

Diagnostic assessment of attention deficit hyperactivity disorder in adults

Attention deficit hyperactivity disorder (ADHD) is a clinical syndrome defined by the presence of impairing levels of hyperactive, inattentive, and impulsive symptoms. Although cognitive deficits are associated with ADHD, not all people with ADHD appear impaired on cognitive tests, and none of the cognitive tests associated with ADHD are specific to the disorder. Thus, cognitive tests should not be used to determine the presence of the disorder. The diagnosis is made in the same way as for other common psychiatric disorders: by careful evaluation of the mental state and a full psychiatric evaluation, including developmental history, functional impairments, and current and past psychiatric history.

Key principles

ADHD is often considered to be a particularly difficult diagnosis to establish in adults, yet there is a considerable consensus among experts about the nature of the core syndrome and how to diagnose the disorder [1]. Certain principles should guide clinicians as follows:

- The diagnosis of ADHD can be distinguished from other common psychiatric disorders of ADHD.
- Diagnosis is no more difficult to make than the evaluation of other common mental health disorders such as anxiety or depression.

- ADHD in adults is a symptomatic disorder, with characteristic descriptions by patients of mental states that reflect the psychopathology of the disorder. ADHD does not just reflect behavioral problems.
- The disorder in adults is commonly misdiagnosed for other common mental health disorders. However, this can usually be avoided by paying attention to the characteristic early onset and trait-like course of the symptoms and impairments that define the disorder.
- ADHD is treatable in most cases and it is important for the wellbeing of patients who present with untreated ADHD to diagnose and treat the disorder.

Diagnosing attention deficit hyperactivity disorder in adults

When evaluating the diagnosis of ADHD in adults there are several key points to consider:

- the DSM-IV criteria;
- diagnostic interviews;
- age-adjusted criteria for symptoms;
- ADHD symptoms are trait like;
- associated symptoms and functional impairments;
- cognitive testing;
- behavioral aspects of the patient's mental state during their clinical evaluation;
- obtaining accurate accounts of symptoms;
- compensatory mechanisms used by the patient.

Diagnostic and Statistical Manual of Mental Disorders criteria

ADHD is a clinical syndrome defined by the presence of high levels of inattentive, hyperactive, and impulsive symptoms. When making a diagnosis, most clinicians use the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)* criteria because the International Classification of

Disease (ICD-10) hyperkinetic disorder defines a restricted subgroup of patients with severe combined type ADHD [1] and does not allow many common forms of comorbidity and broader clinical presentations of the disorder. It is envisaged that most clinicians will move to DSM-V and ICD-11 once the revisions are published in their final form.

Diagnostic interview

The diagnosis should be made following a detailed clinical interview to evaluate the presence of inattention, hyperactivity, and impulsivity when they are severe and impairing. The key elements are:

- current ADHD symptoms;
- common associated symptoms of ADHD that do not appear in the DSM-IV criteria;
- retrospective (occurring in child or adolescent) ADHD symptoms;
- impairments associated with ADHD symptoms;
- comorbid symptoms, syndromes, and disorders.

Age-adjusted criteria for symptoms

Symptoms of ADHD change with developmental age. In most cases, inattentive symptoms in particular become more prominent relative to hyperactive-impulsive symptoms with age. However, when properly age-adjusted expressions of ADHD symptoms are taken into account, persistence of impairing levels of all ADHD symptoms are often seen. Furthermore, when hyperactivity-impulsivity does persist it can be particularly impairing. Examples of adult expressions of ADHD symptoms for each of the DSM-IV items are listed in Chapter 2 and also provided as examples within the Diagnostic Interview for ADHD in Adults (DIVA) clinical diagnostic interview [2] (see Appendix G).

Attention deficit hyperactivity disorder symptoms are trait-like

ADHD symptoms in adults are chronic and trait-like. They start during childhood or early adolescence and follow a trait-like course. For this reason, they are more easily mistaken for symptoms of a personality

disorder than an episodic adult-onset disorder. When evaluating ADHD, clinicians should expect to see symptoms that start during childhood and follow a persistent and nonfluctuating course.

Associated symptoms and functional impairments

There are a range of additional symptoms and impairments that are commonly seen in ADHD and form part of the core syndrome. These should be used to support the diagnosis and may be the key presenting complaint in some cases. Some examples of typical presentations of ADHD and associated symptoms are listed in Table 4.1.

Cognitive testing

Although ADHD is associated with a range of impairments of cognition and measures of brain function, these features are insufficiently sensitive or specific and should not be used to include or exclude the disorder in clinical practice. Rather, they should be used to provide additional information on the range of impairments in patients that meet the diagnostic criteria for ADHD.

Common clinical presentations in attention deficit hyperactivity disorder	
1. Disorganization	Does not plan ahead
2. Forgetfulness	Misses appointments, loses things
3. Procrastination	Starts projects but does not complete
4. Time management problems	Always late
5. Premature shifting of activities	Starts something but then is quickly distracted by something else
6. Impulsive decisions	Spending, taking on projects, travelling, jobs, or social plans
7. Mood lability	Irritable or labile moods and low tolerance of frustration
8. Low boredom threshold	Gets bored easily once the novelty of an activity has worn off
9. Low self esteem	Often associated with life-long functional impairments
10. Variable performance	Both under- and over-focused on tasks, or focuses only on immediately rewarding tasks
11. Criminal offences	Speeding, road traffic accidents, taking illegal drugs
12. Unstable jobs and relationships	Unable to keep a job or maintain long-term relationships

Table 4.1 Common clinical presentations in attention deficit hyperactivity disorder.

Behavioral aspects of mental state during clinical evaluation

ADHD symptoms such as restlessness and distractibility may not be reflected in behaviors during clinical interviews. The reason for this is the sensitivity of the symptoms to stimulating or salient situations, which can normalize behavior for short periods of time. The evaluation of current symptoms should therefore be based on accounts of behavior and reports of ADHD symptoms during a typical day in the life of the patient.

Obtaining accurate accounts of attention deficit hyperactivity disorder symptoms

One difficulty of diagnosing ADHD is that adult informants tend to minimize their symptoms. Adults may also have only a poor recall of their symptoms and behaviors as children. It is also not unusual to find a patient who appears too eager to be diagnosed with ADHD and perceives the diagnosis as a solution to problems that are unrelated to ADHD. The diagnosis of ADHD can nevertheless be established in most cases by:

- accurate use of the DSM-IV criteria;
- enquiring after detailed accounts of problems related to ADHD symptoms;
- obtaining collateral information from relatives, partners, or work colleagues whenever possible;
- review of written reports (eg, school or work reports) whenever possible.

Compensatory mechanisms reduce apparent impairments

Adults have a degree of control over their circumstances and often modify their life to compensate for or minimize impairments related to ADHD. Hyperactivity may be managed by choosing an occupation that keeps people on their feet and moving around; impulsivity may be better adapted to a job that requires prompt action without excessive planning; and inattentiveness may be dealt with by adopting a freelance occupation in which people can control their own schedule. The fact that some people are successful in one of life's realms, such as the workplace and

career, does not preclude the possibility of a diagnosis, since they may be impaired in other ways.

The clinician therefore needs to understand and enquire about what compensating strategies may be in use. Although such strategies may be highly successful in a few cases, they often come at a personal cost in terms of distress from the symptoms and the constant effort that is needed to compensate adequately. Common compensatory mechanisms include:

- support by a member of the family or paid assistant;
- support of an organized partner;
- flexible work schedule;
- occupations or activities where impulsivity may be a positive factor or where high levels of risk may be involved (eg, emergency services, adventure sports);
- excessive preplanning and checking to compensate for difficulties in organizing, planning ahead, and forgetfulness;
- use of electronic aids such as smart phones with alarms, reminders, and electronic calendars.

ADHD has a very wide range of presentations and impairments from mild to very severe. In the most severe cases, adults with ADHD are unable to function in work and have very poorly developed social lives. They may present with extreme levels of impulsivity, emotional dysregulation, distractibility, and poor organization that severely impairs their ability to cope with activities of everyday life. On the other hand, some individuals with ADHD are high functioning and can manage most aspects of their daily lives, but present with a range of mild but persistent symptoms and impairments. Some typical presenting complaints in people meeting clinical criteria for ADHD that responded to treatment are listed in Table 4.2.

Diagnostic protocol

The UK Adult ADHD Network (UKAAN) recommends a standard diagnostic protocol that can be widely adopted in clinical practice. Use of this diagnostic protocol will establish basic procedures, provide a minimum standard, and enable comparative studies across sites that adopt the protocol. Using a standard protocol will help in the development of the

Examples of presenting complaints of adults who met DSM-IV criteria for attention deficit hyperactivity disorder and showed good response to treatment

26-year-old female: Disorganized. Unable to work. Had ceaseless mental activity and difficulty shopping. Treated for anxiety and depression. Used cannabis to “calm thoughts.” Cares for two children that have ADHD

22-year-old male: Unable to cope at college. Has had to repeat his first year of college for third year in a row, despite a high IQ, high motivation, a supportive family, and good level of education

18-year-old male: IQ of approximately 70. Had behavioral problems at home. Lacked insight. Engaged in binge drinking. Main presenting complaint was extreme irritability and aggression

30-year-old female: Experienced irritable and volatile moods. Treated for depression. Managed to get through college but had to expend significantly more energy and put in far more effort than equivalents in her peer group, due to difficulties coping with inattention, distractibility, and planning

25-year-old male: Unemployed and stayed at home doing very little. Complained of severe inner restlessness. Was unable to focus on a task for more than a few minutes. Grossly distractible and had unfocused thought processes

35-year-old male: Displayed extreme impulsivity. Physically and verbally aggressive. Engaged in binge drinking of alcohol on a regular basis and often got into fights in public drinking establishments

Table 4.2 Examples of presenting complaints of adults who met DSM-IV criteria for attention deficit hyperactivity disorder and showed good response to treatment.

ADHD, attention deficit hyperactivity disorder; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, fourth edition; IQ, intelligence quotient.

clinical skills required to diagnose ADHD in adults, by linking the protocol to training programs and sharing of expertise between clinicians.

Development of a standard protocol is not intended to change clinical practice for specialists who have already established their own valid diagnostic methods. However, the recommended protocol uses screening and diagnostic instruments that have been widely adopted in Europe and are used by many experienced clinicians. The diagnostic instruments for this protocol were selected on the basis of their widespread use, previous validation, and being freely available. All materials are provided in the Appendix can also be downloaded from www.ukaan.org.

It is envisaged that ongoing developments in the field will lead to modifications of this protocol, as diagnostic criteria and improved instruments are developed. UKAAN have kept the protocol to the minimum required to evaluate the diagnosis and its treatment outcomes. As such, this section is not a comprehensive review of all available assessments tools.

The minimum protocol for the clinical evaluation of ADHD in adults includes the following components:

- a physician's referral form (Appendix I);
- screening questionnaires (Appendix A; Appendices C–F);
- scales for assessment of current symptoms (Appendix A; Appendix C; Appendix F);
- scales for assessment of retrospective (childhood) symptoms (Appendix D; Appendix E);
- evaluation of impairment (Appendix J);
- evaluation of comorbidity (Appendix K);
- diagnostic interview (Appendix G).

Physician's referral form

Physician referral forms should include all relevant medical information with special attention to the following:

- history of brain trauma or injury;
- history of cardiovascular disease, with particular attention to dysrhythmia and a family history of sudden death. If the patient has a positive history of cardiovascular disease or any cardiac abnormalities detected on physical examination, a recent ECG should be included (Appendix H);
- recent physical examination;
- history of drug use and dependency;
- history of medical disorders;
- history of psychiatric and behavioral problems with particular attention to comorbid conditions such as:
 - anxiety or depression
 - bipolar affective disorder
 - schizophrenia or other psychotic disorders
 - obsessive-compulsive disorder
 - personality disorder
 - pervasive developmental disorder (eg, autism spectrum disorder)
 - substance abuse or addiction disorders
 - antisocial behavior and forensic history.

Screening questionnaires

There are several screening tools that have been developed for ADHD. UKAAN recommends the use of symptoms checklists for the 18 DSM-IV items; for example, the Adult ADHD Self Report Scale (ASRS) and Barkley's adult ADHD symptoms checklist.

Adult ADHD Self Report Scale

The Adult ADHD Self Report Scale (ASRS) screening tool (Appendix A), validated by the World Health Organization (WHO) [3], is one of the most widely used in recent epidemiological studies. It covers each of the 18 items for the DSM-IV, but has reworded each item to better reflect the way that the symptoms affect adults. In addition to this, a short, six-item version has high sensitivity to the clinical diagnosis and can be used as a brief screening tool in primary care, or in a busy clinical setting.

Barkley's adult ADHD symptoms checklist

The Barkley's adult ADHD symptoms checklist is a simple screening tool that systematically enquires after each of the DSM-IV symptoms for ADHD [4]. The scale can be used for evaluation of clinical outcome following treatment.

Diagnostic interviews

The Diagnostic Interview for ADHD in Adults

The Diagnostic Interview for ADHD in Adults (DIVA) is a diagnostic interview for the diagnosis of ADHD in adults, developed by Kooij and Francken from the Netherlands [5] (Appendix G). A PDF of the DIVA interview and all instructions for use of the diagnostic interview can be downloaded from www.divacenter.eu and an iPhone/iPad/Android app will be available. The DIVA interview was developed because there was a need for a structured diagnostic interview for ADHD in adults that is easily available at low cost and has been translated into several languages for both clinical and research assessments. The DIVA interview investigates the DSM criteria for ADHD in childhood using retrospective

accounts and current symptoms in adults, and links this information to impairments in five areas of function:

- work/education;
- relationships/family;
- social contacts;
- free time/hobbies;
- self-confidence/self-image.

Examples are provided for ADHD in adults and children that are sensitive to the developmental stage and provide a guide for probe questions to patients during the interview, if required. The interview starts with assessment of inattention, continues with hyperactivity-impulsivity, and finishes with the assessment of impairment. The DIVA interview takes approximately 60 minutes to complete in most cases.

Connors Adult ADHD Diagnostic Interview for DSM-IV

The Connors Adult ADHD Diagnostic Interview for DSM-IV (CAADID) [6] is a semi-structured interview that has been frequently used to confirm the diagnosis of ADHD in adults for pharmacological studies. It has two main parts: the first part collects background information about the clinical and developmental history and is not essential to the formal diagnosis, but is a very useful guide for clinicians new to the diagnosis of ADHD; the second part systematically addresses each of the 18 DSM-IV items for current and retrospective (childhood) symptoms and impairments due to ADHD. CAADID is not free to use, which limits its routine use in clinical practice.

Attention deficit hyperactivity disorder rating scales

There are several rating scales available for the evaluation of ADHD in adults. While some focus on the DSM-IV items, others include additional symptoms and impairments that are commonly found in adults with ADHD. For the minimum protocol, UKAAN recommends focusing on the 18 DSM-IV items for current and retrospective symptoms (eg, using the ASRS or the Barkley scale).

Assessment of ADHD should include at least one rating scale for adult symptoms and one for retrospective (childhood) symptoms. In both cases,

information should be obtained from the patient and from an external informant (usually a parent or older relative for childhood ratings; a parent, partner, or close friend for current ratings) whenever possible (Table 4.3) (Appendix C–F).

Evaluation of impairment

Weiss Functional Impairment Rating Scale

Impairment is a key part of the diagnostic algorithm and an important outcome measure. UKAAN therefore recommend the use of a detailed rating scale that captures the types of impairment that are commonly seen in adults with ADHD. The Weiss Functional Impairment Rating Scale was developed for this purpose and is now widely used [7] (Appendix B). The scale consists of 72 items covering the following domains of impairment:

- family;
- work;
- school/college;
- life skills;
- social functioning;
- self-concept;
- risk taking.

Barkley Functional Impairment Scale

Because in practice it may not always be possible to include such a long scale for the evaluation of impairment within a standard clinic protocol, an alternative to the Weiss scale is to use the ten summary items from

Recommended rating scale measures of attention deficit hyperactivity disorder symptoms

Self-ratings of current ADHD symptoms: ASRS or Barkley scale

Informant ratings of current ADHD symptoms: Barkley scale

Self-ratings of childhood ADHD symptoms: Barkley scale

Informant ratings of childhood ADHD symptoms: Barkley scale

Table 4.3 Recommended rating scale measures of attention deficit hyperactivity disorder symptoms. ADHD, attention deficit hyperactivity disorder; ASRS, Adult ADHD Self Rating Scale.

the Barkley scale [4]. These address whether the patient has impairment related to the symptoms of ADHD in the following areas:

- in the home with the immediate family;
- in work or occupation;
- social interaction with others;
- activities or dealings with the community;
- any educational activities;
- dating or marital relationship;
- money management;
- driving a motor vehicle;
- leisure or recreational activities;
- management of daily responsibilities.

Comorbidity

Evaluating comorbidity is a time-consuming but essential part of any diagnostic assessment for ADHD. In clinical practice, it is not usually possible to include a standardized diagnostic instrument for adult mental health disorders in addition to the systematic evaluation of ADHD symptoms. Furthermore, the available diagnostic instruments are not designed to differentiate symptoms of ADHD that overlap with diagnostic criteria for other common mental health disorders, such as depressive episodes and bipolar disorder. UKAAN therefore only recommends the use of a standardized clinical interview for adult psychiatric disorders when this is needed for research.

For the minimum protocol, it is essential that common adult mental health disorders that either co-occur at increased rates in ADHD or may be part of the differential diagnosis are carefully evaluated. The assessment of comorbidity is usually completed by a trained psychiatrist or a specialist in the diagnosis of adult mental health disorders. UKAAN recommends the use of a standard diagnostic checklist for the inclusion and exclusion of the following key disorders (Appendix K):

- bipolar affective disorder;
- major depression;
- anxiety disorder;
- obsessive–compulsive disorder;

- schizophrenia;
- substance abuse disorder;
- addiction;
- borderline personality disorder;
- antisocial personality disorder;
- other personality disorder;
- tic disorder;
- autism spectrum disorder;
- learning disability (general);
- specific reading difficulty (dyslexia);
- specific mathematics difficulty.

References

- 1 Asherson P. Clinical assessment and treatment of attention deficit hyperactivity disorder in adults. *Expert Rev Neurother.* 2005;5:525-539.
- 2 World Health Organization. *The ICD-10 Classification of Mental and Behavioural Disorders.* Geneva: World Health Organization;2002. Accessed August 25, 2012.
- 3 Kessler RC, Adler L, Ames M, et al. The World Health Organization Adult ADHD Self-Report Scale (ASRS). *Psychol Med.* 2005;35:245-256.
- 4 Barkley MA, Murphy RA. *Attention-Deficit Hyperactivity Disorder: a Clinical Workbook.* Third ed. New York: Guildford Press; 2006.
- 5 Kooij JJS, Francken MH. Diagnostic Interview for ADHD Adults (DIVA scale). DIVA Foundation website. www.ukaan.org/clinicians_resource.htm. Accessed August 25, 2012.
- 6 Epstein JN, Kollins SH. Psychometric properties of an adult ADHD diagnostic interview. *J Atten Disord.* 2006;9:504-514.
- 7 Weiss Scale. www.caddra.ca/cms4/pdfs/caddraGuidelines2011WFIRS_S.pdf. Accessed August 25, 2012.