CLINICAL PRACTICE GUIDELINE: Attention Deficent Hyperactivity Disorder
Reference Number: NA
Last Review Date: September 2021

See Important Reminder at the end of this policy for important regulatory and legal information.

OVERVIEW

Attention-Deficit/Hyperactivity Disorder (ADHD) is a chronic condition for which there is no cure. In the US, CDC approximates the rate of ADHD in school aged children at about 5% as of 2013 but the rate goes up to 9.4% in some parent reports.[10] This is consistent with previous numbers. It is estimated that only about 55%[12] of children with ADHD have been treated with medication and that 62% of children with a diagnosis of ADHD are currently taking medications.[52] Between 60-85% of children with ADHD will continue to meet criteria for the disorder during their teenage years.[5,9,13] It is somewhat more difficult to delineate the specific number of adolescents who will carry this into adulthood, since overt symptoms are very dependent upon situational demand, and many afflicted individuals will shy away from situational challenges. This results in underachievement, when compared to potential, in many cases. It is estimated that up to 90% will have at least sub-syndromal persistence of symptoms[14]. The National Comorbidity Study estimates that 4.4% of adults have ADHD[20,40]. Since impulsivity, and/or hyperactivity are commonly exhibited symptoms in many childhood mental health or developmental syndromes, including Learning Disorders, Anxiety Disorders, Mood Disorders (especially Bipolar Disorder), PTSD, Psychotic Disorders, and the Disruptive Disorders, a detailed and thorough assessment is essential in making the diagnosis. A 2016 study showed among U.S. children ages 2-17 years, nearly 2 of 3 children with current ADHD had at least one other mental, emotional, or behavioral disorder, about 1 out of 2 children with ADHD had a behavior or conduct problem and about 1 out of 3 children with ADHD had anxiety.[52]

There is no specific biological marker for ADHD. Evidence suggests a strong heritability with genetic twin studies suggesting a 76% concordance[15]. This is consistent with another study which showed an 82% concordance rate between identical twins vs. 38% for non-identical twins.[53] Non-genetic influences include perinatal stress, low birth weight, maternal smoking during pregnancy, traumatic brain injury, and early childhood deprivation. Research currently points to neurodevelopmental influences on the development of ADHD[43]

In 2016–2018, 13.8% of children aged 3–17 years had ever been diagnosed with either ADHD or a learning disability. Non-Hispanic black children (16.9%) were more likely than non-Hispanic white (14.7%) or Hispanic (11.9%) children to be diagnosed with either condition [55]

Overall, children with parents who have a high school education or less (15.4%) were more likely to be diagnosed with ADHD or a learning disability when compared with children with parents who have more than a high school education (12.8%).[55]

Prevalence by Race (ages 5-17): All – 9.4%, White – 9.6%, Black – 10.5%, American Indian/Alaska Native – 6.4%, Asian – 1.4%, Multiple race -11.6%.[56]

Left untreated, higher than expected rates of antisocial and criminal behavior, injuries, motor vehicle accidents, employment and marital difficulties, and teen pregnancies are seen.

DIAGNOSIS

General considerations

Unlike many other syndromes, children with ADHD may not display symptoms in the therapist's office. Therefore, it is necessary to collect information from the parents, teachers, pediatricians or family physicians, and other relevant sources to do a complete assessment[2].

Information sources should include:

- Interview with parents to obtain primary symptoms, age of onset, and stability of symptoms
- Pre-natal, peri-natal and developmental and other relevant histories (academic, medical, psychiatric and substance abuse). Information about past medical history is important. ADHD children have been reported to have more hospitalizations, more ER visits, and greater total medical costs than those without ADHD.
- Family history, since the genetic contribution to ADHD symptoms is the highest for any psychiatric disorder
- School evaluation (with consent of parents) to verify presence of symptoms in a school setting. If possible, this should include reviewing reports from any school-based multidisciplinary evaluation.
- Child diagnostic interview (mental status evaluation, child's description of problems)
- Screens for other conditions that are comorbid or may be confused with ADHD (e.g., substance abuse, learning disability, adjustment disorder, organic conditions, oppositional/conduct disorder, mood disorder, neurological problem, intellectual development disorder). For example, it is estimated that between 54 – 84% of children and adolescents with ADHD may meet criteria for oppositional defiant disorder and a significant portion of these patients will develop conduct disorder(CD; Barkley, 2005, Faraone et al., 1997).
- Refer for a physical examination if none has been conducted in the past year6. If the patient’s medical history is unremarkable, however, laboratory and neurological testing is not necessary (AACAP practice parameters, 2007).
- Use of ADHD rating scales (Achenbach, Connors, Vanderbilt, SWAN, etc) may also be helpful to aid in diagnosis and in evaluating treatment effectiveness16. (See “Resources for Clinicians.”)
- Comprehensive psychological testing, while rarely needed as part of a routine ADHD assessment, may be helpful in clarifying a confusing differential diagnosis and in developing a specific treatment plan.
- The US Food and Drug Administration (FDA) approved a testing device is called the Neuropsychiatric EEG-Based Assessment Aid (NEBA) System. The noninvasive test, based on electroencephalogram technology, computes the ratio of theta and beta brain waves in 15 to 20 minutes. Children and adolescents with ADHD have a higher theta-beta ratio than those who do not have the disorder. Together with a complete medical and psychological workup, the NEBA System can help confirm a diagnosis of ADHD or a

decision to focus further testing on ADHD or other conditions with similar symptoms, according to the FDA. Long term evaluation, however, is necessary to ascertain both the helpfulness and the cost effectiveness of this approach to diagnosis. The FDA based its decision to approve the NEBA System in part on a clinical study of 275 children and adolescents with attention or behavioral issues.

- Quantitative EEG studies have demonstrated some efficacy in diagnosis but appear to have decreased accuracy as the patient ages. It is not currently a generally accepted method to use for diagnosis. It may have some prognostic ability regarding potential for efficacy of treatment but not for determination of treatment intervention.50, 51
- Note: Neuroimaging studies are not useful in making either the diagnosis or in making treatment recommendations or prediction of treatment interventions for ADHD[11,37]. There have been reports of differences in brain structure such as a decrease in prefrontal cortical thinning in adolescence; however, it is not to the point of being a useful diagnostic tool.[44]

DSM-5 Diagnostic Criteria

Of note, ADHD has been moved into the section "Neurodevelopmental Disorders".

All of the following must be present:

- Persistent pattern of inattention and/or hyperactivity/ impulsivity that interferes with functioning or development.
- Several symptoms were present prior to age 12.
- Several symptoms are present in two or more settings (e.g., at school and at home)
- Clear evidence of clinically significant impairment in social, academic, or occupational functioning
- Symptoms do not occur exclusively during a course of a psychotic disorder (e.g., schizophrenia) and are not better accounted for by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorder or personality disorder)

The patient must also exhibit 6 or more symptoms for at least 6 months of one or both of the following categories. The symptoms must be maladaptive and inconsistent with developmental level, they must impact directly on social, academic or occupational activities, and they must not be solely a manifestation of oppositional, defiant, or hostile behaviors or of a failure to understand instruction. For adults (17 yrs and older), only 5 criteria are necessary.

Inattention:

- Failure to give close attention to details
- Difficulty sustaining attention
- Failure to listen when spoken to directly
- Failure to follow through on instructions
- Difficulty organizing tasks
- Avoids tasks that require sustained mental effort
- Loses things necessary for tasks or activities
- Easily distracted by extraneous stimuli
- Forgetful in daily activities

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Hyperactivity-Impulsivity:

- Fidgets with hands or feet or squirms in seat
- Leaves seat in situations where remaining seated is expected
- Runs or climbs inappropriately
- Has difficulty playing or engaging in leisure activities quietly
- "On the go" or acts as if "driven by a motor"
- Talks excessively
- Blurts out answers before questions completed
- Has difficulty awaiting turn
- Interrupts or intrudes on others

Types of ADHD

ADHD is divided into four types according to the presence or absence of at lest six symptoms in each group and is sub-categorized into mild, moderate, or severe. It may also be categorized as in partial remission if criteria were met previously but for the past 6 months, less than 6 criteria have been met:

- Predominately Inattentive
- Predominately Hyperactive-Impulsive
- Combined (both sets of symptoms)
- Unspecified ADHD(prominent symptoms of Inattention, Hyperactivity, or Impulsivity that do not meet the complete ADHD criteria)
- Other Specified ADHD

TREATMENT

General Considerations

There are two types of evidence-based treatment for ADHD: pharmacotherapy and behavior therapy. The evidence is much stronger for pharmacotherapy than for behavior therapy in children of school age and older, but the two are often used together with good results. Cognitive therapies have been demonstrated to have a positive impact on functioning.[42] The American Academy of Pediatrics 2011 clinical practice guidelines recommend that doctors prescribe evidence based behavioral interventions as the first line of treatment for preschool-aged children (4–5 years of age) with ADHD. Parents or teachers can train to provide this type of treatment.

The Agency for Health Care Research and Quality (AHRQ) conducted a review in 2010 of all existing studies on treatment options for preschoolers and they found that parent behavioral interventions are as a good treatment option for preschoolers with disruptive behavior in general and as helpful for those with ADHD symptoms as is medication.[48]

Children and Adults with Attention Deficit/Hyperactivity Disorder (CHADD) offers an educational program to help parents and individuals with ADHD (the Parent to Parent Program) to address ADHD issues.[49]

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Goals of treatment:

- Reduction in symptoms (inattentiveness, restlessness, psychomotor agitation)
- Improvement in academic performance
- health practitioners
- Coordinate treatment efforts with primary care practitioners and/or pediatricians
- Consider family therapy if needed
- Augment medication with behavioral/psychosocial interventions for children who are not responding optimally.25-28
- For those with severe symptoms, consider community-based services, such as respite care and therapeutic case management

Pharmacotherapy

If medication for ADHD is prescribed, practitioners should make reasonable effort to follow the NCQA Initiation and Continuation & Maintenance quality guidelines which are described as follows:

Initiation: Children between ages 6-12 who are newly prescribed ADHD medications (i.e., no medications in 4 previous months) in an outpatient setting have one follow up visit with the prescribing practitioner within 30 days of the medication start date

*Continuation and Maintenance***:** Assesses children between 6 and 12 years of age who had a prescription for ADHD medication and remained on the medication for at least 210 days, and had at least two follow-up visits with a practitioner in the 9 months after the Initiation Phase.

Psychostimulants

Psychostimulants are considered first line and are effective in 75-90% of children and adolescents.

Prior to initiating psychostimulant treatment, the American Heart Association together with the American Pediatrics Association recommends obtaining a focused cardiac history[39]. This would include:

- taking a thorough medical history prior to treatment, with special attention given to symptoms that might indicate heart problems (such as heart palpitations, high blood pressure, heart murmur, fainting or near-fainting episodes, chest pain, or unexplained change in exercise tolerance).
- review of all current medications including prescription, over-the-counter preparations, and health supplements.
- careful evaluation for a family history of sudden death, serious rhythm abnormalities, heart muscle disorders (cardiomyopathy), or Marfan's syndrome.

- a physical exam, including assessment of blood pressure and heart rhythm
- an ECG if the above is suggestive of potential problems. Below is a table of currently approved psychostimulants for the treatment of ADHD:

Trade Name	Generic Name	Approved Age
Adderall Tablets	(mixed salts of a single entity amphetamine product)	3 and older
Adderall XR Extended-Release Capsules	(mixed salts of a single entity amphetamine product) – long acting	3 and older
Astarys	(serdexmethylphenidate/dexmethylphenidate)	6 and older
Concerta Extended-Release Tablets	(methylphenidate hydrochloride) – long acting	6 and older
Daytrana	(methylphenidate) Transdermal System – long acting	6 and older
Desoxyn Tablets	(methamphetamine hydrochloride)	6 and older
Dexedrine Capsules and Tablets	(dextroamphetamine sulfate)	3 and older
Dexedrine Spansule or Dexedring SR	(dextroamphetamine sulfate) – long acting	3 and older
Dextrostat	(dextroamphetamine sulfate) – long acting	3 and older
Focalin XR Extended-Release Capsules	(dexmethylphenidate hydrochloride) – long acting	6 and older
Focalin XR Tablets	(dexmethylphenidate hydrochloride)	6 and older
Focalin	(dexmethylphenidate hydrochloride)	6 and older
Metadate ER	(methylphenidate hydrochloride) (extended release)	6 and older
Metadate CD	(methylphenidate hydrochloride) (extended release)	6 and older
Methylin Oral Solution	(methylphenidate hydrochloride)	6 and older
Methylin Chewable Tablets	(methylphenidate hydrochloride)	6 and older

Ritalin	(methylphenidate hydrochloride)	6 and older
Ritalin SR	(methylphenidate hydrochloride) (extended release)	6 and older
Ritalin LA	(methylphenidate hydrochloride) (long acting)	6 and older
Quillivant XR	(methylphenidate hydrochloride) (long acting) (liquid)	6 and older
Vyvanse	(lisdexamfetamine dimesylate) – long acting	6 and older

Additional evidence-based pharmacologic agents

1. Strattera (atomoxetine hydrochloride: Approximately 10-25% of children do not respond to stimulants. Strattera is approved for the treatment of Attention Deficit Disorder for those over 6 years of age.
2. Intuniv (a slow release form of guanfacine) and Kapvay (a slow release form of Clonidine) are post synaptic alpha 2 stimulators thought to strengthen working memory and to reduce distractibility though the complete mechanism of action is not fully understood. Short term equivalent medications (Tenex and Catapress along with their generic counterparts) have been used with benefit for years but the newer agents may have fewer side effects and a more sustained and consistent effect.
3. Qelbree (Viloxazine) is indicated for treatment of attention deficit hyperactivity disorder (ADHD) in children and adolescents aged 6-17 years. The mechanism of action by which viloxazine affects ADHD is unclear; however, it may be by selectively inhibiting norepinephrine reuptake. Approval was based on 3 phase-3 placebo-controlled trials that included over 1000 participants. Patients taking viloxazine had statistically significant improvement in ADHD Rating Scale 5 and Clinical Global Impressions I scores compared with placebo.

Pharmacologic agents with some success reported

1. bupropion (Wellbutrin, including SR and XL, and others)
2. venlafaxine (Effexor, including ER and XR) and it's metabolite, O-desmethyl venlafaxine (Pristiq)
3. tricyclic antidepressant agents (especially desipramine, imipramine, and nortriptyline)
4. Provigil and Nuvigil
5. Omega 3 fatty acids (Lovazza, Fish Oil)

Psychotherapeutic interventions

1. If a patient demonstrates a satisfactory response to medications alone (indicated by normalization of academic, social, and family functioning), no further interventions are necessary.
2. The use of repeated attention exercises may help in training the brain to concentrate for longer periods of time.[41]

3. If the patient has developed other psychiatric symptoms, these should be addressed. In some cases, there may be residual symptoms as a result of past actions, behaviors, or experiences that warrant CBT or Behavioral interventions.[42]
4. If the difficulties that persist are psychosocial in nature, psychosocial interventions are worthwhile as an adjunctive intervention (this is not considered to be psychotherapy, but rather, educational in nature).

(*Note: Although there has been aggressive marketing of its use, the efficacy of EEG feedback, either as a primary treatment for ADHD or as an adjunct to medication treatment has not been established*[23]

A lack of satisfactory response to the above interventions should result in reconsideration of the diagnosis or treatment interventions.

Once a satisfactory effect has been realized, height, weight, and vital signs should be periodically monitored. After some time, patients should be re-evaluated for the ongoing need for treatment. Symptoms are likely to be most evident under the greatest demand for concentrated efforts and focus and may appear to subside with decreased demand.

Of note: the FDA recommends that stimulant products and Atomoxetine should generally not be used in patients with serious heart problems, or for whom an increase in blood pressure or heart rate would be problematic. In addition, patients treated with these medications should be periodically checked for changes in blood pressure or heart rate. The FDA did not find an increase in the risk of serious cardiovascular events in children and young adults treated for ADHD from studies involving over 1 million children and young adults.[47]

Resources for Families

1. The American Psychiatric Association and the American Academy of Child and Adolescent Psychiatry has developed a medication guide - ADHD Parents Medication Guide: http://www.parentsmedguide.org/pmg_adhd.html
2. National Resource Center on ADHD: http://www.help4adhd.org/
3. Resources from CHADD: http://www.chadd.org/Default.aspx?tabid=510
4. From Family Doctor:
    a. http://sitesearch.familydoctor.org/?q=adhd&sp_cs=UTF-8&sop=en%3Ainternal%3Aerror-page&x=9&y=7
    b. Resources from the National Institute of Mental Health Net, Inc.
    c. http://www.nimh.nih.gov/health/publications/attention-deficit-hyperactivity-disorder/index.shtml
    d. http://www.nimh.nih.gov/health/publications/attention-deficit-hyperactivity-disorder-teens-fact-sheet/attention-deficit-hyperactivity-disorder.shtml
    e. http://www.nimh.nih.gov/health/publications/attention-deficit-hyperactivity-disorder-easy-to-read/index.shtml
    f. http://www.nimh.nih.gov/health/publications/attention-deficit-hyperactivity-disorder-in-children-and-adolescents/index.shtml
5. http://www.webmd.com/add-adhd/guide/parenting-child-adhd
6. http://www.cdc.gov/Features/adhsresources/

Resources for Clinicians

Common Behavior Rating Scales Used for Assessment and Monitoring of ADHD[1]

1. **Multiple Resources from the Children's Healthcare Quality Site can be found at http://www.nichq.org/resources/adhd_toolkit.html.**
    a. **This includes Informational Reports as well as Survey Forms such as the Vanderbilt Assessment Scale. It requires a free account to download forms. (http://www.nichq.org/adhd_tools.html)**

Note: The Connor's has the advantage of having a large normative database to help support the instrument's reliability and validity.

Review History

December 2005	Health Net Medical Advisory Council
October 2007	MHN Clinical policy Committee
November 2007	Health Net Medical Advisory Council
October 2009	MHN Clinical policy Committee
November 2009	Health Net Medical Advisory Council
September 2011	MHNQIUMC
November 2011	Health Net Medical Advisory Council
September 2013	MHNQIUMC
November 2013	Health Net Medical Advisory Council
September 2014	MHNQIUMC
November 2014	Health Net Medical Advisory Council
November 2015	Health Net Medical Advisory Council
November 2016	MHN medical director review and Health Net Medical Advisory Council
November 2017	MHN medical director review and Health Net Medical Advisory Council
November 2018	MHN medical director review and Health Net Medical Advisory Council
November 2019	MHN medical director review and Health Net Medical Advisory Council
September 2021 November 2021	MHN medical director review and Health Net Medical Advisory Council

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online version of the statement. Those changes, as well as several others, are included at: http://circ.ahajournals.org/cgi/content/full/CIRCULATIONAHA.107.189473/DC 1.

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Important Reminder

This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information. The Health Plan makes no representations and accepts no liability with respect to the content of any external information used or relied upon in developing this clinical policy. This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved. “Health Plan” means a health plan that has adopted this clinical policy and that is operated or administered, in whole or in part, by Centene Management Company, LLC, or any of such health plan’s affiliates, as applicable.

The purpose of this clinical policy is to provide a guide to medical necessity, which is a component of the guidelines used to assist in making coverage decisions and administering benefits. It does not constitute a contract or guarantee regarding payment or results. Coverage decisions and the administration of benefits are subject to all terms, conditions, exclusions and limitations of the coverage documents (e.g., evidence of coverage, certificate of coverage, policy, contract of insurance, etc.), as well as to state and federal requirements and applicable Health Plan-level administrative policies and procedures.

This clinical policy is effective as of the date determined by the Health Plan. The date of posting may not be the effective date of this clinical policy. This clinical policy may be subject to applicable legal and regulatory requirements relating to provider notification. If there is a discrepancy between the effective date of this clinical policy and any applicable legal or regulatory requirement, the requirements of law and regulation shall govern. The Health Plan retains the right to change, amend or withdraw this clinical policy, and additional clinical policies may be developed and adopted as needed, at any time.

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This clinical policy does not constitute medical advice, medical treatment or medical care. It is not intended to dictate to providers how to practice medicine. Providers are expected to exercise professional medical judgment in providing the most appropriate care, and are solely responsible for the medical advice and treatment of members. This clinical policy is not intended to recommend treatment for members. Members should consult with their treating physician in connection with diagnosis and treatment decisions.

Providers referred to in this clinical policy are independent contractors who exercise independent judgment and over whom the Health Plan has no control or right of control. Providers are not agents or employees of the Health Plan.

This clinical policy is the property of the Health Plan. Unauthorized copying, use, and distribution of this clinical policy or any information contained herein are strictly prohibited. Providers, members and their representatives are bound to the terms and conditions expressed herein through the terms of their contracts. Where no such contract exists, providers, members and their representatives agree to be bound by such terms and conditions by providing services to members and/or submitting claims for payment for such services.

Note: For Medicaid members, when state Medicaid coverage provisions conflict with the coverage provisions in this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.

Note: For Medicare members, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Refer to the CMS website at http://www.cms.gov for additional information.