

Definition of attention deficit hyperactivity disorder in adults

Attention deficit hyperactivity disorder (ADHD) is a clinical syndrome defined in the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)* [1] by high levels of hyperactive, impulsive, and inattentive behaviors that begin during early childhood, are persistent over time, pervasive across situations, and lead to clinically significant impairments. Current DSM-IV criteria use a list of 18 symptom items, with 9 for hyperactivity-impulsivity and 9 for inattention [2]. Under the International Classification of Disease (ICD-10) classification system endorsed by the World Health Organization [3], the condition is referred to as hyperkinetic disorder, which is a more restricted definition of the disorder, describing a severe subgroup of patients with the combined subtype of ADHD.

Diagnostic criteria

Diagnostic and Statistical Manual of Mental Disorders

DSM-IV diagnosis is made if six or more items in either the inattentive or hyperactive-impulsive domains are present, leading to three subtypes (criterion A) [2]:

- inattentive type of ADHD;
- hyperactive type of ADHD;
- combined type of ADHD.

Impairing symptoms should emerge before the age of 7 years (criterion B), with some impairment in more than one setting (criterion C), and affecting social, occupational, or academic performance (criterion D). Finally, the disorder should not be caused by another condition (criterion E).

In adults, some of the symptoms that are present in childhood will have remitted or modified with developmental age, so that some patients who are still impaired by symptoms of ADHD may no longer meet the full diagnostic criteria. Yet persistence of some symptoms with a significant impairment means that they may still require treatment and fulfill the DSM-IV criteria for ‘ADHD in partial remission.’ Table 2.1 describes the formal DSM-IV criteria for ADHD.

<i>Diagnostic and Statistical Manual of Mental Disorders: diagnostic criteria for attention deficit hyperactivity disorder</i>
A. Either (1) or (2):
1. Six or more of the following symptoms of inattention have persisted for at least six months to a degree that is maladaptive and inconsistent with the developmental level:
Inattention <ul style="list-style-type: none">• often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities• often has difficulty sustaining attention in tasks or play activities• often does not seem to listen when spoken to directly• often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure of comprehension)• often has difficulty organizing tasks and activities• often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (eg, schoolwork or homework)• often loses things necessary for tasks or activities at school or at home (eg, toys, pencils, books, assignments)• is often easily distracted by extraneous stimuli• is often forgetful in daily activities
2. Six or more of the following symptoms of hyperactivity–impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with the developmental level:
Hyperactivity <ul style="list-style-type: none">• often fidgets with hands or feet or squirms in seat• often leaves seat in classroom or in other situations in which remaining seated is expected;• often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)• often has difficulty playing or engaging in leisure activities quietly• often talks excessively• is often ‘on the go’ or often acts as if ‘driven by a motor’
Impulsivity <ul style="list-style-type: none">• often has difficulty awaiting turn in games or group situations• often ‘blurts out’ answers to questions before they have been completed• often interrupts or intrudes on others (eg, butts in to other children’s games)
B. Some hyperactivity–impulsive or inattentive symptoms that cause impairment were present before the age of 7 years

Table 2.1 *Diagnostic and Statistical Manual of Mental Disorders: diagnostic criteria for attention deficit hyperactivity disorder (continues opposite).*

<i>Diagnostic and Statistical Manual of Mental Disorders: diagnostic criteria for attention deficit hyperactivity disorder (continued)</i>
<p>C. Some impairment from the symptoms is present in two or more settings (eg, at school, work, and/or at home)</p> <p>D. There is clear evidence of clinically significant impairment in social, academic, and/or occupational functioning</p> <p>E. The symptoms do not occur exclusively during the course of a pervasive developmental disorder, schizophrenia, or other psychotic disorder, and are not better accounted for by another mental disorder (eg, mood disorder, anxiety disorder, dissociative disorder, or other personality disorder)</p>
<p>Based on these criteria, three types of ADHD have been identified:</p> <ol style="list-style-type: none"> <i>Combined type:</i> if both criteria 1A and 1B are met for the past 6 months <i>Predominantly inattentive type:</i> if criterion 1A is met, but criterion 1B is not met for the past 6 months <i>Predominantly hyperactive-impulsive type:</i> if criterion 1B is met, but criterion 1A is not met for the past 6 months <p>Broader subtypes of ADHD:</p> <p><i>In partial remission:</i> this subtype applies to individuals (especially adolescents and adults) who currently have symptoms that no longer meet full criteria</p> <p><i>ADHD not otherwise specified:</i> this subtype includes disorders with prominent inattention or hyperactivity-impulsivity that do not meet criteria for ADHD. Examples include:</p> <ul style="list-style-type: none"> individuals who meet criteria for ADHD but whose age of onset is 7 years or older individuals with clinically significant impairment who present with inattention and whose symptom pattern does not meet the full diagnostic criteria for ADHD, but have a behavioral pattern marked by sluggishness, daydreaming, and hypoactivity

Table 2.1 *Diagnostic and Statistical Manual of Mental Disorders: diagnostic criteria for attention deficit hyperactivity disorder (continued).* ADHD, attention deficit hyperactivity disorder; DSM-IV; Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; Reprinted with permission from American Psychiatric Association [2].

International classification of disease: hyperkinetic disorder

Under the tenth edition of the International Classification of Disease (ICD-10) system [3] (Table 2.2), the condition is referred to as hyperkinetic disorder. This is considered a more restricted definition of ADHD that delineates a severe form of the Combined Type as defined in DSM-IV. NICE guidelines (2009) recommend that children and adolescents with hyperkinetic disorder require immediate treatment with medication [4].

One limitation of the ICD-10 criteria is the hierarchical rule for comorbid disorders, which results in ADHD being excluded as a diagnosis if it occurs in the presence of other common adult mental health disorders. Since ADHD in adults is commonly accompanied by such conditions (eg, depression), this limits the usefulness of the ICD-10 criteria in clinical practice.

ICD-10 criteria and recommendations for use in clinical practice
Demonstrable abnormality of attention, activity and impulsivity at home, for the age and developmental level of the child, as evidenced by (1), (2), and (3):
<div><div>1. Patient demonstrates at least three of the following attention problems:</div><div><div>A. short duration of spontaneous activities</div><div>B. often leaving play activities unfinished</div><div>C. over-frequent changes between activities</div><div>D. undue lack of persistence at tasks set by adults</div><div>E. unduly high distractibility during study (homework or reading assignment)</div></div><div><div>2. Patient also demonstrates at least three of the following activity problems:</div><div><div>A. very often runs about or climbs excessively in situations where it is inappropriate</div><div>B. seems unable to remain still</div><div>C. markedly excessive fidgeting and wriggling during spontaneous activities</div><div>D. markedly excessive activity in situations expecting relative stillness (eg, mealtimes, travel, visiting, church)</div><div>E. often leaves seat in classroom or other situations when remaining seated is expected; often has difficulty playing quietly</div></div><div><div>3. Patient also demonstrates at least one of the following impulsivity problems:</div><div><div>A. often has difficulty awaiting turns in games or group situations;</div><div>B. often interrupts or intrudes on others (eg, interrupts others' conversations or games);</div><div>C. often blurts out answers to questions before questions have been completed</div></div></div></div></div>
Demonstrable abnormality of attention and activity at school or nursery (if applicable), for the age and developmental level of the child, as evidenced by both (1) and (2):
<div><div>1. Patient demonstrates at least two of the following attention problems:</div><div><div>A. undue lack of persistence at tasks</div><div>B. unduly high distractibility (ie, often orienting toward extrinsic stimuli)</div><div>C. overfrequent changes between activities when choice is allowed</div><div>D. excessively short duration of play activities</div></div><div><div>2. Patient also demonstrates at least three of the following activity problems:</div><div><div>A. continuous (or almost continuous) and excessive motor restlessness (eg, running, jumping in situations allowing free activity)</div><div>B. markedly excessive fidgeting and wriggling in structured situations</div><div>C. excessive levels of off-task activity during tasks</div><div>D. unduly often out of seat when required to be sitting</div><div>E. often has difficulty playing quietly</div></div></div></div>
Directly observed abnormality of attention or activity. This must be excessive for the child's age and developmental level. The evidence may be any of the following:
<div><div>1. direct observation of the criteria above (ie, not solely the report of parent or teacher);</div><div>2. observation of abnormal levels of motor activity, or off-task behavior, or lack of persistence in activities in a setting outside home or school (eg, in a clinic or laboratory)</div><div>3. significant impairment of performance on psychometric tests of attention</div></div> <div>Does not meet criteria for pervasive developmental disorder, mania, depressive, or anxiety disorder</div> <div>Onset before the age of 7 years</div> <div>Duration of at least 6 months</div> <div>IQ above 50</div>

Table 2.2 ICD-10 criteria and recommendations for use in clinical practice. ICD-10, Tenth edition of the International Classification of Disease; Adapted with permission from World Health Organization [3].

Changes to Diagnostic and Statistical Manual of Mental Disorders

Despite the widespread use of the DSM-IV criteria, several criticisms have been leveled at them, including the lack of developmental consistency in adults [4]. For example, criteria referring to ‘climbing’ and ‘playing quietly’ cannot easily be applied outside childhood. Another criticism is the threshold of six symptoms, which may be excessively high when applied to adults. Suggested changes to the DSM-IV criteria include:

- an increase in the permitted age of onset;
- the addition of age-adjusted descriptions of ADHD symptoms that are suitable for use in adults;
- the inclusion of behaviors that reflect deficits of executive functions and emotional lability;
- an adjustment of symptom threshold;
- to allow comorbidity with pervasive developmental disorders;
- replace term ‘clinical subtypes’ with ‘clinical presentations’.

Thus, there are numerous changes that have been considered for the forthcoming DSM-V (Table 2.3).

Age of onset

Although the onset of ADHD symptoms is often seen in early childhood, this is not always the case; a significant group have impairing ADHD symptoms that start later in life. Comparisons of patients that fulfill

Proposed changes in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders

- Change the age of onset from onset of impairing symptoms by age 7 years to onset of symptoms by age 12 years
- Change the three subtypes to three current presentations
- Add a fourth presentation for restrictive inattentive
- Change the examples in the items – without changing the exact wording of the DSM-IV items – to accommodate a lifespan relevance of each symptom and to improve clarity
- Remove pervasive developmental disorders from the exclusion criteria
- Modify the preamble (A1 and A2) to indicate that information must be obtained from two different informants (eg, parents and teachers for children and third party/significant other for adults), whenever possible
- Adjust the age cut-off point for diagnosis in adults (still under consideration)

Table 2.3 Proposed changes in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders.

criteria for ADHD with an age of onset beyond 7 years of age have shown them to be similar to those with an earlier age of onset, with similar predictions for clinical outcome, treatment response, and risk of associated disorders [4,6,7].

In some cases, ADHD symptoms may be less severe in early childhood, with impairments emerging during the secondary school years when there is more demand on self-control of behavior and academic performance. In some cases, ADHD may not emerge as an impairing problem until the young person leaves home and is expected to organize his or her own life. Additionally, both a high cognitive ability and a structured child environment can contribute to masking the problems associated with ADHD in some high-functioning individuals. A further problem is that adults tend to report the onset of ADHD symptoms an average of 5 years later than the actual age at which the symptoms started [8], perhaps related to difficulty in recalling behavior before the age of 12 years.

In the majority of cases, impairing symptoms from ADHD are apparent by the age of 12 years, and this is the criterion that has been adopted by many specialists in the field. We therefore recommend that the age of onset criteria should be altered to symptoms that start before the age of 12 years or by early adolescence. The requirement for onset of impairment in childhood should be dismissed, so long as current impairment can be shown to be the direct result of ADHD symptoms. These changes are expected to be applied to the DSM-V criteria.

Age-adjusted criteria for symptoms in adults

Symptom items for ADHD within the DSM-IV are not adjusted for developmental changes that occur in all people as they grow older. The symptoms persist but their typical presentation changes. Examples of age-adjusted descriptions have been provided in an earlier publication and are reproduced in Table 2.4 [9] and are also incorporated into the Diagnostic Interview for Adult ADHD (DIVA) (see Appendix G).

Descriptions of ADHD symptoms need to take into account the developmental age of individuals. Examples of age-appropriate descriptions of symptoms for adults are expected to be included in DSM-V [10].

Age-adjusted attention deficit hyperactivity disorder symptoms for use with adults

Inattention

- ☐ *Often fails to give close attention to detail.* Has difficulty remembering where they put things. At work, this may lead to costly errors. Tasks that require detail and are considered tedious (eg, income tax returns) become very stressful. This may include overly 'perfectionist'-like and rigid behavior, and needing too much time for tasks involving details in order to prevent forgetting any of them
- ☐ *Often has difficulty sustaining attention.* Inability to complete routine tasks (eg, tidying a room or mowing the lawn) without forgetting the objective and starting something else. Inability to sustain sufficient attention to read a book that is not of special interest, although there is no reading disorder. Inability to keep accounts, write letters, or pay bills. Attention often can be sustained during exciting, new, or interesting activities (eg, using internet, chatting, computer games). This does not exclude the criterion when boring activities are not completed
- ☐ *Often does not seem to listen when spoken to.* Receive complaints that they do not listen or that it is difficult to gain their attention. Even where they appear to have heard, they forget what was said and do not follow through. These complaints reflect a sense that they are 'not always in the room,' 'not all there,' or 'not tuned in'
- ☐ *Fails to follow through on instructions and complete tasks.* Adults with ADHD may observe difficulty in following other people's instructions (eg, inability to read or follow instructions in a manual for appliances). Failure to keep commitments undertaken (eg, work around the house)
- ☐ *Difficulty organizing tasks or activities.* Recurrent errors (eg, lateness, missed appointments, missing critical deadlines). Sometimes a deficit in this area is seen in the amount of delegation to others such as secretary at work or spouse at home
- ☐ *Avoids or dislikes sustained mental effort.* Puts off tasks such as responding to letters, completing tax returns, organizing old papers, paying bills, establishing a will. These adults often complain of procrastination
- ☐ *Often loses things needed for tasks* (eg, misplacing purse, wallet, keys, assignments from work, where car is parked, tools, and even children!)
- ☐ *Easily distracted by extraneous stimuli.* Subjectively experience distractibility and describe ways in which they try to overcome this. This may include listening to white noise, multi-tasking, requiring absolute quiet, or creating an emergency to achieve adequate states of arousal to complete tasks. Often has many projects going simultaneously and has trouble with completion of tasks
- ☐ *Forgetful in daily activities.* May complain of memory problems. For example, a patient may head out to the supermarket with a list of things, but end up coming home having failed to complete their tasks or having purchased something other than what they intended to buy

Hyperactivity

- ☐ *Fidgets with hands or feet.* This item may be observed, but it is also useful to ask patient about this. Fidgeting may include picking their fingers, shaking knees, tapping hands or feet, and changing position. Fidgeting is most likely to be observed while the patient is waiting in the waiting area of the clinic
- ☐ *Leaves seat in situations in which remaining seated is usual.* Adults may be restless. For example, patients become frustrated with dinners out in restaurants or are unable to sit during conversations, meetings, and conferences. This may also manifest as a strong internal feeling of restlessness when waiting

Table 2.4 Age-adjusted attention deficit hyperactivity disorder symptoms for use with adults (continues overleaf).

Age-adjusted attention deficit hyperactivity disorder symptoms for use with adults (continued)
<ul style="list-style-type: none"> <input type="checkbox"/> <i>Wanders or runs excessively or feels frequent subjective feelings of restlessness.</i> Adults may describe their subjective sense of always needing to be 'on the go,' or feeling more comfortable with stimulating activities than with more sedentary types of recreation. They may pace during the interview <input type="checkbox"/> <i>Difficulty engaging in leisure activities quietly.</i> Adults may describe an unwillingness to/dislike of staying home or engaging in quiet activities. They may complain that they are workaholics, in which case detailed examples should be given <input type="checkbox"/> <i>Often 'on the go' or act as if 'driven by a motor.'</i> Significant others may have a sense of the exhausting and frenetic pace of these adults. Adults with ADHD will often appear to expect the same frenetic pace from others. Holidays may be described as draining since there is no opportunity for rest <input type="checkbox"/> <i>Talks excessively.</i> Excessive talking makes dialogue difficult. This may interfere with a spouse's sense of 'being heard' or achieving intimacy. This chatter may be experienced as nagging and may interfere with normal social interactions. Clowning around, repartee, or other means of dominating conversations may mask an inability to engage in give-and-take conversation
Impulsivity
<ul style="list-style-type: none"> <input type="checkbox"/> <i>Answers before questions have been completed.</i> This will usually be observed during the interview. This may also be experienced by probands as a subjective sense of other people talking too slowly and finding it difficult to wait for them to finish. Tendency to say what comes to mind without considering timing or appropriateness <input type="checkbox"/> <i>Difficulty waiting in turn.</i> Adults find it difficult to wait for others to finish tasks at their own pace, such as children. They may feel irritated waiting in line or in a restaurant and may be aware of their own intense efforts to force themselves to wait. Some adults compensate for this by carrying something to do at all times <input type="checkbox"/> <i>Interrupts or intrudes on others.</i> This is most often experienced by adults as social ineptness at social gatherings or even with close friends. An example might be inability to watch others struggle with a task (such as trying to open a door with a key) without jumping in to try the task for themselves

Table 2.4 Age-adjusted attention deficit hyperactivity disorder symptoms for use with adults (continued). ADHD, attention deficit hyperactivity disorder. Reproduced with permission from Asherson [9].

Behaviors that reflect deficits in executive function

Some experts conceptualize ADHD symptoms as primarily a deficit of executive functions. While this is not always reflected in neuropsychological testing of executive functions, impairments are usually seen in the way that people with ADHD manage daily tasks [8,11]. Such impairments include difficulties with self-organization, timekeeping, losing things, attention span, emotion regulation, sustaining effort, and alertness. Table 2.5 lists some of the behaviors that reflect difficulties with executive function.

Behaviors reflecting difficulties with executive functions are commonly seen in adults with ADHD, either reflecting core ADHD symptoms or

Behavioral domains in adults with attention deficit hyperactivity disorder that are proposed to reflect difficulties with executive function

Activation	Organizing, prioritizing, and initiating work
Focus	Focusing, sustaining, and shifting attention to tasks
Effort	Regulating alertness, sustaining effort, and processing speed
Emotion	Managing frustration and regulating emotions
Memory	Utilizing working memory and accessing recall
Action	Monitoring and self-regulating activities

Table 2.5 Behavioral domains in adults with attention deficit hyperactivity disorder that are proposed to reflect difficulties with executive function. Reproduced with permission from Brown et al [11].

commonly associated features of the disorder. Future editions of the operational diagnostic criteria may adopt some of these symptoms as either core or commonly associated features of ADHD.

Subthreshold cases

Follow-up studies of children with ADHD and cross-sectional epidemiological studies have found that, as adults, individuals with ADHD retain significant levels of impairment linked to persistence of ADHD symptoms, albeit symptoms are sometimes at subthreshold levels [12–15].

As a response to this situation, it has been proposed that the number of symptoms required for a diagnosis of ADHD in adulthood should be reduced from the current six or more (as in DSM-IV) to four or more [12], as long as the symptoms are clearly linked to impairments and began during childhood or early adolescence. Application of this revised criterion would be in line with the DSM-IV category of ADHD in partial remission, and would ensure that people with significant impairments from persistence of ADHD symptoms in adulthood would be diagnosed and treated. Despite these considerations it is not certain that the recommended change in symptom threshold will be adopted in the DSM-V [10].

When assessing the diagnosis of ADHD in adults, clinicians should aim to establish the diagnosis in childhood and track the persistence of symptoms through to the time of assessment. Where it is not possible to obtain detailed accounts of symptoms and behaviors from before the age of 12 years, clinical judgment will need to be used to decide whether

the current symptoms reflect persistence of ADHD from childhood or early adolescence.

Comorbid pervasive developmental disorder

Both the DSM-IV and ICD-10 criteria state that ADHD or hyperkinetic disorder should not be diagnosed in the presence of a pervasive developmental disorder (eg, autism spectrum disorder; ASD). Yet in clinical practice, the ADHD syndrome is commonly found to be comorbid with ASD.

In practice, ADHD and ASD are often diagnosed together and co-occurrence of both disorders will be possible in DSM-V [10]. The 2008 NICE guidelines already clarify that it is possible to have both disorders, and that the diagnosis of ADHD should be made on the basis of the core syndrome, regardless of comorbidity [4].

Clinical presentations

The traditional inattentive, hyperactive-impulsive and combined subtypes of ADHD have been found to be developmentally unstable. For example, it is not unusual to see someone meet clinical criteria for the hyperactive-impulsive subtype during early childhood, combined-type ADHD during middle childhood and early adolescence, and the inattentive subtype as young adults. This reflects normal developmental changes seen in the wider population but may also reflect poor sensitivity of the items for hyperactive-impulsive symptoms as adults mature and manage some of their symptoms better. Because of the instability of the clinical subtypes, DSM-V will refer to these as clinical presentations with the expectation that they will often change throughout the lifetime of an individual with ADHD [10].

Defining impairment in attention deficit hyperactivity disorder

The presence of impairment linked to the symptoms of ADHD is critical to the diagnostic construct of ADHD as a mental health disorder. When considering the diagnosis of ADHD, symptoms are defined on the basis of being extreme for the developmental age of the person and leading to

clinically significant impairments. We can think of ADHD as reflecting the extreme and impairing tail of continuous traits of inattentive and hyperactive-impulsive symptoms and behaviors that can also lead to the development of comorbid disorders. In this respect, ADHD is similar to conditions such as obesity, high blood pressure, anxiety, and depression.

Defining the level of impairment that is required for a diagnosis of ADHD is to some extent arbitrary and will depend on cultural and social expectations. Yet we can provide basic ‘common-sense’ guidelines to ensure that ADHD diagnosis is restricted to those who present with a significant mental health disorder. In exactly the same way, we need to decide, for example, whether a patient presenting with an anxiety disorder or depression – both common syndromes experienced by most people at some time – are severe enough to warrant medical or psychological interventions. The 2008 NICE guidelines provide recommendations on the level of impairment required for the diagnosis of ADHD (Table 2.6) [4].

The range of impairments seen in ADHD is very broad and encompasses people who barely function to people who maintain themselves in relatively high-powered jobs. ADHD impairments are not only defined by cross-sectional severity of functional impairments, but also by the

Defining impairment in attention deficit hyperactivity disorder
Impairment in ADHD should have the following features:
<ul style="list-style-type: none">• Specialist professional intervention is required to avoid long-term adverse implications of the impairment (as well as problems in the short and medium term)• Impairment is pervasive, occurs in multiple settings, and is of at least moderate severity• Symptoms relating to the impairment should cause problems in at least two domains. Domains of impairment include:<ul style="list-style-type: none">– personal distress from ADHD symptoms– lowered self esteem (usually related to functional impairment)– problems with social interactions and relationships– impaired function in academic, employment, and daily activities– increase in driving accidents and risk-taking behavior– development of comorbid psychiatric syndromes and behavioral problems• Significant impairment should not be considered if the impact of ADHD symptoms is restricted to academic performance alone without a moderate-to-severe impact in other domains. A diagnosis of ADHD should not be applied to justify the use of stimulant medication for the sole use of increasing academic performance

Table 2.6 Defining impairment in attention deficit hyperactivity disorder. ADHD, attention deficit hyperactivity disorder. Adapted with permission from NICE [4].

chronicity of the disorder and the long-term impact on emotional and social aspects of a patient's everyday life. We all experience poor concentration and respond impulsively at times (eg, when we are tired or 'hungover'). However, patients with ADHD experience such difficulties most of the time and to an extent that impairs function in daily life and causes subjective distress. The chronicity of the disorder and the impact on function from childhood through to adulthood is an important aspect of impairment, with cumulative effects on self esteem, mental well-being, and health-related quality of life.

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