Medical Coverage Policy

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Attention-Deficit/Hyperactivity Disorder (ADHD): Assessment and Treatment

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Overview

This Coverage Policy addresses services for the assessment and treatment of attention-deficit hyperactivity disorder.

Coverage Policy

Coverage for behavioral services varies across plans. Refer to the customer's benefit plan document for coverage details. Services provided by a psychiatrist, psychologist or other behavioral health professionals may be subject to the provisions of the applicable behavioral health benefit. Assessment and treatment for comorbid behavioral health and/or medical diagnoses and associated symptoms and/or conditions may be covered under applicable medical and behavioral health benefit plans. Coverage of medications related to the treatment of ADHD is subject to the pharmacy benefit of the applicable benefit plan.

When coverage is available, services for the treatment of ADHD are considered medically necessary when the criteria of the Diagnostic and Statistical Manual of Mental Health Disorders, Fifth Edition (DSM-5) are met.

Not Medically Necessary

Each of the following procedures/services is considered not medically necessary for the treatment of ADHD:

- intensive behavioral intervention programs (e.g., early intensive behavior intervention [EIBI] intensive behavior intervention [IBI], Lovaas therapy, applied behavior analysis [ABA])
- transcranial magnetic stimulation/cranial electrical stimulation

Not Covered or Reimbursable

Services that are considered primarily educational or training in nature or related to academic or work performance are not covered under many benefit plans. The following

services for the assessment and/or treatment of ADHD are considered primarily educational and training in nature and not covered or reimbursable:

- educational intervention (e.g., classroom environmental manipulation, academic skills training, and parental training)

Each of the following procedures/services is not covered or reimbursable for the assessment and/or treatment of ADHD:

Assessment:

- computerized electroencephalogram (EEG) (e.g., neurometrics, or quantitative electroencephalography [QEEG], Neuropsychiatric EEG-Based Assessment Aid [NEBA] System)
- hair analysis

Treatment:

- Dore program/Dyslexia Dyspraxia Attention Treatment (DDAT)
- vision therapy

Health Equity Considerations

Health equity is the highest level of health for all people; health inequity is the avoidable difference in health status or distribution of health resources due to the social conditions in which people are born, grow, live, work, and age.

Social determinants of health are the conditions in the environment that affect a wide range of health, functioning, and quality of life outcomes and risks. Examples include safe housing, transportation, and neighborhoods; racism, discrimination and violence; education, job opportunities and income; access to nutritious foods and physical activity opportunities; access to clean air and water; and language and literacy skills.

Please see Health Disparity section below for more information.

General Background

Attention-deficit/hyperactivity disorder (ADHD) is a common disorder of childhood and adolescence that is characterized by symptoms of inattention and/or hyperactivity/impulsivity. In this disorder, the symptoms have persisted for at least six months, to a degree that is maladaptive and inconsistent with developmental level. The hyperactive-impulsive or inattention symptoms that cause impairment are present before age seven, although many individuals are diagnosed after the symptoms have been present for a number of years. Some impairment from the symptoms is present in two or more settings (e.g., at home and at school).

The Diagnostic and Statistical Manual of Mental disorders, Fifth edition (DSM-5) notes that there are three subtypes of ADHD (American Psychiatric Association [APA]), 2013):

Diagnostic Criteria from Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) for:

314.01 (F90.2) Attention-Deficit/Hyperactivity Disorder, combined type: If both Criterion A1 (inattention) and Criterion A2 (hyperactivity/impulsivity) are met for the past six months. **314.00 (F90.0) Attention-Deficit/Hyperactivity Disorder, predominantly inattentive type:** If Criterion A1 (inattention) is met but Criterion A2 (hyperactivity/impulsivity) is not met for the past six months. **314.01 (F90.1) Attention-Deficit/Hyperactivity Disorder, predominantly hyperactive-impulsive type:** If Criterion A2 (hyperactivity/impulsivity) 1(inattention) is met but Criterion A1 (inattention) is not met for the past six months.	
A. A persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development as characterized by (1) or (2):	
1) **Inattention**: six (or more) of the following symptoms of inattention have persisted for at least six months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities: **Note**: The symptoms are not solely a manifestation of oppositional behavior, defiance, hostility, or failure to understand tasks or instructions. For older adolescents and adults (age 17 and older), at least five symptoms are required. a) Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or during other activities (e.g., overlooks or misses detail, work is inaccurate). b) Often has difficulty sustaining attention in tasks or play activities (e.g., has difficulty remaining focused during lectures, conversations, or lengthy reading). c) Often does not seem to listen when spoken to directly (e.g., mind seems elsewhere, even in the absence of any obvious distraction). d) Often does not follow through on instructions and fails to finish school work, chores, or duties in the workplace (e.g., starts tasks but quickly loses focus and is easily sidetracked). e) Often has difficulty organizing tasks and activities (e.g., difficulty managing sequential tasks; difficulty keeping materials and belongings in order; messy, disorganized work; has poor time management; fails to meet deadlines).	2) **Hyperactivity-impulsivity**: six (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least six months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities: **Note**: the symptoms are not solely a manifestation of oppositional behavior, defiance, hostility, or a failure to understand tasks or instructions. For older adolescents and adults (age 17 and older), at least five symptoms are required. a) Often fidgets with or taps hands or feet or squirms in seat. b) Often leaves seat when remaining seated is expected (e.g., leaves his or her place in the classroom, in the office or other workplace, or in other situations that require remaining in place). c) Often runs about or climbs in situations in where it is inappropriate (**Note:** in adolescents or adults, may be limited to feeling restless). d) Often unable to play or engage in leisure activities quietly. e) Is often "on the go" acting as if "driven by a motor" (e.g., is unable to be or uncomfortable being still for extended time, as in restaurants, meetings; may be experienced by others as being restless or difficult to keep up with). f) Often talks excessively. g) Often blurts out an answer before a question has been completed (e.g., completes people's sentences' cannot wait for turn in conversation). h) Often has difficulty waiting his or her turn (e.g., while waiting in line).

f) Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (e.g., schoolwork or homework; for older adolescents and adults, preparing reports, completing forms, reviewing lengthy papers). g) Often loses things necessary for tasks or activities (e.g., school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones). h) Is often easily distracted by extraneous stimuli (for older adolescents and adults, may include unrelated thoughts). i) Is often forgetful in daily activities (e.g., doing chores, running errands, for older adolescents and adults, returning calls, paying bills, keeping appointments).	i) Often interrupts or intrudes on others (e.g., butts into conversations, games, or activities; may start using other people's things without asking or receiving permission; for adolescents and adults, may intrude into or take over what others are doing).
B. Several inattentive or hyperactive-impulsive symptoms were present prior to age 12 years. C. Several inattentive or hyperactive-impulsive symptoms are present in two or more settings (e.g., at home, school, or work; with friends or relatives; in other activities). D. There is clear evidence that the symptoms interfere with, or reduce the quality of social, academic, or occupational functioning. E. The symptoms do not occur exclusively during the course of schizophrenia or other psychotic disorder and are not better explained by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorders, personality disorder, substance intoxication or withdrawal).	

It should be specified if the condition is in partial remission: when full criteria were previously met, fewer than the full criteria have been met for the past six months, and the symptoms still result in impairment in social, academic or occupational functioning.

The severity should be specified:
Mild: Few, if any, symptoms in excess of those required to make the diagnosis are present and symptoms results in no more than minor impairments in social or occupational functioning.
Moderate: Symptoms or functional impairment between "mild" and "severe" are present.
Severe: Many symptoms in excess of those required to make the diagnosis, or several symptoms that are particularly severe, are presents, or the symptoms results in marked impairment in social or occupational functioning.

The DSM-5 notes that the designation of "other specified" (DSM-5 code 314.01) (F90.8) applies to presentation in which symptoms characteristic of attention-deficit/hyperactivity disorder that cause clinically significant distress or impairment in social, occupational or other important areas of functioning predominate but do not meet the full criteria for attention-deficit/hyperactivity disorder or any of the disorders in the neurodevelopmental disorders diagnostic class. The other specified attention-deficit/hyperactivity disorder category is used in situations n which the clinician chooses to communicate the specific reason that the presentation does not meet the criteria for attention-deficit/hyperactivity disorder or any specific neurodevelopmental disorder. This is done by recording "other specified attention-deficit/hyperactivity disorder" followed by the specific reason (e.g., "with insufficient inattention symptoms").

The DSM-5 notes that the designation of "not otherwise specified" (NOS) (DSM-5 code 314.01) (F90.9) applies to presentations in which symptoms characteristic of attention-deficit/hyperactivity disorder that cause clinically significant distress or impairment in social, occupational, or other important areas of functioning predominate but not meet the full criteria of attention-deficit hyperactivity disorder or any of the disorder in the neurodevelopmental disorders diagnostic class. This should be used in situations in which the clinician chooses not to specify the reason that the criteria are not met for attention-deficit hyperactivity disorder or for a specific neurodevelopmental disorder and includes presentations in which there is insufficient information to make a more specific diagnosis.

Health Disparity
According to data from the 2022 National Survey of Children's Health (NSCH), approximately 1 in 9 U.S. children have ever received an ADHD diagnosis (11.4%, 7.1 million children) and 10.5% (6.5 million) had current ADHD. Among children with current ADHD, 58.1% had moderate or severe ADHD, 77.9% had at least one co-occurring disorder, approximately half of children with current ADHD (53.6%) received ADHD medication, and 44.4% had received behavioral treatment for ADHD in the past year; nearly one third (30.1%) did not receive any ADHD-specific treatment. Hispanic children and children living in non-English-speaking households had a lower prevalence of taking ADHD medication than non-Hispanic children and children living in primarily English-speaking homes, respectively.
Adolescents aged 12–17 years, children living in households with lower education, and children living in the South or in rural areas had a lower prevalence of receipt of behavioral treatment for ADHD than children aged 6–11 years, children living in households with higher education, and children living in the West or in urban areas, respectively (NSCH/Danielson, et al., 2024).

Attention-deficit/hyperactivity disorder is diagnosed less often and medication treatment is used at a lower rate for children from racial and ethnic minority backgrounds, adolescents, and those experiencing poverty (Barbaresi, et al., 2020). It is important for the treating clinician to be aware that parents from different racial and ethnic backgrounds may have differing experiences, perceptions, and attitudes about ADHD and its treatment. Motivational interviewing strategies, assistance in reducing barriers to care, opportunities for social support and problem solving among peers, and increased coaching during behavior therapy may be helpful in improving family engagement and therefore treatment outcomes (Barbaresi, et al., 2020).

Similar findings were found in a retrospective U.S. national birth cohort study (Shi, et al., 2021) that utilized insurance claim data to evaluate the impact race and ethnicity has on diagnosis and treatment of ADHD. Out of 238,011 children in the cohort, 48.8% were female, 6.7% were Asian, 6.2% were Black, 9.8% were Hispanic, and 72.7% were white. A total of 11,401 were diagnosed with ADHD. At age 12, White children had the highest incidence of ADHD (14.19%) compared to Black children (11.76%) and Asian children (6.08%). White children were significantly more likely to receive some kind of treatment within the first year after diagnosis ($p<0.001$) compared to all other groups. The authors stated that the findings are not fully understood and that future studies are needed to determine the reasons behind the disparity.

Assessment
The diagnosis is clinical, based on findings that are derived from the history, physical and individual/family interviews. There are no specific diagnostic tests for ADHD. The established diagnostic tools used in the assessment of ADHD include:

- parent/child interview (to rule out other psychiatric or environmental causes of symptoms)
- medical evaluation with a complete medical history and physical examination (to assess for co-existing conditions)

- electroencephalogram (EEG) or neurological consult when the presence of focal signs or clinical findings is suggestive of a seizure disorder or a degenerative neurological condition

The use of the DSM-5 criteria is a standard of care for practitioners of all types (e.g., primary care, subspecialty, psychiatry and non-physician mental health providers) to use in the assessment and diagnosis of ADHD (APA, 2013). Diagnosis usually requires several steps, and clinicians will generally need to carry out the evaluation in more than one visit, often two to three visits. The behaviors must adversely affect functioning in school or in a social setting. Information obtained from the parent and school can assist the physician in assessing the effects that the symptoms are having on classroom performance, self-esteem, and family and social relationships.

American Academy of Pediatrics (AAP): The AAP published updated clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. The guidelines include the following key action statements (Wolraich, et al., 2019) addressing assessment:

- The pediatrician or other (primary care clinician) PCC should initiate an evaluation for ADHD for any child or adolescent age four years to the 18th birthday who presents with academic or behavioral problems and symptoms of inattention, hyperactivity, or impulsivity. (Grade B: strong recommendation.)
- To make a diagnosis of ADHD, the PCC should determine that DSM-5 criteria have been met, including documentation of symptoms and impairment in more than one major setting (i.e., social, academic, or occupational), with information obtained primarily from reports from parents or guardians, teachers, other school personnel, and mental health clinicians who are involved in the child or adolescent's care. The PCC should also rule out any alternative cause. (Grade B: strong recommendation.)
- In the evaluation of a child or adolescent for ADHD, the PCC should include a process to at least screen for comorbid conditions, including emotional or behavioral conditions (e.g., anxiety, depression, oppositional defiant disorder, conduct disorders, substance use), developmental conditions (e.g., learning and language disorders, autism spectrum disorders), and physical conditions (e.g., tics, sleep apnea). (Grade B: strong recommendation.)

Agency for Healthcare Research and Quality (AHRQ): The AHRQ published a Comparative Effectiveness Review titled ADHD Diagnosis and Treatment in Children and Adolescents. Comparative Effectiveness Review No. 267 (Peterson, et al., 2024). Their published Main Points include:

Diagnosis

- Multiple approaches showed promising diagnostic performance (e.g., using parental rating scales), but estimates of performance varied considerably across studies, and the strength of evidence (SoE) was generally low.
- Diagnostic test performance likely depends on whether youth with attention deficit hyperactivity disorder (ADHD) are being differentiated from typically developing children or from clinically referred children who had some kind of mental health or behavioral problem.
- Rating scales for parent, teacher, or self-assessment as a diagnostic tool for ADHD have high internal consistency but poor to moderate reliability between raters, indicating that obtaining ratings from multiple informants (the youth, both parents, and teachers) may be valuable to inform clinical judgement.
- Studies evaluating neuropsychological tests of executive functioning (e.g., Continuous Performance Test) used study-specific combinations of individual cognitive measures, making it difficult to compare performance across studies.

- Diagnostic performance of biomarkers, EEG, and MRI scans show great variability across studies and their ability to aid clinical diagnosis for ADHD remains unclear. Studies have rarely assessed test-retest reliability, no findings have been replicated prospectively using the same measure in independent samples, and real-world effectiveness studies of diagnostic performance have not been conducted.
- Very few studies have assessed performance of diagnostic tools for ADHD in children under the age of seven years and more research is needed.
- The identified diagnostic studies did not assess the adverse effects of being labeled correctly or incorrectly as having a diagnosis of ADHD.

Treatment

- We found that several treatment modalities improve core ADHD symptoms compared to control groups (e.g., placebo). These include FDA-approved medications and psychosocial interventions with high or moderate strength of evidence.
- FDA-approved stimulant (e.g., methylphenidate, amphetamine) and non-stimulant (e.g., atomoxetine, alpha agonist) medications had the strongest evidence across interventions for significantly improving ADHD symptoms and additional outcomes, including broadband measures and functional impairment.
- Head-to-head comparisons did not detect statistically significant differences between stimulant and non-stimulant medications for most effectiveness outcomes and adverse events.
- We found little evidence that combination therapies of medication plus psychosocial therapies produce better results than medication alone, but existing research evaluated unique combinations of intervention components.
- Despite the large body of research, comparative effectiveness and safety information is limited and more research is needed to help choose between treatments.
- Data were insufficient to assess the effect of co-occurring disorders on treatment effects.
- We found too few studies reporting on diversion to quantify the risk of diversion of pharmacological treatment.

Monitoring

- Very few monitoring studies have been reported, and more research is needed on how youth with ADHD should be monitored over time.
- Different assessment modalities may provide valid but different perspectives, and more than a single assessment modality may be required for comprehensive and effective monitoring of ADHD outcomes over time (AHRQ/Peterson, et al., 2024).

UpToDate: According to the literature, several medical screening tests and laboratory measures have been proposed to evaluate children with suspected ADHD. Although some additional testing may be warranted to evaluate comorbid conditions or conditions remaining in the differential diagnosis after the initial assessment, the following evaluations are not routinely indicated to establish the diagnosis of ADHD:

- Speech and language evaluation (language or communication disorder)
- Occupational therapy evaluation (motor coordination disorder)
- Mental health evaluation (mood disorder, anxiety, oppositional defiant disorder, conduct disorder, obsessive-compulsive disorder, posttraumatic stress disorder, adjustment disorder)
- Blood lead level (lead poisoning)
- Thyroid hormone levels (thyroid disorder)
- Genetic testing and/or genetics consultation (fragile X syndrome)
- Overnight polysomnography for children with symptoms suggestive of and/or risk factors for obstructive sleep apnea syndrome, restless legs syndrome, or circadian rhythm disorder

- Neurology consultation or EEG (electroencephalography; neurologic or seizure disorder)
- Psychological or neuropsychological testing – Psychological testing (ie, cognitive and academic testing) is not necessary in the routine evaluation for ADHD and does not distinguish children with ADHD from those without ADHD. It may be recommended in the evaluation for complex ADHD.
- Quantitative electroencephalography (EEG) is not routinely recommended (UpToDate/Krull, et al., 2024).

Federal Drug Administration (FDA): Some assessment tools have received FDA marketing approval. These tests have in common a claim to improve the objectivity of ADHD assessment compared to traditional behavioral rating scales and diagnostic interviews currently widely used by mental health professionals to determine an ADHD diagnosis. These assessment tools are not included in the latest DSM-5 Revision. They are not supported by well-designed, peer-reviewed, large clinical trials or endorsed by professional societies (for example, best practice guidelines of the American Psychological Association or American Academy of Pediatric) (Arns, et al., 2016). Examples include:

- Neuropsychiatric EEG-Based Assessment Aid (NEBA) System (NEBA Health, Augusta, GA)
- Quotient ADHD Test/System (previously OPTAx System) (Pearson Education, Inc., Westford, Massachusetts)
- QBTest and QbCheck (Qbtech AB, Sweden)

Genetic testing: When another condition is present along with ADHD, genetic testing may be considered. While there is ongoing research into the genetic causes of ADHD, it is preliminary and currently there is no established role for genetic testing, in the assessment of this condition.

Treatment
Types of treatment for ADHD include behavior therapy, including training for parents; and medications. The FDA has approved two types of medications – stimulants and non-stimulants – to help reduce the symptoms of ADHD and improve functioning in children as young as age 6. Examples of FDA approved non-stimulant pharmacotherapy includes Stattera® (atomoxetine), Intuniv (guanfacine), Kapvay (clonidine) and Qelbree® (viloxazine) (FDA, August 2023). In August 2023, the FDA approved several first generics of Vyvanse (lisdexamfetamine dimesylate) capsules and chewable tablets for attention-deficit/hyperactivity disorder (ADHD) in individuals six years and older.

American Academy of Pediatrics (AAP): The AAP published updated clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. The guidelines include the following key action statements (Wolraich, et al., 2019) addressing treatment:

- ADHD is a chronic condition; therefore, the PCC should manage children and adolescents with ADHD in the same manner that they would children and youth with special health care needs, following the principles of the chronic care model and the medical home. (Grade B: strong recommendation.)
- Recommendations for treatment vary depending on the individual's age and are presented for the following age ranges:
    - preschool-aged children: age 4 years to the sixth birthday;
    - elementary and middle school–aged children: age 6 years to the 12th birthday; and
    - adolescents: age 12 years to the 18th birthday.
- For preschool-aged children (age 4 years to the sixth birthday) with ADHD, the PCC should prescribe evidence-based behavioral PTBM and/or behavioral classroom interventions as the first line of treatment, if available (grade A: strong recommendation). Methylphenidate

may be considered if these behavioral interventions do not provide significant improvement and there is moderate-to-severe continued disturbance in the 4- through 5-year-old child's functioning. In areas in which evidence-based behavioral treatments are not available, the clinician needs to weigh the risks of starting medication before the age of 6 years against the harm of delaying treatment. (Grade B: strong recommendation.)

- For elementary and middle school–aged children (age 6 years to the 12th birthday) with ADHD, the PCC should prescribe US Food and Drug Administration (FDA)–approved medications for ADHD, along with PTBM and/or behavioral classroom intervention (preferably both PTBM and behavioral classroom interventions). Educational interventions and individualized instructional supports, including school environment, class placement, instructional placement, and behavioral supports, are a necessary part of any treatment plan and often include an Individualized Education Program (IEP) or a rehabilitation plan (504 plan).
  (Grade A: strong recommendation for medications; grade A: strong recommendation for PTBM training and behavioral treatments for ADHD implemented with the family and school.)
- For adolescents (age 12 years to the 18th birthday) with ADHD, the PCC should prescribe FDA-approved medications for ADHD with the adolescent's assent (grade A: strong recommendation). The PCC is encouraged to prescribe evidence-based training interventions and/or behavioral interventions as treatment of ADHD, if available. Educational interventions and individualized instructional supports, including school environment, class placement, instructional placement, and behavioral supports, are a necessary part of any treatment plan and often include an IEP or a rehabilitation plan (504 plan). (Grade A: strong recommendation.)
- The PCC should titrate doses of medication for ADHD to achieve maximum benefit with tolerable side effects. (Grade B, strong recommendation)
- The PCC, if trained or experienced in diagnosing comorbid conditions, may initiate treatment of such conditions or make a referral to an appropriate subspecialist for treatment. After detecting possible comorbid conditions, if the PCC is not trained or experienced in making the diagnosis or initiating treatment, the individual should be referred to an appropriate subspecialist to make the diagnosis and initiate treatment. (Grade C, recommendation)

  Grades of recommendations:
  - grade A: consistent level A studies;
  - grade B: consistent level B or extrapolations from level A studies;
  - grade C: level C studies or extrapolations from level B or level C studies.

The supplemental information published along with the AAP guidelines includes information regarding complementary and unproven therapies that may include: megavitamins and other dietary alterations, vision and/or visual training, chelation, EEG biofeedback, and working memory (e.g., cognitive training) programs. The report notes, "there is insufficient evidence to suggest that these therapies lead to changes in ADHD's core symptoms or function. For many complementary and alternative therapies, limited information is available about their safety. Both chelation and megavitamins have been proven to cause adverse effects and are contraindicated. For these reasons, complementary and alternative therapies are not recommended" (AAP 2019).

Cochrane Systematic Review: In a Cochrane Review, Storebø et al. (2023) assessed the beneficial and harmful effects of methylphenidate for children and adolescents with ADHD. The authors concluded:

- Our updated meta-analyses suggest that methylphenidate versus placebo or no-intervention may improve teacher-rated ADHD symptoms and general behavior in children and adolescents with ADHD.

- There may be no effects on serious adverse events and quality of life.
- Methylphenidate may be associated with an increased risk of adverse events considered non serious, such as sleep problems and decreased appetite. However, the certainty of the evidence for all outcomes is very low and therefore the true magnitude of effects remain unclear.
- Due to the frequency of non-serious adverse events associated with methylphenidate, the blinding of participants and outcome assessors is particularly challenging. To accommodate this challenge, an active placebo should be sought and utilized. It may be difficult to find such a drug, but identifying a substance that could mimic the easily recognized adverse effects of methylphenidate would avert the unblinding that detrimentally affects current randomized trials.
- Future systematic reviews should investigate the subgroups of individuals with ADHD that may benefit most and least from methylphenidate. This could be done with individual participant data to investigate predictors and modifiers like age, comorbidity, and ADHD subtypes (Storebø, et al., 2023).

Agency for Healthcare Research and Quality (AHRQ): The AHRQ published a Comparative Effectiveness Review: Attention Deficit Hyperactivity Disorder: Diagnosis and Treatment in Children and Adolescents (Kemper, et al., 2018). (An update is in progress per AHRQ Research Protocol published July 01, 2022.)

The review included 69 studies related to treatment, and no studies were identified regarding monitoring. Findings included:

- Limited additional evidence published since the original 2011 report was available on ADHD medications approved by the Food and Drug Administration (FDA) compared with placebo or compared to different FDA-approved ADHD medications (SOE=insufficient).
- For atomoxetine and methylphenidate, the most commonly reported adverse events were somnolence and mild gastrointestinal problems. Atomoxetine had slightly higher gastrointestinal effects than methylphenidate (SOE=low).
- Cognitive behavioral therapy improved ADHD symptoms (SOE=low).
- Child or parent training improved ADHD symptoms (SOE=moderate) but made no difference in academic performance (SOE=low).
- Omega-3/6 fatty acid supplementation made no difference in ADHD symptoms (SOE=moderate).
- Across all treatments, little evidence was reported on the risk of serious adverse events, including cardiovascular risk.

The review concluded that this targeted update found insufficient evidence regarding new approaches to the diagnosis (e.g., EEGs, neuroimaging). The authors noted that although cognitive behavioral therapy or child or parent training may decrease symptoms of ADHD, more information is needed regarding the relative benefit of these approaches compared to, or combined with, medication treatment; Omega-3/6 supplementation does not appear to improve ADHD outcomes; and, no information was identified regarding the optimal strategy for monitoring after diagnosis.

Definition of strength of evidence grades:
Moderate: moderately confident that the estimate of effect lies close to the true effect for this outcome. The body of evidence has some deficiencies. The findings are likely to be stable, but some doubt remains.
Low: limited confidence that the estimate of effect lies close to the true effect for this outcome. The body of evidence has major or numerous deficiencies (or both). The authors believe that additional evidence is needed before concluding either that the findings are stable or that the estimate of effect is close to the true effect.

Insufficient: no evidence, unable to estimate an effect, or have no confidence in the estimate of effect for this outcome. No evidence is available, or the body of evidence has unacceptable deficiencies, precluding reaching a conclusion.

Cochrane Systematic Review: In a Cochrane Review, Eaton et al. (2022) assessed the effect of stimulant and non-stimulant drugs on children and adults with ADHD and co-occurring epilepsy because ADHD can co-occur in up to 40% of people with epilepsy. The authors concluded:

- In children with a dual-diagnosis of epilepsy and ADHD, there is some evidence that use of the stimulant drug osmotic-release oral system methylphenidate (OROS-MPH) is not associated with significant worsening of epilepsy, but higher doses of it may be associated with increased daily risk of seizures; the evidence is of low-certainty.
- OROS-MPH is also associated with improvement in ADHD symptoms. However, this treatment was also associated with a large proportion of treatment withdrawal compared to placebo.
- In relation to the non-stimulant drug omega-3, there is some evidence for reduction in seizure frequency in children who are also on risperidone and ASM, compared to children who are on risperidone and ASM alone. Evidence is inconclusive whether omega-3 increases or decreases the risk of adverse drug events.
- We identified only two studies – one each for OROS-MPH and omega-3 – with low to high risk of bias. We assessed the overall certainty of evidence for the outcomes of both OROS-MPH and omega-3 as low to moderate.
- More studies are needed. Future studies should include: 1. adult participants; 2. a wider variety of stimulant and non-stimulant drugs, such as amphetamines and atomoxetine, respectively; and 3. additional important outcomes, such as seizure-related hospitalizations and quality of life. Clusters of studies which assess the same drug – and those that build upon the evidence base presented in this review on OROS-MPH and omega-3 – are needed to allow for meta-analysis of outcomes (Eaton, et al., 2022).

Cochrane Systematic Review: In a Cochrane Review, Storebø et al. (2019) assessed the beneficial and harmful effects of social skills training in children and adolescents (aged 5 to 18 years) with ADHD. The review included 25 randomized clinical trials described in 45 reports. The trials included a total of 2690 participants aged between five and 17 years. In 17 trials, participants were also diagnosed with various comorbidities.

- The social skills interventions were described as: 1) social skills training, 2) cognitive behavioral therapy, 3) multimodal behavioral/ psychosocial therapy, 4) child life and attention skills treatment, 5) life skills training, 6) the "challenging horizon program", 7) verbal self instruction, 8) meta-cognitive training, 9) behavioral therapy, 10) behavioral and social skills treatment, and 11) psychosocial treatment. The control interventions were no intervention or waiting list. The duration of the interventions ranged from five weeks to two years.
- The authors found no significant differences between social skills training versus controls on social skills, emotional competencies, and general behavior as assessed by teachers. Compared with the children who had no social skills training, teachers rated those who had been in the social skills groups as having fewer ADHD symptoms at the end of treatment. However, this finding was questionable because our other analyses did not support it. We found no indications of harmful effects.
- All trials suffered from methodological problems such as overestimation of benefits and underestimation of harms. Many studies were also difficult to compare because they involved different interventions.
- The authors summarized that they were unable to conclude whether social skills training is beneficial or not for children with ADHD, noting the need for more randomized clinical trials

on social skills training for children and adolescents with ADHD that have a sufficient number of participants and higher methodological quality. The evidence base regarding adolescents is especially weak (Storebø, et al., 2019).

Cochrane Systematic Review: In a Cochrane Review, Gillies et al. (2023) compared the efficacy of polyunsaturated fatty acids (PUFA) to other forms of treatment or placebo in treating the symptoms of ADHD in children and adolescents. The total number of studies included in the review to 37, including 2374 children and adolescents with ADHD. Thirty-six studies compared PUFA to placebo. Treatment with PUFA lasted between two weeks and six months.

- The authors noted that although there was some evidence that PUFA could improve ADHD symptoms in children and adolescents, most of the evidence indicated that PUFA did not improve ADHD symptoms such as inattention or hyperactivity-impulsivity. PUFA probably makes little to no difference to overall side effects or whether a person drops out of a study (i.e. does not complete it).
- The authors stated they are confident that PUFA has no effect on ADHD symptoms when compared to placebo. Although there was some evidence that ADHD symptoms may be more likely to improve in children and adolescents receiving PUFA compared to those receiving placebo, The authors stated they have little confidence in this finding (Gillies, et al., 2023).

Agency for Healthcare Research and Quality (AHRQ): The AHRQ published a comparative effectiveness review: Attention Deficit Hyperactivity Disorder: Effectiveness of Treatment in At-Risk Preschoolers; Long-Term Effectiveness in All Ages; and Variability in Prevalence, Diagnosis, and Treatment (Charach, 2011). The conclusions of the review include:

- Overall, the most information about long-term outcomes applies to boys ages 7 to 9 years at intervention. Preschoolers with diagnosed ADHD, girls, teenagers, and adults have rarely been the focus of intervention research.
- Parent behavior training for preschoolers is efficacious and benefits appear to last, although many parents drop out of treatment.
- Medications can be efficacious in preschoolers but are not as well tolerated as in children over 6 years of age, or in adults. In addition, parents show decreasing adherence to medication use for their children over 12 months despite effectiveness.
- For children over 6 years of age, teenagers, and adults, medications remain the most thoroughly researched interventions, with most studies sponsored by industry.
- In addition to psychostimulant medications, two additional pharmacologic agents, atomoxetine (ATX) and guanfacine extended release (GXR), have been studied and appear effective and safe for one or more years at a time, with differing adverse event profiles.
- Classroom teacher-based interventions can improve academic and classroom behavior outcomes for both preschoolers and primary school children, but difficulties re-emerge 1 to 2 years following discontinuation of the intervention.
- For some subgroups of children, additional benefit may derive from combined medication and behavioral interventions, but not for all. There remains a lack of clarity about how long treatment may be required, of what type, and for whom.
- For some, incremental improvement accrues with continued intervention over years; for others, medication interventions can be discontinued without symptom relapse. However, these observations are difficult to evaluate due to the absence of information regarding specific subgroups receiving treatment and details regarding co-interventions.

Other Treatments

American Academy of Pediatrics (AAP): The AAP published updated clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and

adolescents. The guidelines include the following key action statements (Wolraich, et al., 2019) addressing treatment.

The supplemental information published along with the AAP guidelines includes information regarding complementary and unproven therapies that may include: megavitamins and other dietary alterations, vision and/or visual training, chelation, EEG biofeedback, and working memory (e.g., cognitive training) programs. The report notes, "there is insufficient evidence to suggest that these therapies lead to changes in ADHD's core symptoms or function. For many complementary and alternative therapies, limited information is available about their safety. Both chelation and megavitamins have been proven to cause adverse effects and are contraindicated. For these reasons, complementary and alternative therapies are not recommended" (AAP 2019).

Dore Program/Dore Program for Attention Deficit Disorder: The Dore program, also known as Dore Program for Attention Deficit Disorder, or Dyslexia Dyspraxia Attention Treatment (DDAT), is an exercise-based program that was originally developed to treat dyslexia. The program is aimed at treating dyslexia, ADHD, dyspraxia and Asperger's Syndrome. The program consists of a specialized neurological evaluation and series of individual-specific exercises designed to simulate the cerebellum or "hind brain." The proponents of this program theorize that cerebellar size and function are related to a constellation of learning disorders that are referred to as cerebellar developmental delay (CDD). A review of this treatment (Bishop, 2007) notes that published studies regarding this program "are seriously flawed." The review notes that two studies were published regarding this treatment for children with dyslexia. Regarding the use of the Dore program for ADHD, the review notes that, "There is nothing here to justify the claims made that the Dore Programme is more effective than state-of-the-art medication for ADHD, especially in view of the fact that only one child in the study had an ADHD diagnosis." There is insufficient evidence to support the efficacy of the Dore program for treatment of ADHD.

Intensive Intervention Programs: Intensive intervention programs, also known as early intensive behavior intervention (EIBI) intensive behavior intervention (IBI), Lovaas therapy, and applied behavior analysis {ABA}. These programs incorporate behavior modification and applied behavior analysis. The programs were developed initially to treat children with autism spectrum disorders (ASD) and have recently been proposed to treat children with learning disabilities and ADHD. These programs may be prescribed by school systems as an intervention that is part of the individualized educational plan (IEP). The program is intensive and usually involves hours of treatment (usually more than 15 hours per week) delivered over a long period of time. There is a lack of scientific evidence to support the efficacy of the programs for ADHD.

Please refer to EVERNORTH Behavioral Health Coverage Policy on Intensive Behavioral Interventions (EN0499) for additional information.

Transcranial magnetic stimulation (TMS)/cranial electrical stimulation (CMS): There is insufficient evidence in the published peer-reviewed literature to support the efficacy of TMS/CES for treatment of ADHD

A systematic review (Westwood, et al., 2020) examined repetitive transcranial magnetic stimulation (rTMS) or transcranial direct current stimulation (tDCS) for a treatment alternative to stimulant medication for attention-deficit/hyperactivity disorder (ADHD). The review found that rTMS and tDCS showed positive effects in some functions but not others, and little evidence for clinical improvement and that the meta-analyses of one to five sessions of anodal tDCS over mainly the left or bilateral dlPFC showed trend-level improvements in inhibition and processing speed, but not in attention. The studies were limited by heterogeneity in stimulation parameters, individual age and outcome measures limited the interpretation of findings.

Leffa et al. (2022) conducted a randomized controlled trial to evaluate the efficacy of tDCS on the treatment of inattention in adults (n=64) with ADHD. The mean age of participants was 38.3 years (18–60 years) with 47% being female. Adult participants were included if they had a diagnosis of ADHD with an inattentive or combined subtype and symptoms rated as moderate or severe according to the clinician-administered version of the Adult ADHD self-report scale version 1.1 (CASRS-I). Individuals were excluded if they: currently used stimulant drug treatment, had current moderate to severe symptoms of depression or anxiety, had a diagnosis of bipolar disorder with a manic or depressive episode in the last year, had a diagnosis of a psychotic disorder (e.g., schizophrenia), or had a diagnosis of autism spectrum disorder. The intervention consisted of 30 minute daily sessions of home-based tDCS for four weeks totaling 28 sessions. Sham tDCS served as the comparator. The primary outcome evaluated was inattention scores as measured by the CASRS-I. Fifty-five participants completed follow-up at four weeks. A significant reduction in CASRS-I scores was noted in the intervention group compared to the sham group ($p<0.001$) at four weeks. Adverse events were reported as mild and included skin redness, headache, and scalp burn in the intervention group. Author noted limitations of the study included individual attrition and inability to generalize the findings to the general population (e.g., those taking stimulant or non-stimulant medications or with comorbid psychiatric conditions). Additional limitations included the small individual population and short-term follow-up. Additional, high-quality studies are needed to establish the safety and efficacy of tDCS for the treatment of inattention in individuals diagnosed with ADHD.

Please refer to EVERNORTH Behavioral Health Coverage Policy on Transcranial Magnetic Stimulation (EN0383) for additional information.

Adult ADHD
While ADHD is well studied in children, it is less studied in adults. An estimated 4.4% of adults aged 18-44 have ADHD. Although comorbid psychiatric disorders are common in both adults and children, the comorbidity rate is higher in adults; as many as 80% of adults with ADHD are reported to have at least one comorbid psychiatric disorder. In clinical adult ADHD samples, substance use disorder (SUD), mood disorder, anxiety disorder, and antisocial personality disorder (ASPD) are the most common comorbid disorders. A recent systematic literature review noted a higher prevalence of comorbid psychiatric disorders in adult ADHD subjects compared to non-ADHD adult subjects, whether they were previously diagnosed with other psychiatric disorders or not. Furthermore, their results suggested a complex association between the multiple comorbidities of ADHD (National Alliance on Mental Illness, 2023; Choi, et al., 2022).

Unlike treatment for childhood ADHD, treatment for adult ADHD has not been well-established by randomized, controlled trials, nor are there any published treatment guidelines. Support groups, such as Children and Adults with Attention-Deficit/ Hyperactivity Disorder (CHADD) assist newly diagnosed adults by providing information about ADHD and available resources, including peer support groups. Coaching and training in organizational skills appear useful but remain unstudied (Goroll, 2009).

In a review article, Kosheleff et al. (2023) noted that worldwide, there is a prevalence of approximately 4.4% to 5.0% in adults, making it among the most common psychiatric disorders. Unlike children with ADHD who are reliant on caregivers, adults living independently and self-sufficiently may be more vulnerable to the functional downstream consequences of inattention, hyperactivity, and impulsivity. Among untreated adults, functional impairments associated with ADHD are widespread and cumulative, and can include social, educational, and professional impairments, increased risk of accidents and mortality, and reduced quality of life.

Medicare Coverage Determinations

	Contractor	Determination Name/Number	Revision Effective Date
NCD	National	No Determination found	
LCD		No Determination found	

Note: Please review the current Medicare Policy for the most up-to-date information.
(NCD = National Coverage Determination; LCD = Local Coverage Determination)

Coding Information

Notes:

1. This list of codes may not be all-inclusive since the American Medical Association (AMA) and Centers for Medicare & Medicaid Services (CMS) code updates may occur more frequently than policy updates.
2. Deleted codes and codes which are not effective at the time the service is rendered may not be eligible for reimbursement.

Considered Not Medically Necessary when used to report the treatment of ADHD:

CPT®* Codes	Description
90867	Therapeutic repetitive transcranial magnetic stimulation (TMS) treatment; initial, including cortical mapping, motor threshold determination, delivery, and management
90868	Therapeutic repetitive transcranial magnetic stimulation (TMS) treatment; subsequent delivery and management, per session
90869	Therapeutic repetitive transcranial magnetic stimulation (TMS) treatment; subsequent motor threshold re-determination with delivery and management
97153	Adaptive behavior treatment by protocol, administered by technician under the direction of a physician or other qualified health care professional, face-to-face with one individual, each 15 minutes
97154	Group adaptive behavior treatment by protocol, administered by technician under the direction of a physician or other qualified health care professional, face-to-face with two or more individuals, each 15 minutes
97155	Adaptive behavior treatment with protocol modification, administered by physician or other qualified health care professional, which may include simultaneous direction of technician, face-to-face with one individual, each 15 minutes
97156	Family adaptive behavior treatment guidance, administered by physician or other qualified health care professional (with or without the individual present), face-to-face with guardian(s)/caregiver(s), each 15 minutes
97157	Multiple-family group adaptive behavior treatment guidance, administered by physician or other qualified health care professional (without the individual present), face-to-face with multiple sets of guardians/caregivers, each 15 minutes
97158	Group adaptive behavior treatment with protocol modification, administered by physician or other qualified health care professional, face-to-face with multiple individuals, each 15 minutes
0373T	Adaptive behavior treatment with protocol modification, each 15 minutes of technicians' time face-to-face with a individual, requiring the following components: administration by the physician or other qualified health care

CPT®* Codes	Description
	professional who is on site; with the assistance of two or more technicians; for a individual who exhibits destructive behavior; completion in an environment that is customized to the individual's behavior

Not Covered or Reimbursable when used to report the assessment and/or treatment of ADHD:

Assessment

CPT®* Codes	Description
95705	Electroencephalogram (EEG), without video, review of data, technical description by EEG technologist, 2-12 hours; unmonitored
95706	Electroencephalogram (EEG), without video, review of data, technical description by EEG technologist, 2-12 hours; with intermittent monitoring and maintenance
95711	Electroencephalogram with video (VEEG), review of data, technical description by EEG technologist, 2-12 hours; unmonitored
95712	Electroencephalogram with video (VEEG), review of data, technical description by EEG technologist, 2-12 hours; with intermittent monitoring and maintenance
95713	Electroencephalogram with video (VEEG), review of data, technical description by EEG technologist, 2-12 hours; with continuous, real-time monitoring and maintenance
95717	Electroencephalogram (EEG), continuous recording, physician or other qualified health care professional review of recorded events, analysis of spike and seizure detection, interpretation and report, 2-12 hours of EEG recording; without video
95718	Electroencephalogram (EEG), continuous recording, physician or other qualified health care professional review of recorded events, analysis of spike and seizure detection, interpretation and report, 2-12 hours of EEG recording; with video (VEEG)
95812	Electroencephalogram (EEG) extended monitoring; 41-60 minutes
95813	Electroencephalogram (EEG) extended monitoring; 61-119 minutes
95816	Electroencephalogram (EEG); including recording awake and drowsy
95819	Electroencephalogram (EEG); including recording awake and asleep

HCPCS Codes	Description
P2031	Hair analysis (excluding arsenic)

Treatment

CPT®* Codes	Description
92065	Orthoptic training; performed by a physician or other qualified health care professional
92066	Orthoptic training; under supervision of a physician or other qualified health care professional

HCPCS Codes	Description
G0177	Training and educational services related to the care and treatment of individual's disabling mental health problems per session (45 minutes or more)
H2027	Psychoeducational service, per 15 minutes
S9445	Individual education, not otherwise classified, non-physician provider, individual, per session
S9446	Individual education, not otherwise classified, non-physician provider, group, per session
T1018	School-based individualized education program (IEP) services, bundled

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Revision Details

Type of Revision	Summary of Changes	Date
Annual review	• Removed policy statements for: ➢ neuroimaging (e.g., computerized tomography [CT], magnetic resonance imaging [MRI], positron emission tomography [PET] and single-photon emission computerized tomography [SPECT]) ➢ education and achievement testing, including Intelligence Quotient (IQ) testing ➢ actigraphy ➢ brain mapping ➢ computerized tests of attention and vigilance ➢ event-related potentials (i.e., evoked potential studies) ➢ Quotient ADHD Test/System ➢ acupuncture/acupressure ➢ anti-candida albicans and antifungal medications ➢ anti-motion sickness medication ➢ auditory integration therapy	1/15/2025

	➢ brain training/cognitive programs/games ➢ chiropractic manipulation ➢ cognitive rehabilitation ➢ dietary treatments ➢ EEG biofeedback/neurofeedback ➢ herbal remedies ➢ megavitamin therapy ➢ metronome training ➢ movement therapy ➢ Neuro-Emotional Technique (NET)	
Annual review	• Revised policy statements	1/15/2024