

PEDIATRIC PSYCHOLOGY

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CHILD • ADOLESCENT • FAMILY

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Attention-Deficit/Hyperactivity Disorder

Prior to 1900 the few papers about this disorder which existed were clearly medical in nature and often described the cognitive and behavioral effects of various central nervous system (CNS) injuries to children, such as trauma and infections.

Seminal Thinkers: George Still and Alfred Tregold have been credited as being the first to focus serious medical attention on the behavioral condition in children that most closely approximates what is today known as ADHD. Still (1902), in a series of lectures to the Royal College of Physicians described 20 children in his clinical practice who were often aggressive, defiant, and resistant to discipline. He stated that these children were excessively emotional or passionate and showed little inhibitory volition. Lawlessness, spitefulness and cruelty, and dishonesty were also associated with this disorder. According to Still, most of these children were impaired in attention and were quite overactive. In addition, Still believed that these children displayed a major defect in "moral control" in their behavior, and that this was relatively chronic in most cases.

Early US Interest: In the US interest in ADHD is traced to the outbreak of an encephalitis epidemic in 1917-1918, when clinicians were confronted with the sequelae of children who had survived this brain infection. Numerous papers described these sequelae which included many of the characteristics of what is now known as ADHD. Symptoms included impaired attention, regulation of activity, and impulse control (the "holy Trinity" of ADHD). They were also noted to have cognitive and behavioral problems. This association of a brain disease with behavioral pathology led early investigators to study other potential causes of brain injury. As a result of this research, the terms minimal brain damage and later minimal brain dysfunction (1950's and 1960's) were coined. It was assumed that soft neurological damage was the cause of ADHD even when such damage was not observable.

Minimal Brain Damage/Dysfunction (1950-1960's): By the 1950's, the term Minimal Brain Damage was in wide usage. However, later in the decade and in early 1960's, in particular, critical reviews challenged the concept of a unitary syndrome of brain damage in children. Moreover, the assumption that if brain damage resulted in some of these behavioral symptoms, these symptoms should be unequivocally pathognomonic of brain damage without any other corroborating evidence of lesions in the CNS began to be questioned. Resultantly, the term Minimal Brain Damage evolved into Minimal Brain Dysfunction. The term Minimal Brain Dysfunction eventually died a slow death as it became recognized as being too vague and providing too little prescriptive value. It was

Portions of this paper are adaptations of the work of Dr. Russel A. Barkley

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eventually replaced by more specific labels such as "dyslexia", "language disorders", "learning disabilities", and "hyperactivity". These labels were based on observable and verifiable deficits rather than on vague and unobservable underlying neurological etiology. By the end of the 1960's, hyperactivity was considered to be the predominant symptom of ADHD.

Period of Attention Deficits (1970's): During this time there developed a disenchantment with the exclusive focus on hyperactivity as the sine qua non of this disorder. Instead, it was argued that sustained attention and impulse control were more likely to account for problems in these children. By the end of the decade over 2,000 studies on ADHD were published.

ADD with and without Hyperactivity: The DSM-III published in 1980 conceptualized attentional deficits as the sine qua non of ADHD and was thought to exist either with (ADHD) or without hyperactivity (ADD no H). However, its revision in 1987 (DSM-III-R) relegated ADD no H to a minimally defined category called "Undifferentiated ADD" because of a lack of research available to determine whether or not ADD no H was characteristic of a similar or a qualitatively different type of attentional deficit separate from ADHD (the latter would make ADD no H a separate disorder in its own right). In the DSM-III-R, the new and currently used diagnostic label, ADHD, was developed.

DIAGNOSTIC CRITERIA

Core Symptoms of ADHD:

Disinhibition deficit: Barkley (1993) has recently described the ADHD child's primary deficit as one of a failure to inhibit behavior.

Poor sustained attention: Much of the literature to date suggests that children with ADHD have difficulty with sustaining attention to tasks of vigilance. The problem is not so much one of heightened distractibility or the ease with which children are drawn off task by extraneous stimulation. Moreover, research suggests that these children are no more distractible than normal children by extra-task stimulation. More recently, Barkley (1993) has described sustained attention difficulty as being more of a problem in persistence of effort. That is, ADHD children have considerable difficulty maintaining steady or persistent performance. As such, their difficulty is more of an "output" problem rather than an "input" or filtering problem.

Impulsivity/poor delay of gratification: Children with ADHD characteristically fail to consider potentially negative, destructive, or even dangerous consequences that may be associated with particular situations or behaviors and seem to participate in frequent, unnecessary risk taking. In addition, they appear to have an inherent difficulty in delaying gratification.

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Hyperactivity: Rather than overall hyperactivity, ADHD children are hyper-responsive to their environment.

Diminished rule-governed behavior: Researchers such as Barkley have recently popularized this notion. These children experience difficulty internalizing and adhering to rules. As such, ADHD is conceptualized as a developmental deficiency in the regulation and maintenance of behavior by its consequences. This deficiency leads to problems with inhibiting, initiating, or sustaining responses on tasks or stimuli, particularly when consequences for such behavior are delayed, weak, or nonexistent.

DSM-IV Criteria for ADHD

■ Diagnostic criteria for Attention-Deficit/Hyperactivity Disorder

A. Either (1) or (2):

- (1) six (or more) of the following symptoms of **inattention** have persisted for at least 6 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 often easily distracted by extraneous stimuli
 - (i) is often forgetful in daily activities
- (2) six (or more) of the following symptoms of **hyperactivity-impulsivity** have persisted for at least 6 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

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

- B. Some hyperactive-impulsive 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.

(continued)

□ Diagnostic criteria for Attention-Deficit/Hyperactivity Disorder (continued)

- 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, Dissociative Disorder, or a Personality Disorder).

Code based on type:

314.01 Attention-Deficit/Hyperactivity Disorder, Combined Type: if both Criteria A1 and A2 are met for the past 6 months

314.00 Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type: if Criterion A1 is met but Criterion A2 is not met for the past 6 months

314.01 Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type: if Criterion A2 is met but Criterion A1 is not met for the past 6 months

Coding note: For individuals (especially adolescents and adults) who currently have symptoms that no longer meet full criteria, "In Partial Remission" should be specified.

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Differential Diagnosis: In making a diagnosis of ADHD, one must be careful to rule out competing diagnoses.

Oppositional-Defiant/Conduct Disorder:

- Lacks impulsivity
- Increased defiance (towards mothers in particular)
- Able to cooperate and complete tasks
- Lacks problem of poor sustained attention
- Child management problems
- Lacks neuromaturational delays

Learning Disability:

- Significant IQ - Achievement discrepancy
- Lacks early history of hyperactivity
- Attention problems arise in middle childhood and appear to be task or subject specific
- Not impulsive or dysinhibited

Anxiety or Affect Disorders:

- Problem more of focused rather than sustained attention deficit
- Not impulsive or aggressive, rather, typically over inhibited
- Strong family history of anxiety problems
- Restlessness is more like fretful, worrisome behavior not the "driven", inquisitive, or overs-stimulated type
- Not socially disruptive; typically socially reticent

Thought Disorder:

- Atypical patterns of thinking
- Delusional thinking
- Hallucinations
- Odd fascinations/strange aversions
- Atypical motor mannerisms, stereotypies & posturing
- Poor empathy, cause-effect perceptions
- Poor perceptions of meaningfulness of events
- Socially aloof, schizoid, disinterested

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- Lack of concern for personal hygiene/dress in adolescence

ETIOLOGY

Genetics: Twenty to 32% of parents and siblings of ADHD children also have the disorder. Twin studies show greater concordance for ADHD symptoms between identical (51%) than between fraternal twins (33%).

Neurological findings: Brain damage was initially proposed as a chief cause of ADHD symptoms. Several studies show that brain damage, particularly hypoxic/anoxic types of insults, are associated with greater attention deficits and hyperactivity.

No differences in brain structure have been noted on computed tomography (CT) scan analysis. Magnetic Resonance imaging (MRI) studies have been conflicting. Overall, fewer than 5% of ADHD children have hard neurological findings indicative of actual brain damage.

Some evidence, e.g., cerebral spinal fluid studies, in particular, point to a selective deficiency in the availability of dopamine, but this evidence cannot be considered conclusive at this time.

Barkley concludes that neurological findings overall point to a central nervous system mechanism in the development of ADHD symptoms; most likely in the connections between the prefrontal areas and the limbic system, especially in the striatum (as per PET scan glucose metabolism studies). These brain areas are known to underlie aspects of response inhibition, inattention, and incentive learning or sensitivity to reinforcement. They are also some of the most dopamine-rich areas of the human brain. The above might also explain why ADHD children evidence diminished responsiveness to punishment, decreased responsiveness to reinforcement, and faster rates of extinction. In other words, the threshold gate for salience is too high. Further extrapolating, this may be why these children experience the difficulties in rule-governed behavior discussed earlier.

Environmental Toxins:

- Food additives - no evidence, Feingold diet - no support
- Sugar - not a single study supports sugar as being the cause of ADHD. In fact, one study suggests that children may actually learn better on sugar.
- Lead - some evidence that elevated blood levels in children may be associated with greater risk for hyperactivity (but low incidence, < 3%).
- Tobacco/ETOH - longitudinal studies suggest that maternal smoking and/or ETOH consumption during pregnancy is associated with hyperactivity and

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inattention.

- Allergies - little convincing support
- Side effects of certain medications - seizure medications such as phenobarbitol and Dilantin, for example, are likely to result in increased inattention and hyperactivity in children. Theophylline, a medication used in treating asthma and certain allergies, may cause inattention and hyperactivity as side effects.

Environmental/Psychosocial: Some have argued that ADHD is caused by poor parental management, overly negative parents, etc. Research suggests, however, that the overly critical, commanding, and negative behavior of mothers of hyperactive children is most likely a reaction to the difficult, disruptive, and noncompliant behavior of these children rather than a cause of it.

PREVALENCE AND SEX RATIO

- Prevalence ratios range from 3 to 5% of the childhood population.
- 3:1 male:female ratio in nonreferred children
- 6:1 male:female ratio in clinic populations
- ADHD constitutes 30 to 40% of referrals to child guidance clinics
- ADHD is found in all countries; however, some differences are notable, e.g., in Britain, these children are more likely to be diagnosed as conduct disorder and the British tend to consider hyperactivity as being the core symptom rather than attention (as is the case in the US).

DEVELOPMENTAL COURSE AND ADULT OUTCOME

Recent research has indicated that children with pure ADHD have relatively good outcomes. However, those ADHD children who have comorbid oppositional or conduct disorders and are untreated make a much less favorable adjustment in later life. As such, many of the more negative outcomes described below would apply to this latter group.

- 60 to 70% have a satisfactory outcome (but characteristically less well than sibling.)
- As a group, are less educated and under-employed
- Absolute level of symptoms decreases with age
- 70 - 80% fully ADHD as teenagers
- 50 - 65% fully ADHD as adults

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- As adults, ADHD symptoms usually not the basis of referral
- 25 - 40% develop antisocial personality traits/disorder as adults
- 25 - 35% develop ETOH/drug problems as adolescents
- 10 - 15% develop ETOH/drug problems as adults
- ADHD children treated with Ritalin have less drug problems
- Three times increased risk of auto accidents
- 50% greater problems with the police
- Lower self-esteem in 65%
- Interpersonal problems in 75% of adults with ADHD
- Increased grade retention X3
- Increased suspension X3
- 30% or more fail to complete high school and most fail to pursue college
- As teenagers, can do relatively well on jobs, but do worse on jobs as adults
- Most support themselves as adults but are more likely to quit their job and are more likely to be fired
- Lower achievement scores on standard tests toward the lower end of the normal range (standard scores between 90 and 95)
- Only 5% of those who start college, complete it, 41% of non-ADHD students do so
- Main predictors of outcome are family SES, childhood intelligence, childhood aggression, poor parental management, parent psychiatric disturbances, and family dysfunction
- The best outcome is associated with milder ADHD, higher intelligence in childhood, few childhood conduct problems, good peer relationships, absence of parental psychopathology, and a stable family environment.

PROTECTIVE FACTORS AGAINST POOR OUTCOME

- Advocating for instead of against the child
- Maximizing use of community resources
- Supportive adults and confidants
- Building a parental coalition
- Becoming an effective child manager
- Restructuring family environments
- Manage parental stress and marital discord

ASSESSMENT OF ADHD

Parent Interview:

- Current concerns
- History of each concern
- Medical history
- Developmental and temperamental history
- Social history
- Academic history
- Family history
 - Family medical/psychiatric history
 - Family structure
 - Family stressors
 - Review of family rules
 - Review of parent management
 - Review of family social circumstances

Behavioral Rating Scales: Standardized behavior checklists and rating scales have become an indispensable part of the assessment of ADHD. Listed below are the scales which we use part of our assessment.

Parent Scales:

- Child Behavior Checklist (CBCL)
- ADHD Rating Scale (2 and 3 scores count toward criteria, must be +2SD or more)
- Home Situations Questionnaire
- Conners Parent Questionnaire (not for diagnosis, for medical follow-up)

Teacher Scales:

- CBCL - Teacher Report Form (TRCBCL)
- ADHD Rating Scale
- Child Attention Profile
- Children's Learning Profile (helps to differentiate between ADHD and LD)
- School Situations Questionnaire

Psychoeducational Assessment: Given the significant overlap and confound of underlying cognitive and/or learning disabilities, a standardized cognitive and achievement battery is essential to a thorough ADHD evaluation. In some cases, apparent attentional problems are more secondary to learning problems rather than being causative.

TREATMENT

Unproven Treatments:

- Diet therapy, e.g., Feingold Diet
- Vitamin therapy
- Sensory integration
- Chiropractic manipulation
- Ocular motor exercises/Optometrics
- Traditional play therapy
- Relaxation therapy/biofeedback
- Self-control training in clinics (doesn't generalize)
- Social skill training in clinics

Proven Treatments:

- Parent counseling about ADHD
- Parent training in child management
- Parent training in adolescent management
- Parent/adolescent problem-solving and communication training
- Self-control training in natural setting (e.g., token reinforcement when a negative behavior is stopped in a public place)
- Teacher training in classroom management
- Special education
- Social skills training (seems to only help socially shy children)
- Residential treatment (only in very dysfunctional families, usually not appropriate)
- Individual therapy (seems to help self-esteem but not ADHD)
- Parent/family therapy

Essential Elements of Treatment:

- Counsel parents regarding ADHD (handout)
 - Review symptoms, course, and causes
 - Redefine ADHD as a handicap
 - Restructure expectations of the child
 - Modify environments instead of the child
 - Move toward acceptance of ADHD
 - Stress importance of building self-esteem
- Parent training in child management, e.g., Barkley's Defiant

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Children: A Clinician's Manual for Parent Training or
Parker's The ADHD Hyperactivity Workbook

- Teacher counseling/training (handout)
- Consider referral to physician for evaluation of appropriateness of medication

The Ten Commandments for Managing ADHD Children

1. Greater immediacy of consequences
2. Increased frequency of consequences
3. Use of more salient consequences
4. More frequent changes in rewards
5. Act, don't yack
6. Use positives before negatives
7. Anticipate problems; have a plan of action
8. Remember that ADHD is a handicapping condition
9. Maintain priorities, choose your battles
10. Practice forgiveness daily - of yourself, your child, and others

Pharmacological Treatment: Stimulant medications are often useful adjuncts to the treatment of children with ADHD.

When utilized properly, these medications can lead to increased selective attention, decreased impulsivity, decreased motor activity, better organization, and improved visual motor coordination (including improved handwriting). It has been estimated that around 70% of children with ADHD and Undifferentiated ADD (or FADD) will show improvement while on stimulant medication. However, it should be emphasized that many children, particularly those with mild problems, may be able to function successfully without the use of medication, particularly if they are in home and school environments that are appropriately structured to compensate for their difficulties. In preschoolers, the effects of stimulant medications appear to be more variable, and there is a higher rate of side effects such as sadness, irritability, clinging behavior, insomnia, and anorexia.

In addition, although some behaviors can improve significantly with use of these medications, the child will probably continue to exhibit many symptoms of ADHD and will probably require classroom modifications and careful behavior management if she is to function in the classroom. In addition, studies suggest that learning may not be as positively affected as behavior for these children. Therefore, other interventions designed to address learning problems, such as compensatory education, may also be needed.

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NOTE: Depending on provider plans, formulary restrictions and limitations on use of certain medications listed in this guideline may apply.

Table 2. Medications Used in Treatment of ADHD				
Decision to medicate should be based on persistent target symptoms sufficiently severe to cause functional impairment.				
GENERIC CLASS	DOSAGE FORM	RECOMMENDED USUAL DOSE	DURATION OF EFFECT	COMMENTS
<i>Brand Name</i>				
STIMULANTS (High margin of safety. Many patients who fail to respond to one stimulant will respond to another.)				
METHYLPHENIDATE PREPARATIONS (Schedule II controlled substance)				
Short-acting <i>Focalin</i>	2.5, 5, 10 mg tablets	INITIAL: 2.5 mg BID. MAX: 20 mg/d		<ul style="list-style-type: none"> • Class contraindications, precautions, and side effects ◦ Safety/effectiveness not studied in patients < 6 yr ◦ Monitor patient growth and weight gain ◦ Use cautiously if history of tics ◦ Give with/after food • Longer-acting stimulants may have greater problematic effects on evening appetite and sleep • Pellet/beaded capsule formulations may be opened and sprinkled on soft food
<i>Methylin</i> <i>Ritalin</i> generics	5, 10, 20 mg tablets 5, 10, 20 mg tablets	INITIAL: 5 mg BID with/after breakfast and lunch. MAX: 60 mg/d	3–5 h	
Intermediate-acting <i>Metadate ER</i> <i>Methylin ER</i> <i>Ritalin SR</i> generics	10, 20 mg tablets 10, 20 mg tablets 20 mg tablet	Corresponds to titrated 6–8 h dose of short-acting methylphenidate. MAX: 60 mg/d	6–8 h	
<i>Metadate CD</i> <i>Ritalin LA</i>	20 mg capsule (6 mg IR/14 mg ER) 20, 30, 40 mg capsules (1/2 IR/1/2 ER)	1 capsule QAM. MAX: 60 mg/d 1 capsule QAM. MAX: 60 mg/d	8 h 8 h	
Long-acting <i>Concerta*</i>	18, 27, 36, 54 mg tablets	1 tablet QAM. MAX: 54 mg/d	12 h	<ul style="list-style-type: none"> • Swallow whole with liquids • Nonabsorbable tablet shell may be seen in stool
AMPHETAMINES (Schedule II controlled substance)				
Short-acting <i>Adderall</i> generics	5, 7.5, 10, 12.5, 15, 20, 30 mg tablets	3–5 yr: 2.5 mg QD-BID, ≥ 6 yr: 5 mg QD-BID. MAX: 40 mg/d	4–6 h	<ul style="list-style-type: none"> • Class contraindications, precautions, and side effects ◦ Safety/effectiveness not studied in patients < 6 yr ◦ Monitor patient growth and weight gain ◦ Use cautiously if history of tics ◦ Give first dose on awakening, with/after food • Longer-acting stimulants may have greater problematic effects on evening appetite and sleep • Pellet/beaded capsule formulations may be opened and sprinkled on soft food
<i>Dexedrine</i> generics	5 mg tablet	3–5 yr: 2.5 mg BID-TID, ≥ 6 yr: 5 mg BID-TID. MAX: 40 mg/d		
<i>Dextrostat</i>	5, 10 mg tablets	3–5 yr: 2.5 mg BID-TID, ≥ 6 yr: 5 mg BID-TID. MAX: 40 mg/d		
Intermediate-acting <i>Dexedrine Spansule</i>	5, 10, 15 mg capsules	≥ 6 yr: 5–10 mg QD-BID. MAX: 40 mg/d	6–8 h	
Long-acting <i>Adderall XR</i>	5, 10, 15, 20, 25, 30 mg capsules	≥ 6 yr: 10 mg QD. MAX: 30 mg/d	10–12 h	
ADJUVANTS TO STIMULANTS				
α2-Adrenergic agonists				
CLONIDINE				
<i>Catapres</i>	0.1, 0.2, 0.3 mg tablets	< 45 kg: 0.05 mg QHS; titrate in 0.05 mg increments BID, TID, QID > 45 kg: 0.1 mg QHS; titrate in 0.1 mg increments BID, TID, QID	ND	<ul style="list-style-type: none"> • Perform cardiovascular evaluation • Effective for: impulsivity and hyperactivity (may not be seen for 4–5 wk), but <i>not</i> for distractibility or inattention; modulating mood level; tics worsening from stimulants • Also effective for sleep disturbances • Taper off to avoid rebound hypertension
GUANFACINE				
<i>Tenex</i>	1, 2 mg tablets	< 45 kg: 0.5 mg QHS; titrate in 0.5 mg increments BID, TID, QID > 45 kg: 1 mg QHS; titrate in 1 mg increments BID, TID, QID	ND	
ALTERNATIVES TO STIMULANTS				
Selective Norepinephrine Reuptake Inhibitor				
ATOMOXETINE (a recently approved medication that may be appropriate for patients who have not responded to, have unacceptable side effects from or have tic disorder worsened by stimulants, or who object to taking Schedule II drugs)				
<i>Strattera</i>	10, 18, 25, 40, 60 mg capsules	INITIAL: 0.5 mg/kg QAM or BID in divided doses. Increase after min 3 d to 1.2 mg/kg QAM or BID in divided doses. MAX: lesser of 1.4 mg/kg/d or 100 mg/d	Into evening or longer	<ul style="list-style-type: none"> • Class contraindications, precautions, and side effects ◦ Safety/effectiveness not studied in patients < 6 yr ◦ Monitor patient growth and weight gain ◦ Give with/after food
Antidepressants (refer to psychiatric specialist)				
AMINOKETONE Bupropion (<i>Wellbutrin, Zyban</i>) [lowers seizure threshold]				
TRICYCLICS [lowers seizure threshold] Nortriptyline (<i>Aventil, Pamelor</i>) Imipramine (<i>Tofranil</i>) Desipramine (<i>Norpramin</i>) [rarely used; associated with rare cases of sudden death at therapeutic doses]				

EDUCATION MANAGEMENT

Helping the Child Follow Instructions

1. Present rules and instructions clearly, briefly, using visual means of presentation where possible.
2. Display lists of rules or instructions in prominent locations in the classroom. Use posters which are brightly decorated or have pictures of desired classroom activities.
3. Have the child re-state rules or directions, particularly prior to beginning new activities. Encourage the child to recite these softly to himself while working on the task.
4. Divide classwork tasks into small chunks. Only give instructions for one chunk at a time. Try placing index cards on the child's desk with rules for individual desk work. Index cards can also be used to present small amounts of work to the child, e.g., to present a few math problems at a time for her completion.
5. Make sure you have the child's attention before providing instructions. For instance, you can try touching the child's shoulder to encourage him to look at you; make sure that you have eye contact before proceeding.
6. Use tape-recorded cues (nag tapes).

Helping the Child Pay Attention During Class

1. Where possible, increase the novelty and stimulation value of classroom presentations by varying presentation format and providing frequent opportunities for active participation by the child. For instance, you could provide brightly colored pictures or posters for the child to look at or pass relevant materials around the classroom for the child to see and touch. Alternate lecture times with hands-on experiences.
2. If needed, allow the child to do something with her hands while engaged in sustained listening, e.g., permit her to doodle or encourage her to write down key words from the classroom presentation.
3. Use an enthusiastic presentation style. For instance, vary your vocal quality and loudness.
4. Use computer or self-directed instruction where available, as many children with ADHD seem to enjoy these activities.

Helping the Child Stay in His Seat/Minimizing Disruptive Behavior

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1. Seat the child close to you in the classroom. This will reduce the amount of peer reinforcement he receives for disruptive behavior and assist you in monitoring his behavior.
2. Intersperse academic periods with brief moments of physical exercise. Provide the child with opportunities to be up and out of her seat at appropriate time, e.g., to help with passing out papers, erasing the board, or similar activities. Find out how long the child can typically sustain attention and try to provide breaks at times when she is typically becoming restless and increasingly off-task.
3. Schedule as many academic subjects during morning hours as possible, leaving the more active, nonacademic subjects for the afternoon periods.
4. Many children with ADHD have difficulty with transitions, e.g., settling down in the morning after coming off the school bus or changing classes. Sometimes it is helpful to change the child's routine to assist her in having a smoother transition. For instance, children who enjoy working with a computer or who spend individual time with the school counselor can spend a short amount of time engaged in those activities while the rest of the class is settling down.
5. Teacher attention can be a powerful tool. Try to attend to appropriate behavior and ignore negative behavior as much as possible. However, since most behavior problems exhibited by ADHD children are not solely bids for teacher attention, you will probably need to utilize other behavior management principles along with this. For instance, consider using a token reward system to reinforce desired behaviors.
6. Providing the child with choices in terms of what activities to do or when to do them (within a pre-established framework) can help with oppositional behavior.
7. Make sure the child knows what is expected of her. The ideal classroom setting for this child is one that combines structure with flexibility.
8. Some children with ADHD do better in a regular, but smaller size classroom to reduce distractions and provide more opportunities for individual attention.

Helping the Child Complete Classwork

1. Academic assignments should be brief and adjusted for the child's attention span. For instance, the child can be given somewhat fewer math problems or questions to answer than other children. This increases the likelihood that the child will actually complete the work.
2. Where possible, provide immediate feedback for accuracy.
Provide a brief period for completing each assignment and consider having the child use

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a timer to help him stay on-task.

3. Design assignments so that not too much written work is expected at once and allow verbal responses to questions where appropriate. **MANY CHILDREN WITH ADHD FIND WRITTEN WORK AVERSIVE.** Use of multiple-choice as opposed to discussion questions may be helpful. Also, allow children to use computers, both in class and at home.

4. Allow the child to use areas of interest (e.g., sports, cars) as the subjects of reading or writing assignments.

5. Where possible, provide the child with zeroxed copies of class notes or academic assignments. If a child with ADHD has to copy homework assignments or questions off the board prior to completing them, he may go home with an incomplete list of assignments or tire of writing before he has time to answer the questions.

6. Be aware that many children with ADHD also have some sort of learning disability that could be interfering with academic performance. Such disabilities could take the form of auditory or visual discrimination or sequencing problems, memory problems, expressive and receptive language disorders, or visual-motor problems to name a few. Do not hesitate to refer the child for a learning evaluation if you suspect a problem in this area.

7. **IT IS USUALLY NOT EFFECTIVE TO SEND UNCOMPLETED CLASSWORK HOME WITH THE CHILD.** This can just lead to power struggles between the child and the parents over finishing the extra work and can increase some children's negative feelings regarding academic work.

8. Remember that increased variability of task performance is typical for these children, with the result that work output may vary greatly from day to day (or within the academic day).

9. Intersperse low with high interest tasks.

10. Set time limits for work completion.

Tips for Using Reward Systems Successfully

1. It is often useful to utilize a reward system based on the distribution of tokens (e.g., poker chips, stars, points) contingent on desired behaviors. Children typically have the opportunity to earn tokens throughout the day and later exchange them for desired privileges, activities, or tangible objects (e.g., a small toy). These backup rewards each cost a certain number of tokens, the number of which is agreed on beforehand.

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2. Tangible tokens, such as poker chips, work best for younger children (ages 4-7 years), while points, numbers, or checks on a card can be used with older children (through high school).
3. Sit down with the child and make a list of the rewards he would like to earn. The list of rewards should include at least 12 to 15 privileges. The rewards should be grouped into three types: (1) low level rewards or every day privileges which the child can buy anytime, or at least during that particular day, without waiting very long (e.g., television, Nintendo, bike riding, etc.); (2) privileges which the child can earn every few days (e.g., staying up late past bedtime, having a friend over, or going to another's house, etc.); and (3) longer term rewards that may be available every week or so (e.g., going to McDonald's, having a friend spend the night, going to the movies or a sporting event, etc.)
4. Next, make a list of jobs, chores, self-care routines that you wish your child to do (e.g., brush teeth, do homework, take bath, pick up toys, etc.). Make sure that the list is not too long and ensure that tasks are appropriate to developmental/age of the child.
5. Go through the list of chores and target behaviors and assign an amount of tokens you will give for each. The amount should be based on how much work does the job require and how hard it is to get the child to do it. For 3 to 5 year olds, use numbers between 1 and 5 tokens (chips or stickers), for 6 to 8 year olds, use numbers between 1 and 10 tokens, for 9 and up, use numbers between 5 and 100 points.
6. Now add up the number of tokens your child could earn on an average day. Write this number down. Now look at the list of rewards again. You want to be sure that your child spends about two thirds of her daily earnings on her daily rewards. For example, if your child earns 30 chips a day, then 20 chips (two thirds of 30) must be used to buy his daily privileges.
7. REWARDS MUST BE CHANGED OR ROTATED MORE FREQUENTLY FOR ADHD THAN FOR OTHER CHILDREN. This is due to the tendency of ADHD children to quickly habituate to rewards and punishments. Just remember that whatever you are now doing to motivate the child, it will undoubtedly lose its effectiveness quickly so you will need to have a number of alternate rewards available.
8. After the first two weeks of using the system for rewarding good behavior, you can start to fine your child (take away tokens or points) for misbehavior. Remember that punishment should be used sparingly and when it occurs should be delivered promptly and consistently. Avoid lengthy reasoning with the child over misbehavior. Punishments are most effective if they are delivered early in the sequence of misbehavior.
9. Token economy systems can also be very effective when used by teachers to improve classroom behaviors and productivity. It is often useful to have parents provide the

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backup rewards to the child based on regular (daily if possible) reports from the teacher. The child can receive a daily "report card" which lists the number of tokens earned that day. The child can then trade the tokens in for items on the previously agreed upon reinforcement menu.

10. Many children with ADHD also benefit from having an assignment pad in which they can note the day's homework assignments. The teacher can initial this to help ensure that the child has copied the assignments correctly.

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