

# Basic Information on ADHD

## 1.1 ADD, ADHD, AD/HD: WHAT'S THE DIFFERENCE?

- *AD/HD* stands for *Attention Deficit/Hyperactivity Disorder*. Sometimes it is written with the slash mark (*AD/HD*) and sometimes without (*ADHD*). This is the current and official term that is used when referring to this disorder, and it is the umbrella term for the three types of *AD/HD*: the Predominantly Inattentive type (*AD/HD-I*), the Predominantly Hyperactive and Impulsive type (*AD/HD-HI*), and the Combined type (*AD/HD-C*). Most people diagnosed with *ADHD* have the combined type of the disorder with significant symptoms in inattention, impulsivity, and hyperactivity.

- *ADD* stands for *Attention Deficit Disorder* and has been a term associated with this disorder for many years. Many people use *ADD* interchangeably with *ADHD* when referring to all types of the disorder, and it is also the term of choice by many when referring to the Predominantly Inattentive type of *ADHD*, that is, individuals without hyperactivity.

- The federal special education law (Individuals with Disabilities Education Act, IDEA) regulations that govern educational rights of children with disabilities refer to both *ADD* and *ADHD* among the “other health impairments” that may qualify a student for special education and related services (if they meet all of the other eligibility criteria).

- It is likely that there will be changes in the name and abbreviation of this disorder (or among some types of the disorder) in the future.

- Throughout the remainder of this book, I just use *ADHD* (without the slash mark), which is inclusive of all three types.

## 1.2 DEFINITIONS AND DESCRIPTIONS OF ADHD

There are several descriptions or definitions of ADHD based on the research evidence and most widely held belief of the scientific community at this time, including the following from leading experts and researchers in the field:

- ADHD is a neurobiological behavioral disorder characterized by chronic and developmentally inappropriate degrees of inattention, impulsivity, and in some cases hyperactivity.

- ADHD is a chronic biochemical, neurodevelopmental disorder that interferes with a person's capacity to regulate and inhibit behavior and sustain attention to tasks in developmentally appropriate ways.

- ADHD is a neurological inefficiency in the area of the brain that controls impulses and is the center of executive functions—the self-regulation and self-management functions of the brain.

- ADHD is a developmental delay or lag in inhibition, self-control, and self-management.

- ADHD is a brain-based disorder that arises out of differences in the central nervous system in both structural and neurochemical areas.

- ADHD is a pattern or constellation of behaviors that are so pervasive and persistent that they interfere with daily life.

- ADHD is a dimensional disorder of human behaviors that all people exhibit at times to certain degrees. Those with ADHD display the symptoms to a significant degree that is maladaptive and developmentally inappropriate compared to others that age.

- ADHD is a developmental disorder of self-control. It consists of problems with regulating attention, impulse control, and activity level.

- ADHD represents a condition that leads individuals to fall to the bottom of a normal distribution in their capacity to demonstrate and develop self-control and self-regulatory skills.

- ADHD is a disorder of inhibition (being able to wait, stop responding, and not respond to an event). Inhibition involves motor

inhibition, delaying gratification, and turning off or resisting distractions in the environment while engaged in thinking.

- ADHD is a neurobiological behavioral disorder causing a high degree of variability and inconsistency in performance, output, and production.

- ADHD is a common although highly varied condition. One element of this heterogeneity is the frequent co-occurrence of other conditions.

### **1.3 RISK FACTORS ASSOCIATED WITH ADHD**

ADHD places those who have this disorder at risk for a host of serious consequences. Numerous studies have shown the negative impact of this disorder without early identification, diagnosis, and proper treatment. Compared to their peers of the same age, youth with ADHD (those untreated for their disorder) experience:

- More serious accidents, hospitalizations, and significantly higher medical costs
- More school failure and dropout
- More delinquency and altercations with the law
- More engagement in antisocial activities
- More teen pregnancy and sexually transmitted diseases
- Earlier experimentation with and higher use of alcohol, tobacco, and illicit drugs
- More trouble socially and emotionally
- More rejection, ridicule, and punishment
- More underachievement and underperformance at school or work

#### **Prevalence of ADHD**

- Estimates of the prevalence in school-age children range from 3 percent to 12 percent. Most sources agree that somewhere between 5 and 9 percent of children are affected.

- Approximately 2 to 4 percent of adults are believed to have ADHD.
- The worldwide prevalence of ADHD in children is estimated at approximately 5 percent. The U.S. prevalence rate falls somewhere in the middle range of other reporting countries.
- Although this disorder can have serious negative outcomes affecting millions of people when untreated, it is estimated that at least half of the children with ADHD are not receiving treatment, and far more adults remain unidentified and untreated.

### **More Statistics Associated with ADHD**

- Between 50 and 75 percent of individuals with ADHD have at least one other disorder or coexisting condition such as anxiety, depression, oppositional defiant disorder, learning disabilities, or speech and language impairments. *See checklist 1.7.*
- Barkley (2000), a leading researcher in the field, cites these statistics:
  - Almost 35 percent of children with ADHD quit school before completion.
  - Up to 58 percent have failed at least one grade in school.
  - At least three times as many teens with ADHD as those without ADHD have failed a grade, been suspended, or been expelled from school.
  - For at least half of the children with ADHD, social relationships are seriously impaired.
  - Within their first two years of independent driving, adolescents with a diagnosis of ADHD have nearly four times as many auto accidents and three times as many citations for speeding as young drivers without ADHD (Barkley & Murphy, 1996).
- For more information, go to the Web sites of CHADD (Children and Adults with Attention Deficit/Hyperactivity; [www.chadd.org](http://www.chadd.org)), the National Resource Center on ADHD ([www.help4adhd.org](http://www.help4adhd.org)), and the National Institute of Mental Health ([www.nimh.nih.gov/health/](http://www.nimh.nih.gov/health/)).

## References

- Barkley, R. A. (2000). *Taking charge of ADHD* (Rev. ed.). New York: Guilford Press.
- Barkley, R. A., Murphy, K. R., & Kwasni, D. (1996). Motor vehicle driving competencies and risks in teens and young adults with ADHD. *Pediatrics*, 98(6 Pt. 1), 1089–1095.

### 1.4 BEHAVIORAL CHARACTERISTICS OF ADHD

The fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) and the text revised edition (DSM-IV-TR), published by the American Psychiatric Association, is the source of the official criteria for diagnosing ADHD. The DSM lists nine specific symptoms under the category of inattention and nine specific symptoms under the hyperactive/impulsive category. Part of the diagnostic criteria for ADHD is that the child or teen often displays at least six of the nine symptoms of *either* the inattentive *or* the hyperactive-impulsive categories *or* six of the nine symptoms in *both* categories.

The checklists that follow contain symptoms and characteristics common in children and teens with ADHD. The specific behaviors listed in the DSM-IV (1994) and DSM-IV-TR (2000) are italicized. Additional symptoms and characteristics associated with ADHD are also included; they are not italicized.

#### Predominantly Inattentive Type of ADHD

- This type of ADHD is what many prefer to call ADD because those diagnosed with it do not have the hyperactive symptoms. They may show some, but not a significant amount of symptoms in the hyperactive-impulsivity category.
  - These children and teens often slip through the cracks and are not as easily identified or understood. Since they do not exhibit the disruptive behaviors that command attention, it is easy to overlook these students and misinterpret their behaviors and symptoms as “not trying” or “being lazy.”
  - Most people display any of the following behaviors at times and in different situations to a certain degree. Those who truly have an

attention deficit disorder have a history of frequently exhibiting many of these behaviors—far above the normal range developmentally. They are pervasive symptoms, exhibited in different settings and environments, and they cause impairment in functioning at school, at home, and in other settings.

- Many children with ADHD and significant difficulties with inattention are often able to be focused and sustain attention for long periods of time when they play video games or are engaged in other high-interest, stimulating, and rapidly changing activities.

### **CHARACTERISTICS AND SYMPTOMS OF INATTENTION**

- *Easily distracted by extraneous stimuli* (for example, sights, sounds, movement in the environment)
- *Does not seem to listen when spoken to directly*
- Difficulty remembering and following directions
- *Difficulty sustaining attention in tasks and play activities*
- Difficulty sustaining level of alertness to tasks that are tedious, perceived as boring, or not of one's choosing
- *Forgetful in daily activities*
- *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)*
- Tunes out; may appear “spacey”
- Daydreams (thoughts are elsewhere)
- Appears confused
- Easily overwhelmed
- Difficulty initiating or getting started on tasks
- Does not complete work, resulting in many incomplete assignments
- *Avoids, dislikes, or is reluctant to engage in tasks requiring sustained mental effort such as schoolwork or homework*
- Difficulty working independently; needs a high degree of refocusing attention to task
- Gets bored easily
- Sluggish or lethargic (may fall asleep easily in class)

- *Fails to pay attention to details and makes many careless mistakes* (for example, with math computation, spelling, and written mechanics such as capitalization and punctuation)
- Poor study skills
- Inconsistent performance; one day is able to perform a task and the next day cannot; the student is “consistently inconsistent”
- *Loses things necessary for tasks or activities* (for example, toys, school assignments, pencils, books, or tools)
- *Difficulty organizing tasks and activities* (for example, planning, scheduling, preparing)

## **ACADEMIC DIFFICULTIES RELATED TO INATTENTION**

### *Reading*

- Loses his or her place when reading
- Cannot stay focused on what he or she is reading (especially if the text is difficult, lengthy, boring, or not of his or her choice reading material), resulting in missing words, details, and spotty comprehension

### *Writing*

- Off topic as a result of losing train of thought
- Poor spelling, use of capitalization and punctuation, and other mechanics and a poor ability to edit written work as a result of inattention to these details

### *Math*

- Numerous computational errors because of inattention to operational signs (plus, minus, multiplication, division), decimal points, and so forth
- Poor problem solving due to inability to sustain the focus to complete all steps of the problem with accuracy

## **Predominantly Hyperactive-Impulsive Type of ADHD**

- Individuals with this type of ADHD have a significant number of hyperactive-impulsive symptoms; they may have some but not a

significant number of inattentive symptoms considered developmentally inappropriate. This type of ADHD is most commonly diagnosed in early childhood, and many of those receiving this diagnosis will be reclassified as having the combined type of ADHD when they get older and the inattentive symptoms become developmentally significant.

- Children and teens with ADHD may exhibit many of the characteristics in the lists that follow. Although each of these behaviors is normal in children at different ages to a certain degree, for those with ADHD, the behaviors far exceed that which is normal developmentally (in frequency, level, and intensity). Again, the behaviors written in italics are those listed in the DSM-IV and DSM-IV-TR.

- Most children, teens, and adults with ADHD have the combined type of the disorder. That means they have a significant number of inattention, impulsive, and hyperactive symptoms that are chronic and developmentally inappropriate, evident from an early age, and are impairing evident from an early age and are impairing their functioning in at least two environments (such as home and school).

### **CHARACTERISTICS AND SYMPTOMS OF HYPERACTIVITY**

- *“On the go” or acts as if “driven by a motor”*
- *Leaves seat in classroom or in other situations in which remaining seated is expected*
- Cannot sit still (instead, jumps up and out of chair, falls out of chair, sits on knees, or stands by desk)
- *Talks excessively*
- Highly energetic; almost nonstop motion
- *Runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)*
- A high degree of unnecessary movement (pacing, tapping feet, drumming fingers)
- Restlessness
- Seems to need something in hands; finds or reaches for nearby objects to play with or put in mouth
- *Fidgets with hands or feet or squirms in seat*

- Is not where he or she is supposed to be (for example, roams around)
- *Difficulty playing or engaging in leisure activities quietly*
- Intrudes in other people's space; difficulty staying within own boundaries
- Difficulty settling down or calming self
- Overall difficulty regulating motor activity

### **CHARACTERISTICS AND SYMPTOMS OF IMPULSIVITY**

- Much difficulty in situations requiring waiting patiently
- Difficulty with raising hand and waiting to be called on
- *Interrupts or intrudes on others* (for example, butts into conversations or games)
- *Blurts out answers before questions have been completed*
- *Has difficulty waiting for his or her turn in games and activities*
- Cannot keep hands and feet to self
- Cannot wait or delay gratification; wants things immediately
- Knows the rules and consequences but repeatedly makes the same errors or infractions of rules
- Gets in trouble because he or she cannot stop and think before acting (responds first, thinks later)
- Difficulty standing in lines
- Makes inappropriate noises
- Does not think or worry about consequences, so tends to be fearless or gravitate to high-risk behavior
- Engages in physically dangerous activities without considering the consequences (for example, jumping from heights, riding bike into the street without looking); hence, a high frequency of injuries
- Accident prone and breaks things
- Difficulty inhibiting what he or she says, making tactless comments; says whatever pops into his or her head and talks back to authority figures
- Begins tasks without waiting for directions (before listening to the full direction or taking the time to read written directions)

- Hurries through tasks, particularly boring ones, to get finished, and consequently makes numerous careless errors
- Gets easily bored and impatient
- Does not take time to correct or edit work
- Disrupts, bothers others
- Constantly drawn to something more interesting or stimulating in the environment
- Hits when upset or grabs things away from others (not inhibiting responses or thinking of consequences)

### **OTHER COMMON CHARACTERISTICS IN CHILDREN AND TEENS WITH ADHD**

- Disorganized, frequently misplaces or loses belongings; desks, backpacks, lockers, and rooms extremely messy and chaotic
- Little or no awareness of time; often underestimates length of time a task will require to complete
- Procrastinates
- A high degree of emotionality (for example, temper outbursts, quick to anger, gets upset, irritable, moody)
- Easily frustrated
- Overly reactive
- Difficulty with transitions and changes in routine or activity
- Displays aggressive behavior
- Difficult to discipline
- Cannot work for long-term goals or payoffs
- Low self-esteem
- Poor handwriting, fine motor skills, written expression, and output—getting their ideas down on paper and amount of work produced
- Overly sensitive to sounds and other stimuli in the environment
- Motivational difficulties
- Receives a lot of negative attention and interaction from peers and adults

- Learning and school performance difficulties; not achieving or performing to level that is expected given his or her apparent ability

## References

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders—IV-TR* (4th ed., text rev.). Washington, DC: Author.

## 1.5 ADHD AND THE EXECUTIVE FUNCTIONS

• Many of the difficulties associated with ADHD center on the ability to employ the *executive functions* of the brain. It is now understood that ADHD is more than a disorder of the three core symptoms of inattention, impulsivity, and hyperactivity; it affects the executive functions of the brain as well. Much of what we have learned since the 1990s about the developmental delay in executive functioning and the significant impact it has on the academic performance of students with ADHD comes from the work of leading ADHD researchers and authorities (particularly Dr. Russell Barkley, Dr. Martha Denckla, and Dr. Thomas E. Brown).

• Executive functions are:

- The management functions (“overseers”) of the brain
  - The self-directed actions individuals use to help maintain control of themselves and accomplish goal-directed behavior
  - The range of central control processes in the brain that activate, organize, focus, integrate, and manage other brain functions
  - Brain functions that have to do with self-regulation of behavior
  - The higher-order cognitive processes involved in the regulation of behavior, inhibition of impulses, planning, and organizing
- For all people, the executive functions are the last part of the brain to develop fully. Research shows that children and teens with ADHD lag in their development of executive functioning skills. This

developmental delay is estimated to be approximately 30 percent compared to other children their age. In other words, a fifteen-year-old with ADHD is developmentally more like a ten-year-old and a ten-year-old is more like a seven-year-old in their behaviors related to executive functioning and self-management. It is important that teachers and parents understand that children with ADHD are immature in their self-regulation and self-management abilities in spite of how intelligent they may be. They will need more adult supports, monitoring, and supervision than other children or teens their age will require.

• It has not yet been determined exactly what constitutes all of the executive functions of the brain. However, some of these functions are believed to involve:

- Working memory (holding information in your head long enough to act on it)
  - Organization of thoughts, time, and space
  - Planning and prioritizing
  - Arousal and activation
  - Sustaining alertness and effort
  - Self-regulation
  - Emotional self-control
  - Internalization of speech and language (using inner speech to guide behavior)
  - Inhibiting verbal and nonverbal responding
  - Quick retrieval and analysis of information
  - Developing and following through on a plan of action
  - Strategy monitoring and revising
- Children whose executive functions are immature and not working efficiently face a number of challenges, particularly with regard to schoolwork and homework. For example, weaknesses in executive functioning often cause difficulties to varying degrees with:
- Time awareness and time management
  - Organization and study skills

- Perseverance on tasks and work production
  - Delaying immediate gratification for long-term gain
  - Decision making based on thoughtful weighing of consequences
  - Planning for and completing long-term projects
  - Forgetfulness and holding information in mind
  - Moderating their emotions
  - Using their metacognitive skills
  - Ability to resist distractions
  - Complex problem solving
- Executive functioning weaknesses commonly cause academic challenges to some degree (mild to severe), regardless of how intelligent, gifted, and capable the person may be. Consequently most children and teens with ADHD need some supportive strategies or accommodations, or both, to compensate for their deficit in executive functioning whether they are part of a written plan or not.

## **1.6 WHAT WE DO AND DO NOT YET KNOW ABOUT ADHD**

### **What We Know**

- ADHD has been the focus of a tremendous amount of research. Literally thousands of studies and scientific articles have been published (nationally and internationally) on ADHD.
- There is no quick fix or cure for ADHD, but it is treatable.
- Proper diagnosis and treatment can substantially decrease ADHD symptoms and impairment in functioning.
- The evidence from an overwhelming amount of worldwide research indicates that ADHD is a neurobiological, brain-based disorder.
- ADHD exists across all populations, regardless of race, ethnicity, gender, nationality, or socioeconomic level.
- ADHD symptoms range from mild to severe.
- There are different types of ADHD with a variety of characteristics. No one has all of the symptoms or displays the disorder in the exact same way.

- A very high percentage (approximately 50 to 75 percent) of children, teens, and adults with ADHD have additional coexisting disorders or conditions. *See checklist 1.7.*

- Many children and teens with ADHD slip through the cracks without being identified or receiving the intervention and treatment they need. This is particularly true of racial and ethnic minorities and girls.

- Although ADHD is diagnosed more frequently in boys than girls, research is showing that many more girls actually have ADHD but are not being diagnosed because they often do not have the disruptive behaviors associated with hyperactivity and impulsivity. *See checklist 1.4.*

- The challenging behaviors that children with ADHD exhibit stem from their physiological, neurobiological disorder. Rarely are these behaviors willful or deliberate. Children with ADHD are often not even aware of their behaviors and their impact on others.

- Children with ADHD are more likely than their peers to be suspended or expelled from school; retained a grade or drop out of school; have trouble socially and emotionally; and experience rejection, ridicule, and punishment. *See checklist 1.3.*

- ADHD is typically a lifelong disorder. The majority of children with ADHD (about 70 to 80 percent) continue to have substantial symptoms into adolescence, and many continue to exhibit symptoms into adulthood. In the past, ADHD was believed to be a childhood disorder. We now know that this is not the case.

- Although ADHD is most commonly diagnosed in school-age children, it can be and is diagnosed in younger children and adults as well.

- The prognosis for ADHD can be alarming if it is not treated. Without interventions, those with this disorder are at risk for serious problems in many domains: social, emotional, behavioral, academic, health, safety, employment, and others. *See checklist 1.3.*

- The prognosis for ADHD when treated is positive and hopeful. Most children who are diagnosed and provided with the help they need are able to manage the disorder. Parents should be optimistic because ADHD does not limit their child's potential. Countless highly successful adults in every profession and walk of life have ADHD.

- ADHD has been recognized by clinical science and documented in the literature since 1902 (having been renamed several times). Some of the previous names for the disorder were Minimal Brain Dysfunction, Hyperactive Child Syndrome, and ADD with or without Hyperactivity.

- Children with ADHD can usually be taught effectively in general education classrooms with proper management strategies, supports, and accommodations, and engaging, motivating instruction.
- ADHD is not the result of poor parenting or lack of caring, effort, and discipline.
- ADHD is not laziness, willful misbehavior, or a character flaw.
- Medication therapy and behavioral therapy are effective treatments for ADHD. *See checklists 1.12, 1.13, and 1.14.*
- Stimulant medications are proven to work effectively for reducing the symptoms and impairment in 70 to 95 percent of children diagnosed with ADHD. They are effective in adults as well. *See checklists 1.12, 1.13, and 1.15.*
- The use of behavioral programs, such as a token economy or a daily report card system between home and school, are beneficial for students with ADHD. *See checklist 1.14.*
- A number of other conditions, disorders, or factors (for example, learning, medical and health, social, emotional) may cause symptoms that look like but are not ADHD. *See checklist 1.9.*
- ADHD causes problems with performance and work production.
- A number of factors can intensify the problems of someone with ADHD or lead to significant improvement, such as the structure in the environment, support systems, or level of stress.
- ADHD can be managed best by a multimodal treatment and a team approach. We know that it takes a team effort of parents, school personnel, and health and mental health professionals to be most effective in helping children and teens with ADHD. *See checklists 1.12 and 5.1.*
- No single intervention will be effective for treating and managing ADHD. It takes vigilance, ongoing treatment and intervention plans, as well as revision of plans.
- The teaching techniques and strategies that are necessary for the success of children with ADHD are good teaching practices and helpful to all students.
- There are many resources available for children, teens, and adults with ADHD, as well as those living with and working with individuals with ADHD. *See checklists 5.7 and 5.8.*
- There is need for better diagnosis, education, and treatment of this disorder that affects so many lives.
- We are learning more and more each day due to the efforts of the many researchers, practitioners (educators, mental health

professionals, physicians), and others committed to improving the lives of individuals with ADHD.

- Fortunately, we know a great deal about:
  - Which behavior management techniques and discipline strategies are effective in the home and school for children with ADHD. *See checklists 1.14, 2.2–2.5, and 3.1–3.4.*
  - The classroom interventions, accommodations, and teaching strategies most helpful for students with ADHD. *See checklists 3.6–3.10, and 3.13–3.17.*
  - Specific parenting strategies that are most effective with children who have ADHD. *See checklists 2.1–2.12.*
  - Research-validated treatments that have been proven effective in reducing the symptoms and improving functioning of individuals with ADHD. *See checklists 1.12, 1.13, 1.14, and 5.4.*
  - Many additional strategies that help those with ADHD build skills and compensate for their weaknesses (for example, with self-regulation, academics, study skills, and interpersonal relationships). *See checklists 4.2, 4.4, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, 5.2, 5.3, and 5.4.*

### **What We Do Not Yet Know**

• A lot about ADHD is still unknown, and there is much that we do not know enough about at this time. Among other things, research is needed to learn more about the following:

- The causes
- How to prevent ADHD or minimize the risk factors and negative effects
- The inattentive type of ADHD
- The disorder in certain populations (early childhood; adults; females; racial and ethnic minorities)
- More conclusive tests for diagnosing ADHD
- Long-term treatment effects
- What may prove to be the best, most effective treatments and strategies for helping individuals with ADHD

## 1.7 ADHD AND COEXISTING CONDITIONS AND DISORDERS

ADHD is often accompanied by one or more other conditions or disorders: psychiatric, psychological, developmental, or medical. Because symptoms of these various disorders commonly overlap, diagnosis and treatment can be complex in many individuals. The word *comorbidity* is the medical term for having coexisting disorders.

- At least half, and as high as two-thirds, of children and teens with ADHD have at least one other coexisting disorder, such as learning disabilities, oppositional defiant disorder, Tourette syndrome, anxiety disorder, or depression.
- Coexisting disorders can cause significant impairment above and beyond the problems caused by ADHD.
- Coexisting conditions make diagnosis, intervention, and management more complicated.
- In order to effectively treat the child or teen, an accurate diagnosis must first be made. That is why it is so important for the clinician making the diagnosis to be skilled and very knowledgeable about ADHD and coexisting conditions. It will be important to tease out what is ADHD and what may be something else—such as a different condition with similar symptoms or additional disorders or conditions that accompany or coexist with the ADHD. *See checklist 1.9.*
- Determining the proper diagnosis requires that the evaluator takes the time and is thorough in obtaining information and data about the child from multiple sources and perspectives and carefully reviewing the history and behaviors. It also can take time for all of the pieces of the puzzle to come together, and parents, teachers, and clinicians need to monitor the child's development and any emerging concerns.

### Common Coexisting Conditions and Disorders

- The prevalence of specific coexisting conditions and disorders accompanying ADHD varies depending on the source. Most sources indicate the following ranges:
  - Oppositional defiant disorder—approximately 40 to 65 percent
  - Anxiety disorder—approximately 25 to 30 percent of children and 25 to 40 percent of adults

- Conduct disorder—approximately 10 to 25 percent of children, 25 to 50 percent of adolescents, and 20 to 25 percent of adults
  - Bipolar—approximately 1 to 20 percent
  - Depression—approximately 10 to 30 percent in children and 10 to 47 percent in adolescents and adults
  - Tics, Tourette syndrome—about 7 percent of those with ADHD have tics or Tourette syndrome, but 60 percent of Tourette syndrome patients also have ADHD
  - Learning disabilities—a range from 20 to 60 percent, with most sources estimating that between one-quarter and one-half of children with ADHD have a coexisting learning disability
  - Sleep problems—approximately 40 to 50 percent
  - Secondary behavioral complications—up to 65 percent of children with ADHD may display secondary behavioral complications such as noncompliance, argumentativeness, temper outbursts, lying, blaming others, and being easily angered
- Go to the Web site of the National Resource Center on AD/HD ([www.help4adhd.org](http://www.help4adhd.org)) for the most up-to-date and reliable information about coexisting disorders with ADHD and recommended treatment.

### **Consequences of Comorbidities**

- Most children with ADHD have school-related achievement, performance, or social problems.
- Because such a high percentage of children with ADHD also have learning disabilities, a psychoeducational evaluation by the school team is very important when a possible learning disability is suspected. *See checklists 1.20, 2.17, and 3.1.*
- Parents, educators, and medical and mental health care providers should be alert to signs of other disorders and issues that may exist or emerge, often in the adolescent years, especially when current strategies and treatments being used with the ADHD child or teen are no longer working effectively. For example, children with the combined type of ADHD are at a much higher risk than the average child of developing a more serious disruptive behavior disorder (oppositional defiant disorder or conduct disorder). There is also a high rate

of coexisting depression and anxiety disorder in teenage girls with ADHD that can easily be overlooked.

- It is important to recognize the risks, identify coexisting conditions, and provide the necessary treatment and support to address the problems that stem from ADHD and any other disorders or conditions that exist.
- Early identification of ADHD and implementing appropriate interventions can help significantly in all respects, reducing the risk for future problems developing and increasing overall successful outcomes.

## 1.8 POSSIBLE CAUSES OF ADHD

ADHD has been researched extensively in the United States and a number of other countries throughout the world. Hundreds of well-designed and controlled scientific studies have tried to determine the causes and most effective treatments for those with ADHD. Sophisticated brain-imaging technologies and recent genetic research have provided a lot of information and hold promise of much more to come. To date, however, the causes of ADHD are not fully known or understood and there are a number of theories. Nevertheless, based on the enormous amount of research so far, there is a lot of consensus in the scientific community about most probable causes.

### **Heredity**

- Based on the evidence, heredity is the most common cause of ADHD: believed to account for about 80 percent of children with ADHD.
- ADHD is known to run in families, as found by numerous studies (for example, twin studies with identical and fraternal twins, adopted children, family studies, and molecular genetic studies).
- It is believed that a genetic predisposition to the disorder is inherited. Children with ADHD frequently have a parent, sibling, grandparent, or other close relative with ADHD or whose history indicates they had similar problems and symptoms during childhood.
- Molecular genetic studies and candidate-gene studies have identified certain genes linked to ADHD. Since ADHD is a complex disorder with multiple traits, future research will likely identify multiple genes involved in ADHD.

- It is hypothesized that the child may inherit a biochemical condition in the brain that influences the expression of ADHD symptoms. An abnormality in one or more genes associated with ADHD may be inherited, such as one of the genes that regulates dopamine activity in the brain. Others suggest that what is inherited is a tendency toward problems in the development of the brain region associated with executive functioning and self-regulation.

### **Diminished Activity and Lower Metabolism in Certain Brain Regions**

- Numerous studies measuring electrical activity, blood flow, and brain activity have found differences between those with ADHD and control groups (those without ADHD), including:

- Decreased activity level in certain regions of the brain (mainly the frontal region and basal ganglia). These regions that are underactivated are known to be responsible for controlling activity level, impulsivity, attention, and executive functions.
  - Lower metabolism of glucose (the brain's energy source) in the frontal region.
  - Decreased blood flow to certain brain regions associated with ADHD.
  - Less electrical activity in these key areas of the brain.
- These differences have been identified using brain activity and imaging tests and scans—for example, functional magnetic resonance imaging (MRI), single photon emission computed tomography (SPECT), positron emission tomography (PET), and electroencephalograms (EEGs).
- Although imaging and other brain tests are used in researching ADHD, they are not used in diagnosing it.

### **Chemical Imbalance or Deficiency in Neurotransmitters**

- There is strong scientific evidence that those with ADHD have a deficiency, imbalance, or inefficiency in brain chemicals (neurotransmitters)

that affect certain brain regions associated with ADHD—particularly the prefrontal cortex. The two main neurotransmitters involved in ADHD are dopamine and norepinephrine, and their levels in those affected brain regions are believed to influence attention, inhibition, motivation, and motor activity.

- The neurotransmitters are the chemical messengers of the brain. The neurons in the brain are not connected. They have a “synapse” or gap between them. The neurotransmitters help carry messages between two neurons by releasing into the synapse and then being recycled or taken back to the first neuron once the message gets across. It is believed that with ADHD, those brain chemicals (dopamine and norepinephrine) may not be efficiently releasing and staying long enough in the synapse in order to do their job in that region and circuits of the brain effectively.

- Stimulant medications for ADHD are believed to work by normalizing the brain chemistry of the neurotransmitters and increasing the availability of the dopamine and norepinephrine in underactivated regions of the brain. *See checklist 1.13.*

### **Prenatal Exposure to Certain Toxins**

There has been found to be an association between prenatal exposure to some environmental toxins and ADHD. Certain substances the pregnant mother consumes or exposes the developing fetus to are believed to increase risk factors and may be a contributing cause for ADHD in some children. This includes fetal exposure to alcohol, nicotine from cigarettes, and high levels of lead.

### **Birth Complications, Illnesses, and Brain Injury**

- For a very small percentage of children with ADHD, some causes may be related to:

- Birth complications, such as toxemia or significantly premature birth and low birthweight
- Trauma or head injury to the frontal part of the brain
- Certain illnesses that affect the brain, such as encephalitis

## Structural Brain Differences and Delays in Brain Development

- There is evidence of some slight structural differences in certain brain regions believed responsible for ADHD:
  - As a group, children with ADHD show slightly smaller volume in brain regions (approximately 3 to 4 percent) compared to those without ADHD but follow a normal growth curve.
  - Recent evidence supports that ADHD may involve a delay in the brain development of some areas, particularly maturation in areas of the cortex.

## Environmental Factors

- Lead poisoning, which can occur prenatally or later, is one environmental factor that increases a child's chances of developing ADHD. Many people wonder about exposure to other unknown toxins that may have harmful effects on the brain's development.
  - The scientific community generally believes that environmental factors influence the severity of ADHD symptoms and their expression and can play a role in increasing symptoms but that they typically are not the cause of ADHD.
    - Research has not supported many of the suggested causes that continue to be popular beliefs (for example, consuming too much sugar or poor parenting). These are not causes of ADHD.
    - There is evidence that for a very small subgroup of children who have super sensitivities, certain food additives and preservatives may cause allergic reactions and hyperactive symptoms.

## 1.9 ADHD LOOK-ALIKES

- Not everyone who displays symptoms of ADHD has an attention deficit disorder. A number of other conditions and factors can cause inattentive, hyperactive, and impulsive behaviors. The following list contains some disorders or conditions that might coexist with ADHD (see *checklist 1.7*) or that may produce some symptoms that look like or mimic ADHD:

Learning disabilities	Sensory impairments (hearing, vision, motor problems)
Substance use and abuse (of alcohol and drugs)	Oppositional defiant disorder
Conduct disorder	Allergies
Posttraumatic stress disorder	Anxiety disorder
Depression	Obsessive-compulsive disorder
Sleep disorders	Bipolar disorder
Thyroid problems	Rare genetic disorders (for example, fragile X syndrome)
Seizure disorders	Lead poisoning
Hypoglycemia	Anemia
Fetal alcohol syndrome, fetal alcohol effects	Chronic illness
Language disorders	Tourette syndrome
Pervasive developmental disorder	Asperger's syndrome
Autism	Developmental delays
Sensory integration dysfunction	Low intellectual ability
High intellectual ability, giftedness	Severe emotional disturbance
Side effects of medications being taken (for example, antiseizure medication, asthma medication)	

• Emotional and environmental factors that have nothing to do with ADHD can also cause a child or teen to be distracted, unable to concentrate, and have acting-out or aggressive behaviors—for example:

- Experiencing or witnessing physical or sexual abuse or violence
- Family stresses (for example, divorce and custody battles)
- Bullying or peer pressure and other peer and social issues
- A chaotic, unpredictable, unstable, or neglectful home life with inappropriate expectations placed on the child

• Inattention and disruptive classroom behaviors can be school related and have nothing to do with ADHD. Students may display those behaviors if they are in a school environment that has:

- A pervasive negative climate
- Poor instruction and low academic expectations

- Nonstimulating and unmotivating curriculum
- Ineffective classroom management

## 1.10 GIRLS WITH ADHD

- Many girls with ADHD are undiagnosed or misdiagnosed. They are often overlooked or labeled and written off as being “space cadets,” “ditzzy,” or “scattered.”

- Most have the inattentive type of ADHD. They do not have the hyperactive, disruptive behaviors that are problematic in the classroom. In fact, they may be shy and timid.

- Girls who *do* have the combined type of ADHD with hyperactivity are very recognizable because their behavior is significantly out of norm compared to other girls their age.

- Girls with ADHD often struggle with learning difficulties, social problems, and low self-esteem.

- Girls have the propensity to be overwhelmed, disorganized, forgetful, and self-critical.

- It is common for girls to exhibit anxiety-related behaviors (pulling hair, biting nails, picking at cuticles).

- Girls with ADHD often put a lot of effort into trying to hide their academic difficulties and please their teachers, which contributes to why their struggles often go undetected and may not have raised the concern of their teachers when they should.

- Girls with the combined type of ADHD often demonstrate much giggling and silly behavior and their hyperactivity is commonly manifested as being hypervocal, hypersocial (cannot stop talking, chatting, commenting on everything), and hyperemotional or reactive.

- Girls have the tendency to unleash frustrations at home that were kept hidden at school. Parents may see behaviors in their daughter such as temper tantrums and meltdowns that would never be exhibited at school.

- Research has begun to reveal the significance of gender differences and issues and will undoubtedly result in changes and improvements in the diagnosis and treatment for girls and women with this disorder.

- It is now known that:

- Females with ADHD have a greater likelihood of anxiety and depression.
  - Girls with ADHD often have impaired social skills and tend to experience more peer rejection than boys with ADHD.
  - Symptoms often increase rather than decrease at puberty, and although DSM-IV criteria for diagnosis require an onset of symptoms by age seven, girls may not show their symptoms until later.
  - Hormones from puberty onward have a great impact on girls with ADHD. Premenstrual syndrome, for example, presents additional problems, worsening ADHD symptoms by adding to irritability, low frustration, mood swings, and emotionality.
  - Impulsivity in girls can lead to binge eating and engaging in other high-risk activities, such as smoking, drinking, drugs, sexual promiscuity, and engaging in unprotected sex.
- Much of the awareness about gender differences in ADHD comes from the work of Kathleen Nadeau and others (2000), Patricia Quinn (2002), and others who have strongly advocated on behalf of females with ADHD. There is excellent information specific to issues and treatment of girls and women with ADHD found in books, publications, and web resources. For example, see the Web sites of the National Center for Girls and Women with AD/HD ([www.ncgiadd.org](http://www.ncgiadd.org)) and <http://www.ADDvance.com> and others in *checklist 5.7*.

## References

- Nadeau, K., Littman, E., & Quinn, P. (2000). *Understanding girls with AD/HD*. Silver Spring, MD: Advantage Books.
- Quinn, P., & Nadeau, K. (eds.). (2002). *Gender issues and AD/HD: Research, diagnosis, and treatment*. Silver Spring, MD: Advantage Books.

### 1.11 MAKING THE DIAGNOSIS: A COMPREHENSIVE EVALUATION FOR ADHD

The diagnosis of ADHD is not a simple process. There is no single laboratory test or measure to determine if a person has ADHD, and no particular piece of information alone can confirm or deny the

existence of ADHD. Nevertheless, ADHD can be diagnosed reliably following the guidelines of medical and psychiatric associations. In future years, we may see the use of genetic testing, brain imaging, or other more conclusive tools and methods used for diagnostic purposes, but currently this is not the case.

### The Diagnosis

- The cornerstone of an ADHD diagnosis is meeting the criteria described in the most current edition of the *Diagnostic and Statistical Manual of Mental Health Disorders*, published by the American Psychiatric Association: the DSM fourth edition (DSM-IV) and text-revised fourth edition (DSM-IV-TR). See *checklist 1.4*.

- The diagnosis is made by gathering and synthesizing information obtained from a variety of sources in order to determine if there is enough evidence to conclude that the child meets all of the criteria for having ADHD.

- The evaluator must collect and interpret data from multiple sources, settings, and methods and use his or her clinical judgment to determine if DSM-IV criteria have been met:

- The child has a sufficient number of ADHD symptoms (at least six out of the nine characteristics listed) in the categories of inattention or hyperactivity-impulsivity, or both.
- The symptoms are to a degree that is “maladaptive and inconsistent with the child’s developmental level.”
- Symptoms are serious enough to be causing significant impairment in the child’s life and affecting the child’s successful functioning in more than one setting (for example, at home, in school, or in social situations in other environments).
- These symptoms are chronic and have been evident from an early age (at least some of the characteristics are evident before age seven).
- Other factors, disorders, or conditions do not better account for these symptoms.

- An appropriate evaluation for ADHD takes substantial time. It is *not sufficient* for a child to be seen by a community physician for

only a brief office visit without gathering and analyzing the necessary diagnostic data from the parents, school, and other sources.

- The guidelines of the American Academy of Pediatrics and American Psychiatric Association for diagnosing ADHD require obtaining sufficient evidence about symptoms and resulting impairment. These data or the evidence are to be obtained from parents or caregivers and from the school. If the school has not been communicated with and has not provided the evaluator information about the student's current functioning and school history, that is an inappropriate assessment for ADHD.

- Evaluation of the child with ADHD should include screening or assessment for coexisting conditions when indicated.

### **Qualifications for Evaluating a Child for ADHD**

- A number of professionals have the qualifications to assess children for ADHD: child psychiatrists, pediatricians, child neurologists, clinical psychologists, clinical social workers, family practitioners, and other licensed medical and mental health professionals.

- Specialists in childhood medical and mental health, such as child psychiatrists, child neurologists, and developmental or behavioral pediatricians, are recommended for complex cases.

- The school psychologist and multidisciplinary team conduct a school-based assessment when indicated eligibility for special education, related services, or accommodations based on a disability causing educational impairment. *See checklist 1.20.*

### **Components of a Comprehensive Evaluation for ADHD**

#### **HISTORY**

- An evaluation for ADHD requires taking a thorough history. This is the single most important feature of the evaluation process. The history is obtained through:

- Interviewing the parents or guardians
- Use of questionnaires, generally filled out by parents prior to office visits
- A review of previous medical and school records

- By using these techniques and instruments, the evaluator obtains important data regarding:

- The child's medical history (for example, fetal development, birth, illnesses, injuries)
- The child's developmental and school history
- The child's behavioral history
- Family medical and social history
- Any significant family circumstances such as death, serious illness in the family, or divorce
- Sense of the parents' style of discipline and interactions with the child
- Parents' perceptions of the child's strengths as well as difficulties

### **BEHAVIOR RATING SCALES**

- These are useful in determining the degree to which various ADHD-related behaviors or symptoms are observed in different key environments (for example, home and school). In addition to information from teachers and parents, rating scales may be filled out by others who spend time with the child, such as the school counselor, special education teacher, child care provider, or other relative.

- A variety of scales and questionnaires can be used in the diagnosis of ADHD for obtaining information from parents and teachers. Some include: Vanderbilt Assessment Scales, Conners Parent and Teacher Rating Scales, ADD-H Comprehensive Teacher's Rating Scale (ACTeRS), Barkley Home and School Situations Questionnaires, SNAP-IV, Behavior Assessment System for Children (BASC-2), SWAN Rating Scale, and Brown ADD Scales.

### **CURRENT SCHOOL INFORMATION**

- A key part of the diagnostic process is reviewing information supplied by the school that indicates current student performance (academic, behavioral, social). No one is in a better position than the teacher to report on the child's school performance compared to other children of that age and grade. This includes the teacher's observations, perceptions, and objective information indicating the child's academic productivity and social, emotional, and behavioral functioning. The teacher should share information regarding the student's ability to exhibit self-control, stay focused and on task, interact

with peers and adults, initiate and follow through on assignments, and other behaviors.

- In an appropriate evaluation for ADHD, teachers will be asked to report their observations about the student through rating scales, questionnaires, narrative statements, phone interviews, or other measures.
- Other indicators of a student's current school performance (academic and behavioral) might be useful as well—for example, disciplinary referrals (among the records of guidance counselors or administrators) and work samples, particularly written samples.

### **INFORMATION ABOUT THE SCHOOL HISTORY**

• Information indicating the existence of symptoms and difficulty the student experienced in his or her school history can be obtained from the school records. A great deal of useful data is located in the student's school records, which might include past report cards, district and state achievement testing, other school evaluations (psychoeducational, speech/language), referrals to the school team, and intervention plans such as individualized education plans.

### **OBSERVATIONS**

• Directly observing the child's functioning in a variety of settings can provide helpful diagnostic information. Most useful are observations in natural settings where the child spends much of his or her time, such as school. How a child behaves and performs in an office visit is not indicative of how that same child performs and behaves in a classroom, on the playground, or in the cafeteria or other natural setting. Because most clinicians do not have the time to make visits to observe the child in the school setting, school personnel can make some observations and provide those observational reports to the evaluating doctor.

- Be aware:
  - The evaluator may or may not read through much supplementary data such as a lot of observational notes that the school sends due to time constraints. Schools should be sure to highlight the main points and supporting evidence. Schools should summarize the key information to communicate to the doctor or other clinician that best reports the student's behaviors and symptoms and how those behaviors are impairing the child's functioning (for example, academically, socially, and behaviorally).

- The school may not communicate or provide any information regarding a student without first obtaining from the parents or guardians their permission in writing. Parents need to fill out a release of information form granting the school permission to do so.

### **PHYSICAL EXAM**

• A clinical evaluation for ADHD generally includes a routine examination to rule out other possible medical conditions that could produce ADHD symptoms. Based on the child's physical exam, as well as medical history (through interview and questionnaire), a physician may look for evidence of other possible causes for the symptoms or additional issues that may need to be addressed, such as sleep disturbances, bedwetting, or anxiety. Other medical tests (bloodwork, electroencephalogram, CT scans) are not done in an evaluation for ADHD. It is the doctor's responsibility to determine the need for additional medical testing or referral to other specialists if indicated.

### **ACADEMIC AND INTELLIGENCE TESTING**

• An evaluator should have at least a general indication of a child's academic achievement levels and performance, as well as a rough estimate of his or her cognitive (thinking and reasoning) ability. This can partly be determined through a review of the student's report cards, standardized test scores, classroom work samples, informal screening measures, and reports from the teacher, parents, or student.

• If the child is exhibiting learning difficulties and struggles academically, a full psychoeducational evaluation needs to be done to determine ability, academic achievement levels, and information about how the child learns. Parents should request this evaluation from the school, which is the beginning of the individualized education program (IEP) process. *See checklist 1.20.*

### **PERFORMANCE TESTS**

• Additional tests are sometimes used in a comprehensive evaluation to obtain more information about how a child functions on various performance measures. Some clinicians use computerized tests that measure the child's ability to inhibit making impulsive responses and to sustain attention to tasks. These tests, however, are not routinely done in ADHD assessments.

## Finding a Professional to Evaluate Your Child

Parents are advised to investigate before selecting the professional to evaluate their child. It is important to find someone well qualified, preferably recommended by others.

Parents seeking professionals to evaluate and treat their child may wish to first speak with other parents of children who have ADHD (for example, through the local chapter of CHADD—Children and Adults with Attention Deficit/Hyperactivity Disorder) regarding recommended professionals in the community. School nurses and school psychologists are excellent resources and knowledgeable in most cases about health care providers in the community who have expertise in ADHD.

Parents should discuss with the individual the methods he or she will be using in the diagnostic process. It is important that this professional:

- Adheres to recommended diagnostic guidelines for ADHD
  - Conducts a comprehensive and multidimensional evaluation
  - Is knowledgeable about ADHD and coexisting conditions
  - Takes the time to answer questions about assessment, treatment, and management to the parents' satisfaction
- Parents who are concerned about symptoms that are affecting their child's functioning and suspect that it may be the result of ADHD or another disorder or disability should pursue an evaluation. *See checklist 2.17.* At any point, they should communicate their concerns with their child's primary care physician and teachers.
- Parents should set up an appointment to meet with the classroom teacher and discuss his or her observations regarding the child's academic achievement, performance, and behavior.
    - A school-based assessment can be done concurrent with, before, or after the clinical evaluation for ADHD. It is best to coordinate efforts. In pursuing a school evaluation, parents should let the teacher know why they want their child evaluated. They should also speak with the principal or other school team member (school psychologist, school nurse, special education teacher, or school counselor) regarding this request for testing.
    - It is likely that the parent will be asked to meet with the school's multidisciplinary team. This team goes by various names in districts

around the country, for example, the student support team (SST). During the SST meeting, information and concerns are reviewed as a team (classroom teacher, support staff, administrator, and parents). *See checklist 3.18.*

- The SST meeting is recommended protocol, particularly if the child has never been referred before and there has not yet been an intervention plan developed to address the student's difficulties in the classroom. It is especially helpful to have an SST meeting when considering an evaluation for ADHD for the following reasons:

- The school can share with parents its role in the assessment of ADHD and obtain parental permission in writing to begin gathering data on such matters as the child's school history and current functioning.
- Better coordination and communication usually follow if parents and school staff meet prior to initiating the diagnostic process.

- As long as the school arranges to meet with the parents in a reasonable time frame, it is often best if parents channel their concerns and request for testing through the SST (if such a team exists at the school). However, parents may choose not to go through this process and can request school testing at any time.

- The school has the responsibility of initiating and following through with a comprehensive evaluation if the child is suspected of having ADHD or any other disability impairing educational performance. If the student is found to be eligible under either of the two federal laws: Individuals with Disabilities Education Act (IDEA) or Section 504 of the Rehabilitation Act of 1973, the school must provide the appropriate supports, services, and accommodations the student needs. *See checklist 1.20.*

- In an ADHD evaluation and potential treatments and interventions, teachers can provide valuable insights and observations regarding:

- The child's school performance difficulties (academic, social, behavioral)
- How and to what degree the symptoms and behaviors are causing the student impairment in school functioning

- The most problematic times and environments (for example, transition times, the playground)
  - The child's strengths, interests, and motivators
  - Environmental, instructional, and behavioral strategies and interventions that have been tried and their degree of success
- In an ADHD evaluation and potential treatments and interventions, parents can provide valuable insights and observations regarding:
- The child's difficulties in learning, behavior, health, and social interactions (past and present)
  - The child's strengths, interests, and motivators
  - Responses to discipline and disciplinary techniques used in the home
  - How the child responds when upset, angry, or frustrated
  - How the child gets along with siblings, neighborhood children, and others
  - The child's feelings: worries, fears, and other feelings

## 1.12 MULTIMODAL TREATMENT FOR ADHD

Once a child is diagnosed with ADHD, there are many ways to help. A multifaceted or multimodal treatment approach is the most effective. It is important to keep the following points in mind.

- Parents are the primary case managers for their children. When they receive the child's diagnosis, they need to start the journey of becoming an ADHD expert, learning all they can about the disorder and treatment options in order to make the best-informed decision for their child's care and management.
- Most positive outcomes for youngsters with ADHD are achieved when parents, teachers and other involved school personnel, and treating medical and mental health providers have good communication and collaborate well. *See checklist 5.1.*
- All parties involved in the care and education of the child with ADHD should be working together in establishing target outcomes

(goals), formulating plans to reach the goals, and monitoring the effectiveness of the interventions being used.

- Since ADHD often lasts throughout one's lifetime, a person may need some of the supports and interventions at different times in life (for example, treatment from medical and mental health professionals, various school interventions, out-of-school tutoring or coaching services).

- The two research-validated interventions known at this time are *medication* and *psychosocial (or behavioral) therapy*. One, the other, or combination of both are the main treatments for ADHD, as the scientific evidence clearly shows these treatments to make the biggest difference with regard to improvement of symptoms and degree of impairment. These interventions have been extensively tested with controlled studies and proven effective in managing ADHD.

- Educational supports and interventions are a critical component in the success of students with ADHD as well.

- There are additional supports and interventions to enhance the plan and benefit the individual with ADHD.

### **Multimodal Intervention**

- A multimodal treatment program may include a number of components.

- *Medical/pharmacological intervention*. Pharmacological treatment is the use of medication to manage ADHD symptoms. Stimulant medications (there are various types) have been proven effective in 70 to 95 percent of children with ADHD and in adults as well. They are called *stimulants* because they stimulate the underactivated parts of the brain, increasing the neurotransmitters or brain chemicals in those brain regions and circuits. Appropriate medical treatment requires well-managed and carefully monitored use of medication(s) for ADHD. When there are coexisting disorders, various medications may be prescribed in the treatment of those other conditions, as well. See *checklists 1.13, 1.15, and 1.7*.

- *Behavior modification and specific behavior management strategies implemented at home and school*. Both parents and teachers learn how to provide clear, consistent structure, follow-through, and effective use of rewards and consequences. These strategies also include specific techniques (for example, token economies, good communication between home and school, incentive systems, and positive

reinforcement) to help increase the child's positive, appropriate behaviors and reduce the undesirable, unwanted behaviors. Among the research-validated behavioral interventions for children with ADHD are the use of daily report cards. See descriptions of daily report cards and a token economy system in *checklist 1.20*. Also see the many behavioral supports and strategies in *checklists 2.2–2.8 and 3.1–3.6*.

- *Parent training*. This is a key and crucial component of ADHD treatment, as parents must learn and be provided with:

- Accurate and reliable information about ADHD in order to understand the impact and developmental course of the disorder, the treatment options, and available resources
  - A new set of skills for managing their child's challenging behaviors
  - Training in effective behavioral techniques and how to structure the home environment and other aspects of their child's life
- The Parent-to-Parent training program offered through CHADD (Children and Adults with Attention Deficit/Hyperactivity Disorder) is highly recommended. See [www.chadd.org](http://www.chadd.org).

### **Other Psychosocial Interventions**

- *Social skills training*. This training is usually provided in small groups with curriculum addressing specific skills that children with ADHD tend to have difficulties with in their interpersonal relationships. The children then practice the skills they have learned in natural settings where they have difficulty in their day-to-day life with feedback and reinforcement. See *checklist 5.4*.

- *Family counseling*. The whole family is often affected in the homes of children with ADHD (see *checklist 1.16*). Family therapy can address issues that affect parents and siblings and improve family relationships.

- *Individual counseling*. Counseling can teach the child coping techniques, self-monitoring and self-regulation strategies, problem-solving strategies, and how to deal with stress or anger.

- *Psychotherapy for teens and adults*. This counseling helps the person with ADHD and a history of school, work, personal, or

relationship problems talk about his or her feelings and deal with self-defeating patterns of behavior.

- *Vocational counseling.* This can be a helpful intervention for teens and adults.

### **Educational Interventions**

- *Differentiated instruction.* Teachers who recognize that one size does not fit all embrace the challenge of providing instruction and designing lessons that reach and teach diverse learners.

- *Providing accommodations* (environmental, academic, instructional, behavioral) as needed enables students to achieve success. *See checklists 3.6–3.17, 4.2, 4.4, 4.6–4.11, 5.2, and others throughout this book.*

- *Special education and related service.* Some students with ADHD who meet the eligibility criteria for special education benefit from these programs and services provided through the school district. *See checklist 1.20.*

- *Other school services and supports.* Various interventions and safety nets may be available at the school that any student may access (not just those in special education), such as homework or organizational assistance, mentoring, and academic tutorials.

- *Tutoring or academic supports.* This may be available both in and outside school.

### **Other Helpful Interventions**

- *ADHD coaching.* This is a service that many teens and adults find beneficial in learning strategies to be more focused and productive and to help them with organization and time management. Coaching generally assists with scheduling, breaking work tasks down into reasonable short-term goals, checking in regularly (often over the phone or by e-mail), and keeping the ADHD client on target with his or her individual short- and long-term goals.

- *Support groups and opportunities to share with others and network.* Support organizations such as CHADD and the Attention Deficit Disorder Association (ADDA) are highly recommended resources (*see checklist 5.7*). CHADD has local chapters throughout the United States, and such groups are an excellent source of information and support. Online discussion groups and other vehicles to interact with others with similar concerns and experiences can be helpful.

- *Exercise.* It is important for children and teens with ADHD to build their physical skills and competencies (for example, in swimming, martial arts, gymnastics, track and field, dance, hiking, and other sports) and have an outlet for their need to move. Among the many benefits to medical and mental health is regulating mood. See *checklist 5.3*.

- *Building on their interests and developing their areas of strengths.* Arts and crafts, sports, scouts, dance, music, and the performing arts contribute to self-esteem and motivation and provide a creative outlet and fun.

- *Healthy diet and lifestyle.* Environmental factors can worsen ADHD symptoms and their expression. All children and teens (including those with ADHD) need to be health conscious and have a well-balanced diet, high in nutrition (plenty of protein, fruits, vegetables). Nutritionists point out that a balanced diet can help control behavioral swings related to surges in blood sugar or hunger. Getting a good night's sleep is also very important and can be very important but often problematic for some children and teens with ADHD. More outdoor activities as opposed to indoor ones (glued to a screen of some type) are good choices for everyone and may be even more important for those with ADHD.

### **Complementary and Alternative Treatments**

- A number of alternative treatments have been claimed to be effective in treating ADHD: megavitamins, anti-motion sickness medication, antioxidants, chiropractic adjustment and bone realignment, and others. These are unproven treatments without scientific evidence, however, and some have been discredited. In addition, a variety of “natural” products claim in their advertisements that they are effective in treating ADHD.

- Parents are cautioned that some so-called natural products can be harmful because they have not been through rigorous scientific testing for effectiveness or safety.

- Some treatments, for example, elimination diets, may be beneficial for certain children with sensitivities. Parents should always discuss this and other dietary concerns they may have with their physician.

- Neurofeedback (also called *biofeedback*) and used as a complementary or alternative treatment has been available for a number of years. These are brain exercises that take place during a series of sessions during which the child wears headgear lined with electrodes

and performs video games and computerized tasks while brain wave activity in the frontal lobe (the part of the brain that is underaroused in those with ADHD) is measured. The treatment is supposed to increase the activation of brain waves in that part of the brain and train patients to eventually produce the brain-wave patterns associated with focus on their own. This is not yet a research-validated intervention for ADHD with sufficient scientific proof, but a number of experts in the field believe it does hold promise (particularly when used along with medication).

- A computer-based intervention called Cogmed Working Memory Training Program is generating interest internationally. This software program is designed to increase working memory—one of the key executive functions that is weak in children with ADHD (*see checklist 1.5*). It involves several exercises in a video game format. Although lacking sufficient research at this time, preliminary studies indicate that it is promising as a complementary intervention.

- For reliable information regarding alternative and complementary interventions, go to these Web sites: National Resource Center on AD/HD ([www.help4adhd.org](http://www.help4adhd.org)) and National Institutes of Health, National Center for Complementary and Alternative Medicine (<http://nccam.nih.gov/>).

### **Additional Points to Keep in Mind**

- When pursuing any treatment, seek professionals who are knowledgeable and experienced in treating individuals with ADHD and coexisting conditions.

- The intervention plan should be designed not just to focus on areas of weakness, but also to help the child or teen recognize and build on his or her strengths.

- Parents need to be educated about ADHD and treatments, as well as their legal rights in the educational system (*see checklists 1.13, 1.14, 1.20, and 2.15*). This is necessary in order to advocate effectively for their child in both the educational and health care systems.

- Children, especially teens, should be included as active partners in their treatment program so that they will be willing to cooperate and participate in the program. They need to understand the disorder, the reason for various interventions, and how those treatments are intended to have a positive effect on their daily lives.

## **1.13 MEDICATION TREATMENT FOR ADHD**

- Medications have been used safely for decades to treat ADHD. They do not cure the disorder but do help in controlling and reducing the symptoms. The most commonly used medications for treating ADHD are the stimulants.

- There continues to be much attention (media sensationalism and public controversy) regarding the use of stimulant medication in treating children with ADHD. A great deal of misinformation exists, which makes it difficult for parents trying to make an informed decision.

- Parents should consult with their physician or other medical professionals about any medication issues, questions, or concerns. This checklist is meant only as a general reference.

### **Stimulant Medications in the Treatment of ADHD**

- Stimulant medications have been used since the 1930s in the treatment of children with behavioral disorders. Hundreds of controlled scientific studies demonstrating their effectiveness in children have been conducted.

- Stimulants have been proven to work for 70 to 95 percent of children with ADHD. They are also effective in adults. There are very few people who do not respond to stimulant medications, and the results can be dramatic.

- Because the scientific evidence so strongly supports the effectiveness of stimulants in managing the symptoms and reducing impairment, they are recommended as the first choice of medications used in treating children with ADHD.

- There are two main classes of stimulants: the methylphenidate formulas and the amphetamine formulas.

### **HOW STIMULANTS ARE BELIEVED TO WORK**

- Researchers suspect that stimulant medications act to normalize biochemistry in the parts of the brain involved in ADHD (primarily the prefrontal cortex and basal ganglia).

- Stimulants increase (or stimulate) the production of neurotransmitters, which are the brain chemicals, to a more normalized level in these key brain regions.

- The brain chemicals mostly involved are dopamine and norepinephrine (*see checklist 1.6*). Scientists believe that medications that increase the availability of these neurotransmitters help nerve-to-nerve communication, thereby boosting the “signal” between neurons.

- The stimulants are thought to be working within the system involved in the release of dopamine into the synapse (the gap between two neurons), and reuptake or recycling of dopamine out of the synapse. Stimulants are believed to help in keeping the proper level of dopamine in the synapse long enough to do the job of transmitting messages from one neuron to the next efficiently.

- Stimulants (while in the bloodstream) work to activate the areas of the brain that are underactive and not working efficiently in those with ADHD. These are the regions responsible for attention, inhibition of behavior, regulation of activity level, and executive functions.

## **STIMULANT MEDICATIONS PRESCRIBED FOR TREATING ADHD**

- There are several stimulant medications—some are methylphenidates and some are amphetamines. In the following list, the italicized name is the generic name, and the names in parentheses are the brand names. Also, SR stands for “sustained release,” LA is “long acting,” and ER and XR mean “extended release”:

### *Methylphenidate Stimulants*

- *Methylphenidate* (Ritalin, Ritalin LA, Ritalin SR, Concerta, Metadate CD, Metadate ER, Methylin, Methylin ER, Daytrana Patch)
- *Dexmethylphenidate* (Focalin, Focalin XR)

### *Amphetamine Stimulants*

- *Dextroamphetamine* (Dexedrine, Dexedrine Spansule, DextroStat)
  - *Mixed amphetamine salts* (Adderall, Adderall XR)
  - *Methamphetamine hydrochloride* (Desoxyn)
  - *Lisdexamfetamine dimesylate* (Vyvanse)
- Methylphenidates are among the most carefully studied drugs on the market. Thousands of children have been involved in research evaluating their use in the treatment of ADHD.

- Each of the stimulants has a high response rate. A child who does not respond well (in symptom improvement) to one stimulant medication will often respond well to another.

- Physicians have a number of possibilities of stimulants to choose from. The initial choice is generally a matter of doctor and parent preference.

- The different stimulant prescriptions vary in their onset (when they begin working), how they are released into the body (immediately or over an extended or sustained period), and how long the effects last (from a few hours to as high as twelve hours).

- The short-acting formulas of the stimulants:

- Start to work about twenty to thirty minutes from the time the medication is taken
- Metabolize quickly and are effective for approximately three to four hours
- Generally require an additional dosage to be administered at school
- May require a third dose (often a smaller one) to enable the child to function more successfully in the late afternoon and evening hours

- The longer-acting stimulants have a time-release delivery system. They:

- Take longer for the effect to begin
- Vary from approximately five to seven hours of coverage for some of the medications to lasting as long as ten to twelve hours for others
- Provide a smoother, sustained level of the drug throughout the day
- Minimize fluctuations (peak and trough) in blood levels
- Minimize rebound phenomena (a worsening of symptoms as the effects of the drug wear off)
- Eliminate the need for a midday dose at school, which is very beneficial for many children and teens, particularly those who are forgetful or embarrassed to take medication at school

## **BENEFITS OF STIMULANT MEDICATIONS**

- They take effect quickly (generally within thirty minutes).
- Children often experience significant improvement once they are on stimulant medications. For the lucky ones, their initial prescription and dosage will work well. But many others require adjustments in dosage or trying others among the stimulant medications and formulas to get the best effect.
- Stimulants are found to improve the core symptoms (hyperactivity, impulsivity, inattention) and many of the secondary or associated problems these children experience (for example, oppositional behavior, interpersonal relationships, work production, and school performance).

## **SIDE EFFECTS OF STIMULANT MEDICATIONS**

- The side effects that are most common are reduction of appetite, headache, stomachache, and mild sleep disturbances. Other possible side effects are irritability, moodiness, agitation, tics, and a rebound effect.
- Rebound, a worsening of ADHD symptoms as the medication wears off, usually lasts for about fifteen to forty-five minutes. The physician generally can adjust the dosage or the times when medication is given or prescribe a different medication.
- Most side effects from stimulant medications are mild, diminish over time, and respond to changes in dosage or the particular stimulant prescribed.
- Research studies have found that stimulant medication can cause some growth suppression (slightly less height and weight gain) compared to children not receiving stimulant treatment for their ADHD, which is a factor parents should discuss with their doctor.
- Medication treatment begins with a titration phase: a trial period when the physician is trying to determine the appropriate medication and dosage. It involves:
  - Close monitoring of symptoms and behavioral changes (at home and school) while progressively changing the dosages and sometimes adjusting the timing of medication administered
  - Starting typically with a very low dosage and raising it gradually
  - Trying to achieve the most improvement in symptoms and optimal effects from the medication with a minimum of side effects

- Parents and teachers communicate with the physician and provide the feedback necessary for the doctor to determine the child's response to the medication and benefits that are being achieved at each dosage level. See *checklist 1.15*.

## Other Medications for Treating ADHD

### **ATOMOXETINE (STRATTERA)**

- *Atomoxetine* (brand name *Strattera*) works differently from stimulants. It is a selective norepinephrine reuptake inhibitor, believed to work by blocking the reuptake or recycling of norepinephrine and increasing the availability of this brain chemical in the affected areas of the brain. Whereas the stimulants mostly work to improve the level of dopamine, *Strattera* works on increasing the norepinephrine level and activity.

- This is the first treatment for ADHD approved by the Food and Drug Administration that is not a stimulant.

- *Atomoxetine* has demonstrated effectiveness for improving ADHD symptoms in children and adults, and has the advantage of providing smooth, continuous coverage, potentially for twenty-four hours. It can help functioning around the clock.

- As *Strattera* was only released in 2002, it does not have the advantage of many years of study, as do the stimulants.

- Also, unlike stimulants that start working right away and show positive effects on symptoms that are readily apparent, *Strattera* takes weeks of daily use before it shows its benefits.

- Most common side effects are upset stomach, nausea, sleep problems, fatigue, and nervousness.

### *Other Medications*

- Certain types of antidepressants are used in the treatment of children with ADHD as a second-line choice of medication. These drugs may be prescribed for a child who is not responding to the stimulant medications or *Atomoxetine*, or if they cannot tolerate the side effects of those drugs.

- In this category are the tricyclic antidepressant medications: *imipramine* (*Tofranil*), *desipramine* (*Norpramin*), and *nortriptyline* (*Pamelor*).

- The tricyclic antidepressants take some time to build up in the bloodstream and reach a therapeutic level.

- They are used primarily for ADHD symptoms of hyperactivity and impulsivity and tic disorders. They also help with insomnia,

mood swings, and emotionality. They are not typically used for treating depression in children.

- Some side effects are fatigue, stomachache, dry mouth, rash, dizziness, accelerated heart rate, and possible risk of cardiac arrhythmias.

- Another drug used sometimes in the treatment of ADHD that is also an antidepressant, but a different type—not a tricyclic, but what is called an atypical antidepressant—is Wellbutrin (*bupropion*).

- In more complicated cases of ADHD, much less commonly used medications may be prescribed, such as *clonidine* (Catapres) and *guanfacine* (Tenex), which are antihypertensives.

### **Additional Information**

- Because of the comorbidities (coexisting conditions) with ADHD, medical treatment may require a combination of medications.

- All medications can have adverse side effects. Parents need to be well informed of the risks versus benefits in any medical treatment.

- There are excellent resources about medication treatment for ADHD. Consult with your physician or other medical professionals. Other reliable resources are found at [www.chadd.org](http://www.chadd.org), [www.help4adhd.org](http://www.help4adhd.org), and other sites listed in *checklist 5.8*. Timothy Wilens's (2006) book is also an excellent resource on this topic.

### **Reference**

Wilens, T. (2006). *Straight talk about psychiatric medications for kids* (Rev. ed.). New York: Guilford Press.

## **1.14 BEHAVIORAL TREATMENT AND MANAGEMENT OF ADHD**

- Behavioral treatments are one of the two research-validated interventions proven effective in the management of ADHD. They require training and commitment to implement, and this is not easy.

- Parents of children with ADHD must become far more knowledgeable and skilled in behavior management principles and techniques than other parents. They need training in how to cope with and handle the daily challenges and behavioral difficulties resulting from their child's disorder.

- Psychosocial or behavioral interventions for ADHD include:
  - Proactive parenting and classroom management and effective discipline practice at home and school, as described in *checklists 2.2 and 3.1*
  - Communicating in ways to increase compliance—that is, helping the child listen to and follow parent and teacher directions (*see checklists 2.7 and 3.3*)
  - Structuring the environment and being aware of antecedents or triggers to misbehavior to prevent problems at home and school (*see checklists 2.3, 2.8, 3.2, and 3.6*)
  - Using strategies to best deal with the challenging behaviors associated with ADHD in school environments and inside and outside the home (*see checklists 2.4, 2.5, 3.4, and 3.10*)
  - Improving the child’s social skills (*see checklist 5.4*)
- Behavior modification techniques are a cornerstone of behavioral intervention for ADHD. Children with ADHD require more external motivation, including the chance to earn rewards with higher frequency, than other children typically need because their internal controls are less mature and they have trouble delaying gratification.
  - Negative consequences or punishments are also effective in changing behavior, particularly use of time-out procedures and loss of privileges when they are implemented correctly and judiciously. *See checklists 2.2 and 3.1.*
  - A key behavioral approach for children with ADHD is to reward their success in meeting specific goals through well-designed behavioral programs such as daily report cards, token economies or token programs, and individual contracts.

### **Daily Report Cards**

- Daily report cards (DRCs) are excellent tools for tracking school performance and motivating a student to improve specific behaviors that are interfering with his or her success. They are highly effective for communicating between home and school and monitoring a child’s daily performance.
  - DRCs can be powerful motivators for students when parents and teachers are willing and able to consistently follow through with

positive reinforcement for the child's successful performance on the DRC goals. Any means to forge a partnership between home and school and work together on improving specific behavioral goals is very beneficial for children with ADHD.

- Daily report cards have been validated by research as an effective intervention for students with ADHD. Basically, DRCs involve selecting and clearly defining one or a few target behaviors or goals to be the focus for improvement. The teacher is responsible for observing and rating daily how the child performed on each target behavior and sending home the DRC at the end of the day.

- Parents are responsible for asking to see the DRC every day and reinforcing school behavior and performance at home. "Good days" in school (as indicated by meeting the criteria of the DRC) earn the child designated rewards at home on a nightly basis. A good week (for example, at least three out of five good days initially and then four out of five days) may also earn the child or teen extra privileges on the weekend.

- Using this system, parents will provide the agreed-on reward at home when their son or daughter has had a successful day according to the DRC. On days the child failed to meet the goal on their DRC, it is *not* recommended that parents punish their child, but be sure that the reward for success is only provided on those days the child earned it.

- Parents may, however, wish to back up the expectation that their son or daughter will bring the DRC home daily by enforcing with some mild punishment (for example, being fined or losing some TV time) on days the child "forgets" to bring the note home.

- Daily report cards can involve school rewards as well as home rewards. For example, a small school reward such as a sticker or computer time can be given to the child at school on a good day. For a good week, the student can earn a special reward or privilege on Fridays.

- If the family is not able to follow through with monitoring and reinforcement on a consistent and daily basis, it is best to do so at school. If the DRC is likely to get lost coming to and from school daily, then perhaps just a card that simply indicates "yes/no" or "met goal/didn't meet goal" can be sent home or a daily e-mail or phone message for parent notification, and the actual DRC remains at school. In this case, the school needs to be responsible for providing the daily reward when the child was successful (*see checklist 3.5*), but parents should be asked to reward the child on the weekend if it was a "good week." This is manageable in most all homes.

**CREATING A DAILY REPORT CARD**

• There are many variations of daily report cards. They basically require the following components:

- Selecting the few goals to be achieved and then defining those goals precisely.
- Collecting data on how frequently the selected behaviors occur is recommended to determine a baseline and then setting the initial criteria slightly higher than the student currently performs. The criteria for success are slowly raised after the child experiences success in the behavioral program.
- Deciding on the initial criteria for success—for example, at least twenty yeses out of twenty-eight possible, at least thirty-five points out of a possible fifty-six for the day, or other reasonable criteria.

• A chart is made with time frames broken down by periods of the day, subject areas, or whatever other intervals fit the student's daily schedule and are reasonable for the teacher to monitor consistently.

• Along the other axis of the chart are the designated target behaviors—for example, “has all necessary materials,” “on-task/working productively,” “cooperating with classmates,” “following directions,” or others as shown on exhibit charts.

• At the end of each time frame, the teacher marks a simple yes/no, plus or minus sign, thumbs-up/thumbs-down sign, smiley/frowny face, or other such symbol, or rates the student with points earned according to the specific criteria.

• The student's number of points (or yeses, smiley faces) are tallied at the end of the day to determine the net number earned that day, and the student's overall performance (Did the student meet the criteria for success?).

• Rewards are provided accordingly (at home, at school, or both), based on the child's performance on the DRC.

• When defining with the child the target behaviors and what you will be evaluating, be clear. For example, “on task” might be defined as “no more than x number of warnings or redirections during that time interval,” “worked all or most of the time frame without bothering others,” or “completed at least 80 percent of the assignment.”

### Exhibit 1.1 Daily Report

STUDENT NAME \_\_\_\_\_ DATE \_\_\_\_\_

Teachers: Please write Y (yes) or N (no) by each behavior at end of class, and sign/initial. You may also write comments to student/parents.

First Period Comments and Signature/Initials

\_\_\_\_\_ On time to class  
 \_\_\_\_\_ Homework turned in  
 \_\_\_\_\_ Used class time productively  
 \_\_\_\_\_ Followed class rules (no more than 2 warnings)

Second Period Comments and Signature/Initials

\_\_\_\_\_ On time to class  
 \_\_\_\_\_ Homework turned in  
 \_\_\_\_\_ Used class time productively  
 \_\_\_\_\_ Followed class rules (no more than 2 warnings)

Third Period Comments and Signature/Initials

\_\_\_\_\_ On time to class  
 \_\_\_\_\_ Homework turned in  
 \_\_\_\_\_ Used class time productively  
 \_\_\_\_\_ Followed class rules (no more than 2 warnings)

Fourth Period Comments and Signature/Initials

\_\_\_\_\_ On time to class  
 \_\_\_\_\_ Homework turned in  
 \_\_\_\_\_ Used class time productively  
 \_\_\_\_\_ Followed class rules (no more than 2 warnings)

Fifth Period Comments and Signature/Initials

\_\_\_\_\_ On time to class  
 \_\_\_\_\_ Homework turned in  
 \_\_\_\_\_ Used class time productively  
 \_\_\_\_\_ Followed class rules (no more than 2 warnings)

Sixth Period Comments and Signature/Initials

\_\_\_\_\_ On time to class  
 \_\_\_\_\_ Homework turned in  
 \_\_\_\_\_ Used class time productively  
 \_\_\_\_\_ Followed class rules (no more than 2 warnings)

Seventh Period Comments and Signature/Initials

\_\_\_\_\_ On time to class  
 \_\_\_\_\_ Homework turned in  
 \_\_\_\_\_ Used class time productively  
 \_\_\_\_\_ Followed class rules (no more than 2 warnings)

**Total number of yeses received today:** \_\_\_\_\_ .

A minimum of \_\_\_\_ yeses are required in order to earn agreed-on reward/privilege.

A successful day of meeting the goal will result in:

Student Signature \_\_\_\_\_ Parent/Guardian Signature \_\_\_\_\_

**Exhibit 1.2 Individualized Daily Report**

\_\_\_\_\_’s Daily Report

Date \_\_\_\_\_

	<b>Stays Seated</b>		<b>On Task</b>		<b>Follows Directions</b>	
Times or Subjects	No more than _____ warning(s)		No more than _____ warning(s)		No more than _____ warning(s)	
	+	-	+	-	+	-
	+	-	+	-	+	-
	+	-	+	-	+	-
	+	-	+	-	+	-
	+	-	+	-	+	-
	+	-	+	-	+	-
	+	-	+	-	+	-
	+	-	+	-	+	-
	+	-	+	-	+	-
	+	-	+	-	+	-
	+	-	+	-	+	-
	+	-	+	-	+	-

My goal is to earn at least \_\_\_\_\_ pluses (+) by the end of the day (or \_\_\_\_\_% of the day showing great behavior and effort).

If I meet my goal, I will earn a reward/privilege of:

\_\_\_\_\_  
Teacher signature

\_\_\_\_\_  
Parent/guardian signature

**Exhibit 1.3 Daily/Weekly Report Card**

**Daily/Weekly Report Card**

Name: \_\_\_\_\_ Week of: \_\_\_\_\_ Daily Goal: \_\_\_\_\_ Points (total for day)

Period	MONDAY		TUESDAY		WEDNESDAY		THURSDAY		FRIDAY	
	Conduct	Classwork	Conduct	Classwork	Conduct	Classwork	Conduct	Classwork	Conduct	Classwork
1										
2										
3										
4										
5										
6										
7										
<b>Total points</b>										
<b>Any teacher comments</b>										

- Conduct:** – Was respectful to adults and classmates  
 – Followed teacher directions  
 – Participated in lessons and activities  
 – Started on assignments right away
- Classwork:** – Refrained from teasing or bothering others  
 – Stayed in assigned place (received permission to leave seat)  
 – Came to class prepared (with homework and materials)  
 – Stayed on task with little redirection

**Teacher Directions:** Please enter a conduct score (0–4 points) and a classwork score (0–4 points) at the end of the class period. Base your score on how many of the four specific conduct/classwork behaviors the student demonstrated in your class that day.

Reward/Privilege earned for meeting daily goal: \_\_\_\_\_

Reward/Privilege earned for a successful week (a minimum of \_\_\_ days of meeting the daily goal): \_\_\_\_\_

**Parents:** Please sign and return this form to school on Monday. \_\_\_\_\_

## MORE ABOUT DRCS

- It is important that reinforcement is provided consistently and as promised. A well-coordinated system between home and school is the most effective.

- For an excellent source on setting up, implementing, and troubleshooting daily report cards, go to the downloadable section of the Web site of the Center for Children and Families, University of Buffalo, State University of New York: [http://ccf.buffalo.edu/resources\\_downloads.php](http://ccf.buffalo.edu/resources_downloads.php). This is the site of William Pelham Jr., a researcher and leader in the field of behavioral interventions for children with ADHD and his colleagues.

- It is very important that the child experiences success when beginning these behavioral programs. This can be achieved by starting with goals that are easy to accomplish rather than setting the bar too high and having the child fail.

## Token Economies and Token Programs

- Other behavioral programs are also used in the management of children and teens with ADHD such as earning tokens (for example, points, poker chips, stickers on a chart, marbles in a jar, classroom “fake” money, or other immediate reward) that is later cashed in or redeemed for bigger, more motivating, and meaningful rewards. The child can earn a special privilege or other reward of choice by accumulating a prescribed number of those tokens.

- Another option is to design a reward menu together with the child. A list of rewards is created (*see checklists 2.6 and 3.5*) with a price or value attached to each item on the menu. The more desirable and bigger the reward or privilege, the more tokens must be accumulated to earn it.

- As with other behavioral programs, it is important that token programs focus on improving no more than a few clearly defined target behaviors and that expectations for improvement are realistic and achievable for the individual child.

- The program needs to be implemented consistently, and the rewards selected (or choice of rewards from a menu) must be valuable to the child in order to serve as an incentive for behavioral change.

- A fun Web site for designing a behavioral program that is animated and versatile is [www.myrewardboard.com](http://www.myrewardboard.com).

## Contracts

- A commonly used behavioral intervention is a contract, which is usually a two- or three-party agreement that specifies the role each will perform in achieving a certain goal. It is tailored to address the individual student's areas of need.
- Together, the child and key adults identify and select one or more specific goals that the student agrees to work on improving.
- All parties then agree on how the child will demonstrate that improvement and the rewards that will occur for meeting the goals. Sometimes the contract includes a negative consequence that will occur if the child fails to make the improvement.
- All parties sign the contract to show that they agree to its terms.

## Response Cost

- *Response cost* refers to when the student loses points or privileges for specific misbehaviors. When implemented correctly and not overused, response costs are an effective disciplinary technique for children and teens with ADHD.
- If a token program is being used that is a combination of positive reinforcement and response cost, there must be far more opportunities for points or tokens to be earned than taken away. Otherwise the child will likely become frustrated and give up. In addition, the child should never be allowed to accumulate negative points.
- As with any other behavioral program, the rewards the child may earn for successful performance must be powerful enough to be an incentive to change behavior. The rewards designated in the program must have meaning and value to that individual child or teen.
- It often helps to change the rewards frequently or provide a menu of different reinforcers the child may choose from in order to maintain interest in the program. See *checklists 2.6 and 3.5*.
- For more details on implementing behavioral programs and examples of charts and forms for home and school use, see my other books listed in *checklist 5.8*.

## **1.15 WHAT TEACHERS AND PARENTS NEED TO KNOW ABOUT MEDICATION**

- Parents do not easily make a decision to medicate their child. Typically they agonize over the decision, and many try avoiding the medical route for years. No parent wants to have their child take a “drug.” They often are fearful of the long-term effects. In addition, they are frequently made to feel guilty by well-meaning relatives and friends who are uneducated about proven treatments or biased against the use of medication from misinformation.

- The school’s role is to support any child receiving medication treatment and cooperate fully. School personnel need to communicate their observations so the doctor can determine the child’s response to the medication, especially during the titration period when the prescription and dosage are being adjusted. This feedback from the school is necessary in helping the physician regulate the dosage and determine if the medication has the desired positive effects on symptoms and functioning and minimal adverse side effects.

- The teacher is an integral part of the therapeutic team because of his or her unique ability to observe the child’s performance and functioning (academic, social, behavioral) on medication during most of the day. Teachers need to monitor and observe students on medication carefully and report changes in the child’s behavior and functioning, as well as any concerns about possible side effects.

- Teachers should feel free to contact the parent, school nurse, and (if parents provided the school written permission) the doctor directly with their observations and any concerns.

- Generally the school nurse (when there is one) acts as the liaison for the parent, physician, and teacher in helping to manage the medication at school. Coordination and communication among all parties are essential for optimal results.

- Physicians or their office personnel should be initiating contact with the school for feedback on how the treatment plan is working. Some doctors do so through direct contact (for example, phone calls and e-mail), and teachers are asked to share their observations. In most cases, teachers are given follow-up behavioral rating scales or other forms to fill out so the doctor can determine changes in the child’s behavior and monitor the medication effects.

### **Advice for Teachers**

- If a student is prescribed a short-acting stimulant medication requiring a dosage to be taken during school hours, the medication must be given on time (it is generally administered just before, during, or right after lunch). Many children and teens have a hard time remembering to go to the office at the designated time for medication because of the very nature of ADHD. It becomes the responsibility of the school staff to help.

- Ways to remind the student (or alert the teacher that the student needs to take a midday dose) may include:

- Use of a beeper watch or watch alarm for the student (or the teacher).
- Pairing the medication time with a daily activity or natural transition at that time (for example, on the way to the cafeteria). This is a common and effective technique because it helps establish a consistent schedule.
- Rewarding the child for remembering—for example, keeping a sticker chart where the medication is dispensed.

- It is very important to provide these reminders to students discreetly, without breaking confidentiality or discussing medication in front of other students. In the nurse's absence, the office staff should be provided with a list of children who need a midday dose of medication, sending for the child if he or she does not come in to receive it.

- With the intermediate and long-acting formulas that are now available, the need for an afternoon dose is no longer an issue, eliminating the need to keep a prescription at school. For children or teens who are resistant or forgetful in taking their medication at school, an intermediate or long-acting medication is likely a better choice.

- It is important to communicate with parents and report noticeable changes in a student's behaviors. Sometimes parents do not disclose to the school that their child has started taking medication (or has had a change of medication) and are waiting to hear if the teacher notices any difference.

### **Advice for Parents**

- If your child is on medication, it is important that you take responsibility for making sure he or she receives it as prescribed in

the morning—on time and consistently. You will need to supervise that your child takes the medication and not leave it as your son or daughter's responsibility to remember.

- Close monitoring and management of the medication are crucial. If the medication is administered haphazardly and inconsistently, your child is better off without it.

- If prescribed a short-acting medication, be sure the school has the permission forms and filled prescriptions needed, or consider using an intermediate or long-acting formula.

- Communicate with the school nurse, principal, and teachers. Obviously the purpose for treating your child with medication is optimal school performance and functioning. This requires teamwork and close communication among the home, school, and physician. If your son or daughter is being treated medically for ADHD, do not keep it a secret from the school.

- Be sure to take your child for all of the follow-up visits scheduled with his or her doctor. These are necessary for monitoring the effects of the treatment plan.

- If there is no follow-up from the doctor in obtaining feedback from you and the school once the child is on medication, that is not appropriate medical care.

- It is very important to educate yourself about the medication treatment or other intervention. There are many excellent resources available. Talk to your physician, and ask all the questions you have.

- Because the commonly prescribed stimulants are classified by the Drug Enforcement Administration as Schedule 2 medications, there are strict laws regarding how they are prescribed and dispensed.

- Children should be counseled about their medication and why they are taking it. There are various resources available that can help children better understand ADHD and why they are taking medication to treat it. Children need to know that the medication is not in control of their behavior; they are. But the medication helps them to put on the brakes and have better self-control and ability to focus, and it therefore enables them to make better choices.

## **1.16 THE IMPACT OF ADHD ON THE FAMILY**

It is important to be aware of the challenges that exist in the home when one or more children (or parent) have ADHD, because this disorder has a significant impact on the entire family. Unfortunately,

teachers are generally unaware or underestimate the struggles these families face: typically a much higher degree of stress than in the average family, along with depression or other pathology in one or more family members.

ADHD causes a great deal of stress in families for these reasons:

- There are generally major issues surrounding homework as well as morning and evening routines (getting ready for school and bedtime).

- It is common for parents to disagree about treatment, discipline, management, structure, and other issues.

- Parents may blame one another for the child's problems or be highly critical of one another in their parenting role. This discord causes a great deal of marital stress and a higher rate of divorce than is typical.

- Often it is the mother who must cope with the brunt of the issues throughout the day, which is physically and emotionally exhausting.

- In single-parent homes, dealing with ADHD is far more challenging.

- As any parent of a toddler knows, having a child who needs constant supervision and monitoring is very time-consuming and interferes with the ability to get things done as planned (for example, housework and other chores).

- Parents of children who have ADHD are constantly faced with needing to defend their parenting choices as well as their child. They must listen to negative press about this disorder and reject popular opinion in order to provide their child with necessary interventions and treatment.

- Parents must deal with criticism and advice from relatives, friends, and acquaintances regarding how they should be disciplining and parenting their child. This causes a lot of parental self-doubt and adds to the stress they are already living with day in and day out.

- Frequently the family must deal with such social issues as the exclusion of the child from out-of-school activities. It is painful when your child is not invited to birthday parties or has difficulty finding someone to play with and keeping friends.

- Siblings are often resentful or even jealous of the central role their sibling with ADHD plays in the family's schedule, routines, and

activities, as well as the extra time and special treatment this child receives. In addition, siblings are acutely aware of and feel hurt and embarrassed when their brother or sister has acquired a negative reputation in the neighborhood and school.

- Parents have a high degree of responsibility in working with the school and being proactive in the management of their child. Furthermore, they must fully educate themselves about ADHD in order to successfully advocate their child's needs.

### **Important Points to Keep in Mind**

- In many cases, other family members who have ADHD were never diagnosed and have been struggling to cope with their own difficulties without proper treatment and support. That is why the clinicians who specialize in treating children with ADHD say it is important to view treatment in the context of the family. Learning about the family (for example, the ways the members communicate and their disciplinary practices) helps in designing a treatment plan that is most effective for the child.

- Commonly a parent may recognize for the first time that he or she has been suffering with undiagnosed ADHD for years when a son or daughter is diagnosed with the disorder. This realization can result in a positive change in the family dynamics.

- Without question, families of children with ADHD need support and understanding. Fortunately, there are far more supports available now than a decade ago. *See checklists 2.13 and 5.7.*

## **1.17 THE IMPACT OF ADHD ON SCHOOL SUCCESS**

- ADHD generally causes difficulty and impairment in school performance. This disorder can have a significant impact on children and teens in various aspects of school functioning: academic, behavioral, and social.

- Every student has different strengths, weaknesses, and educational needs. Their ADHD symptoms may or may not affect them in the following areas and can do so to varying degrees. For example, while many children with ADHD have social problems, others are

quite popular with their peers. Writing difficulties are very common in students with ADHD, but not everyone. Some are gifted, prolific writers. Much of the content in this book addresses specific strategies, techniques, and supports in the following areas, which are problematic for many students with ADHD:

- Organization and study skills
- Planning for short-term assignments
- Planning for long-term projects and assignments
- Various disruptive, aggressive, or annoying behaviors, resulting in a much higher degree of negative attention from and interaction with classmates, teachers, and other school personnel
- Social skills and peer relationships: the ability to work well in cooperative learning groups and get along with peers in work or play activities
- Completing class work to acceptable grade-level standards
- Homework completion, turned in on time and to acceptable grade-level standards
- Listening and following directions
- Following class and school rules
- Memory: remembering instructions, information taught, what they read, math facts, and so forth
- Participating and engaging in classroom instruction and activities
- Working independently (for example, seat work)
- Being prepared with materials for class and homework
- Ability to cope with daily frustrations
- Time awareness and time-management skills
- Issues with low self-esteem
- Building and maintaining friendships
- Written expression and other output
- Handwriting and fine motor skills
- Spelling
- Proofing and editing written work
- Note taking

- Test taking
  - Reading comprehension
  - Math computation
  - Math problem solving
  - Anger management
  - Problem solving and conflict resolution
- There are numerous strategies that teachers and parents employ to help children build these skills and enhance their school performance. See the checklists in sections 2 through 5.

### **1.18 CRITICAL ELEMENTS FOR SCHOOL SUCCESS**

- Belief in the student
- Clarity of expectations, structure, and follow-through
- Close communication between home and school
- Collaboration and teamwork
- Developing and bringing out students' strengths
- Engaging teaching strategies and motivating instruction
- Effective classroom management and positive discipline
- Environmental modifications and accommodations
- Flexibility and willingness of the teacher to accommodate individual needs
  - Help and training in organization, time management, and study skills
  - Knowledge and understanding of ADHD (of educators, parents, and the student)
  - Limiting the amount of homework and modifying assignments when needed to accommodate the fact that work production often takes students with ADHD significantly longer than it takes other students their age to produce
- More time and more space
- Tolerance and a positive attitude toward the child
- Valuing and respecting learning styles and differences, privacy, confidentiality, and students' feelings

### 1.19 POSITIVE TRAITS COMMON IN MANY CHILDREN AND ADULTS WITH ADHD

Energetic	Spontaneous
Creative	Persistent
Innovative	Imaginative
Risk taker	Tenacious
Good-hearted	Ingenuity
Accepting and forgiving	Inquisitive
Resilient	Resourceful
Gregarious	Not boring
Humorous	Outgoing
Willing to take a chance and try new things	Good at improvising
Able to find novel solutions	Inventive
Observant	Full of ideas and spunk
Can think on their feet	Good in crisis situations
Make and create fun	Enterprising
Ready for action	Intelligent and bright
Enthusiastic	Know how to enjoy the present

### 1.20 EDUCATIONAL RIGHTS FOR STUDENTS WITH ADHD

- There are two main laws protecting students with disabilities, including ADHD:
  - Individuals with Disabilities Education Act (known as IDEA, or IDEA 2004)
  - Section 504 of the Rehabilitation Act of 1973 (known as Section 504)
- IDEA is the special education legislation in the United States. It was reauthorized by Congress in 2004, and the final regulations

by the U.S. Department of Education clarifying how the law is to be implemented by state and local education agencies were issued in 2006.

- Section 504 is a civil rights statute that prohibits discrimination and is enforced by the U.S. Office of Civil Rights.

- Another law that protects individuals with disabilities is the Americans with Disabilities Act of 1990 (ADA). This overlaps with Section 504 and is not as relevant to school-aged children.

- Both IDEA and Section 504 require school districts to provide students with disabilities:

- A free and appropriate public education in the least restrictive environment with their nondisabled peers to the maximum extent appropriate to their needs
- Supports (adaptations, accommodations, modifications) to enable the student to participate and learn in the general education program
- The opportunity to participate in extracurricular and non-academic activities
- A free, nondiscriminatory evaluation
- Procedural due process

- There are different criteria for eligibility, services and supports available, and procedures and safeguards for implementing the laws. Therefore, it is important for parents, educators, clinicians, and advocates to be well aware of the differences between IDEA and Section 504 and fully informed about their respective advantages and disadvantages.

## IDEA

- IDEA applies to students known or suspected of having a disability and specifies what the public school system is required to provide to such students and their parents or guardians.

- IDEA provides special education and related services to students who meet the eligibility criteria under one of thirteen separate disability categories. Students with ADHD most commonly fall under the IDEA disability category of Other Health Impaired.

- Eligibility criteria under this category require that:

- The child has a chronic or acute health problem (ADHD).

- This health problem causes “limited strength, vitality, or alertness” in the educational environment. This includes limited alertness to educational tasks due to heightened alertness to environmental stimuli.
- This disabling condition results in an adverse effect on the child’s educational performance to the extent that special education is needed.
- The adverse effect on educational performance is not limited to academics. It can include impairments in other aspects of school functioning, such as behavior, as well.
- Some students with ADHD qualify for special education and related services under the disability categories of Specific Learning Disability or Emotional Disturbance. For example, a child with ADHD who also has coexisting learning disabilities may be eligible under the Specific Learning Disability category.
- Under IDEA, students who qualify for special education and related services receive an individualized education plan (IEP) that is:
  - Tailored to meet the unique needs of the student
  - Developed by a multidisciplinary team, which includes the child’s parents
  - The guide for every educational decision made for the student
  - Reviewed by the team annually

## **THE IEP PROCESS**

- The IEP process begins when a student is referred for evaluation due to a suspected disability, and a process of formal evaluation is initiated to determine eligibility for special education and related services.
- IDEA 2004 requires that the evaluation obtain accurate information about the student’s academic, developmental, and functional skills.
- Children found eligible under IDEA are entitled to the special education programs, related services, modifications, and accommodations the IEP team determines are needed for educational benefit.
- The IEP is a detailed plan. It specifies the programs, supports, services, and supplementary aids that are to be provided and requires measurable annual goals and reports on progress.

- The law requires that the child be reevaluated at least every three years.
- At all stages, parents are an integral part of the process and the team, and the IEP does not go into effect until parents sign and thereby agree to the plan.

### **KEY FEATURES OF IDEA**

- IDEA provides the necessary supports and services to enable students to succeed to the maximum extent possible in the general education curriculum.
- The IEP must incorporate important considerations regarding students' strengths, participation in district and state assessments, and special factors, such as behavioral factors and needs, proficiency in English, and language needs.
- When disciplinary actions are being considered involving removal of the student for more than ten days (through suspension or placement in an alternative placement), there must first be a review to determine if the behavior was related to or was a "manifestation" of the child's disability. If so, that must be taken into consideration in the disciplinary action and consequences the school district is permitted to impose.
- IDEA 2004 makes it clear that eligibility for special education is not based on academic impairment alone. The student is not required to have failing grades or test scores to qualify for special education and related services. Other factors related to the disorder that are impairing the student's educational performance to a significant degree (social, behavioral, and executive function–related difficulties) must be considered as well when determining eligibility.

### **Section 504**

- Section 504 protects the rights of people with disabilities against discrimination and applies to any agency that receives federal funding, which includes all public schools and many private schools.

### **ELIGIBILITY CRITERIA FOR STUDENTS WITH ADHD**

- Children with ADHD who may not be eligible for services under IDEA (and do not qualify for special education) are often able to receive accommodations, supports, and related services in school under a Section 504 plan.

- Section 504 has different criteria for eligibility, procedures, safeguards, and services available to children than IDEA.
- Section 504 protects students if they fit the following criteria:
  - The student is regarded as or has a record of having a physical or mental impairment.
  - The physical or mental impairment substantially limits a major life activity such as learning.
  - As with IDEA, this does not necessarily mean poor grades or academic achievement. Other factors, such as a low rate of work production, significant disorganization, off-task behavior, or social or behavioral issues can indicate the substantial negative impact of the disorder on their learning and school functioning.
- Section 504 entitles eligible students to:
  - Reasonable accommodations in the educational program
  - Commensurate opportunities to learn as nondisabled peers
  - Appropriate interventions within the general education program

### **ADDITIONAL CONSIDERATIONS**

- The implementation of the plan is primarily the responsibility of the general education school staff.
- The 504 plan could also involve modification of nonacademic times, such as the lunchroom, recess, and physical education.
- Supports under Section 504 might also include the provision of such services as counseling, health, and assistive technology.
- In contrast to the IEP, the 504 process:
  - Is simpler, with less bureaucracy and fewer regulations
  - Is generally easier to evaluate and determine eligibility
  - Requires much less with regard to procedures, paperwork, and so forth
- Children who qualify under IDEA eligibility criteria are automatically covered by Section 504 protections. However, the reverse is

not true. Many students with ADHD who do not qualify for special education services under IDEA are eligible for accommodations under Section 504, but they are not automatically covered.

## **504 ACCOMMODATIONS**

• Section 504 plans include some accommodations that are deemed most important for the student to have equal opportunity to be successful at school. They do not include everything that might be helpful for the student, just reasonable supports, that generally the teacher is to provide. Following are examples of some possible 504 plan accommodations (also see the academic, behavioral, instructional, and environmental checklists in Sections Three and Four of this book for more classroom accommodations):

- Extended time on tests
- Breaking long-term projects and work assignments into shorter tasks
- Preferential seating (near the teacher or a good role model, away from distractions)
- Use of frequent praise, feedback, and rewards and privileges for appropriate behavior, such as being on task, remembering to raise a hand to speak, and cooperative and nondisruptive behavior
- Receiving a copy of class notes from a designated note taker
- Reduced homework assignments
- Assistance with organization of materials and work space
- Assistive technology, such as access to a computer or portable word processor for written work and to a calculator
- Cueing or prompting before transitions and changes of activity
- Frequent breaks and opportunities for movement
- A peer buddy to clarify directions
- A peer tutor
- Use of daily and weekly notes or a monitoring form between home and school for communication about behavior and work production

### **Which Is More Advantageous for Students with ADHD: An IEP or 504 Plan?**

- This is a decision that the team of parents and school personnel must make considering eligibility criteria and the specific needs of the individual student.

- For students with ADHD who have more significant and complex school difficulties, receiving an IEP is usually preferable for the following reasons:

- An IEP provides more protections (procedural safeguards, monitoring, accountability, and regulations) with regard to evaluation, frequency of review, parent participation, disciplinary action, and other factors.
- Specific and measurable goals addressing the student's areas of need are written in the IEP and regularly monitored for progress.
- A much wider range of program options, services, and supports is available.
- IDEA provides funding for programs and services. The school district receives funds for students being served with an IEP. Section 504 is not funded, and the school district receives no financial assistance for implementation.
- For students who have milder impairments and do not need special education, a 504 plan is a faster, easier procedure for obtaining accommodations and supports. This plan can be highly effective for students whose educational needs can be addressed through adjustments, modifications, and accommodations in the general curriculum or classroom.