

# Adult ADHD Screening (Attention-Deficit/Hyperactivity Disorder)

## Learning Objectives

Upon completion of this course, participants will be able to:

1. Review our current screening tools for ADHD.
2. Evaluate ADHD in adults.
3. Discuss comorbidity in the diagnosis of ADHD.

## Introduction

Some patients have clear-cut ADHD: easily distracted, difficulty staying seated, constantly losing things and forgetting appointments, problems that date back to childhood, and significant impairment in multiple areas of their life. Diagnosing a patient with those symptoms would probably seem easy, but screening for adult ADHD often isn't this textbook simple. Since almost anyone who walks into the office could fall somewhere on a continuum from mild problems with disorganization to severe ADHD, how can one confidently know where the cut-off points lie?

Screening tools like rating scales, which are typically modeled on the diagnostic criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition (DSM-IV), are a necessary and important first step to making a diagnosis, particularly for a primary care physician or a psychiatrist whose specialty is not adult ADHD. Most primary care physicians and psychiatrists have not had training in this area. About 60% of children with ADHD have symptoms that persist into adulthood,<sup>[1]</sup> which translates into 4% of the US adult population, or 8 million adults. There are 3 main types of rating scales: self-report, significant other/observer report, and clinician-administered. The Adult Self-Report Scale (ASRS) is a newly developed self-rating scale that can be used to screen patients who might have ADHD.<sup>[2]</sup> There are also several other widely used rating scales.

## DSM-IV Criteria for the Diagnosis

Familiarity with the diagnostic criteria for ADHD is extremely important. Most of the major rating scales used for screening patients are modeled on the criteria laid out in the DSM-IV.<sup>[3]</sup> There are 3 critical aspects of the diagnosis: (1) at least 6 of 9 symptoms for one of the ADHD subtypes, (2) childhood onset of symptoms, and (3) impairment in at least 2 areas like work/school, home, and social settings.

According to the DSM-IV, ADHD can be divided into 3 subtypes: predominantly inattentive; predominantly hyperactive-impulsive; and the combined type, for which a patient must fully meet the criteria for both of the other 2 subtypes. Inattentive symptoms include failure to pay close attention to detail, difficulty sustaining attention, not listening when spoken to, failure to follow through on instructions or finish tasks, difficulty

organizing, reluctance to engage in activities that require sustained mental effort, often losing things, being easily distracted, and often being forgetful. A patient must have at least 6 of these 9 symptoms to be considered to have the inattentive subtype.

The symptoms of the hyperactive-impulsive subtype include frequent fidgeting; frequently leaving one's seat in situations where staying seated is expected; running about, climbing excessively, or a feeling of internal restlessness; difficulty engaging quietly in leisure activities ; often "on-the-go" or acting like one is "driven by a motor"; talking excessively; blurting out answers; having difficulty waiting one's turn; and interrupting or intruding on others. Again, at least 6 of these symptoms must be present for diagnosis of the hyperactive-impulse subtype. Patients who meet all criteria for both the inattentive and hyperactive-impulsive subtypes are diagnosed with the combined subtype.

The symptoms that patients describe cannot be episodic -- they must persist for 6 months or longer and must affect at least 2 areas of functioning (ie, school, work, home, social life). Age of onset is also an important adult ADHD diagnostic criterion. Symptoms must date back to age 7 or younger. If the childhood history is not present, the patient does not meet criteria for a diagnosis. Ways of documenting childhood history include the ADHD module from the Kiddie-SADS and the Connors, Barkley, and Brown diagnostic symptoms scales (see Diagnostic Scales), which are described in detail below.

One must also consider whether the symptoms are ADHD or evidence of another disorder. Comorbidity can occur in as many as 80% of ADHD patients,<sup>[4]</sup> but one must also consider whether the observed symptoms are comorbid conditions or if they are the result of a mood disorder or anxiety disorder and not due to ADHD.

## **Rating Scales**

Rating scales are a useful tool for assessing whether a patient meets the DSM-IV criteria necessary for a diagnosis of adult ADHD. They can also be useful in assessing current symptoms.

## **Current Symptom Surveys**

Approximately 60% of children with ADHD continue to experience the disorder through adulthood,<sup>[1]</sup> and the hyperactive, restless symptoms of a child with ADHD can manifest as feelings of internalized restlessness for an adult.<sup>[5]</sup> Current symptom surveys can be divided into clinician-administered and self-report forms. Because symptoms like internalized restlessness, feeling disorganized, and being easily distracted are not always apparent to observers, self-report scales are an effective way to capture the symptoms of adults with the disorder.<sup>[6]</sup>

## **ADHD Rating Scale**

The ADHD Rating Scale is an 18-item scale that rates symptoms using a 4-point Likert-type severity scale (0 = none, 1 = mild, 2 = moderate, and 3 = severe). It is based on the DSM-IV criteria for ADHD. It has 9 items that assess inattentive symptoms and 9 items

that assess hyperactive and impulsive symptoms. Sample rating questions include, "Avoids tasks (eg, schoolwork, homework) that require sustained mental effort" and "Talks excessively." The ADHS Rating Scale has been developed and standardized as a rating scale for children. Although clinician-raters can be trained to successfully administer this scale to adults, they require a period of standardization and training. The scale queries domains of symptoms without a contextual basis and therefore has less utility as a self-administered scale. The ADHD Rating Scale is available through Guilford Press.

### **Copeland Symptom Checklist**

The Copeland Symptom Checklist for Attention Deficit Disorders--Adult Version is designed to help assess whether an adult has characteristic ADHD symptoms, to what degree, and which areas of functioning are most seriously affected. The checklist covers 8 areas, including inattention/distractibility, impulsivity, activity level problems, noncompliance, underachievement/disorganization/learning problems, emotional difficulties, poor peer relations, and impaired family relationships. This scale, which may be used less often than some of the others reviewed here, is available from Resurgens Press.

### **The Brown ADD Scale**

The Brown ADD Scale is a frequency scale with 40 items. To descriptions like "'spaces out' involuntarily and frequently when doing required reading; keeps thinking of things that have nothing to do with what is being read," "is excessively forgetful about what has been said, done, or heard in the past 24 hours," and "is easily frustrated and excessively impatient," patients answer whether the symptoms occur "0 = never," "1 = once a week or less," "2 = twice a week," or "3 = almost daily." Like the Wender-Reimherr Scale and Conners scale (described below), the Brown ADD Scale explores the executive functioning aspects of cognition that are associated with ADHD. This assessment, which has standardized, validated, clinician-rated, and self-report forms, can be ordered from The Psychological Corporation.

### **The Wender-Reimherr Adult Attention Deficit Disorder Scale**

The Wender-Reimherr Adult Attention Deficit Disorder Scale (WRAADS) is intended to measure the severity of the target symptoms of adults with ADHD using the Utah Criteria, which Wender developed.<sup>[7,8]</sup> It measures symptoms in 7 categories: attention difficulties, hyperactivity/restlessness, temper, affective lability, emotional overreactivity, disorganization, and impulsivity. The scale rates individual items from 0 to 2 (0 = not present, 1 = mild, 2 = clearly present) and summarizes each of the 7 categories on a 0-to-4 scale (0 = none, 1 = mild, 2 = moderate, 3 = quite a bit, 4 = very much). An example of a question in the temper section is, "Does your temper cause problems for you? Do you lose control during temper outbursts? (saying things you regret, becoming aggressive, acting in a threatening manner, or behaving impulsively)." A question in the affective lability section is, "Does your mood change frequently, going up and down like a roller coaster in the sense of getting sad or feeling 'up'?" The WRAADS may be particularly useful in assessing the mood lability symptoms of

ADHD. In fact, a recent study has shown that the WRAADS effectively measured improvement in symptoms in mood dysregulation in a large, controlled trial of the norepinephrine reuptake inhibitor, atomoxetine.<sup>[9]\*</sup>

The screening version of the Conners' Adult ADHD Rating Scale (CAARS) is a 30-item frequency scale with items like "loses things necessary for tasks or activities" and "appears restless inside even when sitting still." Symptoms are assessed with a combination of frequency and severity. Patients respond on a 4-point Likert-type scale (0 = not at all, never; 1 = just a little, once in a while; 2 = pretty much, often; and 3 = very much, very frequently). All 18 items from the DSM-IV can be extrapolated from the CAARS. There are also observer and self-report versions of the CAARS. The scale has been validated for both the clinician-administered and self-rated versions. The CAARS is available through Multi Health Systems, Inc.

### **The Adult Self-Report Scale**

The Adult Self-Report Scale (ASRS) is an 18-item scale that can be used as an initial self-screening tool to identify adults who might have ADHD. It was developed by the Workgroup on Adult ADHD, comprising Lenard Adler, MD, of New York University Medical Center, Ron Kessler, PhD, of Harvard Medical School, and Thomas Spencer, MD, of Harvard Medical School and Massachusetts General Hospital. Symptoms are rated on a frequency basis: 0 = never, 1 = rarely, 2 = sometimes, 3 = often, and 4 = very often. The ASRS modifies the language of the ADHD-RS in several ways. In the ASRS, a contextual basis for adult symptoms is provided. So, instead of an item on the ADHD-RS like "difficulty waiting," the corresponding item on the ASRS is "difficulty waiting your turn in situations when turn-taking is required." Additionally, the ASRS breaks down each symptom into its own question, whereas the ADHD-RS sometimes queries 2 symptoms in a single question. For example, an item on the ADHD-RS reads, "Failure to pay close attention to details. Making careless mistakes," and the ASRS queries simply, "Making careless mistakes." The ASRS is now available through the World Health Organization (WHO).

Patients can complete the scale in approximately 5 minutes, responding to items like "How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?" and "How often do you have difficulty unwinding and relaxing when you have time to yourself?" Nine items assess inattention, and 9 items assess hyperactivity/impulsivity. Once the patient has completed the scale, it can be scored quickly and used as a starting point to discuss the details of a patient's clinical history in greater depth.

The ASRS can serve several purposes for patients who are believed to have ADHD. It can assess the likelihood of a diagnosis and is useful as a diagnostic aid after an initial screening to further assess symptoms and to evaluate impairments. The questionnaire's content reflects the importance that the DSM-IV places on symptoms, impairments, and history for a correct diagnosis. Scoring guidelines are based upon the total score in either the inattentive and hyperactive/impulsive subsets (using the higher score of either), which yields a diagnostic likelihood of the patient having ADHD. The scale's scoring produces a result that describes the patient as being unlikely, likely, or highly likely to

have ADHD. The scale has been validated using the National Comorbidity Survey cohort as well as in well-characterized adult ADHD populations.<sup>[10]</sup>

In the National Comorbidity Survey, adult ADHD patients, with variable symptom severity who were being evaluated or treated in New York University and Massachusetts General Hospital Adult ADHD Programs, were evaluated first with the ASRS and then by standard clinician administration of the ADHD-RS. Internal consistency of symptom scores on each scale was assessed by Cronbach's alpha. Agreement of raters was established by intraclass correlation coefficients (ICCs) between scales. Internal consistency was high for both patient- and rater-administered versions. The ICC between scales for total scores and for inattentive and hyperactive-impulsive symptoms were also high. There was also substantial agreement for individual items and significant kappa coefficients for all items ( $P < .001$ ).<sup>[2]</sup>

The scale is available through the NYU Medical Web site, through The WHO, and available for download from Medscape Psychiatry after completion of this clinical update.

\*The WRAADS is available by contacting Fred W. Reimherr, MD, Mood Disorders Clinic, Department of Psychiatry, University of Utah Health Science Center, Salt Lake City, UT 84132.

## **Diagnostic Scales**

The Conners Adult ADHD Diagnostic Interview for DSM-IV separately surveys the presence of the 18 DSM-IV symptoms in both children and adults. Specific prompts and examples of symptoms are provided for each query. Impairment in school or work, home, and social settings is also assessed for children and adults. A definitive diagnosis of ADHD and subtype of condition can then be established by the information that has been gathered. The scale begins by asking patients, "What is going on in your life that leads you to believe you have Attention-Deficit/Hyperactivity Disorder or ADHD?" From there, it goes into childhood history, including gestational, delivery, temperamental, developmental, environmental, and medical history risk factors. Childhood academic history; adult educational, occupational, and social/interpersonal histories; and health and psychiatric histories are queried. Finally, the patient is briefly screened for comorbidity before specific questioning about ADHD diagnostic criteria begins. The Conners Diagnostic Interview is available through Multi Health Systems, Inc.

Assessment can also begin with Barkley's Current Symptoms Scale--Self-Report Form, a scale of 18 items that address the symptoms listed in the DSM-IV diagnostic criteria. Odd-numbered items assess frequency of inattentive symptoms and even-numbered items assess hyperactive/impulsive symptoms on a 0-to-3 Likert-type frequency scale (0 = never or rarely, 1 = sometimes, 2 = often, 3 = very often). Sample items are "Leave my seat in situations in which seating is expected" and "Avoid, dislike, or am reluctant to engage in work that requires sustained mental effort." The scale also asks patients to report the age of onset for ADHD symptoms and to denote how often their symptoms

interfere with activities in social arenas like school, relationships, work, and the home. Finally, it addresses Oppositional Defiant Disorder (ODD) comorbidity with 8 questions about symptoms of ODD. Barkley also has a Childhood Symptoms Scale--Self-Report Form; Developmental Employment, Health, and Social History Form; and Work Performance Rating Scale--Self-Report Forms, all of which can be sent to the patient to complete before their first clinic visit. In addition, the Current Symptoms Scale--Other Report Form provides valuable observer ratings and should be completed by someone who currently knows the person well. A parent is the ideal person to complete the Childhood Symptoms Scale--Other Report Form and the Childhood School Performance Scale--Other Report Form. Together these scales form a picture of the patient's past and present symptoms and functioning. The Barkley Scales are contained in Attention-Deficit Hyperactivity Disorder: A Clinical Workbook, Second Edition by Russell A. Barkley and Kevin R. Murphy.<sup>[11]</sup>

In addition to the Brown ADD Scale, there is also a Brown ADD Scale Diagnostic Form, which goes into much greater detail and can be used for diagnosing ADHD. The diagnostic interview begins with queries about clinical history, including impact of symptoms on work, school, leisure, peer interactions, and self-image. Patients are also asked whether early schooling was impacted by their symptoms. The clinician asks the patient about the clinical history of his or her family and about the patient's physical health, substance use, and sleep habits. The clinician also obtains collateral data from an observer or significant other and screens for the full array of comorbid disorders. A Wechsler Adult Intelligence Scale is administered to gauge whether the patient's concentration level is below their verbal and spatial capabilities. All of these considerations, as well as the patients' score on the 40-item Brown ADD Scale, lead to the diagnosis. The Diagnostic Form is available from The Psychological Corporation.

Another option for assessing childhood ADHD symptoms is to use the Kiddie-SADS Diagnostic Interview section on Attention Deficit Hyperactivity Disorder. The Kiddie-SADS covers the DSM-IV criteria for ADHD and includes extensive prompts that clinicians can use. For example, the item, "Makes a lot of careless mistakes," prompts for the clinician include, "Do you make a lot of careless mistakes at school? Do you often get problems wrong on tests because you didn't read the instructions right? Do you often leave some questions blank by accident? Forget to do the problems on both sides of a handout? How often do these types of things happen? Has your teacher ever said you should pay more attention to detail?" The item, "On-the-go/Acts like driven by motor," prompts for the clinician include, "Is it hard for you to slow down? Can you stay in one place for long, or are you always on the go? How long can you sit and watch TV or play a game? Do people tell you to slow down a lot?" The Kiddie-SADS is available on the World Wide Web at [www.wpic.pitt.edu/ksads](http://www.wpic.pitt.edu/ksads).

## **Comorbidity**

Earlier we discussed the possibility that what may seem like ADHD symptoms may actually be symptoms of another disorder. It is also important to keep in mind that comorbidity is quite common with ADHD, affecting as many as 3 in 4 patients, so it

should not be surprising if a patient meets criteria for one or more disorders in addition to ADHD.

The mood disorders (major depression, bipolar disorder, and dysthymia) have a comorbidity with ADHD ranging from 19% to 37%. For anxiety disorders, comorbidity ranges from 25% to 50%. The range for alcohol abuse is 32% to 53%; for other types of substance abuse, including marijuana and cocaine, it is 8% to 32%. In addition, self-medication with nicotine and excessive doses of caffeine are often overlooked. The rate of occurrence with personality disorders is 10% to 20% and for antisocial behavior is 18% to 28%.<sup>[4,12-15]</sup> There is a 20% comorbidity for learning disabilities, particularly auditory-processing problems like dyslexia and auditory-processing deficits.<sup>[4]</sup>

To address comorbidity issues, one might administer the Hamilton Anxiety Scale (HAM-A), the Hamilton Depression Scale (HAM-D), or the Beck Depression Inventory (BDI), all of which address symptom levels. The Zung Self-Rating Depression Scale is a diagnostic measure. The BDI and the Zung are both self-administered, whereas the HAM-A and HAM-D are investigator-rated.

### **When To Refer a Patient Who Has Adult ADHD**

Patients may present with anxiety, depressive symptoms, conflicts at work, school or home, or substance abuse. This can make it quite difficult to sort out whether ADHD is the primary problem and whether other disorders are comorbid.<sup>[16]</sup> The average clinician may decide to refer the patient for further evaluation to a clinician experienced in ADHD. If the differential cannot be fully established, neuropsychological testing can be an option.

Patients may present with symptoms of depression and anxiety rather than ADHD. The patient may have been nonresponsive to treatment of depression and anxiety secondary to lack of recognition of the patient's ADHD. Finally, symptom overlap can occur between the mood-regulating symptoms of ADHD and the symptoms of anxiety and mood disorders. Taking a longitudinal history can be helpful in assigning the symptoms to the appropriate diagnosis. ADHD symptoms tend to be more lifelong and less episodic than those of comorbid disorders. However, assigning symptoms definitively to one or the other disorder is not always possible.

### **Neuropsychological Testing**

It is important to note that the diagnosis of adult ADHD is a clinical decision based on a combination of clinical assessment and history. The utility of tests in clinical decision-making in medicine lies in their ability to assist in making diagnostic decisions; however, the test results themselves must always be interpreted in the context of the clinical presentation of the patient. This is also true for neuropsychological testing for adult ADHD. Neuropsychological testing can often be helpful in establishing the diagnosis and in evaluating symptom severity when current symptomatology is not fully clear, when there is substantial comorbidity, when there are concerns over learning disabilities, or

when it is difficult to ascertain whether the disorder began in childhood. However, testing should not be divorced from the clinical symptoms and history of the patient, otherwise a substantial risk for misdiagnosis exists.

Findings regarding specific neuropsychological tests in adult ADHD have been well reviewed by Faraone and coworkers.<sup>[17]</sup> Tests of vigilance by continuous performance testing (CPT), auditory and visual, have been found to be abnormal in adults with ADHD. Commonly employed CPTs include the TOVA and Conner's CPT. Both of these tests are scored in comparison with normal control data. Faraone and colleagues note that abnormalities exist in perceptual-motor speed (via digit symbol and coding tests); working memory (via digit span tests); and verbal learning, semantic clustering, and response inhibition (via Stroop-Color Word Test). Color-word interference on the Stroop Test has been shown to correlate with treatment response in an early study of the norepinephrine reuptake inhibitor atomoxetine.<sup>[18]</sup>

This discussion provides far from a complete listing of tests employed in the neuropsychological evaluation of adults with ADHD, but does include tests that address the impairments in domains noted to occur in the disorder. Other commonly used tests include IQ tests, trails A and B, go/no-go protocols, California Verbal Learning Test, and measures of time estimation. Additionally, tests of academic standing, such as the Woodcock Johnson, are often used when adults are in school environments.

One area of controversy is determining how well deficits documented in neuropsychological testing fully translate into functional impairments. An area of promise in this regard is work by Barkley and colleagues<sup>[19]</sup> on abnormalities in driving simulation in adults with ADHD. Adults with ADHD were noted to have more speeding citations, license suspensions, crashes, and crashes involving bodily injury than controls. Additionally, on a computer-simulated driving test, ADHD adults had more erratic steering, difficulty steering, and scrapes than controls. A follow-up study by the same group<sup>[20]</sup> found similar findings regarding citations and accident history as the earlier study. Compared with controls, the ADHD cohort also scored lower on tests of driving rules and decision-making, but not on a simple driving simulator. Abnormalities on neuropsychological tests did not correlate well with adverse outcomes, leading the authors to question their utility as screening tools for driving risks in ADHD adults. Some measures of impairment in executive functioning did correlate with accident frequency and citations. These results are preliminary, but do highlight the need for further study of the measurement of true functional impairments in ADHD adults via formal tests of computer-generated driving simulation.

## **Conclusion**

Adults with ADHD are underrecognized and undertreated. Their symptoms are distinct, though similar, to those of children with the disorder. It is important to remember that adults are not just grown-up children and may have differing symptom presentations and impairments. For clinicians who have little experience screening for or diagnosing adult ADHD, discerning what constitutes a diagnosis can be confusing. Self-report rating scales like the ASRS and clinician-administered scales are a helpful starting point,

although they cannot replace an extensive clinical history and knowing when to refer the patient to a healthcare professional with adult ADHD expertise. Furthermore, it is critical to remember that adult ADHD remains a clinical diagnosis. Neuropsychological testing can be quite helpful in delineating symptoms and degrees of impairment in adult ADHD patients where diagnostic uncertainties cloud the patient evaluation.

## References

1. Wender PH, Wolf LE, Wasserstein J. Adults with ADHD: an overview. *Ann N Y Acad Sci.* 2001;931:1-16.
2. Adler LA, Spencer TS, Faraone SV, et al. Adult ADHD Rating Scale. Program and s of the Annual NIMH New Clinical Drug Evaluation Unit (NCDEU) Meeting, Boca Raton, Florida, May 2003.
3. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision.* Washington, DC: American Psychiatric Pr; 2000.
4. Barkley RA, Murphy KR. *Attention-Deficit Hyperactivity Disorder: A Clinical Workbook, 2nd ed.* New York: Guilford Publications; 1998.
5. Weiss MA, Hechtman LK, Weiss G. *ADHD in Adulthood: A Guide to Current Theory, Diagnosis, and Treatment.* Baltimore: Johns Hopkins Univ Pr;1999.
6. O'Donnell JP, McCann KK, Pluth S. Assessing adult ADHD using a self-report symptom checklist. *Psychological Reports,* 2001;88:871-881.
7. Wender PH, Ward MF, Reimherr FW, Marchant BK. ADHD in adults. *J Am Acad Child Adolesc Psychiatry.* 2000;39:543.
8. Ward MF, Wender PH, Reimherr FW: The Wender Utah Rating Scale: an aid in the retrospective diagnosis of attention deficit hyperactivity disorder. *Am J Psychiatry.* 1993;150:885-890.
9. Reimherr FW, Strong RE, Hedges DW, et al. Emotional dysregulation in ADHD and response to atomoxetine. Program and s of the 156th American Psychiatric Association Meeting; May 17-22, 2003; San Francisco, California. NR640.
10. Goldman LS, Genel M, Bezman RJ, Slanetz PJ. Diagnosis and treatment of attention-deficit/hyperactivity disorder in children and adolescents. Council on Scientific Affairs, American Medical Association. *JAMA.* 1998;279:1100-1107.
11. Barkley R, Murphy K. *Attention-Deficit Hyperactivity Disorder: A Clinical Workbook, 2nd ed.* New York: Guilford Publications;1998:35-70.
12. Biederman J, Faraone SV, Spencer T, et al. Patterns of psychiatric comorbidity,

- cognition, and psychosocial functioning in adults with attention deficit hyperactivity disorder. *Am J Psychiatry*. 1993;150:1792-1798.
13. Murphy K, Barkley RA. Attention deficit hyperactivity disorder adults: comorbidities and adaptive impairments. *Comp Psychiatry*. 1996;37:393-401.
  14. Roy-Byrne P, Scheele L, Brinkley J, et al. Adult attention-deficit hyperactivity disorder: assessment guidelines based on clinical presentation to a specialty clinic. *Comp Psychiatry*. 1997;38:133-140.
  15. Shekim WO, Asarnow RF, Hess E, et al. A clinical and demographic profile of a sample of adults with attention deficit hyperactivity disorder, residual state. *Comp Psychiatry*. 1990;31:416-425.
  16. Elliot H. Attention deficit hyperactivity disorder in adults: a guide for the primary care physician. *Southern Med J*. 2002;95:736-742.
  17. Faraone SV, Biederman J, Spencer T, et al. Attention-deficit/hyperactivity disorder in adults: an overview. *Biological Psychiatry*. 2000;48:9-20.
  18. Spencer T, Biederman J, Wilens T, et al. Effectiveness and tolerability of tomoxetine in adults with attention deficit hyperactivity disorder. *Am J Psychiatry*. 1998;155:693-695.
  19. Barkley RA, Murphy KR, Kwasnik D. Motor vehicle driving competencies and risks in teens and young adults with attention deficit hyperactivity disorder. *Pediatrics*. 1996;98(6 Pt 1):1089-1095.
  20. Barkley RA, Murphy KR, Dupaul GI, Bush T. Driving in young adults with attention deficit hyperactivity disorder: knowledge, performance, adverse outcomes, and the role of executive functioning. *J Int Neuropsychol Soc*. 2002;8:655-672.