

## **Management of Attention Deficit/Hyperactivity Disorder in Children and Adolescents**

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Sources:

“Clinical Practice Guideline: Diagnosis and Evaluation of the Child with Attention Deficit/Hyperactivity Disorder.” *Pediatrics*, May 2000.

“Practice Parameters for the Assessment and Treatment of Children Adolescents, and Adults with Attention Deficit/Hyperactivity Disorder.” *Journal of the American Academy of Child & Adolescent Psychiatry*, October 1997.

“Diagnosis and Management of Attention Deficit Hyperactivity Disorder in Primary Care.” *Health Care Guideline*; Institute for Clinical Systems Improvement, January 2000.

“Clinical Practice Guideline: Treatment of the School-Aged Child with Attention-Deficit/Hyperactivity Disorder” *American Academy of Pediatrics, Pediatrics*, Vol. 108, No. 4, October 2001, pp. 1033-1044.

American Academy of Pediatrics: Elk Grove Village, IL. *Understanding ADHD: Information for Parents About Attention- Deficit/Hyperactivity Disorder*. Pub. No. 5-99/0901

*The recommendations in this guideline do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.*

## **Purpose**

To provide guidelines for screening and treatment of ADHD in children and adolescents.

## **Background and Introduction**

According to the American Academy of Pediatrics (AAP), Attention-Deficit/ Hyperactivity Disorder (ADHD) is the most common neurobehavioral disorder of childhood. ADHD is also among the most prevalent chronic health condition affecting school-aged children. A recent AAP review of prevalence rates in school-aged community based samples indicates rates varying from 4% to 12. In this population, 9% of school-age males and 3% of females are found to have behaviors consistent with ADHD.

Prevalence rates for ADHD vary greatly for several reasons. First, there is variance between practitioners in the use of the Diagnostic and Statistical Manual of Mental Health Disorders, Fourth Edition (DSM-IV) criteria to diagnose ADHD. Second, prevalence rates vary due to misdiagnosis-the true diagnosis is often missed or confused because of other psychiatric comorbidities. Finally, variation in screening and assessment among primary care, psychiatry, and non-physician mental health providers contributes to the variation.

Given these variants in diagnostic prevalence, the treatment of patients with ADHD is equally varied between clinical settings, practitioners within the same type of setting, and geographic region.

## **Definitions**

ADHD is a condition manifested by inappropriate levels of inattention, hyperactivity and impulsivity. The disturbances must be present in two or more settings and must cause significant disruption of social and/or academic functioning.

## **DSM-IV Criteria for ADHD**

- A. Either (1) Inattentive type or (2) Hyperactive/ Impulsive type:
1. Six or more of the following symptoms of inattention have persisted for at least six months to a degree that is maladaptive and inconsistent with developmental level:

### ***Inattention***

- a. often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
- b. often has difficulty sustaining attention in tasks or play activities
- c. often does not seem to listen when spoken to directly
- d. often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
- e. often has difficulty organizing tasks and activities
- f. often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
- g. often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books or tools)
- h. is easily distracted by external stimuli
- i. is often forgetful in daily activities

2. Six or more of the following symptoms of hyperactivity-impulsivity have persisted for at least six months to a degree that is maladaptive and inconsistent with developmental level:

***Hyperactivity***

- a. often fidgets with hands or feet or squirms in seat
- b. often leaves seat in classroom or in other situations in which remaining seated is expected
- c. often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
- d. often has difficulty playing or engaging in leisure activities quietly
- e. is often “on the go” or often acts as if “driven by a motor”
- f. often talks excessively

***Impulsivity***

- a. often blurts out answers before questions have been completed
- b. often has difficulty awaiting turn
- c. often interrupts or intrudes on others (e.g., butts into conversations or games)

- B.** Some hyperactive-impulsive symptoms or inattentive symptoms that caused impairment were present before age 7 years
- C.** Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home)
- D.** There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.
- E.** The symptoms do not occur exclusively during the course of a pervasive developmental disorder, schizophrenia or other psychotic disorder, and are not better accounted for by another mental disorder (e.g., mood disorder, anxiety disorder, disassociative disorder, or personality disorder).

***Take Away Message*** *To meet DSM-IV diagnostic criteria, the patient must manifest symptoms before age 7, in two or more settings, and evidence clinically significant impairment in social or academic functioning.*

## **Evaluation and Assessment**

The importance of a thorough and careful evaluation cannot be underestimated. First, proper diagnosis of ADHD may prevent school and social failure and may temper or prevent later behavioral problems. Second, since the diagnosis of ADHD can carry a stigma, the diagnosis can lead to undesirable consequences. Finally, an incorrect diagnosis can obscure other potentially treatable problems. For these reasons it is crucial that all relevant information be gathered and that professionals work in concert to produce an accurate diagnosis of the condition and related co-morbidities.

Four steps are required in the assessment of a child for ADHD including:

1. School-based assessment and the use of a standardized rating scale for ADHD (i.e., not a broadband scale)
2. Parental input along with the use of a standardized rating scale for ADHD
3. History (patient, family and psychosocial) and physical exam
4. Co-morbidities and differential diagnoses

### **Step 1: School-Based Assessments**

Since elementary school children spend six to eight hours in class each day, teachers are a critical part of the ADHD evaluation. According to the AAP, the assessment of ADHD requires evidence directly obtained from the classroom teacher regarding the core symptoms of ADHD, the duration of symptoms, the degree of functional impairment, and coexisting conditions. Although one can infer symptoms from general descriptions from the classroom teachers a structured tool for collecting information on the child's behavior is key to a thorough evaluation. Examples include the Conners Rating Scale, Child Attention Profile or the Classroom Difficulty Survey.

In situations where the child has more than one teacher, it is important to get input from several instructors. When symptoms of impulsivity, inattentiveness, or hyperactivity are displayed in only one or two of many classes, the diagnosis of ADHD becomes questionable. Both a structured environment and a positive teacher-student relationship can mean the difference between acceptable and unacceptable classroom behavior.

In addition to providing reports of the behavior, schools can also provide information about attendance, grades, test scores, learning disabilities, and other problems that may affect a child's academic performance. These items are helpful to the child's physician in performing a thorough evaluation. Items that can be requested from the school include:

- Behavioral observations and behavioral questionnaires from one or more teachers
- Child study team evaluation, if done;
- Individual education plan, if done;
- Achievement test scores and grades
- Results of IQ or psychometric tests, if done;
- Results of hearing or vision tests, if done, and
- Attendance records.

### **Step 2: Parental Input And Use Of Standardized Rating Scales**

The assessment of ADHD requires evidence directly obtained from parents or caregivers regarding the core symptoms of ADHD in various settings, the age of onset, duration of symptoms, and degree of functional impairment. Use of rating scales is a clinical option when evaluating children for ADHD. It is especially useful when comparing pre and post-treatment effects.

### **Step 3: History & Physical Exam**

The primary purpose of the history and physical exam is to elicit information about other diagnoses in the differential, including psychosocial or mental health comorbidities. For example, poor sleep or inadequate sleep can produce symptoms suggestive of ADHD, especially inattentive type, and therefore an adequate sleep history is essential. Fetal alcohol and cocaine exposure can produce symptoms that mimic ADHD as can lead toxicity. Difficulties in sensory areas may result in classroom difficulties and produce restless or inattentive behaviors. Children with neuromaturational delays or neurological "soft signs" are at risk for learning and behavioral disorders.

The physical examination should focus on the following:

- Screens of vision and hearing, if not previously done in other settings (e.g. school)

- Identification of minor physical anomalies (e.g. low set ears, high arched palate) that may signal genetic abnormalities
- Evidence of physical or sexual abuse
- Motor or vocal tics, asymmetry of reflexes or tone, tremors

**Testing:** Numerous studies have shown that standard, non-targeted tests have little value in diagnosing an individual child. These include:

- Screening for high blood lead levels
- Screening for hypothyroidism
- Computerized continuous performance tests  
CT scans or MRI scans  
Electroencephalograms

The assessment of ADHD requires that family functioning and quality of interaction be established. This includes psychosocial stressors, family psychosocial history, quality of care giving, and parental substance abuse/dependence. Parental psychiatric or chemical dependency problems can cause symptoms that mimic ADHD. The PCP can use his or her on-going familiarity with the family to evaluate these key areas in order to obtain differential or co-existing diagnostic information. Children from disruptive, chaotic, abusive or neglectful home environments often look as though they have ADHD. Children who have suffered multiple moves, friends moving away, or the death or serious illness of a family member can also be distractible and off task. As such, it is important to consider these environmental factors when evaluating a child for ADHD, as they can either co-occur with the disorder or present as ADHD when it is not.

#### **Step 4: Co-Morbidities and Differential Diagnoses**

Children with attention and hyperactivity problems exhibit a wide range of symptom severity and associated disorders. Approximately one quarter of all children newly diagnosed with ADHD do not have ADHD but rather a condition that mimics ADHD symptoms. Biomedical problems are rare mimics of ADHD in comparison to psychiatric, behavioral and learning problems.

**Psychiatric and Behavioral Conditions:** Children with ADHD commonly have other mental health problems; up to 44% have at least one other psychiatric disorder, 32% have two other disorders, and 11% have three other disorders. Because of the high prevalence of comorbidities, referral to a mental health professional may be needed in order to complete the diagnostic assessment.

Children with ADHD are at increased risk of oppositional defiant disorder, anxiety disorders, bipolar disorder and depression. Substance abuse, including abuse of the prescribed stimulant medication becomes more common in adolescents and older age groups. The prevalence of these conditions in children with ADHD ranges from 18 to 35 percent. One in three of children with ADHD also have Oppositional Defiant Disorder. One in five children with ADHD have childhood depression, which often presents as irritability and mood swings. Children can also have these and other psychiatric conditions without ADHD, and because of the overlap of symptoms, these psychiatric conditions may be misdiagnosed as ADHD. Therefore, screening for these four conditions is an important part of the ADHD evaluation.

### Prevalence of Selected Coexisting Conditions in Children With ADHD

| Comorbid Disorder             | Estimated Prevalence (%) | Confidence Limit for Estimated Prevalence (%) |
|-------------------------------|--------------------------|---|
| Oppositional Defiant Disorder | 35.2                     | 27.2, 43.8                                    |
| Conduct Disorder              | 25.7                     | 12.8, 41.3                                    |
| Anxiety Disorder              | 25.8                     | 17.6, 35.3                                    |
| Depressive Disorder           | 18.2                     | 11.1, 26.6                                    |

Table from: American Academy of Pediatrics, Clinical Practice Guideline: Diagnosis and Evaluation of the Child With Attention-Deficit/Hyperactivity Disorder, Vol. 105 No.5 May 2000

**Academic and Learning Problems:** 20-30% of children with ADHD have learning disabilities in reading, writing or math. Alternately, children with undiagnosed learning disorders (but not ADHD) can often appear inattentive or off-task in the classroom when they are unable to process grade-level work. Some signs of learning disability include consistent delays on group standardized achievement tests or report cards.

**Sensory Processing Deficits:** Children with vestibular dysfunction, auditory or visual processing deficits, sensory integration issues, or speech and language deficits can become so frustrated with the environment or others' expectations, that they may appear to have ADHD. Of course, some children and adolescents with these issues also sometimes have ADHD. Careful evaluation of suspected sensory or physical processing issues can be an important part of an evaluation of the child who exhibits signs of these disorders.

**Developmental Disorders:** Autistic spectrum disorders, Tourette's or other tic disorders, or children with significant developmental limitations or delays often have an ADHD aspect to their presentation. Problems understanding emotions, pedantic or slow developing speech, sensorimotor issues, or delays in reaching developmental milestones or acquiring basic academic skills are some signs that these issues are present.

#### **Take Away Message**

*Irritability and mood swings are the most common presenting symptoms of childhood depression. Be especially alert if there is a family history of depression.*

### Therapeutic Interventions

The two primary modalities of treating ADHD are pharmacologic and behavioral, including interventions at home and accommodations at school. For children who have other mental health comorbidities, mental health intervention may be appropriate to treat the co-morbidity and ADHD (see Consultation & Referral section).

#### **Pharmacologic Treatment**

The decision to treat a child with ADHD is based on persistent target symptoms sufficiently severe to cause functional impairment at school, home, and with peers. Although medication is the most powerful and best documented intervention, each of the symptoms may not respond. Some parents and patients (especially adolescents) are resistant to the use of medication, and some patients experience unacceptable side effects or limited efficacy.

### ***Take Away Message***

*A trial of medication as a diagnostic tool is not appropriate. **Response to medication should not be used as the basis to diagnose ADHD.***

### **Medication Trials**

There are a number of reasons why an individual's response to a stimulant or other medication is not a valid indication of the presence of ADHD:

- Individuals with other disorders and those without ADHD may respond positively to stimulant medications, though rarely dramatically.
- A positive response to medication may be the result of a placebo effect rather than a true indication of the presence of ADHD.
- The use of medication as diagnostic tool may lead the physician to prematurely conclude the diagnostic process without considering disorders that coexist with ADHD and jointly interfere with the individual's functions.

### **Medical Considerations**

- Contraindications to the use of stimulants may include psychosis, hypertension, arrhythmias, glaucoma, motor tics (other than Tourette's), or previous untoward reactions to stimulant medication. Individuals with histories of serious drug abuse problems require specialized assessment. A comorbid condition may warrant the consideration of alternative medications, such as an anti-depressant.
- Marked agitation, tension, and anxiety are contraindications to stimulant medications since these drugs may aggravate these symptoms.
- Inquire about herbal or naturopathic remedies, e.g. Ma Huang, due to potential interactive effects.
- Approximately 15-30% children on stimulants experience motor tics. Most are transient and dose related. Half of children with Tourette's also have ADHD. The presence of tics is not an absolute contraindication to the use of stimulants.

### **Choice of Initial Medication**

The 1999 McMaster Report reviewed 22 studies and showed no differences between methylphenidate or dextroamphetamine and no differences among the different short, intermediate, or long-acting forms on improvement in core symptoms. Therefore, medication choice and dosing intervals can be individualized based on life style and other non-medical considerations.

## Summary of ADHD Medications for Use in Children and Adolescents

| Medications   | Duration of Effect   | Starting dose   | Titration & Timing of Doses   |
|---|--|---|---|
| Methylphenidate (Ritalin) short acting tablets (5, 10, 20 mg tabs)<br>Dosage Range: 0.3-0.7 mg/kg/dose.<br>(Total dose usually does not exceed 60 mg/day) | 3-5 hours  | <8 yrs (<25 kg) start with 5mg/dose bid.<br>w<br>>8yrs (>25kg) start with 10mg/dose bid.  | Increase by 2.5-5mg/dose (depending on wt) m & noon; add 4PM dose as needed.<br><br>Dosage range: 0.3-0.7 mg/kg/dose<br>Daily dose above 60mg not recommended.                          |
| Dextroamphetamine (Dexedrine) short-acting tablets (5mg)<br>Dosage Range: 0.2-0.4 mg/kg/dose<br>(Total dose usually does not exceed 40mg/day).            | 4-6 hours  | Usually 5mg tablets bid.<br>Typical dose is half that of the equivalent Methylphenidate dose.   | Increase with 2.5-5 mg tab/dose; am & noon; add 4pm dose as needed.<br>Dosage Range: 0.2-0.4mg/kg/dose<br>Daily dose above 40 mg not recommended.                                       |
| Methylphenidate intermediate-acting (Ritalin SR 20mg tablets, Metadate ER 10, 20 mg tablets)  | 3-8 hours  | 20 mg AM (consider for use in children responding to 10 mg AM and noon doses)   | Add 5mg - 10mg short-acting tablet in AM and/or at 4 PM.<br>Alternately, increase by 20 mg q week.<br>Daily dose above 60 mg not recommended.   |
| Methylphenidate Metadate CD, 20 mg capsules   | 8-12 hours   | 20 mg q AM  | For methylphenidate naïve patients, starting dose 20mg qd. Increase dose by 20 mg q week.   |
| Methylphenidate Concerta 18, 27, 36, 54 mg  | 8-12 hours   | 5 mg Ritalin bid-tid<br>=20 mg SR<br>=18 mg Concerta<br>10mg Ritalin bid-tid<br>=40 mg SR<br>=36 mg Concerta  | For methylphenidate naïve patients, starting dose 18 mg qd.<br>Increase dose by 18 mg q week.<br>Daily dosage above 54 mg not   |
| 15mg Ritalin bid-tid<br>=60 mg SR<br>=54 mg Concerta  |  |   | Recommended for children ages 6-13.<br>Daily dosage above 72mg not recommended for adolescents ages 14 and up.  |
| Dextroamphetamine (Dexedrine) Long-acting spansules: 5, 10, 15 mg   | 6-8 hours  | Age 3-5, start at 2.5 mg dose<br>Age 6+, start at 5 mg dose bid<br>Typical dose is half that of the equivalent methylphenidate dose<br>First dose on awakening, then 4-6 hours later        | Increase by 2.5 mg increments.<br>Increase by 5 mg increments, max 40 mg qd.<br>Increased with 5 mg spansule in AM only or add 5 mg tablets to AM dose.                                 |
| Mixture of amphetamine salts (Adderall®) 5, 10, 20, 30 mg tablets   | 5-8 hours depending on dose  | Age 3-5, start at 2.5 mg dose<br>Age 6+, start at 5 mg dose bid   | Increase by 2.5 mg increments.<br>Increase by 5 mg increments, max 40 mg qd.<br>Can add second dose 6 - 7 hrs after am dose.<br>Consider using smaller pm dose.                         |
| Adderall XR 5, 10, 15, 20, 25, 30 mg  | 8 - 12 hours   | 5-10 mg qAM - increase by 5-10 mg q week  | Maximum dose 60 mg qd   |
| Wellbutrin Short acting 75, 100 mg<br>(Available generically)   | 50 mg tid  | Maximum dose 50-100 mg  | Wellbutrin Short acting 75, 100 mg<br>(Available generically)   |
| Wellbutrin SR 100, 150, 200 mg<br>Wellbutrin XL 150, 300 mg   | 100 mg bid   | Maximum dose 400 mg bid   | Wellbutrin SR 100, 150, 200 mg<br>Wellbutrin XL 150, 300 mg   |
| Strattera (atomoxetine) 10, 18, 25, 40 and 60 mg  | Atomoxetine has a half-life of around 5 hours, so effects will normally last through most of the dosing interval | <70kg start at 0.5mg/kg qAM for 3 days<br>>70kg, start at 40mg qAM for 3 days<br>25-100 mg daily<br>(The total daily dose usually does not exceed the lesser of 1.4mg/kg/day or 100mg/day). | <70 kg increase dose to a target of 1.2mg/kg qAM or BID in divided doses. Max dose is 1.4 mg/kg/day.<br>>70kg, increase dose to 80 mg qAM or BID in divided doses. Max dose: 100 mg/day |

\* Clonidine in doses of 0.1 mg to 0.3 mg per day appears to have moderate treatment effects for the common symptoms of ADHD in children and adolescents. Clonidine as a second-line treatment is comparable in effectiveness to tricyclic antidepressants but is generally less effective than stimulants. Clonidine treatment is associated with many treatment-emergent side effects, especially sedation and irritability.

**Behavioral Interventions**

While medication is the most effective intervention for the primary symptoms of ADHD, psychosocial and/or behavioral interventions are indicated when the child has mental health comorbidities or when family dysfunction is present. In fact, research shows a minimal effect of individual psychotherapy on primary ADHD symptoms. Effective behavioral interventions all have the common goal of modifying the physical and social environment to alter behavior, and should be used with substantial parental involvement.

Principles for behavior therapy are:

1. **Set specific goals.** Set clear goals for your child such as staying focused on homework for a certain time or sharing toys with friends.
2. **Provide rewards and consequences.** Give your child a specified reward (positive reinforcement) when she shows the desired behavior. Give you child a consequence (unwanted result or punishment) when she fails to meet a goal.
3. **Keep using the rewards and consequences.** Using the rewards and consequences consistently for a long time will shape your child’s behavior in a positive way.

**Behavior Therapy Techniques**

| Technique              | Description   | Example  |
|------------------------|---|--|
| Positive reinforcement | Providing rewards or privileges in response to desired behavior   | Child completes an assignment and is permitted to play on the computer   |
| Time-out               | Removing access to desired activity because of unwanted behavior  | Child hits sibling and, as a result, must sit for 5 minutes in the corner of the room  |
| Response cost          | Withdrawing rewards or privileges because of unwanted behavior  | Child loses free-time privileges for not completing homework   |
| Token economy          | Combining reward and consequence. The child earns rewards and privileges when performing desired behaviors. She loses the rewards and privileges as a result of unwanted behavior | Child earns stars for completing assignments and loses stars for getting out of seat. The child cashes in the sum of her stars at the end of the week or a prize |

Source: American Academy of Pediatrics: Elk Grove Village, IL. Understanding ADHD: Information for Parents About Attention-Deficit/Hyperactivity Disorder. Pub. No. 5-99/0901

**Accommodations at School**

Medication should not be used as a substitute for appropriate educational curricula, student-to-teacher ratios, or other environmental accommodations. At times, the most appropriate response to a behavioral problem is behavior modification, a change in classroom placement, or modification of the teacher’s classroom management style or behavioral interventions. This is particularly the case when there is evidence that the disturbance is localized to one classroom situation, when it seems to be a reaction to a change in teachers or to a particular teacher’s approach with the child, or when the patient has a learning disability. In mild cases, parent education and appropriate school placement or resources often are initiated before medication, although a decision about special education may best be deferred until the degree of improvement due to medication can be assessed.

- Classroom management techniques may include the following:
- Keeping a set routine and schedule for activities
- Using a system of clear rewards and consequences, such as a point system or token economy Sending daily or weekly report cards or behavior charts to parents to inform them about the child's progress
- Seating the child near the teacher
- Using small groups for activities
- Encouraging students to pause a moment before answering questions
- Keeping assignments short or breaking them into sections
- Close supervision with frequent, positive cues to stay on task

### **Diet Interventions**

There is no well-validated controlled trial that shows diet modifications ameliorate the primary symptoms of ADHD. Anecdotal reports of hyperactive behavior in children in association with certain foods including sugar, chocolate, and food dyes, prompted double-blind, placebo-controlled studies of the relationship between food additives and hyperactivity. None of these studies supported the effect of food additives on behavior except in a very small group of children. Although recent studies have reported behavioral improvement with hypoallergenic restriction diets, the lack of methodologic rigor requires further study before such therapy can be considered effective.

## **Assessment of Response to Treatment**

### **Measurement of Treatment Effects**

There should be regular assessment of the therapeutic effects and side effects of all the medications administered. **Children who have received a new diagnosis of ADHD and who have received an ambulatory prescription for ADHD medication should have a follow-up visit with a practitioner who has prescriptive authority within 30-days of the initial diagnosis and treatment.**

**Children who continue on ADHD medication through the 30 day initiation phase should have at least two additional follow-up visits with a practitioner who has prescriptive authority within the following 9 month period.**

Comparison of pre- and post-medication behavioral rating scales produces a more accurate, less biased assessment of treatment effects. Rating scales should be completed within 1-2 weeks of medication changes. A brief checklist such as the CAP profile or the IOWA Conners Teacher Rating Scale is invaluable in obtaining teacher's reports of medication efficacy. Once the initial dosing schedule is complete, physicians should continue periodic medication reviews with parents and teachers.

Curriculum-based measures and academic performance ratings are useful for monitoring progress in academic subjects. Measures of academic productivity and accuracy administered in the office, such as timed brief reading and math tests, may be especially useful in assessing drug effect because of their similarity to tasks expected of the child at school.

Response to one stimulant does not predict response to the others. Studies indicate a 70-80% response rate to each stimulant independent of one another. Therefore, if a child is a non-responder to one stimulant, it is advisable to attempt a second or third trial with other stimulants.

If the patient fails to respond to common stimulant medications, then consider referral to a specialist.

Even children who respond positively to medication may continue to show deficits. Specific learning disabilities, gaps in academic knowledge and skills due to inattention, and impaired organizational abilities may require educational remediation. Parent education and training in techniques of behavior management are often indicated. Social skills deficits and family pathology may need specific treatment.

### **Side Effect Assessment**

Parents often are superior in rating side effects, while teachers are better at assessing stimulant efficacy. A structured side effects checklist can be used, such as the Side Effect Rating Scale for Stimulants. Each of these stimulant medications have the common emergent side effects of decreased appetite, insomnia, headache, stomachaches, and irritability. Most are dose related and may resolve with dose reduction.

### **Breakthrough Symptoms**

If children have breakthrough symptoms, then:

- Evaluate for environmental/comorbid causes, especially in adolescents
- Increase dose and assess compliance
- Shorten frequency of dose (overlap) or increase dose
- Consider long acting preparation
- Add short-acting dose late afternoon for difficulties completing homework.
- In adolescents consider comorbidities of Oppositional Defiant Disorder, Substance Abuse, etc. if previously effective dose is no longer effective.

*Take Away Message Dosing is gradually increased until symptoms are diminished. However, at higher doses hyperactive symptoms may be relieved at the expense of cognitive impairment and attention.*

### **Consultation & Referral**

During the course of evaluation and/or treatment, problems may be identified which require consultation or referral to a mental health professional. Examples include depression, anxiety, co-occurring medical condition, parental substance abuse, parent-child conflict, or other behavioral problems. Psychological assessment can assist with the diagnostic process in complex cases.

Referrals should be considered when:

- Recommended maximum dose has been administered with minimal improvement
- A second stimulant trial has failed
- There is a decline in efficacy of previously effective medications
- Family psychopathology is present
- Substance abuse by parents or the adolescent is suspected

If there is a concern about learning difficulties, psychoeducational testing generally available to families at no expense through the school system.

### **Maintenance & Continuing Care**

Attention Deficit Hyperactivity Disorder may have an evolving impact on a child or adolescent's behavioral or learning success. It is a condition that is significantly related to each child's environment (home, school, etc.) as well as to the specific demands placed upon the child. A

child's ability to develop compensation skills and succeed over time is related to these factors, as well as the presence or absence of co-morbid conditions.

Recent evidence suggests that worsening clinical status during adolescence may more likely be due to environmental and/or co-morbid causes, instead of inadequate psychostimulant medication dosage. The clinician should evaluate these possibilities before prescribing higher doses of stimulants to adolescents.

For these reasons, close monitoring and follow-up is recommended for all children and adolescents diagnosed with ADHD whether or not medication is utilized.

In the course of ongoing maintenance care, the patient may develop features suggestive of an emerging co-morbid condition such as depression or dysthymia, anxiety, chemical abuse, conduct problems or antisocial behavior, family stress or dysfunction, etc. If this occurs, consider referral for mental health counseling.

### **Discontinuing Medication**

Some clinicians choose not to dose at all on the weekends or during summer unless inattentive or hyperactive behaviors cause significant social impairment or disruption. Note, however that reactive dosing based on exhibition of undesired behaviors is rarely effective and can create a confrontation point for child and parent.

For children who are on daily medication, periodically consider weekend or summer drug holiday in a proactive, planned manner. The purpose of holidays is to assess the continuing need for daily medication.

If symptoms are not severe outside the school setting, a medication-free trial may be arranged for all or part of the summer. If school behavior and academic performance are stable, a carefully monitored trial off medication during the school year will assist in determining whether medication is needed at all.

### **Patient Education**

Patient education plays an important role in the effective treatment of ADHD. Parents who have accurate information about their child's condition are more likely to follow their treatment plan. It is important to "demystify" ADHD through a thorough explanation of clinical symptoms and treatment expectations. Additionally, education about the importance of communication with the child's teacher, primary care physician, and any specialists should be stressed, too.

An easy-to-read parental resource is titled:

**"Understanding ADHD: Information for Parents about Attention-Deficit/Hyperactivity Disorder"** is available from the American Academy of Pediatrics, Elk Grove Village, IL, Pub. No. 5-99/0901, is designed as a handout for parents, outlines a series of problems and accommodations available for parents and teachers.

In addition, the Internet resources below offer useful information for parents on the diagnosis and treatment of ADHD.

[afraidtoask.com/ADHD/index.html](http://afraidtoask.com/ADHD/index.html) Wide-ranging information on ADHD including a self-scoring children's Conners test for parents to complete

[chadd.org](http://chadd.org) National Attention Deficit Disorder Association and support group information.

[Idanatl.org](http://Idanatl.org) Learning disabilities information

[priorityhealth.com](http://priorityhealth.com) offers search capabilities on ADHD and other mental health conditions.

[safemedication.com](http://safemedication.com) provides patient information on stimulants and other medications

Your comments and questions regarding Practice Guidelines are encouraged. Please contact the Behavioral Health department at 800 673-8043.