

ABOUT THE AUTHOR

Lawrence Martin, MD

Dr. Martin has been an active member of the McMaster Department of Psychiatry and Behavioural Neurosciences for more than 25 years and has acted as Director of Resident Training and Vice Chair responsible for Education. He has been a Royal College Examiner and Vice-Chair of the Examination Committee. Dr. Martin has had a broad range of clinical administrative responsibilities, including Assistant Chief of Psychiatry at St. Joseph's Healthcare and was Clinical Director of the Regional Mood and Anxiety Disorders Program at St. Joseph's Healthcare for more than 10 years. He is deeply committed to adult learning and has lectured across Canada and internationally on diagnosis and treatment of mood disorders and of Adult ADHD. For the first half of his career Dr. Martin systematically misdiagnosed patients with ADHD as Bipolar Disorder NOS and treated their mood instability with a wide range of misdirected strategies. After a modest epiphany 12 years ago he realized that a large portion of his mood disorder patients were in fact suffering from ADHD. He is sorry he is apparently a rather slow learner. Dr. Martin is now focusing his clinical and education work on direct mentoring of family physicians wishing to increase their skills diagnosing and managing Adult ADHD.



Affiliations

Assistant Clinical Professor (Adjunct), Department of Psychiatry and Behavioural Neurosciences, McMaster University, Hamilton, ON

ADULT ADHD: WHAT IT IS AND HOW TO ASSESS AND TREAT IT

Introduction

Adult ADHD is a significant problem for an estimated 4.4% of the adult population, and is also prevalent in 10% of those with depressive or anxiety disorders and in 20% of those with chronic low mood.¹ Among patients referred for treatment-resistant depression, one in three may have undiagnosed ADHD.² Overall, ADHD is poorly understood, significantly undertreated, and a common reason for poor response to treatment in mood and anxiety disorders.

ADHD is not a consequence of poor parenting, indulged laziness, or excessive consumption of sugar or food dyes. It is a neurodevelopmental disorder, a "hardwiring" problem, marked by delayed maturation of the Prefrontal Cortex and allied subcortical regions that constitute the "adult" brain.³

When we are young, we have limited self-control: we take what we want, say what we think, get excited, cry, and live in the moment. As our brains mature, we learn to control our behaviours, manage our emotional reactions,

prioritize tasks, plan, and follow through on those plans. In individuals with ADHD, this maturation is delayed and too often remains incomplete.

Imaging studies on individuals not taking medication show that development of the prefrontal cortex in individuals with ADHD is approximately 3 years behind that of peers.⁴ Thus, a 14-year-old with ADHD may have the self-regulation ability of an 11-year-old. This immature behaviour puts them out of step with their peers and often leads to difficulties fitting in, having few friends, and being bullied. This rejection can reinforce a negative self image due to poor school performance, poor motor control, and overall lack of success.

Most children with ADHD do not completely "grow out" of it. Most have lifelong difficulties with attention, impulsivity, or restlessness.⁵ Adults with ADHD often will describe feeling as though they are stuck at the developmental stage of a 14-year-old.

ADHD is not a problem of being **unable** to pay attention, rather, it is a problem of being unable to **regulate** attention. If an activity is interesting/stimulating, those with ADHD have no problem paying attention, indeed they hyper-focus and cannot stop what they are doing. However, if the task is not of interest, then it is almost impossible for those with ADHD to focus on it. This phenomenon has been called “erectile dysfunction of the mind” (TE Brown) – without interest, nothing happens.

ADHD is also marked by poor control over impulses and emotional reactions. Everyone experiences urges to buy things, to say what we think, or to indulge in an extra piece of cake. However, we automatically and unconsciously anticipate the consequences – “what comes next,” inhibit these impulses, and do not act on them. In individuals with ADHD, the first impulse too often goes unchecked and unregulated. The ADHD brain is stuck in the “now” and has difficulty anticipating “what comes next”. As a result, adults with ADHD tend to make unfiltered comments, hasty decisions, and risk leading lives of regret. They not surprisingly have much higher rates of divorce, substance misuse, financial difficulties, and legal problems, including incarceration.⁶

Those with adult ADHD often experience more intense emotional reactivity. Emotional dysregulation is a core feature of ADHD,^{7,8} experienced by 40–70% of patients and is marked by rapid and reactive shifts in mood. The adult brain, which normally buffers feelings, provides perspective, and maintains calmness, but in adult ADHD, these functions are often markedly underactive. This leads to anger outbursts, rapid emotional swings, and overall moodiness. The pattern of rapid triggered drops in mood and difficulty returning to normal seen in ADHD is the same pattern that is observed in borderline personality disorder (BPD).⁹ Consequently, ADHD is easily misdiagnosed as BPD, particularly in young women. At least one-third of patients diagnosed with BPD have untreated ADHD.¹⁰

Restlessness, the third domain of ADHD, is a less problematic component of adult ADHD. In adults, inner restlessness manifests as a strong need to keep constantly busy, along with an inability to relax. Those with adult ADHD, similar to the activity of their minds, cannot rest. For example, at work, they may overcommit by volunteering for too many committees, become overextended, and have track records of not finishing or following through on commitments. Even on holiday, they do not rest, but instead explore.

Because of lifelong problems with follow-through, prioritizing, and overall self-control, those with ADHD have difficulty building a fulfilling adult life. Frequently, they are stuck in jobs that are below their potential. If they

are fortunate enough to marry or hire “a prefrontal cortex” they can be very successful.

Who should be screened for adult ADHD?

If you suspect a patient may have ADHD, your intuition is likely correct.

In general, it is always beneficial to screen patients who are frequently and easily overwhelmed, present with constantly changing problems, or have longstanding patterns of impulsivity, conflict, or financial difficulties. Consider screening patients who are very talkative or very moody, as well as those who are always “a day late and a dollar short.”

It is especially important to screen patients showing a poor response to standard treatment for mood or anxiety disorders. Notably, over 75% of adults with ADHD present with a comorbid psychiatric disorder.¹¹ Unfortunately, the comorbid illness usually becomes the focus of care, and the ADHD is missed, resulting in poor response to treatment.

Next steps if you suspect ADHD

When ADHD is suspected, provide the patient with the **Adult ADHD Self-Report Scale (ASRS)**, a validated 18 question screening tool for ADHD developed by the World Health Organization. If a patient answers positively to four of the first six questions, there is over a 90% likelihood they have ADHD.¹² Ask the patient to share the ASRS with people who know them well. Ask the patient to bring in old report cards and ideally have someone close to the patient come with them to the next meeting. You may also suggest that the patient conducts an online search of adult ADHD to see if the descriptions resonate with their experiences (**Table 2**). To increase confidence in the screening, add the **Weiss Functional Impairment Scale – Self Report (WFIRS-S)**, which is also self-rated.

At the next visit, review the screeners and report cards and ask the family member or friend about problems such as talking over others, impulsivity, disorganization, procrastination, and moodiness.

ADHD is a lifelong disorder, and a review of childhood behaviours will usually reveal problems with fitting in and longstanding problems with self-regulation.

Neuropsychiatric testing and psychiatry consults

ADHD is a clinical diagnosis that is based on presentation and history. Formal neuropsychiatric testing is rarely needed for the diagnosis and is financially out of reach for most. Unfortunately, seeking a consultation from a psychiatrist can be of limited value unless they have some

expertise in ADHD. Psychiatry training programs provide little or no attention to adult ADHD and supervisors, themselves untrained in assessing ADHD, may minimize or dismiss it. Consequently, it is advisable for family physicians to rely on their own assessments and proceed with treatment accordingly.

Treatment

When in doubt, treat. Treatment changes the trajectory of the lives of people with ADHD.

While full treatment involves patient education, skill development, and therapies such as cognitive behavioural therapy (CBT) or dialectical behaviour therapy (DBT), these are not typically provided by family physicians. The principal role for family physicians is to thoughtfully prescribe stimulants. Though non-stimulant treatments (i.e. atomoxetine, bupropion, guanfacine) can be beneficial, their effects are less pronounced, making stimulants the preferred first-line treatment for ADHD.

Stimulants increase activity in the “adult” regions of the brain and have an overall calming effect, rather than being experienced as excitatory or stimulating.¹³ Improving activity in the “adult” regions increases the time between stimulus and response, reduces emotional lability, and improves focus. The key sign of stimulant effectiveness is that the patient feels calmer and more in control.

Some family physicians may feel uncomfortable prescribing stimulants, due to concerns such as abuse, divergence, or that prescribing stimulants may lead to substance abuse problems. However, the literature clearly supports that treating ADHD reduces rather than increases the risk of subsequent substance abuse.¹⁴ While stimulant diversion is in fact a relatively minor problem, the highest risk is among college students, and even then, it involves a small minority who misuse or re-sell their medication. The benefits to the patient almost always outweigh the risk of misuse.

Stimulants can elevate blood pressure and should be treated if this becomes significant.¹⁵ An electrocardiogram is not required as part of the standard workup and is recommended only if the patient or patient’s family has a significant cardiac history.

Initiating stimulant treatment

Treatment can be started with either an amphetamine or a methylphenidate stimulant (**Table 1**). The key factor in selecting an agent is its duration of action. Longer-acting compounds are preferred because they provide more consistent benefits, improve adherence, and reduce the risks of diversion or misuse.

Stimulants should be started at the lowest dose for the specific compound and increased weekly to biweekly by one dosing increment. Most patients notice improvements by the second or third dose increase. They experience a less busy mind, feel calmer, and accomplish more with less effort. Family or friends notice that the patient is easier to live with, less interruptive, less moody, and is completing tasks.

With each dose increase, advise the patient to watch for any worsening of their condition. When the dose is too high, patients report feeling stimulated, “edgy”, “sketchy”, anxious, or in some cases tired, flat, or depressed. If this occurs, they should immediately lower their dose back to the previous level.¹⁶

It is of primary importance that the patient feel and be in control through the **entire** day. It is vital that parents with ADHD maintain control in the evening when they face the full demands of parenting. Treatment is not successful if they can function well at work but are irritable, moody, and unfocused with their children in the evening.

It is therefore essential to determine the duration of the stimulant’s effect. Although longer-acting stimulants are reported to last 12 hours, this estimate is based on problem-solving tests administered in quiet settings, not on one’s ability to self-regulate in a noisy and chaotic world.¹⁷ Actually, most long-acting stimulants lose optimal effect after approximately 8 hours. Patients are usually good at identifying when the stimulant wears off – they again feel overwhelmed, scattered, moody, and unfocused.¹⁸

Patients often need a second dose of stimulant in the mid-afternoon. This dose is usually one-half to two-thirds of the morning dose, but sometimes it matches the full morning dose. Each patient is unique.

If the second dose worsens sleep, switch the second dose to a shorter-acting stimulant. Most patients with ADHD actually sleep better when using stimulants, because of their overall calming effect.

With a second dose, the patient may exceed the “maximum daily dose”. This recommended maximum assumes that long-acting stimulants last the full day, which is often not the case. When exceeding the maximum dose, record that the stimulant appears to be metabolized rapidly, and that full coverage requires going above the recommended daily dose. Among the currently available stimulants, the most reliably long-acting agent is Focquest, which provides coverage for patients for a full 16 hours.

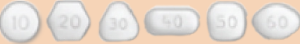
Medications & Illustrations			Delivery	Duration of Action ¹	Starting Dose ²
Amphetamine-Based Psychostimulants					
First Line	Adderall XR®	Capsules 5, 10, 15, 20, 25, 30 mg 	Granules can be sprinkled	~12 h	5–10 mg q.d. a.m.
First Line	Vyvanse®	Capsules 10, 20, 30, 40, 50, 60, 70 mg  Chewable Tablets 10, 20, 30, 40, 50, 60 mg 	Capsule content can be diluted in liquid or sprinkled Chewable tablets should be chewed thoroughly	~13–14 h	20–30 mg q.d. a.m.
Methylphenidate-Based Psychostimulants					
First Line	Biphentin®	Capsules 10, 15, 20, 30, 40, 50, 60, 80 mg 	Granules can be sprinkled	~10–12 h	10-20 mg q.d. a.m.
First Line	Concerta®	Extended Release Tablets 18, 27, 36, 54 mg 	Osmotic-Controlled Release Oral Delivery System (OROS®)	~12 h	18 mg q.d. a.m.
First Line	Foquest®	Capsules 25, 35, 45, 55, 70, 85, 100 mg 	Granules can be sprinkled	~13–16 h	25 mg q.d. a.m.

Table 1. The Canadian ADHD Resource Alliance (CADDRA) Guide to Long-Acting Adult ADHD Pharmacological Treatments in Canada – July 2024 (Abridged Version); *original version of this sheet developed by Dr. Annick Vincent in collaboration with Direction des communications et de la philanthropie, Laval University.*

Up to one-third of patients may not achieve an optimal outcome with the first stimulant. If, after several dose increases, the patient does not feel any improvement, you can switch to the alternative stimulant category.¹⁹ Simply stop the first and immediately start the alternative at lower doses. No washout period is needed.

Stimulants are usually well tolerated, however, if appetite decreases, encourage the patient to have a larger breakfast, consume protein-rich light snacks throughout the day, and eat a larger meal later in the day. If these problems persist, consider switching to a non-stimulant such as atomoxetine, which tends to have fewer effects on appetite.

A full review of strategies for treating disorders comorbid with ADHD is beyond the scope of this article. However, the basic principle is to “treat the worst first”. If the patient has chronic low mood, treat the ADHD first; if the patient is severely depressed, treat the depression first. When managing ADHD-related depression, it is best to use a non-selective serotonin reuptake inhibitor (SSRI) antidepressant, because increases in serotonin reduce activity in dopamine circuits, which is already a problem in ADHD. Consider using antidepressants that do not have this inhibitory effect, such as bupropion (Wellbutrin), vortioxetine (Trintellix), or levomilnacipran (Fetzima). Once the mood has stabilized, the treatment can then focus on managing the ADHD by introducing a stimulant.

Websites/Youtube	Comments
CADDRA https://www.caddra.ca	Unquestionably the best website for information, tracking forms, screening tools and supports, including therapists and coaches
ADDitude Magazine https://www.additudemag.com/	Short, accurate articles about ADHD and helpful, practical strategies for those with ADHD
How to ADHD https://howtoadhd.com/	Somewhat dramatic, aimed at 15–25 year olds, however, it includes accurate information about the experience of having ADHD across the lifespan
r/ADHD and r/adhdwomen https://totallyadd.com/	reddit – A lot of real-world discussion about ADHD and various strategies
	A bit chaotic but many love its humour and friendly approach

Books	Comments
Driven to Distraction Ed Hallowel and John Ratey	A good overview of the condition and treatment and coping strategies
A Radical Guide for Women with ADHD Sari Solden and Michelle Frank	A self-guided workbook that helps women understand the unique problems ADHD presents for them
Order From Chaos Jaclyn Paul	Practical approaches to dealing with the daily chaos of ADHD
ADHD 2.0 Ed Hallowel and John Ratey	Practical coping strategies for patients trying to manage their ADHD
Taking Charge of Adult ADHD. Russell Barkley	Solid information and useful workbook from the leading expert on ADHD
You Mean I'm not Lazy, Stupid or Crazy Kate Kelley and Peggy Ramundo	Helpful for patients to understand the impact of ADHD and coping strategies
Change Your Brain, Change Your Life Daniel Amen	Controversial, but provides understandable explanations about regional brain functioning in ADHD

Table 2. Information Resources for Patients and Physicians; *courtesy of Lawrence Martin, MD.*

For most patients with ADHD, stimulants reduce anxiety. If the patient experiences general anxiety, it may be beneficial to treat the ADHD first to determine whether this provides adequate reduction of the persistent anxiety.

Conclusion

ADHD is a common problem that has a significant impact on a person's ability to function. It is a neurodevelopmental disorder often described as a "hardwiring" problem, which can be effectively treated in most patients. Treating ADHD is enormously satisfying because of the often-profound effect treatment has on a patient's life and trajectory. Instead of rapid, fragmented thoughts, strong emotional reactions, and difficulty staying on task, the patient can gain control and function more effectively, finally able to "adult", and simply be themselves.

Correspondence

Lawrence Martin, MD
Email: martinl@mcmaster.ca

Financial Disclosures

Advisory Boards/ Speakers' Bureau: Abbvie, Eisai, Elvium, Lundbeck/Otsuka, and Takeda

References

1. Kessler RC, Adler L, Barkley R, Biederman J, Conners CK, Demler O, et al. The prevalence and correlates of adult ADHD in the United States: results from the National Comorbidity Survey Replication. *Am J Psychiatry*. 2006;163(4):716-723. doi:10.1176/ajp.2006.163.4.716
2. Sternat T. Abstract S2-10. Anxiety and Depression Association of America (AADA); 2016 March 31 to April 3; Philadelphia PA.
3. Shaw P, Malek M, Watson B, Greenstein D, de Rossi P, Sharp W. Trajectories of cerebral cortical development in childhood and adolescence and adult attention-deficit/hyperactivity disorder. *Biol Psychiatry*. 2013;74(8):599-606. doi:10.1016/j.biopsych.2013.04.007
4. Castellanos FX, Lee PP, Sharp W, Jeffries NO, Greenstein DK, Clasen LS, et al. Developmental trajectories of brain volume abnormalities in children and adolescents with attention-deficit/hyperactivity disorder. *Jama*. 2002;288(14):1740-1748. doi:10.1001/jama.288.14.1740
5. Di Lorenzo R, Balducci J, Poppi C, Arcolin E, Cutino A, Ferri P, et al. Children and adolescents with ADHD followed up to adulthood: a systematic review of long-term outcomes. *Acta Neuropsychiatr*. 2021;33(6):283-298. doi:10.1017/neu.2021.23
6. Steele M, Jensen PS, Quinn DM. Remission versus response as the goal of therapy in ADHD: a new standard for the field? *Clin Ther*. 2006;28(11):1892-1908. doi:10.1016/j.clinthera.2006.11.006
7. Retz W, Stieglitz RD, Corbisiero S, Retz-Junginger P, Rösler M. Emotional dysregulation in adult ADHD: what is the empirical evidence? *Expert Rev Neurother*. 2012;12(10):1241-1251. doi:10.1586/ern.12.109
8. Hirsch O, Chavanon M, Riechmann E, Christiansen H. Emotional dysregulation is a primary symptom in adult Attention-Deficit/Hyperactivity Disorder (ADHD). *J Affect Disord*. 2018;232:41-47. doi:10.1016/j.jad.2018.02.007
9. Moukhtarian TR, Reinhard I, Moran P, Ryckaert C, Skirrow C, Ebner-Priemer U, et al. Comparable emotional dynamics in women with ADHD and borderline personality disorder. *Borderline Personal Disord Emot Dysregul*. 2021;8(1):6. doi:10.1186/s40479-021-00144-y
10. Weibel S, Nicastro R, Prada P, Cole P, Rüfenacht E, Pham E, et al. Screening for attention-deficit/hyperactivity disorder in borderline personality disorder. *J Affect Disord*. 2018;226:85-91. doi:10.1016/j.jad.2017.09.027
11. Sobanski E, Brüggemann D, Alm B, Kern S, Deschner M, Schubert T, et al. Psychiatric comorbidity and functional impairment in a clinically referred sample of adults with attention-deficit/hyperactivity disorder (ADHD). *Eur Arch Psychiatry Clin Neurosci*. 2007;257(7):371-377. doi:10.1007/s00406-007-0712-8
12. Kessler RC, Adler L, Ames M, Demler O, Faraone S, Hiripi E, et al. The World Health Organization Adult ADHD Self-Report Scale (ASRS): a short screening scale for use in the general population. *Psychol Med*. 2005;35(2):245-256. doi:10.1017/s0033291704002892
13. Arnsten AF. The Emerging neurobiology of attention deficit hyperactivity disorder: the key role of the prefrontal association cortex. *J Pediatr*. 2009;154(5):l-s43. doi:10.1016/j.jpeds.2009.01.018
14. Boland H, DiSalvo M, Fried R, Woodworth KY, Wilens T, Faraone SV, et al. A literature review and meta-analysis on the effects of ADHD medications on functional outcomes. *J Psychiatr Res*. 2020;123:21-30. doi:10.1016/j.jpsychires.2020.01.006
15. Zhang L, Li L, Andell P, Garcia-Argibay M, Quinn PD, D'Onofrio BM, et al. Attention-deficit/hyperactivity disorder medications and long-term risk of cardiovascular diseases. *JAMA Psychiatry*. 2024;81(2):178-187. doi:10.1001/jamapsychiatry.2023.4294
16. Arnsten AF, Pliszka SR. Catecholamine influences on prefrontal cortical function: relevance to treatment of attention deficit/hyperactivity disorder and related disorders. *Pharmacol Biochem Behav*. 2011;99(2):211-216. doi:10.1016/j.pbb.2011.01.020
17. McCabe SE, Dickinson K, West BT, Wilens TE. Age of onset, duration, and type of medication therapy for attention-deficit/hyperactivity disorder and substance use during adolescence: a multi-cohort National study. *J Am Acad Child Adolesc Psychiatry*. 2016;55(6):479-486. doi:10.1016/j.jaac.2016.03.011
18. Brame M, Moon E, Pucci M, López FA. Duration of effect of oral long-acting stimulant medications for ADHD throughout the day. *Curr Med Res Opin*. 2010;26(8):1809-1825. doi:10.1185/03007995.2010.0488553
19. Hodgkins P, Shaw M, Coghill D, Hechtman L. Amphetamine and methylphenidate medications for attention-deficit/hyperactivity disorder: complementary treatment options. *Eur Child Adolesc Psychiatry*. 2012;21(9):477-492. doi:10.1007/s00787-012-0286-5