

UC DAVIS MIND INSTITUTE

MINT STUDY

ADHD RESOURCE GUIDE



Prepared by the Attention, Impulsivity, and Regulation (AIR) Lab

<https://health.ucdavis.edu/mindinstitute/research/adhdprogram/index.html>

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About ADHD



Everybody can have difficulty sitting still, paying attention or controlling impulsive behavior once in a while. For some people, however, the problems are so pervasive and persistent that they interfere with every aspect of their life: home, academic, social and work.

Attention-deficit/hyperactivity disorder (ADHD) is a neurodevelopmental disorder affecting 11 percent of school-age children (Visser, et al., 2014.) Symptoms continue into adulthood in more than three-quarters of cases (Brown, 2013.) ADHD is characterized by developmentally inappropriate levels of inattention, impulsivity and hyperactivity.

Individuals with ADHD can be very successful in life. However, without identification and proper treatment, ADHD may have serious consequences, including school failure, family stress and disruption, depression, problems with relationships, substance abuse, delinquency, accidental injuries and job failure. Early identification and treatment are extremely important.

Medical science first documented children exhibiting inattentiveness, impulsivity and hyperactivity in 1902. Since that time, the disorder has been given numerous names, including minimal brain dysfunction, hyperkinetic reaction of childhood, and attention-deficit disorder with or without hyperactivity. With the Diagnostic and Statistical Manual, Fifth Edition (DSM-5) classification system, the disorder has been renamed attention-deficit/hyperactivity disorder or

More than 75 percent of children with ADHD continue to experience significant symptoms in adulthood. In early adulthood, ADHD may be associated with depression, mood or conduct disorders and substance abuse.

Adults with ADHD often cope with difficulties at work and in their personal and family lives related to ADHD symptoms.

ADHD. The current name reflects the importance of the inattention aspect of the disorder as well as the other characteristics of the disorder such as hyperactivity and impulsivity.

Symptoms

Typically, ADHD symptoms arise in early childhood. According to the DSM-5, several symptoms are required to be present before the age of 12. Many parents report excessive motor activity during the toddler years, but ADHD symptoms can be hard to distinguish from the impulsivity, inattentiveness and active behavior that is typical for kids under the age of



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four. In making the diagnosis, children should have six or more symptoms of the disorder present; adolescents 17 and older and adults should have at least five of the symptoms present. The DSM-5 lists three presentations of ADHD—Predominantly Inattentive, Hyperactive-Impulsive and Combined. The symptoms for each are adapted and summarized below.

ADHD predominantly inattentive presentation

- Fails to give close attention to details or makes careless mistakes
- Has difficulty sustaining attention
- Does not appear to listen
- Struggles to follow through with instructions
- Has difficulty with organization
- Avoids or dislikes tasks requiring sustained mental effort
- Loses things
- Is easily distracted
- Is forgetful in daily activities

ADHD predominantly hyperactive-impulsive presentation

- Fidgets with hands or feet or squirms in chair
- Has difficulty remaining seated
- Runs about or climbs excessively in children; extreme restlessness in adults
- Difficulty engaging in activities quietly
- Acts as if driven by a motor; adults will often feel inside as if they are driven by a motor
- Talks excessively
- Blurts out answers before questions have been completed
- Difficulty waiting or taking turns
- Interrupts or intrudes upon others

ADHD combined presentation

- The individual meets the criteria for both inattention and hyperactive-impulsive ADHD presentations.

These symptoms can change over time, so children may fit different presentations as they get older.

Confusing labels for ADHD

In 1994, the name of the disorder was changed in a way that is confusing for many people.

Since that time all forms of attention deficit disorder are officially called “Attention-Deficit/Hyperactivity Disorder,” regardless of whether the individual has symptoms of hyperactivity or not. Even though these are the official labels, a lot of professionals and lay people still use both terms: ADD and ADHD. Some use those terms to designate the old subtypes; others use ADD just as a shorter way to refer to any presentation.



Severity of symptoms

As ADHD symptoms affect each person to varying degrees, the DSM-5 now requires professionals diagnosing ADHD to include the severity of the disorder. How severe the disorder is can change with the presentation during a person’s lifetime. Clinicians can designate the severity of ADHD as “mild,” “moderate” or “severe” under the criteria in the DSM-5.

Mild: Few symptoms beyond the required number for diagnosis are present, and symptoms result in minor impairment in social, school or work settings.

Moderate: Symptoms or functional impairment between “mild” and “severe” are present.

Severe: Many symptoms are present beyond the number needed to make a diagnosis; several symptoms are particularly severe; or symptoms result in marked impairment in social, school or work settings. As individuals age, their symptoms may lessen, change or take different forms. Adults who retain some of the symptoms of childhood ADHD, but not all, can be diagnosed as having ADHD in partial remission.

ADHD throughout the lifespan

Children with ADHD often experience delays in independent functioning and may behave younger than their peers. Many children affected

by ADHD can also have mild delays in language, motor skills or social development that are not part of ADHD but often co-occur. They tend to have low frustration tolerance, difficulty controlling their emotions and often experience mood swings.

Children with ADHD are at risk for potentially serious problems in adolescence and adulthood: academic failure or delays, driving problems, difficulties with peers and social situations, risky sexual behavior, and substance abuse. There may be more severe negative behaviors with co-existing conditions such as oppositional defiant disorder or conduct disorder. Adolescent girls with ADHD are also more prone to eating disorders than boys. As noted above, ADHD persists from childhood to adolescence in the vast majority of cases (50–80 percent), although the hyperactivity may lessen over time.



Teens with ADHD present a special challenge. During these years, academic and life demands increase. At the same time, these kids face typical adolescent issues such as emerging sexuality, establishing independence, dealing with peer pressure and the challenges of driving.

More than 75 percent of children with ADHD continue to experience significant symptoms in adulthood. In early adulthood, ADHD may be associated with depression, mood or conduct disorders and substance abuse. Adults with ADHD often cope with difficulties at work and in their personal and family lives related to ADHD symptoms. Many have inconsistent performance at work or in their careers; have difficulties with day-to-day responsibilities; experience relationship problems; and may have chronic feelings of frustration, guilt or blame. Individuals with ADHD may also have difficulties with maintaining attention, executive function

and working memory. Recently, deficits in executive function have emerged as key factors affecting academic and career success. Executive function is the brain's ability to prioritize and manage thoughts and actions. This ability permits individuals to consider the long-term consequences of their actions and guide their behavior across time more effectively. Individuals who have issues with executive functioning may have difficulties completing tasks or may forget important things.

Co-occurring Disorders

More than two-thirds of children with ADHD have at least one other co-existing condition. Any disorder can co-exist with ADHD, but certain disorders seem to occur more often. These disorders include oppositional defiant and conduct disorders, anxiety, depression, tic disorders or Tourette syndrome, substance abuse, sleep disorders and learning disabilities. When co-existing conditions are present, academic and behavioral problems, as well as emotional issues, may be more complex.

These co-occurring disorders can continue throughout a person's life. A thorough diagnosis and treatment plan that takes into account all of the symptoms present is essential.

Causes

Despite multiple studies, researchers have yet to determine the exact causes of ADHD. However, scientists have discovered a strong genetic link since ADHD can run in families. More than 20 genetic studies have shown evidence that ADHD is strongly inherited. Yet ADHD is a complex disorder, which is the result of multiple interacting genes. (Cortese, 2012.)

Other factors in the environment may increase the likelihood of having ADHD:

- exposure to lead or pesticides in early childhood
- premature birth or low birth weight
- brain injury

Scientists continue to study the exact relationship of ADHD to environmental factors, but point out that there is no single cause that

explains all cases of ADHD and that many factors may play a part.

Previously, scientists believed that maternal stress and smoking during pregnancy could increase the risk for ADHD, but emerging evidence is starting to question this belief (Thapar, 2013.) However, further research is needed to determine if there is a link or not.

The following factors are NOT known causes, but can make ADHD symptoms worse for some children:

- watching too much television
- eating sugar
- family stress (poverty, family conflict)
- traumatic experiences

ADHD symptoms, themselves, may contribute to family conflict. Even though family stress does not cause ADHD, it can change the way the ADHD presents itself and result in additional problems such as antisocial behavior (Langley, Fowler et al., 2010.)

Problems in parenting or parenting styles may make ADHD better or worse, but these do not cause the disorder. ADHD is clearly a neurodevelopmental disorder. Currently research is underway to better define the areas and pathways that are involved.

Diagnosis

There is no single test to diagnose ADHD. Therefore, a comprehensive evaluation is necessary to establish a diagnosis, rule out other causes, and determine the presence or absence of co-existing conditions. Such an evaluation requires time and effort and should include a careful history and a clinical assessment of the individual's academic, social, and emotional functioning and developmental level.

There are several types of professionals who can diagnose ADHD, including clinical psychologists, clinical social workers, nurse practitioners, neurologists, psychiatrists and pediatricians. Regardless of who does the evaluation, the use of the DSM-5 diagnostic criteria for ADHD is necessary.



Determining if a child has ADHD is a complex process. Many biological and psychological problems can contribute to symptoms similar to those exhibited by children with ADHD. For example, anxiety, depression and certain types of learning disabilities may cause similar symptoms. In some cases, these other conditions may actually be the primary diagnosis; in others, these conditions may co-exist with ADHD. A thorough history should be taken from the parents and teachers, and when appropriate, from the child. Checklists for rating ADHD symptoms and ruling out other disabilities are often used by clinicians; these instruments factor in age-appropriate behaviors and show when symptoms are extreme for the child's developmental level.

For adults, diagnosis also involves gathering information from multiple sources, which can include ADHD symptom checklists, standardized behavior rating scales, a detailed history of past and current functioning, and information obtained from family members or significant others who know the person well. ADHD cannot be diagnosed accurately just from brief office observations or just by talking to the person. The person may not always exhibit the symptoms of ADHD in the office, and the diagnostician needs to take a thorough history of the individual's life. A diagnosis of ADHD must include consideration of the possible presence of co-occurring conditions.

As part of the evaluation, a physician should conduct a thorough examination, including assessment of hearing and vision to rule out other medical problems that may be causing symptoms similar to ADHD. In rare cases, persons with ADHD may also have a thyroid dysfunction. Diagnosing ADHD in an adult requires an evaluation of the history of childhood

problems in behavior and academic domains, as well as examination of current symptoms and coping strategies.

Treatment

Treatment in children with ADHD

ADHD in children often requires a comprehensive approach to treatment that includes the following:

- Parent and child education about diagnosis and treatment
- Parent training in behavior management techniques
- Medication
- School programming and supports
- Child and family therapy to address personal and/or family stress concerns

Treatment should be tailored to the unique needs of each child and family. Research from the landmark NIMH Multimodal Treatment Study of ADHD showed significant improvement in behavior at home and school in children with ADHD who received carefully monitored medication in combination with behavioral treatment. These children also showed better relationships with their classmates and family than did children receiving this combination of treatment (Hinshaw, et al., 2015.) Further research confirms that combining behavioral and stimulant treatments are more effective than either treatment alone (Smith & Shapiro, 2015.)

Medication

Psychostimulants are the most widely used class of medication for the management of ADHD related symptoms.

Approximately 70 to 80 percent of children with ADHD respond positively to psychostimulant medications (MTA 1999.)

Significant academic improvement is shown by students who take these medications: increases in attention and concentration, compliance and effort on tasks, as well as amount and accuracy of schoolwork, plus



decreased activity levels, impulsivity, negative behaviors in social interactions and physical and verbal hostility (Spencer, 1995; Swanson 1993.) These improvements show up clearly in the short term, however, long-term effectiveness is still being studied by researchers (Hinshaw, et al., 2015.) A nonstimulant medication—atomoxetine—appears to have similar effects as the stimulants. Antidepressants, antihypertensives and other medications may decrease impulsivity, hyperactivity and aggression. However, each family must weigh the pros and cons of taking medication. Medications may carry the risk of side effects. Physicians need to monitor their patients who take medication for potential side effects, such as mood swings, hypertension, depression and effects on growth.

Behavioral interventions

Behavioral interventions are also a major component of treatment for children who have ADHD. Important strategies include being consistent and using positive reinforcement and teaching problem-solving, communication and self-advocacy skills. Children, especially teenagers, should be actively involved as respected members of the school planning and treatment teams.

School success may require a variety of classroom accommodations and behavioral interventions. Most children with ADHD can be taught in the regular classroom with minor adjustments to the environment. Some children may require special education services. These services may be provided within the regular education classroom or may require a special placement outside of the regular classroom that meets the child's unique learning needs.

ADHD treatment for adults

Adults with ADHD can benefit by identifying the areas of their life that are most impaired by their ADHD and then seeking treatment to address them. Adults with ADHD may benefit from treatment strategies similar to those used to treat ADHD in children, particularly medication and learning to structure their environment. Medications effective for childhood ADHD

continue to be helpful for adults who have ADHD. Various behavioral management techniques can be useful. Some adults have found that working with a coach, either formally or informally, to be a helpful addition to their ADHD treatment plans. In addition, mental health counseling can offer much-needed support to adults dealing with ADHD in themselves or someone they care about. Since ADHD affects the entire family, receiving services from ADHD-trained therapists skilled in Cognitive-Behavioral Therapy can help the adult with ADHD learn new techniques to manage living with ADHD.

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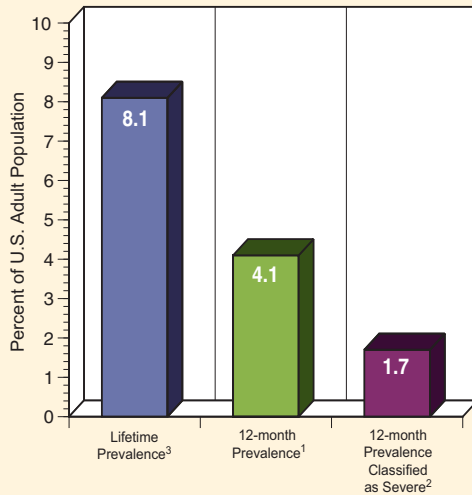
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www.chadd.org/nrc

Attention Deficit/Hyperactivity Disorder (ADHD)

Prevalence

- **12-month Prevalence:** 4.1% of U.S. adult population¹
- **Severe:** 41.3% of these cases (e.g., 1.7% of U.S. adult population) are classified as “severe”²



Demographics

(for lifetime prevalence)⁵

- **Sex:** Not Reported
- **Race:** Not Reported
- **Age:**
 - 18–29: 7.8%
 - 30–44: 8.3%
 - 45–59: Not Reported
 - 60+: Not Reported

Average Age-of-Onset: 7 years old⁴

Treatment/Services Use

12-month Healthcare Use: Not Reported

- **Percent Received Minimally Adequate Treatment:** Not Reported

12-month Any Service Use (including Healthcare): Not Reported

- **Percent Received Minimally Adequate Treatment:** Not Reported

¹Kessler RC, Chiu WT, Demler O, Walters EE. Prevalence, severity, and comorbidity of twelve-month DSM-IV disorders in the National Comorbidity Survey Replication (NCS-R). *Archives of General Psychiatry*. 2005 Jun;62(6):617–27.

²Ibid

³Kessler RC, Berglund PA, Demler O, Jin R, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication (NCS-R). *Archives of General Psychiatry*. 2005 Jun;62(6):593–602.

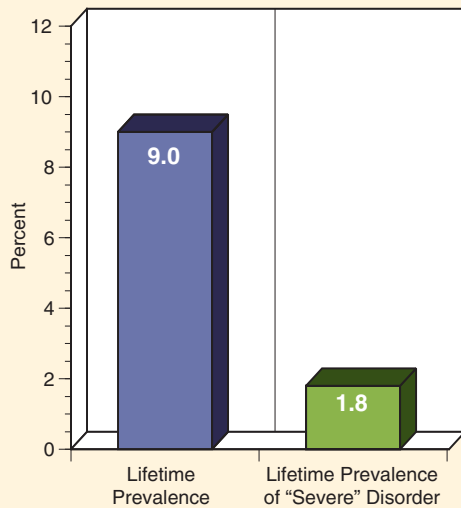
⁴Ibid

⁵Ibid

Attention Deficit Hyperactivity Disorder

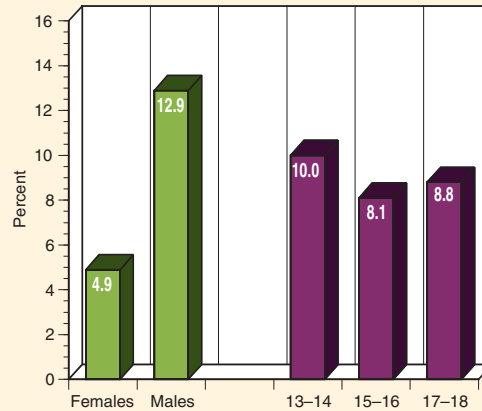
Lifetime Prevalence of 13 to 18 year olds

- **Lifetime Prevalence:** 9.0% of 13 to 18 year olds
- **Lifetime Prevalence of “Severe” Disorder:** 1.8% of 13 to 18 year olds have a “severe” disorder



Demographics (for lifetime prevalence)

- **Sex and Age**



- **Race:** Not Reported

Merikangas KR, He J, Burstein M, Swanson SA, Avenevoli S, Cui L, Benjet C, Georgiades K, Swendsen J. Lifetime prevalence of mental disorders in U.S. adolescents: Results from the National Comorbidity Study-Adolescent Supplement (NCS-A). *J Am Acad Child Adolesc Psychiatry*. 2010 Oct;49(10):980-989.

Just as untreated ADHD can present challenges in everyday life, other disorders can also cause unnecessary suffering in individuals with ADHD and their families if left untreated. Any disorder can coexist with ADHD, but certain disorders tend to occur more commonly with ADHD. ADHD may co-exist with one or more disorders.



CHILDREN AND ADULTS WITH
ATTENTION-DEFICIT/HYPERACTIVITY DISORDER

ADHD and Coexisting Disorders

More than two-thirds of individuals with ADHD have at least one other coexisting condition. The symptoms of ADHD—constant motion and fidgetiness, interrupting and blurting out, difficulty sitting still and need for constant reminders, etc.—may overshadow these other disorders. But just as untreated ADHD can present challenges in everyday life, other disorders can also cause unnecessary suffering in individuals with ADHD and their families if left untreated. Any disorder can coexist with ADHD, but certain disorders tend to occur more commonly with ADHD. ADHD may coexist with one or more disorders.

Disruptive behavior disorders

About 40 percent of individuals with ADHD have oppositional defiant disorder (ODD). ODD involves a pattern of arguing; losing one's temper; refusing to follow rules; blaming others; deliberately annoying others; and being angry, resentful, spiteful and vindictive.

Among individuals with ADHD, conduct disorder (CD) may also be present, occurring in 27 percent of children, 45–50 percent of adolescents and 20–25 percent of adults with ADHD. Children with conduct disorder may be aggressive to people or animals, destroy property, lie or steal things from others, run away, skip school or break curfews. Adults with CD often exhibit behaviors that get them into trouble with the law.

Mood disorders

In adults, approximately 38 percent of ADHD patients have a co-occurring mood disorder. Mood disorders are characterized by extreme changes in mood. Children with mood disorders may seem to be in a bad mood often. They may cry daily or be frequently irritable with others for no apparent reason. Mood disorders include depression, mania and bipolar disorder.



Approximately 14 percent of children with ADHD also have depression, whereas only 1 percent of children without ADHD have depression. In adults with ADHD, approximately 47 percent also have depression. Typically, ADHD occurs first and depression occurs later. Both environmental and genetic factors may contribute.

Up to 20 percent of individuals with ADHD may show symptoms of bipolar disorder, a severe condition involving periods of mania, abnormally elevated mood and energy, contrasted by episodes of clinical depression. If left untreated, bipolar disorder can damage relationships and lead to job loss, school problems and even suicide.

Anxiety

Up to 30 percent of children and up to 53 percent of adults with ADHD may also have an anxiety disorder. Patients with anxiety disorders often worry excessively about a number of things (school, work, etc.) and may feel edgy, stressed out, tired and tense and have trouble getting restful sleep.

Tics and Tourette Syndrome

Less than 10 percent of those with ADHD have tics or Tourette Syndrome, but 60 to 80 percent of those with Tourette Syndrome have ADHD. Tics involve sudden, rapid, recurrent, involuntary movements or vocalizations. Tourette Syndrome is a much rarer, but more severe tic disorder, where patients may make noises, such as barking a word or sound, and movements, such as repetitive flinching or eye blinking, on an almost daily basis for years.

Learning disorders

Up to 50 percent of children with ADHD have a coexisting learning disorder, whereas 5 percent of children without ADHD have learning disorders. Learning disorders can cause problems with how individuals acquire or use new information such as reading or calculating. The most common learning disorders are dyslexia and dyscalculia. In addition, 12 percent of children with ADHD have speech problems, compared with 3 percent without ADHD.

Sleep disorders

One-quarter to one-half of parents of children with ADHD report that their children suffer from a sleep problem, especially difficulties with falling asleep and staying asleep. Sleep problems can be a symptom of ADHD, may be made worse by ADHD or may make the symptoms of ADHD worse.

Substance abuse

Research suggests that youth with ADHD are at increased risk for very early cigarette use, followed by alcohol and then drug abuse.



Cigarette smoking is more common in adolescents with ADHD, and adults with ADHD have elevated rates of smoking and report particular difficulty in quitting. Youth with ADHD are twice as likely to become addicted to nicotine as individuals without ADHD.

However, research has shown that individuals with ADHD who are treated with stimulants are not more prone to cocaine and stimulant abuse than others. Indeed, adolescents who are prescribed stimulant medication for their ADHD are less likely to subsequently use illegal drugs than are kids with ADHD who are not prescribed medication.

Diagnosis

As part of the diagnostic process for ADHD, the clinician or mental health professional must also determine whether there are any other conditions affecting the individual that could be responsible for presenting symptoms. Often, the symptoms of ADHD may overlap with other disorders.

The challenge for the health care professional is to figure out whether a symptom belongs to ADHD, to a different disorder or to both disorders at the same time. For some patients, the overlap of symptoms among the various disorders makes multiple diagnoses necessary. Interviews and questionnaires are often used to obtain information about symptoms from the patient, the family and teachers—in the case of children—to screen for these other disorders.



Treatment of co-occurring conditions

Decisions about what disorder to treat first depends on the impairment that those symptoms are producing in the individual's life. Clinicians work with the patient and family members, especially with children, to establish an individually tailored comprehensive treatment plan. These plans are ongoing and should be reviewed at least annually to make sure that the treatment options are working and adjust them if necessary.

In many cases when an individual has both ADHD and a co-occurring condition, the health care professional may elect to treat the ADHD first because primary treatment of ADHD may reduce stress, improve attentional resources and may enhance the individual's ability to deal with the symptoms of the other condition. Treatment options for ADHD include behavior therapy, medication, skills training, counseling, and school supports and accommodations. These interventions can be tailored to the patient's and family needs and help the patient control symptoms, cope with the disorder, improve overall psychological well-being and manage social relationships.

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www.help4adhd.org

Please also visit CHADD at www.chadd.org.

Homework Help: Creating a Homework Space



Homework can be a source of frustration and difficulty particularly for students with ADHD. As a parent, you can help lessen that frustration by creating an organized and comfortable space within your home for your child to do homework. This might be a kitchen table, desk, or even a floor mat. The best space is one where your child can be near you or another adult but yet have minimal distractions.

With a designated homework space, your child can get into the homework habit each time they sit down to do their homework. Your child begins to associate that space with being focused and productive and learns how to organize and structure his or her time and thoughts.

The following tips can help you set up the space:

- ❖ Involve your child in setting up the space to help figure out what works best for him or her early in the school year.
- ❖ Make sure your child has all the necessary materials to do his or her homework (paper, binders, calculator, rulers, pencils, pens, and erasers) and, if possible, an extra set of school books for home.
- ❖ Color-coded folders or ones with different patterns are very helpful in reminding your child what goes where. Some students find it helpful to have a folder for completed homework



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assignments that travels back and forth to home and school.

- ❖ A portable homework station like a basket with supplies can help when your child prefers to study on a floor mat, a sofa, or at a table near you.
- ❖ Remove or minimize things that distract or cause stress, such as facing away from the doors and windows or removing the television.
- ❖ Keep pets in another room.
- ❖ If possible find an open space or accessible room with good lighting. Although some kids like to do their homework on the floor, having an uncluttered table or desk available is a good idea.
- ❖ Pick the space so that you can keep an eye on your child but do not hover over your child.
- ❖ Provide a timer or a silent clock to help your child know the difference between work time and break time.

- ❖ Your child may work better with predictable background noise or music without words than complete silence. Try it out with your child to see what works.
- ❖ Some children work better if they are able to stand or move around/walk while doing activities such as reading, memorizing, or being quizzed. Try it out with your child to see what works.
- ❖ Check in throughout the year to see what's working for your child and if the space needs to be adjusted to help your child work better.

Additional Homework Tips:

- ❖ Get your child a planner to record daily homework assignments and reminders.



- ❖ Show your child how to file loose papers into specific folders (for example: math, reading, parent signatures, science, completed homework, and incomplete assignments).
- ❖ Involve your child in setting up ways to organize their belongings, including the book bag, folders, binder, and assignments so they can keep track daily of their school work on their own.
- ❖ Establish a designated homework time for each day (consistency is key!).
- ❖ For younger children and older students who need extra help organizing, help them by going through their assignments with them. Show

them how to read all the directions carefully.

- ✓ Use colored pens or highlighters to highlight the main parts, questions, and instructions. Highlighters, colored pens, and sticky notes can also be used by the student to double check their own work.
- ✓ Have your child re-read the assignments for better understanding.
- ✓ Write important information down so your child can reference it again.
- ❖ Work with your child to organize homework assignments into manageable parts:
 - ✓ Divide big assignments into smaller ones.
 - ✓ Use a calendar to help plan for larger assignments; this helps model how to plan and breakdown larger assignments.
 - ✓ Work on one section at a time.
- ❖ If your child has difficulty with handwriting, using drafts or dictating ideas and then writing them down from the dictation can help. Your child can break down parts or directions by thinking of ideas and recording them, then listening to the recording to organize before writing everything in order.
- ❖ Use a timer to manage attention.
 - ✓ Schedule 5–10 minute breaks to allow time for your child to move around and grab a healthy snack and drink to energize.
 - ✓ Work with your child to see when and how often breaks are needed.
- ❖ Check homework with your child.

- ❖ Praise your child for effort and be specific in your praise:
 - ✓ Give positive feedback to show you are noticing his or her effort and perseverance.
 - ✓ Remain optimistic, patient, and hopeful. Take a break yourself if you need it.
 - ✓ Reward your child's effort to continue trying his or her best with specific and concrete praise.
- ❖ Continue to monitor your child's work and study skills and habits to find out what's working or not working and adjust accordingly.
- ❖ Communicate with your child's teacher if you notice any patterns or things that work or that are challenging for your child during home-work time.



Praise Your Child

Instead of saying "good job," say "I like how you kept trying even when the math problems became harder."

and

Replace "you are doing great!" with something more concrete so they know what they are doing well, such as, "You went back to re-read the question to check your work; that extra step was a great idea."

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Most persons with ADHD respond well to any of the frequently used medications for ADHD. Some respond much better to one than another. If the first medication tried does not produce a satisfactory response, it is usually wise to try a different type of ADHD medication.

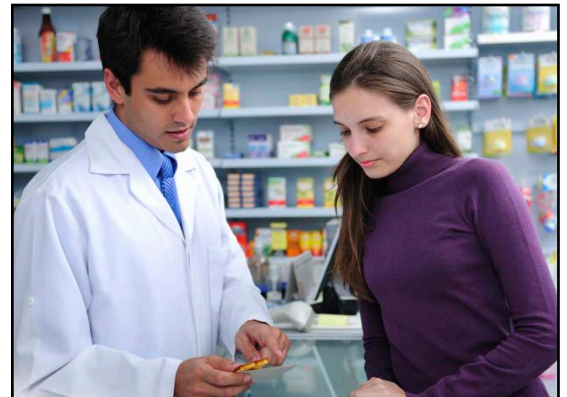
Managing Medication for Children and Adolescents with ADHD

Treating ADHD in children requires medical, educational, behavioral and psychological interventions. This comprehensive approach to treatment is called “multimodal” and consists of parent and child education about diagnosis and treatment, behavior management techniques, medication, and school programming and supports. Treatment should be tailored to the unique needs of each child and family.

The Role of Medication

For most children with ADHD, medication is an integral part of treatment. It is not used to control behavior. Medication, which can only be prescribed by medical professionals, is used to improve the symptoms of ADHD so that the individual can function more effectively. In some instances, the first medicine tried may not be the right one, or perhaps a higher dose may be needed. In addition, sometimes the medication does not work because the individual isn’t taking it or isn’t taking it as prescribed.

Each family must weigh the pros and cons of choosing medication as part of the treatment plan for ADHD. Research does show that children and adults who take medication for symptoms of ADHD usually attribute their successes to themselves and not to the medication.



Psychostimulant medications

Psychostimulant compounds are the most widely used medications for the management of ADHD symptoms. Psychostimulant medications were first administered to children with behavior and learning problems in 1937. Despite their name, these medications do not work by increasing stimulation of the person. Instead, they help important networks of nerve cells in the brain to communicate more effectively with each other. Between 70–80 percent of children with ADHD respond positively to these medications. For some, the benefits are extraordinary; for others, medication is quite helpful; and for still others, the results are more modest. Attention span, impulsivity and on-task behavior often improve, especially in structured environments. Some children also demonstrate improvements in frustration tolerance, compliance and even handwriting. Relationships with parents, peers and teachers may also improve.

Medication does not cure ADHD; when effective, it eases ADHD symptoms during the time it is active. Thus, it is not like an antibiotic that may cure a bacterial infection, but more like eyeglasses that help to improve vision only during the time the eyeglasses are actually worn.

Common psychostimulant medications used in the treatment of ADHD include methylphenidate (Ritalin, Concerta, Metadate, Focalin); mixed salts of a single-entity amphetamine product (Adderall, Adderall XR); and dextroamphetamine (Dexedrine, Dextrostat). Methylphenidate, amphetamine and mixed salts of amphetamine are now available as both short- and long-acting preparations. Short-acting preparations generally last approximately 4 hours; long-acting preparations are more variable in duration—with some preparations lasting 6–8 hours and newer preparations lasting 10–12 hours. Of course, there can be wide individual variation that cannot be predicted and will only become evident once the medication is tried.

The specific dose and timing of medication must be determined for each individual. However, there are no consistent relationships between height, age and clinical response to a medication. A medication trial is often used to determine the most beneficial dosage. The trial usually begins with a low dose that is gradually increased at 3–7 day intervals until clinical benefits are achieved.

It is common for the dosage to be raised several times during the trial.

In addition, the individual is monitored both on and off the medication. For children, observations are collected from parents and teachers, even coaches and tutors, and parent and teacher rating scales are often used. In all cases, the appropriate dose must be tailored to the individual patient and monitored by the prescribing medical professional to make any needed adjustments.

Since effective longer-acting formulations of stimulants became available, many children, adolescents and adults have found these preferable. Longer-acting medications may cause fewer “ups and downs” over the day and may eliminate the need for taking additional doses at school or during work. Although there is little research on utilizing short-acting and long-act-

ing medications together, many individuals, especially teenagers and adults, find that they may need to supplement a longer-acting medication taken in the morning with a shorter-acting dose taken in the mid to late afternoon. The “booster” dose may provide better coverage for doing homework or other late afternoon or evening activities and may also reduce problems of “rebound” when the earlier dose wears off.

Hundreds of controlled studies involving more than 6,000 children, adolescents and adults have been conducted to determine the effects of psychostimulant medications—far more research evidence than is available for virtually any other medication. There are no studies on the use of psychostimulant medications for more than a few years, but many individuals have been taking these medications for many years without adverse effects. Longer term controlled studies cannot be done because withholding treatment over many years from some patients suffering significant impairments, which is required in a controlled study, would be unethical.

Nonstimulant medications

Although stimulants are the best tested and most widely used medications for the treatment of ADHD, some children, adolescents and adults respond just as well or better to treatment with other medications that are not stimulants. Nonstimulants may be used when psychostimulant medications have been ineffective, unacceptable side effects have resulted, or the individual or child’s parents prefer a nonstimulant for other reasons.

Atomoxetine (Strattera) is neither a stimulant nor an antidepressant. It alleviates inattention and hyperactivity/impulsivity symptoms of ADHD by affecting specific aspects of the norepinephrine system. Atomoxetine has been tested on more than 1,600 children, adolescents and adults. It is a prescription medication, but it is not a controlled substance like a stimulant. This allows medical professionals to give samples and to place refills on the prescriptions. It does not start working as quickly as the stimulants do. Reports suggest that the full effects are often not seen until the person has been taking atomoxetine regularly for 3 or 4 weeks.

Medications initially developed as antidepressants are used less frequently for ADHD but have been shown

to be effective. Antidepressants, for example the tricyclics and novel medications like bupropion, that have active effects on the neurotransmitters norepinephrine and dopamine can have a positive effect on ADHD symptoms. Antidepressants that only affect the serotonin system—serotonin selective reuptake inhibitors (SSRIs), such as fluoxetine (Prozac), sertraline (Zoloft) and citalopram (Celexa)—have not been shown to be effective for treating primary symptoms of ADHD but may be effective against co-existing conditions. Recent research has shown that long-acting clonidine (Catapres) and guanfacine (Tenex), which are sometimes prescribed to reduce excessive hyperactivity or severe insomnia in children with ADHD, can also improve attention span in children with ADHD.

Possible side effects of medications for ADHD

Most immediate side effects related to these medications are mild and typically short term. The most common side effects are reduced appetite and difficulty sleeping. Some children experience stimulant rebound, a brief period of negative mood, fatigue or increased activity when the medication is wearing off. These side effects are usually managed by changing the dose and scheduling for short-acting medications or by changing to a prolonged-release formulation. Headaches and stomachaches can also occur; these often disappear with time or, if necessary, a reduction in dose. Some children may have an initial, slight effect on height and weight gain, but studies suggest that ultimate height and weight are rarely affected. A few studies suggest that some children with ADHD reach puberty later than their peers, but this does not appear to be a result of medication treatment.

Tics are involuntary motor movements, such as eye blinking, facial twitching, shrugging and throat clearing. Sometimes children who are given stimulant medication may appear to develop tics. The medication, however, does not actually cause the tics, but may instead bring them to notice earlier, or make them more prominent than they would be without medica-

tion, but they often eventually go away, even while the individual is still on medication.

Tourette's syndrome is a chronic tic disorder that involves vocal and motor tics. Experts estimate that 7 percent of children with ADHD have tics or Tourette's syndrome that is often mild but can have social impact in the severe but rare form, while 60 percent of children with Tourette's have ADHD. Recent research



suggests that the development of Tourette's syndrome in children with ADHD is not related to psychostimulant medication. However, a cautious approach to treatment is recommended when there is a family history of tics or Tourette's syndrome, as certain patients will experience worsening of their tics with stimulant treatment. In these cases, treatment with nonstimulant medications may be considered as an alternative.

For any questions about possible side effects, consult a physician or other medical professional. Starting medication

Each person considering medication treatment for ADHD should first have a careful, comprehensive assessment to clarify the diagnosis, identify other medical, psychological or learning problems that may be present with ADHD, and learn about ADHD. After the diagnosis has been made, a treatment plan should be developed in consultation with the physician or other medical professional. In this planning session, the patient, family and medical professional can work together to consider the various options for treatment. If medication is going to be used, the medical professional will prescribe a specific medication.

The medication trial should be monitored very carefully, especially in the early weeks of treatment, so needed adjustments can be made to dose and timing. If the first medication tried is not helpful or produces unpleasant side effects, the prescribing professional will probably make adjustments. If the adjustments are not sufficient to bring a good response, another medication option can be tried. Most persons with ADHD

respond well to any of the frequently used medications for ADHD. Some respond much better to one than another. If the first medication tried does not produce a satisfactory response, it is usually wise to try a different type of ADHD medication.

Continued monitoring

Ultimately, success with treatment depends on a collaborative effort between the patient and a committed team of caregivers. Medication can help the complete multimodal treatment program be more effective. Medication treatment without monitoring, appropriate education about ADHD, and other appropriate treatment interventions is often not enough to help.



Parents sometimes report that medication that had previously worked during childhood no longer works once the child reaches adolescence. Often this problem can be solved by

adjusting the dose or switching to another medication. Adolescence is not usually the time to give up on medical management for ADHD if it was helpful in past years. If such problems occur with your adolescent, discuss your observations and concerns with your doctor.

Frequently asked questions

Q. How long does it take to achieve a therapeutic dose of medication?

A. The effects of psychostimulant medications are usually noticeable within 30–60 minutes once an appropriate dose for that individual has been found. However, determining the proper dosage and medication schedule for each individual often takes a few weeks. Nonstimulant medications often require several weeks before their full effects can be observed.

Q. As a child grows, will the dosage need to be changed?

A. Not necessarily. Many adolescents and adults continue to respond well to the same doses of psy-

chostimulant medication. However, many others will require higher doses. Some children may respond well initially to a low dose of medication and then require a modest dose increase after a few weeks or months once a “honeymoon period” has passed.

Q. Will my child need to take medication forever, even into adulthood?

A. Not necessarily. These medications can be stopped at any time. However, ADHD is a chronic condition. Its severity and developmental course are quite variable in duration and severity. Up to 60 percent of children with ADHD continue to exhibit problematic symptoms into adolescence and adulthood. For these individuals, continuing effective treatment modalities, including medication, can be helpful.

Q. Should medication only be taken when the child is in school?

A. This should be decided with the prescribing medical professional and the therapeutic team. Children can often benefit from medication outside of school because it can help them succeed in social settings, peer relations, home environment and with homework. Medication can be of help to children who participate in organized sports and activities that require sustained attention, such as musical programs, debate or public speaking activities.

Q. What about individuals who do not respond to medication, either psychostimulants or antidepressants?

A. In general, two or three different stimulant medications should be tried before determining that this group of medications is not helpful. Similarly, several different antidepressant medications can also be tried. Most individuals will respond positively to one of these medication regimens. Some individuals, because of the severity of their disability or the presence of other conditions, will not respond. And some individuals will exhibit adverse side effects. In such cases, the entire treatment team—family, physician, mental health professional and educators—must work together to develop an effective intervention plan. Other medications such as clonidine may be helpful, and occasionally, combinations of medication may be needed. When all medication appears to be ineffective, consideration needs to be given to whether the diagnosis of ADHD

is accurate, whether other conditions are affecting functioning, whether appropriate criteria for improvement have been established, and whether objective and accurate feedback is being provided regarding the effectiveness of medication.

Q. Are children who take psychostimulant medications more likely to have substance abuse problems later in life?

A. No. Multiple studies that have followed children with ADHD for 10 years or more support the conclusion that the clinical use of stimulant medications does not increase the risk of later substance abuse. In fact, many studies have shown that individuals with ADHD who are not effectively treated with medication during childhood and adolescence have an increased risk of developing significant alcohol or drug abuse problems later in life. When treated, the risk of later drug or alcohol problems is the same as individuals who do not have ADHD.

Although there is potential for abuse when misused, psychostimulant medications do not cause addictions to develop in those being treated appropriately. Unfortunately, research does show that children who demonstrate conduct disorders (delinquent behaviors) by age 10 and who are smoking cigarettes by age 12 are at higher risk for substance abuse in the teenage years, possibly persisting into mid-life. Therefore, it is important to recognize this subgroup early and get them involved in an effective multimodal therapeutic program.

Overview of medications often used in the treatment of ADHD

The information presented on the following pages provides an overview of the current classes of medications currently being used to treat ADHD. It is provided for educational purposes only. Discuss the specifics of any medication with your physician or medical professional. The names used below are the generic (chemical) names of the compounds, with names of common brands made by different pharmaceutical companies. New medications for the treatment of ADHD continue to be formulated and researched every day. Similarly, researchers continue to explore the use and effectiveness in the treatment of ADHD of

medications that were used previously to treat other conditions.

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While a great deal of information on the diagnosis and treatment of ADHD is available, not all of it is accurate or based on scientific evidence. It is up to you to be a good consumer and learn to distinguish the accurate information from the inaccurate.



CHILDREN AND ADULTS WITH
ATTENTION DEFICIT/HYPERACTIVITY DISORDER

Parenting a Child with ADHD

While ADHD is believed to be hereditary, effectively managing your child's symptoms can affect both the severity of the disorder and development of more serious problems over time. Early intervention holds the key to positive outcomes for your child. The earlier you address your child's problems, the more likely you will be able to prevent school and social failure and associated problems such as underachievement and poor self-esteem that may lead to delinquency or drug and alcohol abuse. Although life with your child may at times seem challenging, as a parent you can help create home and school environments that improve your child's chances for success.

Here are some ways to get started.

Don't waste your limited emotional energy on self-blame. ADHD is a disorder in certain areas of the brain and is inherited in the majority of cases. It is not caused by poor parenting or a chaotic home environment, although the home environment can make the symptoms of ADHD better or worse.

Learn all you can about ADHD.

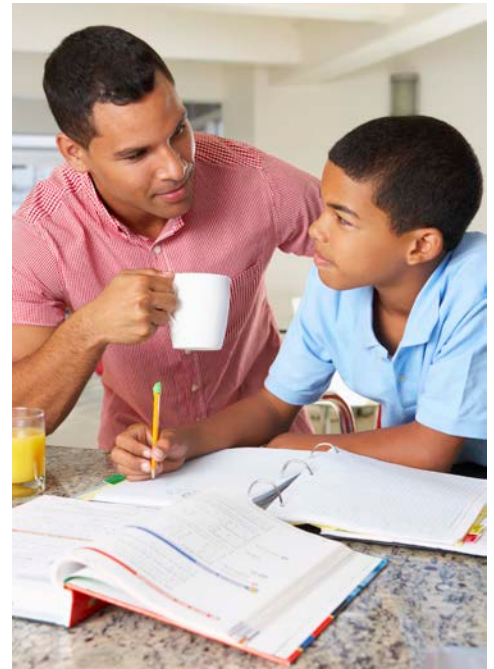
While a great deal of information on the diagnosis and treatment of ADHD is available, not all of it is accurate or based on scientific evidence. It is up to you to be a good consumer and learn to distinguish the accurate information from the inaccurate. How can you sort out what will be useful and what will not? In general, it is good to be wary about ads claiming to cure ADHD. Currently, there is no cure for ADHD, but you can take positive steps to decrease its impact. In addition, pay attention to the source of the information. If you're using the Internet, stick with reputable websites such as government, nonprofit (such as CHADD) or university resources.

Make sure your child has a comprehensive assessment. To complete the diagnostic process, make sure your child has a comprehensive assessment that includes medical, educational and psychological evaluations (involving input from your child's teacher) and that other disorders that either mimic or commonly occur with ADHD have been considered and ruled out.

How to help your child succeed at school

Become an effective case manager. Keep a record of all information about your child. This includes copies of all report cards, teacher notes, disciplinary reports, evaluations and documents from any meetings concerning your child. You might also include information about ADHD, a record of your child's prior treatments and placements, and contact information for the professionals who have worked with your child.

Form a team that understands ADHD and be the team captain. Meetings at your child's school should be attended by the principal's designee as well



as a special educator and a classroom teacher that knows your child. You, however, have the right to request input at these meetings from others that understand ADHD or your child's special needs. These include your child's physician, the school psychologist, and the nurse or guidance counselor from your child's school. If you have consulted other professionals, such as a psychiatrist, psychologist, educational advocate or behavior management specialist, the useful information they have provided should also be made available at these meetings. A thorough understanding of your child's strengths and weaknesses and how ADHD affects him will help you and members of the team go on to develop an appropriate and effective program that takes into account his or her ADHD.

Identify your child's strengths. Build upon these strengths, so that your child will have a sense of pride and accomplishment.

Learn all you can about ADHD and your child's educational rights. The more knowledge you have about your child's rights under the two education laws, the Individuals with Disabilities Education Act (IDEA) and Section 504 of the Rehabilitation Act, the better to maximize his or her success. Each state has a parent technical assistance center that can help you learn more about your child's rights (visit <http://www.parentcenterhub.org/ptacs/> to find the center in your state).

Become your child's best advocate. You need to represent and protect your child's best interest in school situations, both academic and behavioral. Become an active part of the team that determines what services and placements your child receives in an Individualized Education Plan (IEP) or Section 504 plan. See Educational Rights for Children with ADHD for more information.

Communicate regularly. Adopt a collaborative attitude when working with your child's team—after all, everyone has the same goal, to see your child succeed! Let your child's teachers know if there are some major changes going on in your family since your child's behavior can be affected. Invite the teachers to contact you with any issues or concerns before they become a problem. Having open lines of communication between you and the school will help your child.

How to make life at home easier

Join a support group. Parents will find additional information, as well as support, by attending local CHADD

meetings where available. You can find the nearest chapter to your home on <http://www.chadd.org> using the chapter locator.

Seek professional help. Ask for help from mental health professionals, particularly if you are feeling depressed, frustrated or exhausted. Helping yourself feel less stressed will benefit your child as well.

Work together. It is important that all of the adults that care for your child (parents, grandparents, relatives and babysitters) agree on how to handle your child's problem behaviors. Working with a professional, if needed, can help you better understand how to work together to support your child.

Learn the tools of successful behavior management. Behavioral techniques have been widely established as a key component of treatment for children with ADHD. Parent training will teach you strategies to change behaviors and improve your relationship with your child. CHADD offers the Parent to Parent Program, which provides basic education on many facets of ADHD. You can also identify parent training programs in your community through your local parent information and resource center (<http://www.federalresourcecenter.org/frc/TAGuide/welcome.htm>) or parent training and information center (www.parentcenterhub.org/ptacs/).

Find out if you have ADHD. Since ADHD is often inherited, many parents of children with ADHD discover that they have ADHD when their child is diagnosed. Parents with ADHD may need the same types of evaluation and treatment that they seek for their children in order to function at their best. ADHD in the parent may make the home more chaotic and affect a parent's ability to be proactive rather than reactive.

Parent training will help you learn to:

Provide clear, consistent expectations, directions and limits. Children with ADHD need to know exactly what others expect from them. They do not perform well in



ambiguous situations that don't specify exactly what is expected and that require them to "read between the lines." Working with a professional can help narrow the focus to a few specific behaviors, help you set limits and consistently follow through with consequences.

Set up an effective discipline system. Parents should learn proactive—not reactive—discipline methods that teach and reward appropriate behavior and respond to misbehavior with alternatives such as time outs or loss of privileges. Communicate with the other people who care for your child and work to be as consistent with behavioral techniques across settings and caregivers as possible.

Help your child learn from his or her mistakes. At times, negative consequences will arise naturally out of a child's behavior. However, children with ADHD have difficulty making the connection between their behaviors and these consequences. Parents can help their child with ADHD make these connections and learn from his/her mistakes.

How to boost your child's confidence

Set aside a daily special time for you and your child. Constant negative feedback can erode a child's self-esteem. A special time, whether it's an outing, playing games or just time spent with your child in positive interaction, can help fortify your child against assaults to self-worth.

Notice your child's successes, no matter how small. Make an effort to notice when your child is paying attention well or doing what s/he is supposed to be doing. Tell your child exactly what she/he did well. This can improve your child's self-esteem and teach him/her to notice gradual improvements, rather than being too hard on him/herself.

Tell your child that you love and support him/her unconditionally. There will be days when you may not believe this yourself. Those will be the days when it is even more important that you acknowledge the difficulties your child constantly faces and express your love. Let your child know that you will get through both the smooth and rough times together.

Assist your child with social skills. Children with ADHD may be rejected by peers because of hyperactive, impulsive or aggressive behaviors. Parent training can help you learn how to assist your child in making friends and learning to work cooperatively with others.

Identify your child's strengths. Many children with ADHD have strengths in certain areas such as art, athletics, computers or mechanical ability. Build upon these strengths, so that your child will have a sense of pride and accomplishment. Make sure that your child has the opportunity to be successful while pursuing these activities and that his strengths are not undermined by untreated ADHD. Also, avoid, as much as possible, targeting these activities as contingencies for good behavior or withholding them, as a form of punishment, when your child misbehaves.

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Psychosocial Treatment for Children & Adolescents with ADHD

Psychosocial treatment is a critical part of treatment for attention-deficit/hyperactivity disorder (ADHD) in children and adolescents. The scientific literature, the National Institute of Mental Health and many professional organizations agree that behaviorally oriented psychosocial treatments—also called behavior therapy or behavior modification—and stimulant medication have a solid base of scientific evidence demonstrating their effectiveness. Behavior modification is the only nonmedical treatment for ADHD with a large scientific evidence base.

Treating ADHD in children often involves medical, educational and behavioral interventions. This comprehensive approach to treatment is called “multimodal” and consists of parent and child education about diagnosis and treatment, behavior management techniques, medication, and school programming and supports. The severity and type of ADHD may be factors in deciding which components are necessary. Treatment should be tailored to the unique needs of each child and family.

Why use psychosocial treatments?

Behavioral treatment for ADHD is important for several reasons. First, children with ADHD face problems in daily life that go well beyond their symptoms of inattentiveness, hyperactivity and impulsivity, including poor academic performance and behavior at school, poor relationships with peers and siblings, failure to obey adult requests and poor relationships with their parents. These problems are extremely important because

they predict how children with ADHD will do in the long run.

Research has shown that how a child with ADHD will do in adulthood is best predicted by three things: (1) whether his or her parents use effective parenting skills, (2) how he or she gets along with other children and (3) his or her success in school. Psychosocial treatments are effective in treating these important domains. In addition, behavioral treatments teach skills to parents and teachers that help them deal with children with ADHD. They also teach skills to children with ADHD that will help them overcome their impairments. Learning these skills is especially important because ADHD is a chronic condition and these skills will be useful throughout the children’s lives.

Behavioral treatments for ADHD should be started as soon as the child receives a diagnosis. There are behavioral interventions that work well for preschoolers, elementary-age students, and teenagers with ADHD, and there is consensus that starting early is better than starting later. Parents, schools and practitioners should not put off beginning effective behavioral treatments for children with ADHD.



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What is behavior modification?

With behavior modification, parents, teachers and children learn specific techniques and skills from a therapist, or an educator experienced in the approach, that will help improve children's behavior. Parents and teachers then use the skills in their daily interactions with their children with ADHD, resulting in improvement in the children's functioning in the key areas noted above. In addition, the children with ADHD use the skills they learn in their interactions with other children.

Behavior modification is often put in terms of ABCs: Antecedents (things that set off or happen before behaviors), Behaviors (things the child does that parents and teachers want to change), and Consequences (things that happen after behaviors). In behavioral programs, adults learn to change antecedents (for example, how they give commands to children) and consequences (for example, how they react when a child obeys or disobeys a command) in order to change the child's behavior (that is, the child's response to the command). By consistently changing the ways that they respond to children's behaviors, adults teach the children new ways of behaving.



Parent, teacher and child interventions should be carried out at the same time to get the best results. The following five points should be incorporated into all three components of behavior modification:

1. Start with goals that the child can achieve in small steps.
2. Be consistent—across different times of the day, different settings, and different people.
3. Provide consequences immediately

following behavior.

4. Implement behavioral interventions over the long haul—not just for a few months.
5. Teaching and learning new skills take time, and children's improvement will be gradual.

Parents who want to try a behavioral approach with their children should learn what distinguishes behavior modification from other approaches so they can recognize effective behavioral treatment and be confident that what the therapist is offering will improve their child's functioning. Many psychotherapeutic treatments have not been proven to work for children with ADHD. Traditional individual therapy, in which a child spends time with a therapist or school counselor talking about his or her problems or playing with dolls or toys, is not behavior modification. Such "talk" or "play" therapies do not teach skills and have not been shown to work for children with ADHD.

How does a behavior modification program begin?

The first step is identifying a mental health professional who can provide behavioral therapy. Finding the right professional may be difficult for some families, especially for those that are economically disadvantaged or socially or geographically isolated. Families should ask their primary care physicians for a referral or contact their insurance company for a list of providers who participate in the insurance plan, though health insurance may not cover the costs of the kind of intensive treatment that is most helpful. Other sources of referrals include professional associations and hospital and university ADHD centers (visit [CHADD](#) for a list of providers).

The mental health professional begins with a complete evaluation of the child's problems in daily life, including home, school (both behavioral and academic), and social settings. Most of this information comes from parents and teachers. The therapist also meets with the child to get a sense of what the child is like. The evaluation should result in a list of target areas for treatment. Target areas—often called target behaviors—are behaviors in which change is desired, and if changed, will help improve the child's functioning/impairment and long-term outcome.

Target behaviors can be either negative behaviors that need to stop or new skills that need to be developed. That means that the areas targeted for treatment will typically not be the symptoms of ADHD—overactivity, inattention and impulsivity—but rather the specific problems that those symptoms may cause in daily life. Common classroom target behaviors include “completes assigned work with 80 percent accuracy” and “follows classroom rules.” At home, “plays well with siblings (that is, no fights)” and “obeys parent requests or commands” are common target behaviors.

After target behaviors are identified, similar behavioral interventions are implemented at home and at school, through collaborative efforts between parents and teachers. Parents and teachers learn and establish programs in which the environmental antecedents (the A’s) and consequences (the C’s) are modified to change the child’s target behaviors (the B’s). Treatment response is constantly monitored, through observation and measurement, and the interventions are modified when they fail to be helpful or are no longer needed.

What about combining psychosocial approaches with medication?

Numerous studies over the last 30 years show that both medication and behavioral treatment are effective in improving ADHD symptoms. Short-term treatment studies that compared medication to behavioral treatment have found that medication alone is more effective in treating ADHD symptoms than behavioral treatment alone. In some cases, combining the two approaches resulted in slightly better results.



The best-designed long-term treatment study—the Multimodal Treatment Study of Children with ADHD (MTA)—was conducted by the National Institute of Mental Health. The MTA studied 579 children with ADHD-combined type over a 14-month period. Each child received one of four possible treatments: medication management, behavioral treatment, a combination of the two, or the usual community care. The results of this

landmark study were that children who were treated with medication alone, which was carefully managed and individually tailored and children who received both medication and behavioral treatment experienced the greatest improvements in their ADHD symptoms.

Combination treatment provided the best results in improving ADHD and oppositional symptoms and in other areas of functioning, such as parenting and academic outcomes. Overall, those who received closely monitored medication management had greater improvement in their ADHD symptoms than children who received either intensive behavioral treatment without medication or community care with less carefully monitored medication. It is unclear whether children with the inattentive type will show the same pattern of response to behavioral interventions and medication as have children with combined type.

Some families may choose to try stimulant medication first, while others may be more comfortable beginning with behavioral therapy. Another option is to incorporate both approaches into the initial treatment plan. The combination of the two modalities may enable the intensity (and expense) of behavioral treatments and the dose of medication to be reduced. For young children with ADHD, a behavioral approach is recommended first prior to considering medication.

A growing number of physicians believe that stimulant medication should not be used as the only intervention and should be combined with parent training and classroom behavioral interventions. In the end, each family has to make treatment decisions based on the available resources and what makes the best sense for the particular child. No one treatment plan is appropriate for everyone.

What if there are other problems in addition to ADHD?

There are evidence-based behavioral treatments for problems that can co-exist with ADHD, such as anxiety and depression. Just as play therapy and other non-behaviorally based therapies are not effective for ADHD, they



have been documented to be effective for the conditions that often occur with ADHD.

Additional Resources

[Parent Training and Education.](#)

[Managing Medication.](#)

[How to Establish a School-Home Daily Report Card.](#)

[Behavioral Therapy for Young Children with ADHD.](#)

[Effective Child Therapy: Evidence-based mental health treatment for children and adolescents.](#)

[The Incredible Years.](#)

[Triple P: Positive Parenting Program.](#)

[Parent Child Interaction Therapy.](#)

[STAR Parenting.](#)

[Strengthening Families Program.](#)

[Parent Management Training Institute.](#)

[Parent Friendship Coaching.](#)

[STEP: Systemic Training for Effective Parenting.](#)



ADHD Facts:

- Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by a persistent pattern of inattention and/or hyperactivity and impulsivity that interferes with daily functioning and life's achievements.
- ADHD affects 17 million people of every age, gender, IQ, religion and socioeconomic background across the United States.
- The U.S. Centers for Disease Control and Prevention (CDC) report that the percentage of children in the United States diagnosed with ADHD is 8%. Boys are more than twice as likely as girls to be diagnosed, leaving more girls undiagnosed.
- Despite overwhelming scientific evidence—endorsed by the most prestigious medical organizations in the world—there is still a lot of inaccurate information circulating, leading to confusion and doubt among uninformed or misinformed audiences as to the validity of ADHD.
- ADHD and ADD are one and the same. The only difference within ADHD is that some individuals have hyperactivity and some do not. The term ADD is no longer used.
- ADHD is highly manageable with an individualized, multimodal treatment approach that can include behavioral interventions, parent/patient training, educational support, and medication.

[Find your local CHADD Chapter](#)



For further information, please contact
National Resource Center on ADHD:

A Program of CHADD

4601 Presidents Drive, Suite 300

Lanham, MD 20706-4832

1-800-233-4050

www.chadd.org/nrc



Mental Health Resources

National Suicide Prevention Lifeline

1-800-273-TALK (8255)

Spanish/Español: 1-888-628-9454

Crisis Text Line

Text HOME to 741-741

Suicide Prevention Resource Center

www.sprc.org

National Institute of Mental Health

www.nimh.nih.gov

Substance Abuse and Mental Health Services Administration

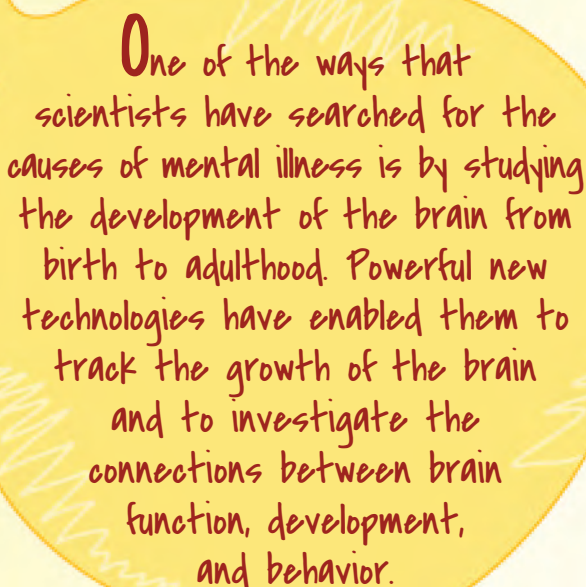
www.samhsa.gov



The Teen Brain:

STILL UNDER CONSTRUCTION





One of the ways that scientists have searched for the causes of mental illness is by studying the development of the brain from birth to adulthood. Powerful new technologies have enabled them to track the growth of the brain and to investigate the connections between brain function, development, and behavior.

The research has turned up some surprises, among them the discovery of striking changes taking place during the teen years. These findings have altered long-held assumptions about the timing of brain maturation. In key ways, the brain doesn't look like that of an adult until the early 20s.

An understanding of how the brain of an adolescent is changing may help explain a puzzling contradiction of adolescence: young people at this age are close to a lifelong peak of physical health, strength, and mental capacity, and yet, for some, this can be a hazardous age. Mortality rates jump between early and late adolescence. Rates of death by injury between ages 15 to 19 are about six times that of the rate between ages 10 and 14. Crime rates are highest among young males and rates of alcohol abuse are high relative to other ages. Even though most adolescents come through this transitional age well, it's important to understand the risk factors for behavior that can have serious consequences. Genes, childhood experience, and the environment in which a young person reaches adolescence all shape behavior. Adding to this complex picture, research is revealing how all these factors act in the context of a brain that is changing, with its own impact on behavior.

The more we learn, the better we may be able to understand the abilities and vulnerabilities of teens, and the significance of this stage for life-long mental health.

The fact that so much change is taking place beneath the surface may be something for parents to keep in mind during the ups and downs of adolescence.

The "Visible" Brain

A clue to the degree of change taking place in the teen brain came from studies in which scientists did brain scans of children as they grew from early childhood through age 20. The scans revealed unexpectedly late changes in the volume of gray matter, which forms the thin, folding outer layer or cortex of the brain. The cortex is where the processes of thought and memory are based. Over the course of childhood, the volume of gray matter in the cortex increases and then declines. A decline in volume is normal at this age and is in fact a necessary part of maturation.

The assumption for many years had been that the volume of gray matter was highest in very early childhood, and gradually fell as a child grew. The more recent scans, however, revealed that the high point of the volume of gray matter occurs during early adolescence.

While the details behind the changes in volume on scans are not completely clear, the results push the timeline of brain maturation into adolescence and young adulthood. In terms of the volume of gray matter seen in brain images, the brain does not begin to resemble that of an adult until the early 20s.

The scans also suggest that different parts of the cortex mature at different rates. Areas involved in more basic functions mature first: those involved, for example, in the processing of information from the senses, and in controlling movement. The parts of the brain responsible for more "top-down" control, controlling impulses, and planning ahead—the hallmarks of adult behavior—are among the last to mature.

What's Gray Matter?

The details of what is behind the increase and decline in gray matter are still not completely clear. Gray matter is made up of the cell bodies of neurons, the nerve fibers that project from them, and support cells. One of the features of the brain's growth in early life is that there is an early blooming of synapses—the connections between brain cells or neurons—followed by pruning as the brain matures. Synapses are the relays over which neurons communicate with each other and are the basis of the working circuitry of the brain. Already more numerous than an adult's at birth, synapses multiply rapidly in the first months of life. A 2-year-old has about half again as many synapses as an adult. (For an idea of the complexity of the brain: a cube of brain matter, 1 millimeter on each side, can contain between 35 and 70 million neurons and an estimated 500 billion synapses.)

Scientists believe that the loss of synapses as a child matures is part of the process by which the brain becomes more efficient. Although genes play a role in the decline in synapses, animal research has shown that experience also shapes the decline. Synapses "exercised" by experience survive and are strengthened, while others are pruned away. Scientists are working to determine to what extent the changes in gray matter on brain scans during the teen years reflect growth and pruning of synapses.



A Spectrum of Change

Research using many different approaches is showing that more than gray matter is changing:

- Connections between different parts of the brain increase throughout childhood and well into adulthood. As the brain develops, the fibers connecting nerve cells are wrapped in a protein that greatly increases the speed with which they can transmit impulses from cell to cell. The resulting increase in connectivity—a little like providing a growing city with a fast, integrated communication system—shapes how well different parts of the brain work in tandem. Research is finding that the extent of connectivity is related to growth in intellectual capacities such as memory and reading ability.
- Several lines of evidence suggest that the brain circuitry involved in emotional responses is changing during the teen years. Functional brain imaging studies, for example, suggest that the responses of teens to emotionally loaded images and situations are heightened relative to younger children and adults. The brain changes underlying these patterns involve brain centers and signaling molecules that are part of the reward system with which the brain motivates behavior. These age-related changes shape how much different parts of the brain are activated in response to experience, and in terms of behavior, the urgency and intensity of emotional reactions.
- Enormous hormonal changes take place during adolescence. Reproductive hormones shape not only sex-related growth and behavior, but overall social behavior. Hormone systems involved in the brain's response to stress are also changing during the teens. As with reproductive hormones, stress hormones can have complex effects on the brain, and as a result, behavior.
- In terms of sheer intellectual power, the brain of an adolescent is a match for an adult's. The capacity of a person to learn will never be greater than during adolescence. At the same time, behavioral tests, sometimes combined with functional brain imaging, suggest differences in how adolescents and adults carry out

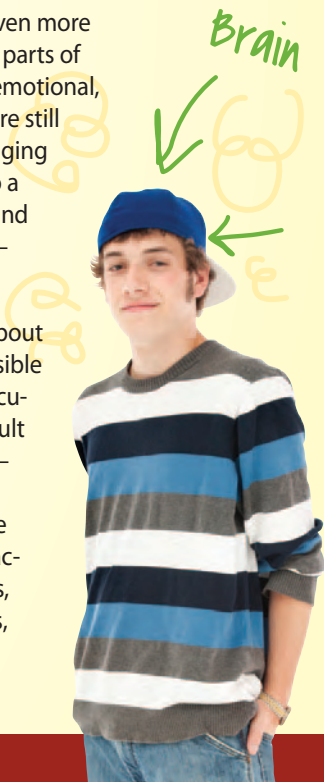
mental tasks. Adolescents and adults seem to engage different parts of the brain to different extents during tests requiring calculation and impulse control, or in reaction to emotional content.

- Research suggests that adolescence brings with it brain-based changes in the regulation of sleep that may contribute to teens' tendency to stay up late at night. Along with the obvious effects of sleep deprivation, such as fatigue and difficulty maintaining attention, inadequate sleep is a powerful contributor to irritability and depression. Studies of children and adolescents have found that sleep deprivation can increase impulsive behavior; some researchers report finding that it is a factor in delinquency. Adequate sleep is central to physical and emotional health.

The Changing Brain and Behavior in Teens

One interpretation of all these findings is that in teens, the parts of the brain involved in emotional responses are fully online, or even more active than in adults, while the parts of the brain involved in keeping emotional, impulsive responses in check are still reaching maturity. Such a changing balance might provide clues to a youthful appetite for novelty, and a tendency to act on impulse—without regard for risk.

While much is being learned about the teen brain, it is not yet possible to know to what extent a particular behavior or ability is the result of a feature of brain structure—or a change in brain structure. Changes in the brain take place in the context of many other factors, among them, inborn traits, personal history, family, friends, community, and culture.



Teens and the Brain: More Questions for Research

Scientists continue to investigate the development of the brain and the relationship between the changes taking place, behavior, and health. The following questions are among the important ones that are targets of research:

- How do experience and environment interact with genetic preprogramming to shape the maturing brain, and as a result, future abilities and behavior? In other words, to what extent does what a teen does and learns shape his or her brain over the rest of a lifetime?
- In what ways do features unique to the teen brain play a role in the high rates of illicit substance use and alcohol abuse in the late teen to young adult years? Does the adolescent capacity for learning make this a stage of particular vulnerability to addiction?
- Why is it so often the case that, for many mental disorders, symptoms first emerge during adolescence and young adulthood?

This last question has been the central reason to study brain development from infancy to adulthood. Scientists increasingly view mental illnesses as developmental disorders that have their roots in the processes involved in how the brain matures. By studying how the circuitry of the brain develops, scientists hope to identify when and for what reasons development goes off track. Brain imaging studies have revealed distinctive variations in growth patterns of brain tissue in youth who show signs of conditions affecting mental health. Ongoing research is providing information on how genetic factors increase or reduce vulnerability to mental illness; and how experiences during infancy, childhood, and adolescence can increase the risk of mental illness or protect against it.

The Adolescent and Adult Brain

It is not surprising that the behavior of adolescents would be a study in change, since the brain itself is changing in such striking ways. Scientists emphasize that the fact that the teen brain is in transition doesn't mean it is somehow not up to par. It is different from both a child's and an adult's in ways that may equip youth to make the transition from dependence to independence. The capacity for learning at this age, an expanding social life, and a taste for exploration and limit testing may all, to some extent, be reflections of age-related biology.

Understanding the changes taking place in the brain at this age presents an opportunity to intervene early in mental illnesses that have their onset at this age. Research findings on the brain may also serve to help adults understand the importance of creating an environment in which teens can explore and experiment while helping them avoid behavior that is destructive to themselves and others.

Alcohol and the Teen Brain

Adults drink more frequently than teens, but when teens drink they tend to drink larger quantities than adults. There is evidence to suggest that the adolescent brain responds to alcohol differently than the adult brain, perhaps helping to explain the elevated risk of binge drinking in youth. Drinking in youth, and intense drinking are both risk factors for later alcohol dependence. Findings on the developing brain should help clarify the role of the changing brain in youthful drinking, and the relationship between youth drinking and the risk of addiction later in life.

Brain

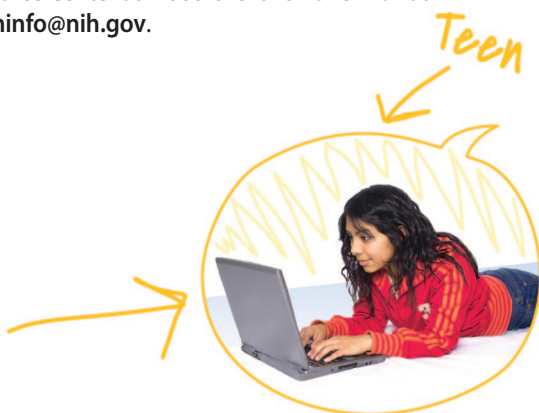


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EDGE FOUNDATION
COLLEGE TRANSITION TOOL KIT
For Parents and Students with ADHD

Don't Just SURVIVE College, THRIVE There

Being proactive can be the most important thing that parents and students with ADHD can do when faced with the difficult transition from high school to college. Being prepared can make a huge difference.

CHANGES IN THE LAW

When students transition from high school to college the protections that they enjoy under the law change significantly. Parents need to know this so that they can prepare themselves and their children for the transition while keeping them protected under the law.

- Be Proactive - ADVOCACY BEGINS IN THE HOME - Educate yourself and your children about ADHD and any co-occurring conditions and/or learning disabilities and how they impact your child.
- Make your child understand their needs and be able to articulate them both in high school and college.

IDEA & Transition Planning

- IDEA does not follow your children to college, however it does require that the district meet with you to form a TRANSITION PLAN to prepare them for post secondary education or vocational training. Take advantage of the transition plan and make sure your child understands and participates in it.

Section 504 & ADA

- While these laws do follow students into college, they change and you must understand that change. Prior to college, IDEA, Section 504 and ADA contain a provision called **CHILD FIND**, which places the burden on the school district to seek out students with disabilities and provide services. Once they graduate high school, the burden shifts to the student to **SELF REPORT** their disability and advocate for services in order to be protected under the law.
- Self Advocacy Skills are **CRUCIAL** - Students need to know how their ADHD manifests itself to be able to articulate their need for reasonable

accommodations.

- Involve your child in their IEP, 504 plan and definitely their transition plan.
- When looking for colleges, look into the type of disability office and how responsive they are to special needs.
- Meet with disability services personnel before school begins to put your transition into place before orientation.
- Organize evaluations, prior 504 plans or IEP's and have them readily available to the disability services office.

FERPA - Family Education Rights and Privacy Act - Federal legislation that ensures that parents have the sole and exclusive right to their children's school records. Once a student graduates from high school, however, FERPA no longer protects the parents. It is the student who has the sole and exclusive right to their school records ***EVEN IF THEIR PARENTS ARE STILL PAYING THE BILL***. The rights and protections apply to the student as an adult.

- **HAVE YOUR CHILD SIGN A RELEASE AHEAD OF TIME**, if you and your child agree that you are to remain involved, and file it with the school immediately to have access to their records.

MEDICATION

Medication Plan

- Have a medication plan in place that can be maintained while your child is away at school.
- Have your child's mental health professional coordinate with services at the school or a local practitioner in the event that medication needs to be renewed in between home visits and/or for therapeutic support.

DIVERSION - the practice of prescription medication being diverted to individuals without a prescription and without medical supervision. Research suggests that at least 34% of students admit to taking non prescribed ADHD medication and as many as 60% of seniors and 80% of seniors in a fraternity or sorority.

How does it occur?

- Without the daily support and supervision of their parents, many students deviate from their medication plan and decide to take their medication

sporadically. This leads to a surplus of medication at the end of the month which often gets loaned to friends, or stolen or even sold.

What are the consequences?

- Taking any medication without the supervision of a doctor is dangerous and can interact with other medications or pre-existing conditions. Additionally, there are also legal and administrative consequences.

What can parents do?

- Develop a medication plan with your child's mental health care provider and involve your student as much as possible.
- Educate yourself and your child on the dangers of sharing medication and the consequences.
- Check in with your child as often as possible to make sure the plan is being followed.
- Help your student by providing local or accessible support, such as a mental health care provider, coach or doctor.
- Review the plan with your child and their doctor regularly to make sure it doesn't have to be changed. Avoid medication surplus at all costs.

What can students do?

- **STICK TO YOUR MEDICATION PLAN** - Take your medication as prescribed and if you don't think you need them as much as planned, **DISCUSS THAT WITH YOUR DOCTOR** to modify your prescription and your plan. Don't put yourself in the position of having a surplus of medication.
- **SAFEGUARD YOUR MEDICATION** - You are carrying a controlled substance. **DO NOT LET IT FALL INTO THE WRONG HANDS.**
- **NEVER EVER SHARE YOUR MEDICATION WITH OTHERS** - Stimulant medication is a Schedule II Controlled Substance and is classified the same way as Cocaine. In most states giving a controlled substance to someone is the same as selling it to them. It is illegal and considered a serious felony. You could be subject to prosecution and disciplinary action at school, or even expulsion.
- **NEVER TAKE ADHD MEDICATION FOR RECREATIONAL**

PURPOSES - It can interact with alcohol and other substances.

CONSIDER A COACH

Coaching is a contract between a coach and client where the client defines goals and the coach and client plan out a course to achieve those goals by providing STRUCTURE, SUPPORT and ACCOUNTABILITY. Coaching is a way of empowering students to succeed by identifying and having them gravitate toward their strengths and learning to navigate around their weaknesses. A coach can help develop advocacy skills, reduce stress and help keep students on track and following a plan.

Selecting a Coach (For Students)

- Look for a coach that is certified through a reputable program that involves ADHD coach training geared toward students.
- Look for a coach who has or understands the unique challenges you face with your ADHD in a school environment and in your life.
- Look for a coach who is flexible and one ***YOU*** feel comfortable with as opposed to your parents.
- Look for someone who will offer the option of working by phone/skype or in person if necessary.
- Look for someone who will be comfortable working in coordination with your therapist, tutor, faculty advisor or other professionals for your best interests.

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