patients have onset of ADHD symptoms before 7 years of age is being reexamined and questioned.¹³⁻¹⁶ Adults who meet all *DSM-IV-TR* ADHD symptom criteria except for the stipulation that onset of symptoms should be before 7 years of age, have been found not to differ significantly from adults with the stipulated early age of onset.¹⁷ ADHD often is not recognized until adolescence or early adulthood, when EFs are challenged by increased demands for self-management. Females and males who are intelligent and do not exhibit disruptive behavior in early childhood are especially likely to have their ADHD symptoms overlooked until mid-adolescence or early adulthood.¹³ Therefore, since symptoms may be overlooked until later in life, diagnosis of ADHD in adults should be made as early as possible, with no predefined age limit for onset of symptoms in childhood and adolescence.

Broadly considered, EF is a set of cognitive processes, including attention, that facilitate flexible, goal-directed behaviors.¹⁸ Barkley and colleagues¹ consider these EFs to be forms of self-directed actions used to modify subsequent behavior so as to maximize longer-term or delayed consequences. The primary components or clusters of EF include behavioral inhibition; organizing and activating to work; sustaining and shifting attention to tasks; regulating alertness and sustaining effort; managing emotions; and using working memory.² EF impairments in adults may appear as distractibility or problems with organization and time management, and may affect academic or professional performance as well as personal life.

Manifestations of ADHD symptoms may change considerably from childhood to adulthood. Although hyperactivity is not required for a diagnosis of ADHD,¹⁶ when present, it tends to diminish with age,¹⁹ so those with ADHD may not show symptoms of hyperactivity in adulthood, even though they had such symptoms in early childhood.^{20,21} The set of symptoms associated with inattention usually become more prominent in adults with ADHD. Adults with ADHD are less likely to obtain college or advanced degrees

and more likely to experience employment instability marked by frequent job changes.^{22,23} Furthermore, adults who had childhood ADHD are more likely to have poor driving records,^{24,25} marital difficulties, and fewer friends.^{23,25}

Not all EF impairments are attributable to ADHD.²⁶ Such difficulties can also result from substance abuse, disorders on the autistic spectrum, cerebral vascular accidents, dementias, etc. Skilled clinical evaluation in assessing long-term functioning across multiple domains is needed to accurately differentiate ADHD from other psychiatric and neurologic disorders.

Comprehensive clinical interviews are an effective way to assess for ADHD and to make an adequate differential diagnosis. EF deficits may underlie reported inability to start or complete projects; thus, chronic and severe procrastination is often a major problem.² Adults with ADHD may cite problems sustaining attention during classes or meetings, or report losing track of a discussion because of daydreaming or becoming drowsy, despite actively *trying* to pay attention. Adults with ADHD may also have difficulty controlling emotions, feeling overwhelmed, sad, impatient, or angry, often over minor issues and may act out in ways inappropriate or disproportionate to the situation.²

Physicians may expect impairments across all aspects of ADHD, but some adults may mask some of their ADHD symptoms through use of minimizing or compensating strategies. For example, they may choose professions involving much physical activity or avoid situations demanding long periods of intense concentration.²⁷

One common mistake in assessment is failure to recognize that adults with ADHD may show normal or excellent functioning while doing tasks in which they have strong personal interest or when they feel themselves under threat of immediate negative consequences if they fail to complete the task immediately. The patient with ADHD typically cannot utilize willpower to achieve comparable levels of efficacy in situations that are not of high interest or of immediate threat.^{2,13}

Diagnostic Approaches and Tools

Traditional neuropsychological tests to evaluate EF are of limited use in diagnosing adults with suspected ADHD.^{26,28} A meta-analysis of 33 investigations using traditional EF assessments found inconsistencies and a wide variety of performance differences that indicate neuropsychological defi-

cits in adults with ADHD.²⁹ The complex and interactive nature of EF suggests that more sensitive assessments are derived from clinical interviews assessing how the patient performs complex, self-managed tasks of everyday life.³⁰

While clinically useful, *DSM-IV-TR* criteria have important limitations for adults. They have been developed and validated only for children 4–17 years of age. Consequently, some items lack relevance in adults (eg, “has difficulty playing... quietly”). Further, the threshold requirement for 6 of 9 possible symptoms on one or both of two clusters of diagnostic criteria, or 3.5 standard deviations above the mean for a normal control group,³¹ appears overly restrictive for diagnosing adult ADHD. Because of these limitations, the *DSM-IV-TR* criteria may miss many adult ADHD patients with significant impairments.¹⁵

To evaluate possible ADHD in adults, the ADHD Rating Scale IV (ADHD-RS-IV),³² based on the 18 symptoms in the *DSM-IV-TR*, has been modified with additional prompts for adults.³³ The adult prompts include changing some of the wording in the questions of the ADHD-RS-IV. For example, the phrase “play activities” might be replaced with “leisure activities” in the item “has difficulty sustaining attention in tasks or play activities.”³³

Two criteria-normed symptom rating scales for adults (Conners' Adult ADHD Rating Scale [CAARS], Brown Attention-Deficit Disorder Scale [BADDSS]) that elicit self-report and collateral report data on a range of ADHD-related symptoms more inclusive than the *DSM-IV-TR* diagnostic criteria have been published. Kooij and colleagues³⁴ recently compared these scales with one another and with the ADHD-RS in conjunction with a structured diagnostic interview. In a sample of 120 adults with ADHD, the CAARS had a missed diagnosis rate of 39%, while the ADHD-RS (9% to 20% missed diagnosis depending on cutoff), and BAADS (16% missed diagnosis) performed better in predicting clinical diagnosis. They also found that adults with ADHD seem to be the best informants regarding their symptoms, though patients did underreport inattention and hyperactivity/impulsivity on the ADHD-RS.³⁴

Barkley and colleagues¹ have proposed a revised list of ADHD symptoms in adults for possible inclusion in the upcoming *DSM-V*. A chart review of >200 adults with a *DSM-IV-TR* diagnosis of ADHD yielded 91 common complaints

and adaptive behavioral difficulties, including 9 items related to cognitive and behavioral inhibition (Table).¹ The presence of 6 of these 9 items accurately classified 92% of adults with *DSM-IV-TR*-diagnosed ADHD while excluding 99% of healthy controls.¹ The items on the new list emphasize distractibility, impulsiveness, poor concentration, inability to persist at tasks, and difficulties with working memory, organization, and planning.

INCIDENCE OF COMORBID ADHD IN PATIENTS WITH OTHER PSYCHIATRIC DISORDERS

The National Comorbidity Survey reported that about 4.4% of adults 18–44 years of age were found to meet diagnostic criteria for ADHD that include *DSM-IV-TR* criteria, symptom onset prior to 7 years of age, and impairment in at least two areas of living during the preceding 6 months.⁷ Patients with *DSM-IV-TR*-defined mood, anxiety, substance use, and impulse control disorders have high rates of ADHD.^{7,35,36} For example, ADHD was highly prevalent among individuals with drug dependence (25.4%), bipolar disorder (21.2%), dysthymia (22.6%), and agoraphobia (19.1%) (Figure), though it was not as prevalent among individuals with drug abuse (7.2%) or obsessive-compulsive disorder (6.5%). The overall prevalence of ADHD was 2- to 7-fold higher in those with psychiatric conditions.⁷

Depression

Estimates of ADHD among patients with major depressive disorder (MDD) vary widely, depending on the sampling and the methodologies used. Greater than 16.0% of MDD patients in one clinical study met full or partial lifetime criteria for ADHD,³⁷ while in another study,³⁸ 42.5% of those with recurrent brief depression met criteria for ADHD. A large community-based survey identified ADHD in 9.4% of respondents with MDD, while the presence of ADHD was 3.7% in those without MDD.⁷ An analysis based on health insurance claims, however, found that only 0.2% of adults (454 of 17,792) with a coded diagnosis of MDD were diagnosed with ADHD.³⁹ Another claims analysis found ADHD in 1.7% of patients whose primary diagnoses were MDD and an anxiety disorder.⁴⁰ Such discrepancies suggest that in clinical practice, where diagnosis may depend on patient-defined complaints, comorbid ADHD may often go undetected in patients with MDD.

Depressed individuals with and without ADHD appear to have similar age of onset of MDD; similar number, duration, and severity of episodes; and comparable response to antidepressant treatment.³⁷ However, MDD patients with comorbid ADHD more frequently seek psychotherapy and/or pharmacotherapy, and have higher frequencies of social phobia and generalized anxiety disorder than patients with ADHD alone.⁴¹

Bipolar Disorder

Bipolar disorder—with a lifetime prevalence of 3.9% in the US—is also highly prevalent in patients with ADHD.⁴² In one study,⁴³ bipolar disorder was detected at baseline in 11.0% of boys with ADHD; 4 years later, new cases of bipolar disorder had been diagnosed in an additional 12.0%. In addition, 21.2% of adults with bipolar disorder also met criteria for ADHD.⁷ In subjects with bipolar disorder, the lifetime presence of ADHD was higher in men than in women (14.7% vs 5.8%, respectively).¹¹ The course of bipolar disease in individuals with comorbid ADHD is marked by earlier onset (mean: 12.1 vs 20.0 years)⁴⁴ and more frequent affective episodes, suicide attempts, violence, and legal problems.¹¹ It is important to recognize that these mood disorders occur in ADHD as well as in other psychiatric disorders, and that simply having a mood disorder does not preclude a diagnosis of ADHD.⁷

Substance Use Disorders

Patients with substance use disorders (SUDs) are more likely to have a previous or current diagnosis of ADHD. In respondents with any SUD, 10.8% met criteria for comorbid ADHD.⁷ While ADHD was more prevalent among individuals with alcohol abuse (9.5%), alcohol dependence (11.1%), and drug abuse (7.2%) than in those without these comorbidities (4.0%, 4.0%, and 4.1%, respectively), these differences were not significant. However, drug-dependent individuals were significantly more likely to have ADHD (25.4% vs 4.0% of those without any other psychiatric disorder). ADHD is also more prevalent among patients who undergo voluntary treatment for an SUD. In a study of adults admitted to chemical dependency treatment centers, 24.0% met *DSM-IV-TR* criteria for adult ADHD,⁴⁵ and 34.0% of adolescents being treated for SUDs had a lifetime diagnosis of ADHD.⁴⁶ In a study of adults treated for cocaine

addiction, 35% had ADHD.⁴⁷ The course of SUDs in the presence of comorbid ADHD may also be more severe. Despite greater involvement with addiction treatment, these patients are less likely to abstain from drugs.⁴⁷

A patient's specific ADHD symptomatology may affect the risk of SUDs.⁴⁸ Severe symptoms of hyperactivity and impulsivity during childhood and adulthood seem to be predictive of later cocaine abuse, whereas inattentive symptoms are not.⁴⁹ However, recent findings demonstrated that stimulant treatment of children and adolescents with ADHD does not increase their risk of SUDs in adulthood and may offer additional benefits.⁵⁰

Anxiety Disorders

The prevalence of ADHD is significantly higher in patients with most anxiety disorders.⁷ One study of children found that 19.1% of patients with agoraphobia, 14.0% with social phobia, and 13.4% with posttraumatic stress disorder (PTSD) met criteria for ADHD. Moreover, cognitive and academic vulnerabilities were greater in patients with an anxiety disorder and ADHD than in those with an anxiety disorder alone.⁵¹

Conduct Disorder and/or Oppositional Defiant Disorder

The lifetime prevalence of conduct disorder (CD) and oppositional defiant disorder (ODD) among US adults has been estimated at 9.5% and 8.5%, respectively.⁴² Their lifetime prevalence is increased among children and adults with ADHD. Of children and adolescents with ADHD, 40% to 60% also met criteria for ODD or, less often, CD.^{52,53} Furthermore, 24% to 35% of clinically referred adults with ADHD have ODD and up to 25% have CD.^{9,36} In children with ADHD and CD, antisocial personality disorder is often seen as an adult outcome, present in 7% to 44% of adults with ADHD.⁹

CD, antisocial personality disorder, and ADHD are associated with heightened risks for SUDs.^{9,45,54} In children with ADHD followed through adolescence, those with ongoing CD were significantly more likely to be diagnosed with an SUD (30% vs 6%; $P < .01$).⁵⁴ The substances most likely to be used and/or abused by patients with ADHD alone are alcohol, tobacco (smoking), and marijuana,^{46,52,55} whereas those with comorbid CD are more likely to use and/or abuse cocaine and hallucinogens.⁴⁵

IMPLICATIONS OF COMORBIDITIES ON DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC ILLNESS

The presence of ADHD complicates the diagnosis and treatment of psychiatric disorders.²⁷ Most patients respond to ADHD treatment, regardless of the presence of other psychiatric disorders. Adults treated with desipramine showed significant improvements in ADHD symptoms, regardless of the presence or absence of a comorbid anxiety or depressive disorder.⁵⁶ Adults with ADHD, with or without lifetime comorbid psychiatric disorders, responded equally well to stimulant therapy.⁵⁷

The impact of psychiatric comorbidities on response to ADHD treatment was assessed by pooling data from two identically designed trials of atomoxetine in adults with ADHD and comorbidities, including MDD, PTSD, and depression not otherwise specified (NOS).^{58,59} After 10 weeks of atomoxetine treatment, patients with MDD, PTSD, and depression NOS had improvements in clinical indicators, including each of the four Conners' Adult ADHD Rating Scales (Index, Hyperactivity, Inattention, and Total). Patients with PTSD also showed improvements on the General Well-Being Schedule.^{58,59} Patients with comorbid MDD or PTSD who received placebo exhibited more severe ADHD symptoms at endpoint compared with those without comorbidity. These findings indicate that patients with a psychiatric disorder and ADHD are often more severely affected and that treatment of ADHD can have a dramatic therapeutic effect.

ADHD treatment may have positive effects on symptoms of the coexisting psychiatric disorder. Atomoxetine treatment reduced both ADHD and ODD symptoms in children with both disorders.⁶⁰ In addition, atomoxetine,^{61,62} methylphenidate,⁶³ and mixed amphetamine salts⁶⁴ had positive effects on ODD symptoms in children who also had ADHD, and methylphenidate⁶⁵ had positive effects on children with ADHD and CD. Finally, it is of note that stimulants or nonstimulants alone may not be enough to treat some of the psychiatric comorbidities associated with ADHD. Other pharmacological agents (ie, antidepressants, anxiolytics) may need to be prescribed to control comorbid conditions.⁶⁶

CONCLUSION

Adults with various psychiatric conditions, including mood, anxiety, SUD, and impulse control disorders, may also have ADHD. Diagnostic criteria for neurodevelopmental disorders, such

as ADHD, have not been as thoroughly developed for diagnosis in adults as they have for diagnosis in children, yet comorbid ADHD generally increases overall disease burden, with more severe involvement and greater functional impairment. Symptoms of comorbid psychiatric disorders that persist or respond poorly to therapy may be due to undiagnosed and untreated ADHD. More research is warranted to quantify the rates of undiagnosed ADHD within patients already being treated for other psychiatric disorders. ADHD may also compromise patient satisfaction with, and adherence to, treatment of their comorbid psychiatric disorders. Successful treatment of the comorbid condition in some patients may not be achieved until ADHD is adequately managed. Specific interventions for the treatment of ADHD will be determined by which comorbid psychiatric disorders are present.

Accurate diagnosis and effective treatment of ADHD has a positive impact on patient quality of life. Initiation of ADHD treatment may resolve refractory symptoms. Patients may be more compliant with medication, resolving functional impairments related to ADHD. This creates a background of stable functioning from which recovery from other disorders may be facilitated. **CNS**

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