

Do I Have ADHD? Diagnosis of ADHD in Adulthood and Its Mimics in the Neurology Clinic

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Abstract

Attention-deficit/hyperactivity disorder (ADHD) is a lifelong neurodevelopmental disorder that causes difficulties with sustained attention, executive functioning, impulsivity, hyperactivity, and/or emotional regulation. Although many people are diagnosed with ADHD in childhood, others seek diagnosis in adulthood. Many adults have already reviewed available clinical scales or screening tools for ADHD and are referred for evaluation of attention problems by their primary care providers. Key features of the history and examination in a clinic visit can differentiate ADHD from other causes of attention problems in adults. Treatment with stimulant or nonstimulant medications for ADHD can be life-changing for adults with ADHD, increasing productivity at home and work, reducing anxiety and impulsive behaviors, and improving interpersonal and community relationships. This article aids neurologists in differentiating ADHD from other causes of attention and executive functioning problems in adults and in initiating treatment.

Introduction

ADHD Is a Lifelong Neurodevelopmental Disorder

ADHD is a clinical syndrome defined by difficulties with sustained attention, executive functioning, impulsivity, and/or hyperactivity that impair daily function and typically first become apparent in childhood. There is a high heritability suggesting that genetic causes may alter the development of brain circuits involved in sustained attention, executive functioning, impulsivity, and emotional regulation.^{1,2} Difficulties in these cognitive domains alter how individuals learn and accomplish different cognitive tasks as their brain networks mature through early childhood, adolescence, and early adulthood^{3,4} and are influenced by environmental factors and other comorbidities. The difficulties that people with ADHD encounter also vary by age, based on the types of environmental demands and the individual's life experience.^{5,6} A child with inattentive-type ADHD who daydreams in class and has difficulty remembering to finish and/or hand in homework may become an adult who changes jobs frequently and/or is involved in multiple traffic accidents.

Identification and treatment of ADHD can be life-changing for children and adults with ADHD and reduce risk of mortality.⁷ For many adults with lifelong symptoms, ADHD diagnosis helps them understand many of the difficulties they have in achieving their goals. This knowledge also counters messages they have received in the past that their difficulties are because they lack motivation or intelligence. Diagnosis with ADHD, and ADHD education, can improve relationships with family and friends, who may previously have had difficulty understanding the forgetfulness—or lack of follow through—and incorrectly attributed it to lack of caring.⁸ There are also multiple highly successful medication and nonmedication strategies to improve ADHD symptoms.^{9,10} Stimulant medications are available in different formulations and dosing, allowing titration of the

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stimulants to the individual's symptoms. Unlike many medications for other neurologic or psychiatric conditions, one can often assess whether a stimulant is working within minutes to hours (versus waiting weeks to months). Stimulants also offer the flexibility of being able to take on some days and not others without the need to taper the dose, as often required for other neuropsychiatric medications. Although stimulants are generally well tolerated in adults with ADHD, there are also non-stimulant medication options.

Challenges to Diagnosing ADHD in Adulthood

There are many medical problems and external environmental factors that contribute to problems with sustained attention and executive function in adulthood (Table 1). This includes common conditions such as anxiety, depression, bipolar disorder, sleep difficulties, and pain/discomfort. It also includes the increasing demands at work and the responsibilities that come with adulthood. History of childhood trauma, neglect, or deprivation can also contribute to attention difficulties in childhood and later as an adult.¹¹ Many of the clinical scales for assessing the likelihood of ADHD in adulthood are available to patients online. Thus, it is not unexpected that adults with attention difficulties from other causes may present for ADHD evaluation. Understanding the multiple contributions to difficulties with sustained attention and executive functioning can be helpful with evaluating and managing expectations regarding treatment.

Variation in ADHD Presentation and Dysfunction Based on the Cognitive Profile

People with ADHD are more likely to be diagnosed in childhood if they have difficulty with behavior and/or performance in academic settings. Combined-type and hyperactive/impulsive-type ADHD are more likely to be detected because of disruptive behavior than inattentive-type.¹² There is also gender bias in which girls, particularly those with inattentive-type, are less likely to be evaluated

for ADHD than boys with hyperactive/impulsive-type, even where academic performance was affected.^{13,14} This bias persists into adulthood.¹⁵ For many adults born before 1980, there was limited awareness of ADHD in many communities. It is also not uncommon that parents may have refused testing or treatments due to their beliefs regarding ADHD, mental illness, and/or moral development.

ADHD can occur in people with wide-ranging intellectual abilities and full-scale IQ scores. Co-occurring learning or other intellectual disabilities may make ADHD symptoms more pronounced, particularly due to the limited ability to develop and/or apply compensatory strategies.¹⁶ By contrast, people with above average and/or superior cognitive abilities in other domains (particularly processing speed and verbal and/or nonverbal learning) are often able to compensate for moderate or even severe ADHD in childhood and early adulthood. They need less time than their peers to learn and thus are less affected by inattention than average-paced or below average-paced learners. On careful review of history, many adults with ADHD, who were not diagnosed as children, benefited significantly from the structure of school, structure provided by parents or tutors who assisted them with their school work, and relatively few demands at home. Thus, for many adults with ADHD, the severity of symptoms may not be fully apparent to them until they leave structured training (e.g., high school, college, or professional training) and enter jobs where they have to organize their own time and project management and balance their own home and family responsibilities.

Motivations for Seeking Diagnosis of ADHD in Adulthood

For many adults with ADHD, the primary motivation for seeking evaluation in our clinic is to better understand the lifelong difficulties with sustained attention, distractibility, impulsivity, and/or hyperactivity. For many patients, the impetus for arranging the appointment came from recent recognition of their difficulties as likely due to ADHD through conversations with family or coworkers, or when a first-degree relative (e.g., sibling or child) is diagnosed. Others may have suspected for many years (including people who were referred as children by the school, but their parents refused the evaluation or treatment) but have only recently encountered challenges that overwhelm their compensatory strategies.

In people for whom ADHD is not the cause of their attention and/or executive function difficulties, significant increases in their workload, disruption of routines, or other medical problems can prompt evaluation. For university students, academic difficulties are also a strong motivator for evaluation because both medication and accommodations can become available with a clinical ADHD diagnosis. Identifying the underlying cause(s) of attention problems—such as poor

Table 1 Common Causes of Attention and Executive Function Difficulties in Adults

Medical	Attention-deficit/hyperactivity disorder (ADHD) Anxiety Bipolar disorder Depression Sleep deprivation and/or sleep disorders Pain or physical discomfort Fatigue Medications Other medical conditions that affect daily function
Environmental	External stressors (e.g., relationships, financial, and legal) Increased demands in home, work, and/or family Grief (e.g., death or serious illness in family) Disruption or change in daily routines

sleep or substance use—is key to addressing their difficulties in daily functioning.

Diagnosing ADHD in Adults From the Clinical History

Nature of Attention and Impulsivity Problems

Many if not all of the adults presenting for question of ADHD are familiar with the criteria through taking online questionnaires or speaking with friends and family who are familiar with ADHD. It is helpful to know what triggered their request for a clinical assessment and what resources they have used to learn more about ADHD. It is common for adults with ADHD to present because a family or friend is diagnosed, or a friend says, “I think you have ADHD.” In part because ADHD runs in families, it is not uncommon for adults with profound ADHD symptoms to not have come to medical attention as a child or earlier in adulthood because he/she/they thought “everyone thought this way.” It is this maturation and increased awareness as an adult of how they accomplish tasks differently than their peers which may prompt evaluation for ADHD.

The DSM-V criteria, with the suggested adaptations for adults, are a key framework for diagnosing ADHD. It can also provide clarity to people who have attention problems for other reasons why ADHD is not a good fit. Although yes and no answers are commonly used for scoring (hence why many people who do not have ADHD present after taking an online test), *it is the detailed nature of the difficulties that is most informative for distinguishing ADHD from other causes of inattention.* Asking for examples for each symptom the patient endorses, immediately after they endorse it, often produces very characteristic responses in people with ADHD that can help distinguish ADHD from other disorders. Characteristic responses are provided contrasting the inattentive symptoms in ADHD and anxiety (Table 2) and the impulsive-hyperactive symptoms in ADHD and sleep deprivation/disorders (Table 3).

Asking open-ended questions such as “can you give me an example?” or “can you give me an example at home?” is more informative than providing examples to the patient. This reduces the likelihood that patients who are prone to agreeing with clinicians, or who are invested in the diagnosis for other reasons, will be incorrectly diagnosed with ADHD. When reviewing the diagnostic criteria in clinic, adults with ADHD may immediately answer “yes” or “all the time” to the symptoms that are most severe. By contrast, people who have attention complaints for other reasons often spend more time thinking about whether the symptom happens to them and may ask for clarification. If patients are equivocal, or have difficulty recognizing the symptoms in their own behavior, it can be helpful to ask how their partner or friends would answer these questions if asked about the patient. Most patients with ADHD are very

aware of the feedback they have received from family and close friends.

Symptoms present in multiple contexts including home and the workplace are also a key differentiator. Although increasing cognitive load can be the triggering event for both people with ADHD and other causes of attention problems, people with ADHD typically have difficulties with the DSM-V criteria in nonstressful and stressful situations. People with ADHD and strong abilities in other cognitive domains may be able to perform better in high-stake situations (e.g., relationships at work) but have significant difficulties with close relationships including partners, parents, and/or siblings where the consequences may be less severe. Many people with ADHD report that they love being with their friends but have difficulty sustaining friendships because of an “out-of-sight-out-of-mind” effect. They do not think about calling or messaging their friends unless their friend is right in front of them. If they make arrangements to meet with their friend(s), would their friends be confident the patient would show up? Or have their friends had the experience of the patient frequently canceling, double booking, or showing up late?

It is important that diagnosis of ADHD in adults does not require parent (or teacher) questionnaires, as are commonly used for diagnosis in children. These questionnaires have not been validated for use in adults.

Food Cravings and Binge Eating

Although not included in the DSM-V criteria, the association of ADHD and overeating behaviors is well-documented.¹⁷ People with ADHD inattentive-type will often endorse an inattentive type of eating. If food is in front of them (e.g., a bowl of chips), they will end up “mindlessly” eating the chips while thinking or doing something else and be surprised to find they have eaten the whole bowl. Less commonly, patients will endorse a history of “binge eating.” However, when asked if they often intended to only eat 1 cookie (or another favorite carbohydrate snack) and then eat the whole package, many will endorse this behavior. For combined-type and impulsive/hyperactive-type, people often report craving food most of the day and having difficulty inhibiting impulses to stop for fast food while out driving, or finish all of a favorite food or drink that is left in the fridge. For patients with difficulty with emotional regulation, questions about whether they can eat a whole box of cookies or whole pizza if they are upset can be supportive of an ADHD diagnosis. Although not everyone who has a history of binge eating behaviors has ADHD (likely 50%–70%), it seems that with careful questioning, most, if not all, of the adults with ADHD in my clinical practice have exhibited overeating and/or binge eating behaviors.

Compensatory Strategies

One of the reasons that ADHD symptoms are likely under-recognized in adult populations are the compensatory strategies

Table 2 Characteristic Descriptions of ADHD Inattentive Symptoms in ADHD vs Anxiety

Inattentive symptoms	Examples from people with ADHD	People with anxiety ^a
Difficulty organizing	<ul style="list-style-type: none"> • Difficulty with knowing how to organize workspace; may look to others and copy their approach • May spend excessive amount of time (even hours) making lists to try to organize tasks • Double booking with friends, or forgetting all together about arrangements 	<ul style="list-style-type: none"> • More common to report knowing what needs to be done but having difficulty initiating tasks • Less or no organizing difficulty when relaxed • Organizing challenges isolated to a specific context (e.g., school)
Difficulty prioritizing	<ul style="list-style-type: none"> • Can have difficulty identifying what should be done first • Even when knows what should be done first, often finds self doing non-urgent work first • Difficulty budgeting time on project; spending too much time on less important parts of project 	<ul style="list-style-type: none"> • Knows what needs to be done first but actively avoids specific tasks due to anxiety • Very aware that should be working on higher priority task; feels guilty while working on other task
Avoids or procrastinates on work that requires sustained attention	<ul style="list-style-type: none"> • Typical in both work and home settings • Tasks requiring a lot of reading or synthesizing information from multiple sources are often stressful 	<ul style="list-style-type: none"> • Avoidance can be more tasks specific (e.g., avoids some types of work requiring sustained attention while able to do others)
Easily distracted	<ul style="list-style-type: none"> • This can be by positive, neutral, or negative thoughts and/or external stimuli • When distracted, person is often unaware of how much time has passed and may be fully engrossed in topic(s) of distraction • Can affect reading (having to read page over and over) or following plot in movie or tv show 	<ul style="list-style-type: none"> • Distracting thoughts are often negative and return frequently to same source(s) of anxiety • When distracted, the patient is typically aware of passage of time and often still thinking or worried about the source of anxiety
Inattentive when others are talking	<ul style="list-style-type: none"> • Report that they try to listen but are frequently distracted by thoughts popping into their head • Often later realize that decisions were made in a conversation that they thought were still undecided 	<ul style="list-style-type: none"> • May have difficulty following discussion due to anxiety on how to reply (1:1) or jump in (groups) • Tends to be less frequent or consistent across lifespan
Difficulty completing tasks	<ul style="list-style-type: none"> • Buying supplies for different art or other home improvement projects but then not using them • Affects both projects that are necessary and those for fun • Needing high-stake deadlines to motivate to finish at 11th hour 	<ul style="list-style-type: none"> • Initiating tasks can be the most difficult part • Experiencing anxiety during the task that leads to stopping task • Tends to be for specific tasks that cause anxiety
Forgetful, loses things	<ul style="list-style-type: none"> • Pervasive at home and work • Requires frequent reminders • Often does not recall promising to pick items up from store, or other errands, from partner • Often returns to the house 2, 3, 4 even 5 times to get everything they need before going to work 	<ul style="list-style-type: none"> • Subjective memory complaints that the patient cannot remember recent conversations, appointments, or recently learned details as easily as they did before (decline in function)

Abbreviation: ADHD = attention-deficit/hyperactivity disorder.

^a People with ADHD and anxiety can also exhibit these symptoms in setting of anxiety.

that many people with ADHD develop. When these compensatory strategies become insufficient, or the cost becomes too high, this can be a motivation to seek diagnosis and treatment in the neurology clinic.

Anxiety: Many adults with ADHD learned in their adolescence or early adulthood to leverage anxiety to modulate and sustain their attention. Estimates of clinical anxiety are higher in the adults with ADHD than the general population.¹⁸ Many adults with ADHD will endorse purposefully saving difficult tasks for the last minute to harness the anxiety of missing the deadline to hyperfocus for even hours to days.

Most are aware of the dangers of this approach to both achieving their goal on time and the personal costs to their health and relationships.

Visual reminders: People with ADHD who have cognitive strengths in visual processing will often report using sticky notes and/or multiple calendars around their house or work environment to organize basic daily tasks. This has limits, many admit, when there are too many sticky notes. People with strong visual skills will often spread out all of the information on a large space around themselves on the floor, or large work area, so that they can

Table 3 Characteristic Descriptions of ADHD Impulsive/Hyperactive-Type Symptoms in ADHD vs Sleep Deprivation and/or Sleep Disorders

Impulsive/hyperactive symptoms in adults	Examples from people with ADHD	People with sleep problems ^a
Fidgeting	<ul style="list-style-type: none"> • Often moving in seat, fidgeting with hands or legs • May spend significant effort suppressing movements 	<ul style="list-style-type: none"> • Fidgeting typically absent, may show reduced movements
Difficulty remaining seated, restlessness, always on the “go”	<ul style="list-style-type: none"> • Choose jobs with lots of activity • Frequently out-of-the house or socializing with friends • Report intense daily exercise is the only way to be able to sit quietly later in the day to watch tv 	<ul style="list-style-type: none"> • Attention is short, but energy levels typically lower than normal
Talking excessively, blurting out answer before question complete, interrupting	<ul style="list-style-type: none"> • Frequently oversharing including in work or inappropriate settings • Often unintentionally interrupting others because distracted by own thoughts and/or not attending to others talking 	<ul style="list-style-type: none"> • May be more uninhibited or tangential in speech when tired, quantity of speech more likely to be normal or reduced • May snap at family
Emotional regulation	<ul style="list-style-type: none"> • Easily frustrated • Can snap or say unkind things to loved ones, typically have near immediate regret of behavior • May be worse when tired, but also happens when well rested • May lead to overeating/binging (particularly on carbohydrates) 	<ul style="list-style-type: none"> • Easily frustrated • Can snap or say unkind things to loved ones • Worse when tired or fatigued • Onset of poor emotional regulation occurred after sleep difficulties began
Overeating	<ul style="list-style-type: none"> • Some report near constant food cravings • Difficulty limiting intake of less healthy foods, alcohol, other substances • Stopping for fast food or other unhealthy food items when presented with visual stimuli 	<ul style="list-style-type: none"> • Inhibition may be lower • Sleep problems alone less likely to drive impulsive overeating or overdrinking behaviors

Abbreviation: ADHA = attention-deficit hyperactivity disorder.

^a People with ADHD and sleep problems can also exhibit these symptoms.

see all the parts at once. This allows them to overcome some of the executive function challenges by having all parts visible at once, instead of holding these parts in working memory.

Modeling: Older adults who have successfully remained in their chosen careers despite significant lifelong difficulties with ADHD often report using modeling, that is mimicking what others do around them. For example, patients with difficulty figuring out how to organize their workspace may compensate by watching what their coworkers are doing and when their coworkers start organizing their desks, copying what their coworkers do. People with ADHD may also use this strategy at home if they have a family member or housemate who is more organized.

Relying on others: Many adults with ADHD have close friends, or are married to someone, who does not have ADHD. Many adults presenting for evaluation for ADHD report that they made it to the appointment because their spouse reminded them and/or brought them to the appointment. This reliance on others can also be apparent in reports from patients that their partner does not understand, or can become frustrated by, the patient’s forgetfulness or difficulty with organization. The reliance on others also

becomes apparent in the transition from living with parents, for example, to living independently.

Working longer: Many adults with ADHD who have been successful in college or in jobs report compensating for their difficulties with sustained attention and executive functioning by brute force. They may spend extra hours per day on school work or at work—often at the expense of extracurricular activities, social and family relationships. Others may commit to extra work (e.g., summer school) to provide external structure to their day throughout the year.

Common Medical Conditions That Can Mimic ADHD Sleep

One of the most common mimics of ADHD symptoms in adults is insufficient quantity and/or quality of sleep. Asking for specifics about what time people go to bed and what time they get up and how much variation in that pattern is important for understanding if they are getting enough sleep. For many people, the earliest consequence of chronic sleep deprivation is loss of attention, concentration, motivation, and emotional regulation. Distractability, forgetfulness, and difficulty with executive function are common and can mimic both inattentive and hyperactive/impulsive symptoms

ADHD (Tables 2 and 3). Patients may not associate these symptoms with their lack of sleep habits, especially if they have been sleep-deprived for many years and do not appreciate the cumulative effects. If they can recall times before the sleep deprivation where they had ADHD symptoms (e.g., childhood), then it may be possible to make a diagnosis of ADHD even with comorbid sleep problems. However, many people report sleep deprivation starting in college or even high school. Thus, a patient may need to have sufficient sleep for months to a year or more to fully recover from the cognitive effects of sleep problems. Evidence of daytime sleepiness, including napping, are a red flag of poor sleep quality where the quantity of sleep would otherwise be sufficient. An Epworth Sleepiness Scale can be scored quickly with online calculators in a clinic visit and support a referral for a sleep study.

Anxiety

Adults with ADHD can have a significant amount of anxiety in daily life. From a developmental perspective, the fear of missing significant deadlines and disappointing acquaintances through forgetting or not following through on tasks, as well as the consequences of making these mistakes, stoke anxiety over time. Impulsive behaviors can lead to taking on new responsibilities (e.g., pets), signing contracts, or purchasing items that one cannot afford, all contributing to increased stress and more anxiety around managing daily tasks and relationships. Over early life, some people with ADHD develop a more carefree approach to life where the habit of leaping before one looks and the difficulty with future planning result in anxiety only around the times where the negative consequences of impulsivity or inattention become apparent. Other people with ADHD are aware of their difficulties with attention and impulsivity and have the opposite response of learning to anticipate possible negative consequences leading to both specific and generalized anxiety. Anxiety, even in the absence of ADHD, is a main contributor to difficulties with attention, concentration, and executive function. One key to distinguishing people with an anxiety disorder (and no ADHD) from people with ADHD and anxiety is to identify whether ADHD symptoms occur even in low-stress situations or times when the person is not anxious. Many people with ADHD report getting distracted even during leisure activities and being unaware their mind or actions have wandered from the original goal until half an hour or more has passed. By contrast, people who are distracted by anxiety often report being miserable and constantly aware of the anxiety they are avoiding while pursuing their distractions. This is accompanied by a feeling of guilt, whereas people with ADHD typically report lack of awareness that their mind has wandered. If the content of their distraction is pleasing, people with ADHD can be quite happy while distracted.

Depression

Loss of sleep, appetite, and concentration along with increased irritability are all signs of depression and can

contribute to and/or mimic inattentive ADHD symptoms. Both ADHD and depression are common in the population and thus can occur in the same patient. For the question of ADHD in adults, the developmental history is typically the most helpful in determining whether symptoms are due to ADHD (with or without depression) or depression alone. For example, if the patient is able to describe ADHD symptoms occurring before the first depressive episodes or during periods of remission. However, there are also patients who have experienced depression and/or periods of low mood starting in the teenage years that have persisted into adulthood. In situations where it is unclear if attention problems are due to depression or ADHD, family history can be helpful (see below). Treating or referring for treatment for depression first and then reevaluating for ADHD may also be necessary.

OCD

The co-occurrence of ADHD and OCD can exacerbate OCD symptoms and make the OCD symptoms more difficult to control. There is a subset of people with ADHD—who have not been diagnosed with OCD—will report that they have “OCD” symptoms. They describe distressing thoughts that enter their mind without warning and then they will ruminate on these concerns. In many cases, they are aware the negative thought is not likely to happen, or even rational, but they are unable to ignore it. For those who also have difficulty with emotional regulation, this may also be accompanied with grief and crying over bad things that have not happened (and they know are not likely to happen). Notably, they do not report any compulsions related to the obsessive thoughts. Of interest, for many of these patients, stimulant medication reduces or eliminates these symptoms through reducing the distractibility, impulsivity, and distressing thoughts entering their mind.

Other Neurodevelopmental Disorders

People with autism spectrum disorder (ASD) and/or tics are more likely to have ADHD than people without ASD or tics.¹⁹ Thus, an adult with either of these diagnoses already raises the probability of ADHD. It is important to note that ADHD can mimic symptoms of ASD, leading to patients (and sometimes their clinicians) mistakenly diagnosing a person with ADHD as having ASD instead. This is because inattention can lead to missing social cues and impulsivity can lead to socially awkward or inappropriate behavior. By contrast, it would not be common for someone with ASD (who does not have an underlying ADHD phenotype) to be mistakenly diagnosed with ADHD.

Family History

One or more first-degree relatives with a clinical diagnosis of ADHD, or symptoms highly suggestive of ADHD, significantly increases the likelihood of ADHD, which is highly heritable. I ask “who in your family is like you?” for patients with a high probability of ADHD based on history and examination. Parental occupation is often informative. People

with ADHD tend to be drawn to more physically active, socially interactive, and/or dynamic jobs (e.g., teacher, caregiver, builder, mechanic, and salesperson). By contrast, people with ADHD are less likely to seek jobs that require a high level of executive function and sustained attention (e.g., accounting, computer programming, and engineering). Recent diagnosis of ADHD in the child of an adult seeking a clinical diagnosis of ADHD is also informative as an indication of heritability. Moreover, as parents, the patients are often able to identify more specifically the traits that they share with their child. The experience of helping their children with school and home tasks can also evoke more specific memories of difficulties the patient had as a child.

Diagnosing ADHD in Adults From the Clinical Examination

Arrival Time to the Appointment

A key question for adults presenting for a question of ADHD is how they made it to the appointment. In our clinic, the no-show rate and cancellation rate, after the automated reminder message, are higher for patients referred for a question of ADHD than for people referred for other cognitive disorders. Failure to attend an appointment for question of ADHD increases the likelihood of ADHD in the absence of other explanations. Adults with ADHD also commonly arrive late for their appointments, while a few show up excessively early (more than 1 hour) as a compensatory strategy to ensure they will be on time. It can be informative to ask adults who appear for the scheduled appointment how they made it to the appointment, particularly for those who report frequently missing appointments or social engagements. Common answers from people with ADHD include checking their calendar multiple times per day as a habit, leaving sticky notes in visible places around their house, their partner or friend reminds and/or accompanies them, or scheduling a ride service. For patients who show up late, I ask the patient why they were late. Although traffic provides high variability for all patients in our clinic, people with ADHD will more commonly report going to the wrong building, getting lost and taking a longer route, or failing to leave their previous location with enough time allotted. Report of anxiety about missing the appointment alone is nonspecific for ADHD and is seen in many other disorders affecting attention. Report that anxiety is due to frequently missing appointments because of forgetting about the appointment, double booking, failure to leave adequate time to get to the appointment, or failure to ask for time off from work, however, are very common responses from adults with ADHD.

Level of Motor Activity

Many people with ADHD, particularly combined-type or hyperactive/impulsive-type, are often more animated during the clinical visit. They may show a wider range of facial expressions, more hand gestures, and broader range of emotions expressed than patients who do not have ADHD in

the clinical setting. These nonverbal forms of social communication are typically appropriate for the context, except where there are comorbid neurologic or psychiatric conditions. Many move around more frequently in their chair: shifting position, crossing-uncrossing legs, and fidgeting with hands or restless movements in either leg. Where there is a high suspicion of ADHD from history but no or minimal fidgeting during the visit, it is often informative to ask if the patient is consciously suppressing these movements during the visit. For people with ADHD of mild severity and a high social sensitivity, many will admit to investing a significant amount of effort during the visit to suppress restless movements because they know other people may find fidgeting or excess small movements distracting. Notably, adults with anxiety, who do not have ADHD also commonly show small hand repetitive movements or leg tremor. Distinguishing features include slower, repetitive movements in hands with less variation in the type of movements than in ADHD. With anxiety, the variation in the intensity and presence of restless leg movements are greater during stressful or emotional parts of the conversation. Patients with ADHD will typically show fidgeting throughout the visit, whereas adults with attention problems due to anxiety may decrease if they become more relaxed during the clinic visit.

Social Interaction

Clinic visits with ADHD, particularly with the combined-type or hyperactive/impulsive-type, tend to move along quickly and with relative ease because the patient is able to move quickly from topic to topic in the absence of other neurologic or psychiatric conditions. Social reciprocity is typically quite good, and this is a chief differentiating factor from ASD. As many people with ADHD enjoy novelty, spontaneity, and interacting with new people, this tends to facilitate the doctor-patient relationship. There is often less hesitance than seen in patients with other neurologic conditions to discuss the cognitive difficulties that prompted the clinic visit. For adults seeking diagnostic clarity for questions of ADHD, they most often come alone to the clinic visit or, if someone accompanied them, that person will typically wait in the waiting room. This is in contrast to memory, attention, or cognitive concerns from other sources (e.g., post-COVID neurologic symptoms) where if a family or friend is available, they will often accompany the patient during the visit to provide further history and emotional support.

Notably, other aspects of the neurologic examination are typically within the normal range unless there is another neurologic condition (new or longstanding) present. If evidence of expressive (e.g., confrontation naming) or receptive language, or slowness in processing speed, is present, further investigation may be necessary to distinguish the consequences of specific learning disabilities from ADHD.

Role of Neuropsychological Testing

ADHD is a clinical diagnosis and, importantly, does not require neuropsychological testing for diagnosis.

Neuropsychological testing can reveal relative weaknesses in executive functioning and in sustained attention and/or impulsivity *but it may not be helpful in identifying the cause*. For example, sleep deprivation, or poor sleep quality due to obstructive sleep apnea, can show a similar cognitive profile to ADHD on testing. Although neuropsychological testing is neither required nor recommended for the majority of adults with a question of ADHD, there are instances where the cognitive profile can be helpful in identifying co-occurring learning disabilities and/or other focal cognitive problems that may be contributing. Patients with weaknesses in language processing and/or processing speed (relative to their other cognitive abilities) can appear inattentive at times and have executive functioning difficulties particularly around spoken and/or written language depending on their specific profiles. Identifying relative weaknesses in the cognitive profile can be informative for compensatory strategies for both adults who do or do not have ADHD. At a practical level for the patient, a diagnostic evaluation through a standard neurology clinic appointment requires less time off of work (typically 1 hour or less compared with 3–5 hours for full neuropsychological testing) and significantly less expense (several hundred vs several thousand dollars). At a systems level for a hospital or medical center, diagnosis of the majority of patients with ADHD through a clinic appointment vs full neuropsychological testing allows more patients to be seen, decreasing wait times both for patients with a question of ADHD and for patients waiting for neuropsychological testing for other conditions.

Treatment and Diagnostic Trial With Stimulant Medications

Rationale

Children with ADHD who are successfully treated with stimulant medications often experience improved performance in school, acceptance from their peers, and better harmony at home. Adults with ADHD who are successfully treated with stimulant medications can stay longer in a job, sustain relationships better, and reduce anxiety caused by the difficulties organizing oneself at home, work, and other social settings.²⁰ Despite the many benefits for the individual with ADHD and their community, many people do not receive treatment either because they are unaware of ADHD as the cause of their difficulties, or because of the stigma often attached to ADHD and stimulant use. Adults diagnosed with ADHD, or those for whom there is a high suspicion for ADHD, can significantly benefit from a trial of stimulant medications. A trial is relatively low-risk as even the long-acting medications typically wear off within 8–12 hours. Prior screening for bipolar disorder, history of mania, or cardiac disease is important for identifying people who should discuss stimulant use with their psychiatrist or cardiologist, respectively, before starting a stimulant trial. People with ADHD and co-occurring bipolar disorder or history

of mania benefit from mood stabilization before initiating stimulant medications to reduce the risk of triggering a manic episode. If there is a family history of bipolar, or symptoms suggestive of mania, referral to psychiatry for assessment before a trial of stimulant medication is recommended. Patients with severe, and untreated, anxiety should also be referred to psychiatry first.

Treatment Strategy

The long-acting formulations typically have smoother on and off effects for most adults. I typically start with 5 mg Adderall XR because it allows smaller increments of titration than many other formulations to find the dose that has positive effects for sustained attention while avoiding common side effects. Patients can increase the dose one increment every few days or week until they find the dose that gives the maximum attention benefit without causing side effects (e.g., difficulty falling asleep or anxiety). For people diagnosed as adults with ADHD, the majority experience relief of symptoms without significant side effects between 5 and 15 mg of Adderall XR, while few require 20–30 mg every morning. The extended release formats need to be taken when people get up in the morning to reduce the risk of impairing sleep later in the evening. Recommendations for titration of stimulant medications are elaborated in Table 4. Helping patients manage expectations can also assist in ADHD care. It is not uncommon early in the clinical relationship to receive urgent messages about running out of medication. Advising patients to count the number of pills and make a calendar reminder to request a prescription 7–10 days before the medication will run out can be very helpful.

Assessing the Effectiveness of Treatment

People with ADHD typically describe that stimulant medications make them feel calmer, in contrast to people who do not have ADHD who may feel “edge-y” or “wired.” People with ADHD often describe that their thoughts slow down to a normal pace, and they are able to ignore distracting thoughts that do pop into their head. This decrease in distractibility is highly specific for ADHD and is often the chief benefit reported by patients with either inattentive-type or combined-type ADHD. By contrast, people without ADHD (and people with ADHD who are also sleep deprived) describe benefits as “more awake”, more “alert”, or “easier to focus.” These are nonspecific to ADHD and should not be considered as a pharmacologic response of ADHD.

For people with combined-type or hyperactive/impulsive-type ADHD, the effect of stimulants can have a dramatic and immediate effect on reducing impulsivity. This is particularly true around eating behaviors (e.g., not stopping to purchase unhealthy food options when driving past a fast food restaurant) and in relationships (e.g., pausing before snapping at, or saying something unkind, to a partner or other family member). The stimulant medication can also reduce consumption of alcohol, cigarettes, or marijuana due to better

Table 4 Titrating Stimulant Medications for ADHD

Effect of medication	Recommended action
Improvement in ADHD symptoms (e.g., decrease in distractibility, more control over thoughts, reduced snacking, improved mood, more productive)	Continue at the current dose. Or after 3–7 d increase dose by one increment (e.g., by 5 mg with Adderall XR ^a) to see whether one can get further improvement
No effect noticed	Can increase by one increment (5 mg) every 3–7 d until reach 20 mg (for Adderall XR). If no effect at 20 mg, consider trying a different formulation (e.g., Ritalin LA)
Feeling edge-y or wired	Continue 5 mg for 7 d to see if negative feeling fades. Otherwise stop and consider alternative formulations or nonstimulant medication
Feeling more awake or alert	This indicates that sleep difficulties are likely contributing to attention difficulties (in someone with or without ADHD). Recommend investigating and treating sleep issues first before continuing stimulants (to avoid worsening sleep problems)
Difficulty falling asleep	Take long-acting medication earlier in the morning. Confirm not taking late morning or earlier afternoon. If still having difficulty, can lower the dose of long-acting in the morning and add a short-acting formulation mid-day or early afternoon if need more attention coverage. Some patients may require twice daily dosing of short-acting formulation if they cannot tolerate long-acting

Abbreviation: ADHD = attention-deficit/hyperactivity disorder.

^a Adderall XR is used as an example here. A similar strategy could be used with other formulations.

impulse control (e.g., drink 1 beer in the fridge instead of the whole 6-pack). People with inattentive-type ADHD also report a reduction in, or even elimination of, snacking between meals and may appreciate healthy weight loss. A patient with combined-type ADHD reported when taking the stimulant medication that this was the first time in his life when he was not constantly craving food. Unlike in children with ADHD, where loss of appetite can be a use-limiting side effect of stimulants, in adults with ADHD, the effect on appetite seems to be primarily in the domain of reducing impulsive or inattentive eating and allowing better control to the individual. Taking the stimulant medication for ADHD in the morning on waking increased the likelihood of some patients—who were previously too disorganized in the morning—to eat a healthy breakfast before going to work. Other people with ADHD report that with the stimulant medication, they can execute all the steps to cook a healthy dinner, vs not planning ahead and eating less healthy options or ordering take-out.

Stimulant Side Effects and Nonstimulant Treatments

Some patients with ADHD who have high anxiety—especially about taking stimulants—can feel edge-y or wired with the first dose. For these patients, encouraging them to take the 5 mg dose for a full week before stopping can be helpful to see if the edge-y or wired feeling fades. Reassuring patients

that studies confirm that the stimulant medications when taken as prescribed are not addictive⁹ can also improve compliance. If these negative feelings persist and the person meets diagnostic criteria otherwise for ADHD, nonstimulant options such as atomoxetine (Strattera) or bupropion (Wellbutrin) may be a good alternative. Although clonidine and guanfacine are commonly prescribed in children for ADHD, there is not sufficient evidence for their efficacy in adults. Their use is most common in adults with co-occurring autism spectrum disorder (level 2 or 3) who have co-occurring problems with sleep or irritability, respectively.

Stimulants and Sleep

Decreased sleep negatively affects attention, concentration, mood, and emotional regulation. Thus, it is important to adjust the dose and timing of medications to avoid disrupting sleep. If the stimulant medication is working during the day, patients are generally aware when the medication wears off. The average duration of effect for the Adderall extended release is 6–8 hours according to the manufacturer. However, this is a drug where it is possible to discover the duration for the individual by asking when they take it in the morning and when it wears off. The average is 6–8 hours for our adult patients, with the range from 2 to 18 hours for individuals. Titrating the long-acting and short-acting doses (if applicable) are key to avoiding disrupting sleep.

Effect of Other Medical Conditions and Environmental Changes on Symptomatic Relief From Stimulants

Patients tend to do well on the same dose of stimulants for long periods of time and do not show tolerance.⁹ If a patient who has been stable on the same dose reports that it is “no longer” or “not always working” and is requesting a higher dose, it is important to arrange a follow-up visit to look for other causes for worsening attention and concentration. The most common reason that the stimulant medication is less effective is worsening sleep. Thus, it is important to first address the sleep difficulties. Otherwise, adding or increasing the stimulant dose can further exacerbate both the sleep and attention problems. New or worsening medical illnesses, pain, changes in the environment, or social stressors can also reduce the effectiveness. Discussing with patients that attention and concentration problems come from multiple sources and that the stimulant medication only treats the portion due to ADHD can help patients understand why the stimulant medication “doesn’t always work the same.”

Adapting Clinical Style and Communication for Adults With ADHD

Inattention during conversations in ADHD affects processing of clinical information in the clinic visit and memory of the discussion after patients go home. Many people with ADHD also experience inattention or distractibility with reading and may have difficulty with reading longer texts. Sending the patients a copy of the clinic visit note can serve as a memory aid. Moving the assessment and plan to the top of the note (e.g., page 1, before the history and physical examination) can be helpful to make sure the most important part is read first. The Children and Adults with Attention-deficit/hyperactivity Disorder (CHADD) has a wonderful website with resources for adults.²¹ They have succinct, practical 1-page advice for adults on topics including organizing the workspace, managing money, relationships, and driving. Including direct links to the relevant pages for each topic decreases the probability of the patient getting distracted while trying to navigate to this information from the parent webpage. Our clinic also offers patient education “skills groups” for people with ADHD to teach strategies for managing attention, memory, and executive functioning difficulties.

What Are the Unanswered Questions?

One of the major unanswered questions is how we can achieve parity in the treatment of ADHD medications with medications for most other health conditions. In the United States, adults experience difficulty accessing stimulant medication due to government, pharmacy, and insurance policies. Pharmacies are restricted in the number of pills

leading to shortages that unfairly affect more densely populated urban areas in contrast to more wealthy suburban locations. Refills are not allowed (in contrast to other controlled substances such as epilepsy medications). This places a particular burden on adults with attention and executive functioning difficulties, who would most benefit from receiving automated reminders. The cost of missing medication not only affects the daily life of people with ADHD but also their productivity and attentiveness in their communities²⁰ and their mortality risk.⁷ Critical questions including how we will address these disparities. Access to stimulant medications would have a significant benefit for people with ADHD, their families and society. It would also decrease stigma.

Where Is the Field Going?

Internationally, more clinician providers are needed who are skilled in distinguishing ADHD from other causes of attentional problems in adults.^{22,23} There is also recognition that treatment of ADHD in adults saves lives, reducing the overall mortality risk in adults with ADHD.⁷

What Are the Practical Implications?

Adults with ADHD can benefit significantly from both diagnosis of ADHD and treatment with stimulant, non-stimulant medication, and behavioral strategies. Detailed history taking and observation of behavior during the clinic visit can help distinguish ADHD from other conditions that affect sustained attention and executive functioning including anxiety, depression, sleep difficulties, environmental changes, and other neurologic or psychiatric disorders. Stimulant medications for ADHD are a highly effective and flexible tool to empower people with ADHD in their daily lives and function within their community. Advocacy to improve access to clinical evaluations for adults with ADHD and parity in the prescribing rules for ADHD stimulant medications would have significant benefits for people with ADHD and society.

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