

Elisabeth Baerg Hall, MD, CCFP, FRCPC, Cynthia Buckett, RD, MBA

Diagnosing and treating adult attention-deficit/hyperactivity disorder

Providing family physicians with appropriate resources to diagnose and treat attention-deficit/hyperactivity disorder in adults ensures patients receive timely and accurate care and reduces societal and health care costs.

ABSTRACT: Attention-deficit/hyperactivity disorder (ADHD) is a common neurodevelopmental condition that is increasingly understood to continue into adulthood. Family physicians are well positioned to diagnose ADHD in adults, due in part to their longitudinal relationship with their patients. Treating adult ADHD supports the unique strengths of these individuals. A reliable diagnosis takes several visits and should focus on gathering information, obtaining collateral from others, conducting diagnostic interviews, identifying functional impairments, and reviewing comorbidities. Treatment for adults with ADHD is most effective when it focuses on a combination of pharmacotherapy and nonpharmacological treatments, such as executive function cognitive-behavioral therapy training. Psychostimulant medications are commonly used to treat ADHD in adults and are highly effective in managing ADHD. After making a

diagnosis, family physicians continue to provide important supports in psychoeducation and psychosocial interventions to reduce functional impairment and improve quality of life throughout the patient's lifespan.

Attention-deficit/hyperactivity disorder (ADHD), a lifespan disorder with potentially significant impairment throughout adulthood, has attracted increasing clinical attention over the past 20 years.¹⁻³ The prevalence of ADHD in children is estimated to be 7%; in adults, it is estimated to be 2.4% to 4.0%.⁴ The rate of ADHD identification, diagnosis, and treatment in adults has increased in recent years; however, diagnostic rates still remain well below prevalence.⁵ Awareness of ADHD in the general population has risen, which has led to concern that it is a post-COVID-19 popular-press-driven phenomenon.⁶ Given that ADHD is a highly prevalent, previously underdiagnosed condition associated with significant impairment and treatment benefits, it is worth taking the time to assess for ADHD in adults.

Comorbid psychiatric disorders are frequently associated with ADHD: approximately 80% of individuals present with at least one comorbidity.^{7,8} These include anxiety, mood disorders, substance use disorders, personality disorders such as borderline and antisocial, binge eating, and impulsive suicide risk.⁹ The higher incidence

of comorbidities in adults can contribute to a misdiagnosis and can mask the underlying ADHD,¹⁰ which can result in unnecessary, ongoing impairment.

Adult ADHD imposes a significant burden on society and affected individuals.⁹ Functional challenges in academic achievement, financial well-being, relationships, and psychological instability are well known. Occurrences of sexually transmitted infections, unwanted pregnancies, motor vehicle and other accidents, and even premature death are also associated with ADHD.^{10,11} Physical health issues associated with reduced capacity to manage chronic illnesses, such as diabetes, are of concern.^{10,11} Identification and management of adult ADHD help improve patient health outcomes and reduce societal costs associated with the disorder.

Diagnosis

According to the *Diagnostic and Statistical Manual of Mental Disorders* (5th edition), a diagnosis of adult ADHD requires symptoms to be present in at least two settings, such as home and work, with clear evidence of impairment as indicated by interference or reduced functioning in arenas such as occupation, relationships, or academic.^{12,13}

Trends toward increased diagnosis are influenced by several factors, including improvements in medications (e.g., long-acting stimulants), improved public and physician

Dr Baerg Hall, an adult attention-deficit/hyperactivity disorder program consultant and specialist, is the executive director of The ADHD Centre. Ms Buckett is the program manager for health care initiatives with the North Shore Division of Family Practice.

Corresponding author: Dr Baerg Hall, info@ebhallmd.com.

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awareness, and better training of physicians.¹⁴ Canadian trends indicate that ADHD is more frequently diagnosed by family doctors than by specialists.¹⁴ Family physicians are well positioned to diagnose ADHD due to their longitudinal relationship with their patients, which allows them to identify patients who accurately present with ADHD symptoms, understand their relevant family history, and identify symptoms that affect at least two areas of function.⁵

A reliable primary care diagnosis of ADHD requires several patient consultations to gather information, obtain collateral from others, conduct an in-depth diagnostic interview, identify functional impairment in at least two domains, and review comorbidities. While important, a diagnosis of ADHD in adults is *not* urgent. Whether or not ADHD has been previously diagnosed, symptoms of this chronic neurobiological condition will have been present since childhood. Multiple clinical factors need to be considered, and it takes time to ensure accuracy and reliability.

Outlined below are practical steps that family physicians can follow to accurately diagnose ADHD in adult patients. When following these steps, physicians should plan for and document three to four visits in a primary care setting.

Step 1. Identify adults at risk

Any adult patients who were diagnosed with ADHD in childhood or those for whom an ADHD assessment was recommended at any age by professionals such as teachers, professors, and athletic coaches should be assessed for symptoms of adult ADHD. At least 60% of those with childhood ADHD are considered to have ongoing symptoms as adults.¹⁵

Adult patients of all genders who have a child, sibling, or parent who has been diagnosed with ADHD or for whom ADHD is suspected need to be screened.

Consider individuals with a chronic mental health condition, such as depression or anxiety, especially those who have not improved as expected after treatment for the condition.

There are qualitative differences between individuals who present for ADHD diagnosis as adults and those who present in childhood. For example, physical hyperactivity is less common in adults, whereas behavioral impulsivity remains a prominent, ongoing issue.

Consider a diagnosis of ADHD in adults with obesity, multiple driving infractions, online addictions, frequent job changes, job loss, moves, and frequent relationship changes, because many of these conditions are associated with behavioral impulsivity.

Women and individuals assigned female at birth often present with ADHD symptoms later in life. This population often presents with less physical hyperactivity, even in childhood, which makes ADHD symptoms less noticeable to teachers and adults who provide care. This will affect the reliability of childhood collateral information, if it is available. Impairment may be difficult to identify, even on elementary school report cards. Characteristics such as comorbid social anxiety, the need for external validation, socialization to behavioral norms, and proficiency in attending to socio-emotional and environmental cues also confound diagnoses of childhood ADHD in girls.¹⁶ Expand the diagnostic focus to symptoms and functional impairment around the time of puberty and early adolescence in this population.

Although a high percentage of patients will identify as having had ADHD symptoms since childhood, consider the presentations of ADHD described above, where functional impairment sometimes occurs without even the patient identifying ADHD as the underlying condition. Physicians are encouraged to build diagnostic skills by focusing on diagnosing and treating patients who present with a high likelihood of ADHD.

Step 2. Gather information

The diagnostic process is assisted by gathering multiple data, which is best achieved by using standardized questionnaires,¹⁰ such as the Adult ADHD Self-Report

Scale and the Wender Utah Rating Scale. The Adult ADHD Self-Report Scale is a World Health Organization–validated screening tool that has high specificity (99.5%) and moderate sensitivity (68.7%) in general population surveys.¹² While other conditions that affect executive function are not ruled out, the family physician is alerted to a possible ADHD diagnosis. The Adult ADHD Self-Report Scale is a helpful screening tool that can be used in the contexts described in step 1.¹⁷ If the patient has no childhood ADHD diagnosis, the Wender Utah Rating Scale (short form) has well-established reliability for the self-report of ADHD symptoms in childhood.¹⁸ While these questionnaires are helpful in guiding the clinical history, they do not confirm or rule out an ADHD diagnosis.¹⁰

Psychoeducational testing for other conditions such as learning disabilities can be helpful but are not necessary for making an ADHD diagnosis.

Step 3. Conduct a diagnostic interview

Conducting an interview is fundamental to making an ADHD diagnosis.¹⁹ Information obtained from using the Adult ADHD Self-Report Scale and Wender Utah Rating Scale can help guide clinical questions about childhood and current behavioral symptoms to assess the level of functional impairment.

For example, consider asking “How much time in your day do you spend looking for items?” rather than “Do you frequently lose things?” If your patient has methods to keep track of items, such as the use of electronic tags or habitual storage places, this would be considered an executive function adaptation. Listen for the functional impairment beneath these adaptations. In the interview, explore varying presentations of impairment in different environments and under different stress levels and the presence of other mental health conditions. Assess the cognitive demands required to maintain function in challenging environments. For example, your patient may work on projects for 2 to 3 hours when others take only 1 hour to complete the same task.

They may also express higher levels of cognitive fatigue in accomplishing tasks and may develop behavioral avoidance associated with these additional demands. Note that these are frequently not identified as ADHD symptoms, and patients will likely have long-standing beliefs about their impairments that lead to low self-evaluation and self-derogatory terms, such as calling themselves lazy or dumb.

Although patients are best positioned to provide an account of their symptoms, a diagnosis based on self-report alone may lead to overdiagnosis or underdiagnosis of ADHD.¹⁹ Obtain corroborating information on current behaviors and childhood symptoms from at least one family member, partner, or close friend, if possible. Consider making a phone call to family or friends for collateral information in the presence of your patient or obtaining questionnaires (e.g., Adult ADHD Self-Report Scale) from these sources.

Step 4. Review comorbidities

ADHD symptoms can overlap with those of mental health conditions, including anxiety, depressive disorders, personality disorders, learning disorders, and substance use disorders, which makes it challenging to identify and manage ADHD.^{10,12} Impulsivity, a key feature of ADHD, also occurs in other mental health conditions. Consider impulsive risks, such as suicide, when developing a care plan. Prison settings have a high incidence of ADHD. Treatment reduces recidivism.²⁰ Physical conditions such as sleep disorders and epilepsy are associated with ADHD.¹⁸ For complex comorbidities such as bipolar disorder, referral is recommended. The prevalence of ADHD in people with bipolar disorder can be more than 20%.²¹

Individuals with ADHD are at high risk for substance misuse, including nicotine, cannabis, and alcohol. Conversely, approximately 23% of individuals who have a substance use disorder also meet the criteria for ADHD.²² Screen for these conditions during the diagnostic interview. A comprehensive clinical interview can differentiate

ADHD symptoms from those related to other conditions. ADHD symptoms typically worsen when comorbid mental illnesses such as depression and anxiety disorders are present, but rarely does full functional improvement return with treatment of the underlying conditions alone. When these conditions have improved, approach the ADHD diagnosis again. Severe comorbid conditions such as bipolar and psychotic disorders are treated first.¹²

Treatment

Treatment for adults with ADHD is effective and includes a combination of pharmacotherapy, if tolerated, and nonpharmacological treatments to achieve optimal health outcomes.²³ The Canadian ADHD Resource Alliance has published expert guidelines to assist physicians with the assessment and treatment of ADHD. For the purposes of this article, minor modifications to those guidelines have been made to take into account a family practice-targeted adult population.

Severe mental health conditions such as major depressive disorder, psychotic disorders, and some substance use disorders should be treated first, for at least a few weeks, after which ADHD can be managed.¹² A discussion of harm reduction treatments for substance use disorder is beyond the scope of this article; however, physicians are encouraged to identify and treat ADHD in adult patients with substance use disorder if there is ADHD functional impairment in at least two areas. Treating ADHD will benefit the management of other conditions. By treating impairment from ADHD, patients with severe mental health conditions are better able to participate in their ongoing treatment programs for other mental health conditions (e.g., by remembering appointments, managing impulsivity, and sitting in therapy sessions).

Cannabis is known to have amotivational qualities, which can be counterproductive for ADHD patients. To date, cannabis has not been proven to be an evidence-based treatment.²²

Medications

Psychostimulant medications, such as methylphenidate and amphetamine-based compounds (e.g., lisdexamfetamine), are commonly used to treat ADHD in adults and are highly effective in managing ADHD symptoms.²⁴ When taken as prescribed, stimulant medications can improve attention and reduce impulsivity and hyperactivity in adults with ADHD. These medications work by increasing the levels of dopamine and norepinephrine in the prefrontal cortex.

However, medications are not a cure for ADHD. They help manage symptoms and improve functioning. Long-acting stimulants may improve adherence to treatment, have fewer side effects (e.g., rebound symptoms) compared with short-acting medications, and are generally less desirable for diversion.¹²

Prior to starting medication, obtain a patient and family cardiovascular history to ascertain genetic predisposition to cardiac events, especially arrhythmias. Other medical conditions and potential drug interactions should be reviewed. A risk and benefit discussion with your patient is helpful.

Some patients respond preferentially to one medication class or another. Physicians should become familiar with one long-acting medication in each of the two classes so they can readily try a different medication if medications from one class are poorly tolerated.

Stimulant medications are generally well tolerated when titrated incrementally, with small dose increases every 5 to 7 days and regular evaluation of the side effects and benefits. Common side effects include insomnia, reduced appetite, increased heart rate, and mild increases in blood pressure. These side effects are usually temporary but can impact patient tolerance, compliance, and evaluation of medication effectiveness. Transient side effects can be managed with dose adjustments and by educating patients before starting the medication. The Canadian ADHD Resource Alliance's one-page medication summary sheet includes a medication titration schedule, including starting and target doses [Box].

BOX. Attention-deficit/hyperactivity disorder resources for physicians and patients.**Physician resources and education**

- **Special Authority** (www2.gov.bc.ca/gov/content/health/practitioner-professional-resources/pharmacare/prescribers/special-authority)
The BC government provides full or partial coverage for medications not otherwise covered or partially covered. After a week of reasonable doses of immediate-release amphetamine or methylphenidate, application for long-acting methylphenidate or lisdexamfetamine is possible. Atomoxetine is also available on Special Authority, especially where addiction is a concern. Use Special Authority eForms to submit requests (www2.gov.bc.ca/gov/content/health/practitioner-professional-resources/pharmacare/prescribers/special-authority/special-authority-eforms).
- **Skills for Success: ADHD Strategies for Adults** (<https://cbtskills.ca/about-us/what-we-offer/>)
An MSP-covered 8-week executive function and evidence-based skills program created by Drs Elisabeth Baerg Hall and Candice Murray with Shared Care Committee support, delivered by trained physicians throughout BC. Eligible patients can be referred to this program using the Cognitive Behavioural Therapy Skills Group Program Referral Form (<https://cbtskills.ca/wp-content/uploads/CBT-SKILLS-GROUP-PROVINCIAL-REFERRAL-FORM-FILLABLE-2021.pdf>) and indicating an ADHD diagnosis.
- **Canadian ADHD Resource Alliance** (<https://adhdlearn.caddra.ca>)
Assessment and treatment guidelines are available free for members and for purchase for nonmembers.
- **Canadian ADHD Resource Alliance: Medication Chart** (www.caddra.ca/resources/medication-chart/)
Free to download.
- **Canadian ADHD Resource Alliance: ADHD in Practice** (<https://adhdlearn.caddra.ca/courses/adhd-in-practice/>)
A free, accredited 1-hour program that offers a step-by-step walk-through of an ADHD assessment and management process using the Canadian ADHD Resource Alliance's ADHD Treatment, Education and Assessment Tool (ADHD TrEAT).
- **Canadian ADHD Resource Alliance: ADHD TrEAT** (www.caddra.ca/adhd-treat1/)
An online resource designed to support health care practitioners in assessing and treating ADHD. Provides

guidance based on the Canadian ADHD Practice Guidelines. Free for Canadian ADHD Resource Alliance members. All questionnaires discussed in this article are available from this site.

- **North Shore Adult ADHD Education Project** (contact northshore@nsdivision.ca)
- **Provincial Academic Detailing service** (www2.gov.bc.ca/gov/content/health/practitioner-professional-resources/pad-service/medications-for-adhd)
Up-to-date resources on prescribing ADHD medications and instructions on how to apply for Special Authority.
- **Pathways** (<https://pathwaysbc.ca/login>)
Canadian ADHD Resource Alliance resources, including diagnostic and treatment algorithms, questionnaires (e.g., Adult ADHD Self-Report Scale, Wender Utah Rating Scale, Weiss Functional Impairment Rating Scale), and a patient handout on psychoeducation.

Patient resources

- **Centre for ADHD Awareness, Canada** (<https://caddac.ca/>)
Provides programs and resources for parents and individuals affected by ADHD.
- **How to ADHD** (<https://howtoadhd.com/>)
Website and YouTube channel supporting individuals with ADHD.
- **ADDitude** (www.additudemag.com/)
Website and magazine providing expert guidance and support for living with ADHD and related mental health conditions.
- **Rolling with ADHD for parents** (<https://healthymindslearning.ca/rollingwith-adhd-for-parents/>)
ADHD education for parents, from the BC Children's Hospital.
- **Rolling with ADHD for teachers** (<https://healthymindslearning.ca/rolling-with-adhd-for-teachers/>)
ADHD education for teachers, from the BC Children's Hospital.
- **Types of classroom accommodations** (<https://caddac.ca/find-a-resource/for-physicians/>)
Centre for ADHD Awareness, Canada guidelines on school accommodations.

Self-reflection, an executive function that is commonly impaired in ADHD patients, is addressed by encouraging self-monitoring of medication-associated changes. Invite your patients to check in with their spouses, roommates, or trusted colleagues to help evaluate the efficacy of the medications. The Adult ADHD Self-Report Scale is helpful for reviewing changes from baseline. Have your patient identify four target symptoms they want to change, and follow up on this, which helps teach them to monitor progress over time.

In the family practice setting, ADHD is managed as a chronic condition. In the first 6 to 8 weeks of treatment with medications, or until a workable dose is established, regular follow-up is recommended to assess the effectiveness of the medications, titrate doses, and manage side effects to prevent premature discontinuation of the medications. Once a reasonable effective dose has been established, there will rarely be a need to increase the dose unless your patient has had a contextual change that causes further functional impairment (e.g., attending a training program). If your patient wonders about the need for a medication change outside of these conditions, reassess them for other mental health conditions, comorbid physical conditions, and new environmental stressors. The development of tolerance happens but is rare.

A diagnosis of adult ADHD is not made by psychostimulant trial alone. A positive or negative response to an isolated stimulant medication can occur for many reasons. Some patients respond preferentially to one medication class or another. Stimulant medications are cognitive enhancers, so some benefits are likely. The primary effect is to improve wakefulness, and perceived performance enhancement is often disproportionate to actual response.^{25,26}

Diversion and misuse. Diversion and misuse of prescription stimulants is a concern. Physicians who treat ADHD should note high-risk settings and behaviors associated with misuse.²⁷ It is common for ADHD patients to lose their prescriptions, as may

also be common with other items. When the family doctor knows the patient, this challenge can be understood in the patient context, anticipated, and mitigated. Having a conversation with your patient when prescribing medication will set the stage for effective collaboration. This should include a discussion about safe medication storage in the home and in contexts associated

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with medication diversion and misuse, such as post-secondary settings.²⁸ Sometimes a standard clinic-patient agreement is used. Patients typically want to help their peers and do not realize that sharing one or two pills with someone they believe will benefit from them constitutes diversion. Invite your patient to consider withholding sharing their ADHD treatment success stories in high-diversion settings.

Immediate-release stimulant medications are readily diverted. If this is a concern, provide long-acting preparations or atomoxetine, which can be useful as a psychostimulant alternative medication. Consider requiring your patient to make regular visits to obtain prescription renewals.

Individuals who misuse ADHD medications are likely to have ADHD, a substance use disorder, or both.²⁸ In these cases, screen for substance use disorders and manage accordingly. Physicians who work with patients that have severe substance use disorders might consider witnessed medication dispensing.

Special Authority provides access to a few long-acting ADHD medications and atomoxetine [Box].

Nonpharmacological treatments

Psychoeducation and psychosocial interventions are two key approaches that improve overall functioning when used alone or in combination with medication as treatment for adults with ADHD.

Psychoeducation involves education about ADHD symptoms, functional impairment, and comorbidities.^{11,12} This will support your patient's understanding of the disorder, aid in relationship management, and offer insights into past difficulties.¹² Many adult patients experience grief associated with a later ADHD diagnosis.

Psychosocial interventions can help reduce functional impairment and improve quality of life.¹⁸ Behavioral interventions that target executive function challenges include creating routines, setting priorities, breaking tasks into smaller steps, and using visual aids, reminders, and planners.

Lifestyle recommendations can support the use of executive function skills and include promoting exercise, healthy sleep hygiene, and stress management techniques and minimizing distractions in the environment. Social prescriptions can also be helpful.

Cognitive-behavioral therapy treatment for adults with ADHD is an evidence-based approach that addresses executive dysfunction, which, when used alone or in combination with medication, can significantly improve function.¹²

Skills for Success: ADHD Strategies for Adults, an 8-week cognitive-behavioral therapy psychoeducational program, is available through the Cognitive Behavioural Therapy Skills Group program [Box].

There are initiatives in BC that address the lack of resources to build physician capacity in diagnosing and treating adult ADHD. For example, the North Shore Adult ADHD Education Project, a Shared Care Committee-funded pilot project, trained family physicians on how to diagnose and treat uncomplicated adult ADHD in a primary care setting [Box]. The findings of this project demonstrated that participants were more confident in their ability and more likely to recognize,

diagnose, and treat uncomplicated ADHD in their adult patients.²⁹

Summary

People with ADHD have unique strengths, such as increased energy, drive, creativity, and resilience, which are enhanced with diagnosis and therapeutic support.³⁰ Family physicians diagnose many chronic conditions in their daily practice, and they are well positioned to diagnose and treat adults with ADHD, which further embeds the delivery of care for these patients within primary care.

Providing family physicians with appropriate ADHD resources, education, and supports to diagnose and treat the adult population not only improves patients' quality of life by ensuring timely and accurate care but also reduces societal and health care costs. ■

Competing interests

Dr Baerg Hall is a Canadian ADHD Resource Alliance board member and past Education Committee co-chair. This is a volunteer position. Dr Baerg Hall leads and participates in several Shared Care projects that address ADHD in adults. She is a co-author of Skills for Success, a psychoeducational program referred to in this article. This program is physician-delivered through MSP via the Cognitive Behavioural Therapy Skills Group program.

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