


**ADHD  
Parent Readiness  
Education Program  
(PREP)**

CADDAC  
416-637-8584  
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**ADHD Overview**

- ▷ What ADHD is and is Not
- ▷ Symptoms of ADHD
- ▷ ADHD in Girls
- ▷ Degree of Impairment
- ▷ Assessing and Diagnosing
- ▷ Comorbidities

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**WHAT ADHD IS AND IS NOT**

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### ADHD

- ▶ ADHD (Attention Deficit Hyperactivity Disorder) is the most common childhood mental health disorder occurring in approximately 5% of children world-wide
- ▶ Resulting in more than half of all referrals
- ▶ It doesn't discriminate - It impacts people from all walks of life and backgrounds
- ▶ It can sometimes be complex to diagnose since comorbid disorders and disorders that mimic symptoms are common

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### Consequences of ADHD

ADHD impacts behaviour regulation, school achievement, work, relationships, health and safety - most areas of an individual's life. Socioeconomic costs are significant!

**Risk for long term consequences without treatment:**

- ▶ Less years of academic and work attainment
- ▶ More accidents
- ▶ Increased risk of additional mental health disorders
- ▶ Increased chance of substance use and abuse, including smoking and alcohol use
- ▶ Increased chance of unwanted pregnancies
- ▶ Difficulties with social skills and relationships
- ▶ Risk of delinquency and involvement with justice systems

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### ADHD is Not

**A new fad diagnosis**

- ▶ Dr. Alexander Crichton a Scottish physician first wrote about "mental restlessness" in 1798

**Something that is outgrown**


- ▶ ADHD is considered a chronic condition, at least 80% of adolescents meet diagnostic criteria and 60% of adults retain impairing symptoms

**Just for boys**

- ▶ Although 3 times as many boys are still diagnosed
- ▶ In adulthood almost as many females as males –Therefore we are under diagnosing girls (and some males) with inattentive presentation of ADHD

**Over diagnosed and over treated**

- ▶ We are still under diagnosing and under treating ADHD
- ▶ Most conservative incidence world wide - 5% of children and 4% of adults

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## ADHD is Not

**Caused or impacted by Diet**

- ▷ Excessive sugar, yeast or food additives do not cause ADHD. This has been disproven by many, many follow-up research studies over several decades. Food dyes and additives increase hyperactivity, not ADHD in a small number of ALL children. A small amount of all children can become more hyperactive if sensitive to food additives or colourants.

**Due to:**

- ▷ Bad parenting or a lack of discipline
- ▷ Lazy educators
- ▷ Too much TV or computer time
- ▷ Laziness, a lack of willpower, or morality of the child or adult
- ▷ A lack of intelligence or excessive intelligence
- ▷ The North American lifestyle and a lack of exercise

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## What is the cause of ADHD?

- ▷ Exact cause not yet determined
- ▷ Strong genetic component – same level on the heredity scale as height -75%
- ▷ The latest theory is that the corpus striatum, the executive assistance, scans thoughts, feelings and experiences and sends some to the cortex to focus on
- ▷ In ADHD it sends several things at a time with no priority
- ▷ Medications may help the Corpus striatum prioritize what it sends
- ▷ Some of the impairments of people with ADHD may be more related to networks of fibers that support interactive communication between various regions of the brain
- ▷ Difficult to implicate one specific gene, thought that many genes may be involved due to the diversity and complexity of the condition
- ▷ Can also be caused by prenatal or post natal brain trauma (secondary ADHD)

[6 Things You Didn't Know About the ADHD Brain](#) William Dodson, M.D. Thomas E. Brown, Ph.D.

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## Epigenetics

- ▷ Newest theory on ADHD -Focused on self-regulation
- ▷ Not just one part of the brain but a result of neurons misfiring in communications and connections between multiple areas of the brain
- ▷ Genes convey a vulnerability to the disorder
- ▷ Environment influences which genes are turned on or off or how much they are expressed (volume on a radio)
- ▷ Environmental factors such health, stress, exercise, diet, exposure to toxins (before and after birth)
- ▷ Dr. Joel Nigg's book [Getting Ahead of ADHD: What Next-Generation Science Says about Treatments That Work and How You Can Make Them Work for Your Child](#)

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## RESEARCH ON BRAIN DEVELOPMENT & FUNCTIONING

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### Brain Imaging and ADHD

- ▷ In youth with attention deficit hyperactivity disorder (ADHD), the brain matures in a normal pattern but is delayed about three years (when completed at 30 often remain behind)
- ▷ Frontal cortex areas responsible for higher-order executive control functions normally peak later, during the teen years
- ▷ Frontal areas support the ability to suppress inappropriate actions and thoughts, focus attention, remember things from moment to moment, work for reward, and control movement - These functions are often disturbed in people with ADHD
- ▷ Research has also noted that the delayed pattern of maturation observed in ADHD is the opposite of that seen in other developmental brain disorders like autism, in which the volume of brain structures peaks at a much earlier-than-normal age

Brain Matures a Few Years Late in ADHD, But Follows Normal Pattern, <http://www.nih.gov/news/science-news/2007/brain-matures-a-few-years-late-in-adhd-but-follows-normal-pattern.shtml>gions, on average

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11

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### Functional Magnetic Imaging (fMRI) and ADHD

- ▷ Research using fMRIs to better understand ADHD (Hart, 2013) looked at studies where people did specific tasks and found that the patterns of brain activity associated with both attention and inhibition are different in people with ADHD
- ▷ When areas of the brain are active, more oxygen is used and the blood changes colour allowing researchers to estimate changes in brain activity
- ▷ Researchers can then work out which parts of the brain are more or less active when doing different tasks or when doing nothing
- ▷ These MRIs tell us that there is a decrease in activity across specific brain networks related to attention and inhibition in people with ADHD
- ▷ Researchers also found that brain activity in certain areas of the brain (prefrontal cortex, specific subcortical regions, and the cerebellum) was normalized with medication use

<http://www.thementalief.net/mental-health-conditions/adhd/brain-imaging-reveals-different-pattern-of-activity-in-adhd-which-is-partly-normalised-by-medication/#hah.1V9pLuv.dpuf>

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12

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**SYMPTOMS**

Core Symptoms  
 Attention Dysregulation  
 Hyperactivity and Impulsivity  
 Presentations  
 Primarily Inattentive

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13

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**Core Symptoms**

**Three Core Symptoms**


- ▷ Impaired regulation of attention (both under and over focusing, and difficulty with prioritizing & switching focus)
- ▷ Increased hyperactivity
- ▷ Increased impulsivity

**Three Presentations**

- ▷ Primarily inattentive (formerly known as ADD)
- ▷ Primarily hyperactive (very rare)
- ▷ Combined (most common)

**Other Common Impairments (Emotional Regulation and EF)**

- ▷ Executive Functioning used to regulate self management impaired
- ▷ More easily frustrated and less able to cope when frustrated
- ▷ Difficulty with social cues and skills

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14

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**About ADHD Symptoms**

- ▷ Symptoms are always present to some degree but can fluctuate from moment to moment, throughout the day, from day to day
- ▷ Symptoms vary according to the situation
- ▷ Symptoms are most apparent when no external support or control, work is more complex with multiple steps under a time constraint or requires sustained effort
- ▷ Attention dysregulation almost always a core symptom
- ▷ Symptoms of hyperactivity and impulsivity are more noticeable than symptoms of inattention
- ▷ However, attention regulation symptoms are what causes the most impairment in learning and functioning
- ▷ Hyperactivity and impulsivity decrease with age and restlessness becomes internal
- ▷ Comorbid (coexisting) disorders can alter the presentation

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15

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### DSM-5 Criteria Inattentive symptoms

- ▷ Fails to pay close attention to detail
- ▷ Difficulty sustaining attention
- ▷ Does not seem to listen
- ▷ Does not follow through on instructions
- ▷ Difficulty organizing tasks and activities
- ▷ Avoids tasks that require sustained mental effort
- ▷ Loses things necessary for activities
- ▷ Easily distracted
- ▷ Forgetful in daily activities and routines

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16

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### Inattention Symptoms Can Result in Child being mislabelled as:

- Stupid
- Lazy
- Defiant
- Disinterested
- Unmotivated
- Uncaring
- Undisciplined
- Sloppy

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17

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### DSM-5 Criteria Hyperactive-Impulsive Symptoms

- ▷ Fidgets with hands or feet and squirms in seat
- ▷ Leaves seat at inappropriate times
- ▷ Runs or climbs inappropriately and excessively
- ▷ Has difficulty playing quietly
- ▷ On the go continually as if driven, unable to relax
- ▷ Talks excessively
- ▷ Blurts out answers, before questions are completed
- ▷ Has difficulty waiting in line or for their turn
- ▷ Interrupts or intrudes frequently
- ▷ These symptoms can lead to the child being mislabelled as a "bad child"

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18

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### Primarily Inattentive Presentation

- ▷ Daydreaming "spaced out"
- ▷ Slower in processing information
- ▷ Can present as underacting, lethargic
- ▷ Easily confused, slower to comprehend
- ▷ More difficulty focusing / selective attention
- ▷ More difficulty with retrieval – memory
- ▷ More uninvolved and socially isolated
- ▷ Rarely: disruptive, impulsive, aggressive, ODD
- ▷ Russell Barkley believes that this is a different disorder
- ▷ These symptoms frequently lead to the child being labeled as "not overly bright"

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19

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## ADHD IN GIRLS

Presentation Differences  
Symptoms  
Impact of Hormones

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### ADHD in Girls

- ▷ Symptoms less noticeable in school
- ▷ Less likely to display disruptive behaviour - clowning around, gross motor hyperactivity and aggression
- ▷ This may be due to the socialization of girls
- ▷ However girls are more likely to display teasing and taunting and name calling behaviour
- ▷ Rates the same for ODD, GAD, depression, and dysthymia
- ▷ Symptoms in off task behaviour, small motor hyperactivity and cognitive impairments are the same
- ▷ Girls are as impaired as boys in social skills and academic achievement although they are under diagnosed

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21

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### ADHD and Female Hormones

- ▶ Hussey (1990) found that first noted that girls with ADHD may have increasingly severe problems with the onset of puberty
- ▶ Increased hormonal fluctuations throughout the phases of the menstrual cycle might result in increased symptomatology
- ▶ Alan Zametkin reported that girls show a decrease in cerebral glucose metabolism at puberty that is not seen in boys
- ▶ Medications may need to be adjusted with hormonal fluctuations

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22

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## DEGREE OF IMPAIRMENT

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### Degree of Impairment

- ▶ The degree of ADHD symptom are on a continuum
- ▶ DSM 5 requires there be at a level of impairment for a diagnosis but symptoms levels can still fluctuate significantly
- ▶ Coexisting disorders the norm rather than the exception, so the number and severity of coexisting disorders will increase functional impairment
- ▶ Support and family functioning can help to mitigate or increase functional impairment
- ▶ The child's other strengths can also help mitigate or cover-up symptoms, at least during the earlier years, this can be an issue because bright children can be missed until they are older when demands on skills are greater

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24

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**ASSESSING AND DIAGNOSING ADHD**

Referral and Assessment  
Differential Diagnosis  
Comorbid Disorders

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**Referral and Assessment**

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**Why a Child Might be Referred for an Assessment**

- ▶ The child is experiencing functional impairment at home and /or at school
- ▶ Most commonly the school notices that the child is having difficulty with focus, distractibility, productivity or self- regulation
- ▶ The child's oppositional behaviour may be of concern
- ▶ Discord in the family or family functioning may be the primary issue
- ▶ Other family members may have already been diagnosed
- ▶ Children without hyperactivity or impulsivity are diagnosed later in life and if symptoms are more severe

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27

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### Information is Gathered From a Variety of Sources

- ▷ Developmental history
- ▷ Physical and mental health history of child and family members
- ▷ Rating scales done by parents and teachers
- ▷ Interview with parents of current and past symptoms and difficulties
- ▷ Review of school performance

How does this information assist with the assessment of ADHD?

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28

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### DSM 5 criteria

#### Questions Physicians Ask When Assessing

- ▷ Have the symptoms been evident for more than 6 months, and before the age of 7?
- ▷ Are the symptoms at a level of impairment and significantly greater than other children of the same age?
- ▷ Are the symptoms evident in two or more setting?
- ▷ Does the child display 6 out of 9 attention and/or 6 out of 9 hyperactive/impulsive symptoms?

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29

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### Neurodevelopmental Disorders

- DSM 5 has placed ADHD under this category – previously under behaviour disorder category
- Group of conditions that can be seen during early in the developmental period before school
- Characterized by developmental deficits that produce impairment in personal, social, academic, or occupational functioning
- Deficits can range from impact on learning or control of executive functions to impairment of total life functioning
- Neurodevelopmental disorders often co-occur with each other

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30

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## Common Comorbid Disorders

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### Coexisting (Comorbid) Disorders

- ▶ 50 to 90% of children have one coexisting disorder and half have two or more
- ▶ Coexisting disorders can be caused due to ADHD or coexist with ADHD
- ▶ Common childhood and adolescent coexisting disorders are: Oppositional Defiant Disorder (ODD), learning disabilities, anxiety disorders, Tourette Syndrome, and depression
- ▶ It is important to discover all the puzzle pieces that make up the child's profile – Why?

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32

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### ADHD rarely occurs by itself!

With permission of Dr. Rosemary Tannock

Comorbid mental health conditions		Comorbid learning disabilities	
Anxiety/mood disorders	25%-48%	Oral language disorders	8%-30%
Severe tics/Tourette's disorder	11%	Reading disorder	15%-40%
Oppositional defiant disorder (Aggression)	40%-60%	Mathematics Disorder	10%-25%
Conduct Disorder (Aggression)	14%-20%	Written language expression	65%?
Bipolar Disorder (Aggression)	Rare (0.2%)	Developmental Co-ordination Disorder	40% - 60%

Carroll et al (2005) J Child Psychol Psychiatr 46:524-532; Jensen et al (2001) JAACAP 40:147-158; Kessler et al (2005) Am J Psychiatry 163:716-723; Reich et al (2005) Twin Res Hum Genet 8:459-466

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## Differential Diagnosis

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### Differential Diagnoses

- ▶ It is paramount to consider and exclude other disorders that can mimic ADHD symptoms (differential diagnosis)
- ▶ These disorders may be a physical disorder
- ▶ Symptoms of attention impairment can be seen in several other mental health disorders
- ▶ An ADHD assessment is as much ruling in ADHD symptoms as it is ruling out other conditions that could be mimicking these symptoms

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### Physical Disorders that Can Mimic Symptoms

- ▶ Vision and hearing impairments
- ▶ Thyroid dysfunction
- ▶ Head and brain trauma
- ▶ Seizure disorder
- ▶ Sleep disorders
- ▶ FASD
- ▶ Anemia (severe), hypoglycemia

For a complete list access:  
<http://www.caddra.ca/pdfs/caddraGuidelines2011Chapter02.pdf>

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### Psychiatric Disorders that Can Mimic Symptoms

- ▷ Anxiety
- ▷ Depression
- ▷ Learning Disabilities
- ▷ Autism
- ▷ Intellectual disabilities
- ▷ OCD
- ▷ ODD and Conduct Disorder

For a complete list access:  
<http://www.caddra.ca/pdfs/caddraGuidelines2011Chapter02.pdf>

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37

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### References

- Currie J, Stabile M. Child mental health and human capital accumulation: the case of ADHD. *J Health Econ*. 2006; 25(4):1098-118.
- Polanczyk G, de Lima MS, Horta BL, Biederman J, Rohde LA. The worldwide prevalence of ADHD: a systematic review and meta-regression analysis. *Am J Psychiatry*. 2007 Jun;164(6):942-8.
- Kessler, R.C., et al., Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry*. 2005. 62(6): p. 593-602
- Canadian Attention Deficit Hyperactivity Disorder Resource Alliance (CADDRA): Canadian ADHD Practice Guidelines, Third Edition, Toronto: ON: CADDRA, 2011.
- Lange KW, Reichl S, Lange KM, Tucha L, Tucha O (2010) The history of attention deficit hyperactivity disorder. *ADHD Attention Deficit and Hyperactivity Disorders* 2: 241-255 PubMed
- Hargis, V.A. (2005). The effect of ADHD on the life of an individual, their family, and community from preschool to adult life. *Archives of Disease in Childhood*, 90(1 Suppl), i2-i7
- Martinussen R, Tammoek R, with McInnes A, Chabon P (2006). *TeachADHD Teacher's Resource Manual* (DVD enclosed). Website: [www.teachADHD.ca](http://www.teachADHD.ca). TVOntario, Toronto, Canada ([www.tvo.org/sales/teachadhd](http://www.tvo.org/sales/teachadhd))
- Abikoff, H.B., Jensen, P.S., Arnold, L.L., et al. (2002). Observed classroom behavior of children with ADHD: relationship to gender and comorbidity. *Journal of Abnormal Child Psychology*, 30, 349-359
- Quinn Patricia O. *Attention Deficit Disorder: Diagnosis and Treatment From Infancy to Adulthood* Routledge | November 16, 2013 | Kobo Edition (eBook)

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### References

- [Tartakovsky, D.](http://psychcentral.com/blog/archives/2012/12/23/the-biggest-myths-about-girls-with-adhd/) The Biggest Myths About Girls With ADHD.  
<http://psychcentral.com/blog/archives/2012/12/23/the-biggest-myths-about-girls-with-adhd/>
- Russell Barkley, Concentration Deficit Disorder (Sluggish Cognitive Tempo)  
<http://www.russellbarkley.org/fsct/sheets/SluggishCognitiveTempo.pdf>

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39

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