

TDMHSAS BEST PRACTICE GUIDELINES

Attention Deficit Hyperactivity Disorder in Children and Adolescents

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Clinician Summary

- ADHD is a very common child and adolescent disorder.
- Problematic childhood disruptive behavior, hyperactivity, impulsivity and/or inattention should be evaluated for possible ADHD diagnosis.
- Diagnosis involves a detailed clinical interview focused on specific diagnostic criteria.
- Diagnostic information should be sought from multiple sources including teacher reports.
- Treatments usually involve stimulant medication but should also include behavioral interventions and classroom modifications.

Background

The Centers for Disease Control and Prevention (CDC) estimates that 4.4 million youth ages 4-17 have been diagnosed with attention deficit hyperactivity disorder (ADHD) by a healthcare professional. Overall estimates are that 5-10 percent of children may have ADHD. This figure includes 9.87% of youth in Tennessee. As of 2003, 2.5 million youth ages 4-17 were receiving medication treatment for the disorder. This includes 4.79 percent of children and adolescents aged 4-17 in the state of Tennessee (ADHD, 2005). In general, 60 percent of youth with ADHD carry their symptoms into adulthood (Medical News Today, 2004). The male-to-female ratio ranges from 2:1 to 6:1 (American Psychological Association, 2006).

Several recent reports suggest that ADHD rates are on the rise (MMWR, 2010; Akinbami, 2011). Approximately 9.5 percent or 5.4 million children 4-17 years of age had been diagnosed with ADHD as of 2007, representing a 22 percent increase in four years. Rates may be increasing because of greater knowledge and awareness about the condition, more frequent behavioral screening of children, or unidentified factors that may be causing more ADHD over time.

This Practice Guideline is focused on the treatment of ADHD in school aged children, particularly in the primary care/pediatric setting. Treatment of ADHD in pre-school children and adolescents may present added challenges.

Diagnostic Criteria (DSM-IV-TR)

- At least six of the following symptoms of inattention have been present for a minimum of six months ***to a degree that is maladaptive and NOT consistent with developmental level:***

1. Often fails to give close attention to details or makes careless mistakes in schoolwork.
2. Often has difficulty sustaining attention in tasks or play activities.
3. Often does not seem to listen when spoken to directly.
4. Often does not follow through on instructions and fails to finish schoolwork or chores (***NOT*** due to oppositional behavior or failure to comprehend instructions).
5. Often has difficulty organizing activities and tasks.
6. Often dislikes, avoids, or is reluctant to engage in tasks that require concentrated mental effort (e.g., schoolwork, homework).
7. Often loses items necessary for tasks or activities such as toys, assignments, pencils, or books.
8. Is often easily distracted by environmental stimuli.
9. Is often forgetful in daily activities.

OR

- At least six of the following symptoms of hyperactivity or impulsivity have been present for a minimum of six months ***to a degree that is maladaptive and NOT consistent with developmental level:***

1. Often fidgets with hands or feet, or squirms in seat.
2. Often leaves seat in classroom or in other situations in which the expectation is to remain seated.
3. Often runs about or climbs excessively in situations in which such behavior is inappropriate.
4. Often has difficulty playing or engaging in leisure activities quietly.
5. Is often “on the go” or often acts as if “driven by a motor.”
6. Often talks excessively.
7. Often blurts out answers before questions have been completed.
8. Often has difficulty waiting turn.
9. Often interrupts or intrudes on others like butting into conversations or games.

AND

- Some symptoms that caused impairment were apparent before 7 years of age.

AND

- Some impairment from the symptoms is present in at least two settings (e.g., at school and home).

AND

- There is clear evidence of clinically significant impairment in academic, social, or occupational functioning.

AND

- The symptoms do **NOT** occur only during a psychotic disorder and are **NOT** better accounted for by another mental disorder (e.g., Mood or Anxiety Disorder).

Depending on a predominance of symptoms in either the inattentive category or the hyperactive/impulsive category the diagnosis may be classified **ADHD-Primarily Inattentive** (formerly referred to as ADD), **ADHD-Primarily Hyperactive/Impulsive** or **ADHD-Combined Type** (American Psychiatric Association, 2000).

Differential Diagnosis

- | | |
|--|---------------------------------------|
| • Age appropriate behaviors in active children | Pervasive developmental disorder |
| • Adjustment disorders | Psychotic disorder |
| • Intellectual disability | Medical conditions |
| • Under-stimulating environments | Coordination or articulation problems |
| • Other environmental factors such as chaotic and/or disorganized environments | Hearing loss |
| • Disruptive behavior disorders | Sleep difficulties |
| • Substance-related disorders | Stereotypic movement disorder |
| • Petit mal epilepsy | Bipolar disorder |
| • Past trauma/child abuse | |

(American Psychiatric Association, 2000; Krull, 2012; Mehl-Madrona, 2003)

Comorbidity of Attention Deficit Disorders

ADHD frequently co-exists with:

- Other disruptive behavior such as Oppositional Defiant Disorder or Conduct Disorder
- Learning Disabilities and Language Delays
- Anxiety Disorders, including Obsessive-Compulsive Disorder
- Tic disorders, including Tourette's Disorder

Some conditions may develop in addition to ADHD, especially in poorly controlled ADHD:

- Depressive Disorders
- Substance Abuse Disorders

Source: American Psychiatric Association, 2000; Kaiser Permanente ADHD Guideline Development Team, 2009; Krull, 2012.

Screening, Evaluation and Diagnosis

The following may be the **chief complaints** from parents or teachers of a young person suffering from some form of attention deficit disorder. They indicate a need for further exploration:

School problems	Over active: fidgety restless
Can't stay in seat	Easily distracted
Difficulty taking turns	Blurts out answers
Can't follow instructions	Disruptive behavior
Difficulty completing tasks	Talks excessively
Interrupts, intrudes on others	Acts without thinking
Accident-prone	Poor self esteem
Difficulty being calm	"Doesn't listen"
Short term memory problems	"Someone thinks he has ADHD"

However, regardless of the nature of the chief complaint, the clinician should incorporate **screening for ADHD** as part of every youth's mental health assessment. Screening questions should ask about the major symptom domains of ADHD and whether the symptoms cause impairment. If rating scales/questionnaires will be used as screening tools, they can be packaged as part of the registration materials that parents/caregivers have to complete before visits or while in the waiting room. Any impairment as a result of symptoms or scores in the clinical range on screening instruments warrants a full evaluation. **Diagnostic evaluations** should be comprised of the following:

- ***Clinical interviews with the youth and the parent/caregiver.*** The interviews should be detailed, focusing on each of the 18 ADHD symptoms listed in the DSM-IV-TR. Data detailing duration, frequency, severity and age of onset should be collected. Parents

might complete measurement instruments that yield data about other psychiatric disorders as well as ADHD.

- ***Information should be gathered about the settings in which the symptoms occur.*** Questions about impairment in the school and/or work setting are as important as any impairment that manifests in the home. Typically, youth with ADHD have academic impairment.
- ***Ask about comorbid psychiatric disorders.*** Start with data regarding ODD and CD. Then explore about symptoms of learning disabilities, depression, anxiety, tic disorders, and/or substance abuse. Although they are much rarer conditions, explore for symptoms of psychosis or mania.
- ***Family history and family functioning is very important.*** ADHD and other psychiatric disorders often have a genetic component. Factors about the home environment indicative of inconsistency, disorganization or high levels of stress may indicate adjustment issues that resemble ADHD.
- ***Check youth's medical and social history.*** Include perinatal history and developmental milestones. Rarely, medical conditions, such as hyperthyroidism or seizures may mimic ADHD symptoms (AACAP, 2007).

Elementary school aged children should be interviewed along with the parent/caregiver. Older youth should be interviewed with their parents and also separately so they might disclose any significant symptoms. (Children and adolescents are less likely to accurately self-report disruptive behavior but parents are likely to under-report anxiety or depressive symptoms in their children.) A mental status examination assessing appearance, attention, behavior, affect, mood, sensorium, and thought processes should be performed by the clinician during the youth interview. **Psychological or neuropsychological assessments are necessary only if the youth's history suggests low general cognitive ability or low achievement in mathematics or language relative to his/her intellectual ability** (AACAP, 2007).

- ***ADHD-specific rating scales should be obtained from classroom teachers.*** The tools in Table 1 can assist clinicians in diagnosing disorders of attention in youth. The instruments can further serve to monitor progress following interventions.

Table 1. Screening Tools and Rating Scales

Attention Deficit/Hyperactivity Symptoms				
Screening Tool / Rating Scale	For Ages (Years)	Who Completes Checklist: Number of Items	Time to Complete (Minutes)	View Free Online ?
Attention Deficit Disorders Evaluation Scale (ADDES-3)	4-18	Parent: 46 Teacher: 60	12 15	
ADHD Rating Scale-IV (ADHD-IV)	5-17	Parent, Teacher, Clinician: 18	10-20	
ADHD Rating Scale	6-12	Parent, Teacher, Clinician, Student: 18	10-15	YES
Vanderbilt ADHD Diagnostic Parent Rating Scale	6-12	Parent: 55	10	YES
Vanderbilt ADHD Diagnostic Teacher Rating Scale		Teacher: 43		
SNAP-IV Rating Scale - Revised (SNAP-IV-R) - A revision of the Swanson, Nolan and Pelham	6-18	Parent, Teacher: 90	10	
ADD-H: Comprehensive Teacher's Rating Scale: Parent Form (ACTeRS)	6-14	Parent: 24	5-10	
ADHD Comprehensive Teacher Rating Scale (ACTeRS)	6-14	Teacher: 24	5-10	

*Source: Massachusetts General Hospital, School Psychiatry Program & Madi Resource Center, 2010.

Note: Evaluation instruments can assist the clinician with diagnosis, especially of the “underdiagnosed” type of attention disorder—ADHD Primarily Inattentive Type (ADHD-I, formerly ADD). Such youth do not generally present as if they are “driven by a motor.” Instead, ADHD-I youth more closely resemble the “space cadet” or the “couch potato” in his/her behaviors. As a result, they are frequently overlooked by teachers, become scapegoats for parents, and may be misdiagnosed by clinicians (Mehl-Madrona, 2003). In either case, multiple sources should be used to enhance diagnostic accuracy.

The diagnosis may require additional attention in **special populations**. In preschool children, the presence of environmental stressors should be completely understood. Very young children are more sensitive to negative environmental stress and may respond with symptoms that closely resemble ADHD. Adolescents are more likely to have co-morbid conditions such as depression, anxiety, substance abuse or conduct disorder. Identifying a primary condition (i.e. untreated ADHD may have resulted in depression) may help direct appropriate initial treatment.

Treatment

Untreated ADHD carries risk of poor adjustment. Without treatment, a child with ADHD may fall behind in school and have trouble with friendships. Family life may also suffer. Untreated ADHD can increase strain between parents and children and parents often blame themselves when they can't communicate with their child. The sense of losing control can be very frustrating. Teenagers with ADHD are at increased risk for driving accidents, substance abuse and delinquent behavior. Additionally, adults with untreated ADHD have higher rates of divorce and job loss, compared with the general population. Luckily, safe and effective treatments are available which can help children and adults control the symptoms of ADHD and prevent the unwanted consequences (AACAP, 2010).

Treatment planning for ADHD should take into account the chronic nature of the disorder as well as the most recent evidence concerning effective therapies. Family preferences and/or concerns should be considered as well. Treatment plans may consist of psychopharmacological and/or behavior therapy and should include psychoeducation of parents and children about ADHD and the various treatment options as well as school resources and linkage with community supports. Education about the diagnosis and the related issues is generally performed by the physician in the context of medication management and involves educating the parent and child about ADHD, helping parents anticipate developmental challenges that are difficult for children with ADHD, and providing general advice to the parent and child to help improve the child's academic and behavioral functioning. The treatment plan should be reviewed regularly and modified if the patient's symptoms do not respond (AACAP, 2007, AAP, 2011). Most treatment plans will involve:

- **Medication** (usually stimulants, see below)
- **Behavior Therapy** (including parent management training, see below)
- **Classroom or education modifications** (from minor classroom modifications to special education certification and the development of an IEP)

Primary treatment strategies for ADHD include a combination of medication and behavior therapy. Although professional groups have had differing opinions regarding the efficacy and importance of behavior therapy vs. medication in treating ADHD (e.g., AMA, 1998; AACAP, 2007, APA, 2007), both types of treatment have been demonstrated to be well-established with multiple studies supporting their use as a first-line treatment (Pelham & Fabiano, 2010). Thus, providers should take a comprehensive, multimodal approach to treatment planning, including both pharmacological and psychosocial interventions. 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 (National Resource Center on ADHD, 2004).

In the American Academy of Pediatrics' 2011 Clinical Practice Guidelines for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents, recommendations for treatment of ADHD vary depending on the age of the patient (AAP, 2011). For preschool-aged children (4-5 years), parent and/or teacher administered behavior therapy is recommended as the first line of treatment, with medication prescribed if the behavior interventions do not provide significant improvement and moderate to severe

disturbance in the child's functioning continues. For elementary school-aged children (6-11 years), medication and/or evidence-based parent- and/or teacher-administered behavior therapy is recommended, preferably both. It is also recommended that the school environment, program, or placement be a part of any treatment plan. For adolescents (12-18 years), medication is recommended, preferably with behavior therapy (AAP, 2011).

Medication Therapy

Stimulant medications remain the first choice among pharmacological options in the treatment of attention disorders, especially ADHD, in young people. They are the most widely used and widely researched ADHD treatment medications, especially involving children (National Resource Center on AD/HD, 2008). Nearly three fourths of elementary school children with the disorder who are treated with stimulants respond positively to one or more doses. In the short-term, stimulants often lead to improved attention and task completion, as well as reductions in disruptive behavior and impulsivity. In some cases, aggression is reduced. Youngsters tend to stay on medication treatment for an average of two to seven years, depending on their age. Results for adolescents are less favorable (American Psychological Association, 2006).

Table 2 lists medications that are typically prescribed for ADHD symptoms. All listed medications have been approved by the Food and Drug Administration (FDA) for use with youth. **Psychopharmacological treatment of ADHD should begin with an agent that has been approved by the FDA** (AACAP, 2007).

Regardless of the particular medication chosen, obtaining baseline measures is recommended, such as the scales referenced in Table 1. These measures can be repeated once the youth has begun medication therapy to measure efficacy and adjust dosage. Informed consent (risks including possible side effects, benefits and alternatives) should be obtained from the parent/guardian and assent should be obtained from the patient prior to starting these medications. **There is no specific recommended dose of medication based on weight of child or severity of disorder.** Typically, treatment should start with low doses and should be increased gradually depending on response and side effects. A poor response to one stimulant is not an indication that other stimulants will be ineffective. The goal of treatment is to use the lowest effective dose balanced with the fewest for side effects. If a medication is not working, reassess the diagnosis, drug dosing and the treatment plan.

A **progression of medication trials** may be necessary to identify an effective treatment:

1. Begin **Stimulant 1** (either methylphenidate based or amphetamine based) and gradually increase to document lack of effect or significant side effects. If ineffective, discontinue.
2. Begin **Stimulant 2** (from the other stimulant class) and gradually increase to document lack of effect or significant side effects.
3. Begin **Non-stimulant** monotherapy or add alpha-agonist to partially effective stimulant.

Table 2. Typically Prescribed Medications – Attention Deficit Hyperactivity Disorder

STIMULANTS				
<p>Common side effects of stimulant medications include rebound, irritable mood, tics and decreased appetite which can lead to weight loss and decelerated growth in some children. Children on stimulant medications can have trouble sleeping, particularly those being dosed in the afternoon to cover the second half of the day and late afternoon (around homework time). Stimulants can be known to induce mania in vulnerable populations. All stimulants carry warnings about their abuse potential. The shorter acting drug, the increase in abuse potential. The long acting drugs are much more likely to be misused than abused. Stimulants are not recommended in patients with known cardiac abnormalities or those patients with a family history of sudden death before age 30.</p>				
MAXIMUM RECOMMENDED DAILY DOSAGE				
Brand Name	Generic Name	Children	Adolescents	Length of Action
Adderall	Mixed salts of single-entity amphetamine	40 mg	40 mg	FDA approved for children ages 3 and older (Texas Department of Family & Protective Services ..., 2010). Lasts 3-6 hours (Hirsch, n.d.). Black Box warning for abuse/diversion potential, among other issues (ADHD Information Library, 2011).
Adderall XR	Mixed amphetamine salts	30 mg	40 mg	FDA approved for children ages 6 and older (Texas Department of Family & Protective Services ..., 2010). Lasts 8-10 hours (Hirsch, n.d.). Black Box warning for abuse/diversion potential, among other issues (ADHD Information Library, 2011).
Dexedrine	Amphetamine	40 mg	40 mg	FDA approved for children ages 6 and older (Texas Department of Family & Protective Services ..., 2010). Lasts 3-6 hours (Hirsch, n.d.). Black Box warning for abuse/diversion potential, among other issues (ADHD Information Library, 2011).
Dexedrine Spansule	Amphetamine	40 mg	40 mg	FDA approved for children ages 6 and older (Texas Department of Family & Protective Services ..., 2010). Lasts 8-10 hours (Hirsch, n.d.). Black Box warning for abuse/diversion potential, among other issues (ADHD Information Library, 2011).
Vyvanse	Lisdexamfetamine	70mg	70mg	FDA approved for children ages 6-12 (NIMH, 2010; Texas Department of Family & Protective Services ..., 2010). Research shows it can last between 10-12 hours (National Resource Center on AD/HD, 2011). The medication carries a Black Box warning but abuse potential is expected to be lower because activation occurs only if swallowed (Hosenbocus & Chahal, 2009).
Ritalin	Methylphenidate	60 mg	60 mg	FDA approved for children ages 6 and older (Texas Department of Family & Protective Services ..., 2010). Lasts 3-4 hours (Hirsch, n.d.). Black Box warning for chronic abusive use, among other issues (ADHD Information Library, 2011).
Ritalin LA	Methylphenidate	60 mg	60 mg	FDA approved for children ages 6 and older (Texas Department of Family & Protective Services ..., 2010). Lasts 8-12 hours (Hirsch, n.d.). Black Box warning for chronic abusive use, among other issues (ADHD Information Library, 2011).
Metadate CD	Methylphenidate	60 mg	60 mg	FDA approved for children ages 6 and older (Texas Department of Family & Protective Services ..., 2010). Lasts 8-12 hours (Hirsch, n.d.). Black Box warning for chronic abusive use, among other issues (ADHD Information Library, 2011).

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MAXIMUM RECOMMENDED DAILY DOSAGE				
Brand Name	Generic Name	Children	Adolescents	Length of Action
Methylin (chewable and liquid)	Methylphenidate	60 mg	60 mg	FDA approved for children ages 6 and older (Texas Department of Family & Protective Services ..., 2010). Lasts 3-4 hours (Hirsch, n.d.). Black Box warning for chronic abusive use, among other issues (ADHD Information Library, 2011).
Concerta	Methylphenidate	54 mg	72 mg	FDA approved for children ages 6 and older (Texas Department of Family & Protective Services ..., 2010). Lasts 8-12 hours (Hirsch, n.d.). Black Box warning for chronic abusive use, among other issues (ADHD Information Library, 2011).
Daytrana Patch	Methylphenidate	30 mg	30 mg	FDA approved for children ages 6 and older (Texas Department of Family & Protective Services ..., 2010). Lasts 8-12 hours (Hirsch, n.d.). Black Box warning for chronic abusive use, among other issues (ADHD Information Library, 2011).
Focalin	Dexmethylphenidate	20 mg	20 mg	FDA approved for children ages 6 and older (Texas Department of Family & Protective Services ..., 2010). Lasts 3-4 hours (Hirsch, n.d.). Black Box warning for chronic abusive use, among other issues (ADHD Information Library, 2011).
Focalin XR	Dexmethylphenidate	30 mg	30 mg	FDA approved for children ages 6 and older (Texas Department of Family & Protective Services ..., 2010). Lasts 8-12 hours (Hirsch, n.d.). Black Box warning for chronic abusive use, among other issues (ADHD Information Library, 2011).

NOTE: Contents are based on *Psychotropic Medication Utilization Parameters for Foster Children* (2010), as developed by the Texas Department of Family & Protective Services..., as well as other reliable resources.

NONSTIMULANTS				
MAXIMUM RECOMMENDED DAILY DOSAGE				
Brand Name	Generic Name	Children	Adolescents	Length of Action/other
Strattera	Atomoxetine	100 mg	100 mg	FDA approved for children ages 6-17 (Texas Department of Family & Protective Services ..., 2010). It has the potential to last 24 hours (Hirsch, n.d.). Black Box warning for suicidal ideation, among other issues (NIMH, 2009).
Catapres	Clonidine	0.4mg	0.4 mg	<i>Not approved for use in pediatric patients</i> (Texas Department of Family & Protective Services ..., 2010). Use and dosage should be based on clinical need and determined by the prescriber (Mayo Clinic, 2012).
Kapvay	Clonidine XR	.4 mg	.4 mg	FDA approved for children ages 6-17 (Texas Department of Family & Protective Services ..., 2010). Can last up to 24 hours (WebMD, n.d.). Can cause low heart rate and blood pressure (Daily Med, 2012).
Tenex	Guanfacine	4 mg	4mg	<i>Not approved for use in pediatric patients</i> (Texas Department of Family & Protective Services ..., 2010). Use and dosage should be based on clinical need and determined by the prescriber (Mayo Clinic, 2012).
Intuniv	Guanfacine XR	4 mg	4 mg	FDA approved for children ages 6-17 (Texas Department of Family & Protective Services ..., 2010). Lasts 24 hours (WebMD, n.d.). Can cause low heart rate and blood pressure (Daily Med, 2011).
Wellbutrin SR	Bupropion			<i>Not approved for use in pediatric patients</i> (Texas Department of Family & Protective Services ..., 2010). Use and dosage should be based on clinical need and determined by the prescriber (Mayo Clinic, 2012).
Wellbutrin XL	Bupropion			<i>Not approved for use in pediatric patients</i> (Texas Department of Family & Protective Services ..., 2010). Use and dosage should be based on clinical need and determined by the prescriber (Mayo Clinic, 2012).
Wellbutrin	Bupropion			<i>Not approved for use in pediatric patients</i> (Texas Department of Family & Protective Services ..., 2010). Use and dosage should be based on clinical need and determined by the prescriber (Mayo Clinic, 2012).

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Behavior Therapy

Behavior modification, or behavior therapy, is the only nonmedical treatment that has been found to be effective for ADHD. It may be effective as a sole treatment in mild cases of ADHD but most treatment plans should consider both medication and behavioral interventions. There are three components to effective behavior therapy: Behavior Parent Training (BPT), Behavior Classroom Management (BCM), and Behavior Peer Interventions (BPI). Although all three types of interventions have empirical support, BPT appears to be the most important aspect of psychosocial treatments for ADHD. BPT involves working directly with parents to establish rules and structure in the home, use praise and rewards for positive/desired behavior and appropriate consequences for undesired behavior, give appropriate commands, ignore behavior when possible, and other skills. BCM involves working with teachers and school personnel toward similar goals in the classroom. Preferential seating, frequent breaks, and increased attention and praise may be components of BCM. BPT often takes place in the school setting as well and involves teaching social skills, social problem solving, and decreasing undesirable and antisocial behaviors.

Although teaching parents more effective ways of dealing with their children is the most important aspect of psychosocial treatment for ADHD, ideally parent, teacher, and child interventions should be integrated to yield the best outcome. Several principles are common to behavioral interventions:

- start with goals that the child can achieve and improve in small steps;
- rewarding positive behavior is more effective than punishing negative behavior
- be consistent--across different times of the day, different settings, and different people;
- don't expect instant changes--teaching and learning new skills take time, and children's improvement will be gradual;
- constantly monitor the child's response and adjust treatment as necessary; and
- begin intervention as early as possible--although behavior modification works for all ages, early treatment is more effective than later intervention.

Family therapy can also be used to change family interactional patterns that may cause dysfunction and improve communication between family members, which functions to encourage the child to rely upon his/her strengths. Various forms of individual counseling may be indicated for children with problems coping or other comorbid conditions. Individual psychotherapy is not recommended as a primary intervention for children with attention disorders (AAP, 2001).

When medication is not part of the initial treatment plan and the youth continues to have problems with core symptoms of the attention disorder, a stimulant medication should be considered AND behavior therapy should be reinforced.

Bibliotherapy

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For Youth with ADHD

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