



NASSET ADHD SERIES

Part # 6 - Treatment Options for Students with ADHD

Like many medical conditions, ADHD is managed, not cured. There's no "quick fix" that resolves the symptoms of the disorder. Yet a lot can be done to help. Through effective management, some of the secondary problems that often arise out of untreated ADHD may be avoided. In the majority of cases, ADHD management will be a life-long endeavor. It may be helpful to think of ADHD as a challenge that can be met. The National Institute of Mental Health (NIMH), in combination with the U.S. Department of Education's Office of Special Education Programs (OSEP), completed a long-term, multisite study to determine which treatments had the greatest positive effect on reducing ADHD symptoms. This study is known as the MTA study (The MTA Cooperative Group, 1999). MTA stands for multi-modal treatment study of children with ADHD.

Although at present no cure for ADHD exists, there are a number of treatment options that have proven to be effective for some children. Effective strategies include behavioral, pharmacological, and multimodal methods. What is the recommended multi-modal treatment for ADHD?

The recommended multi-modal treatment approach consists of four core interventions:

1. patient, parent, and teacher education about the disorder
2. medication (usually from the class of drugs called stimulants)
3. behavioral therapy
4. other environmental supports, including an appropriate school program

Each of these core interventions is described in more detail below.

Parent, Child, and Teacher Education

Often, the first treatment step begins with learning what ADHD is and what to do about it. This knowledge will help parents understand that the way their child thinks, acts, and feels has a lot to do with circumstances outside his or her control. When we understand the nature of the challenge, we are better equipped to meet the challenge.

Understanding ADHD also changes the way in which a child's behavior is viewed. When we know more about ADHD, we come to understand that the child has troubles and is not the cause of those troubles.

There are accommodations that can help parents sons or daughters adapt reasonably well. It is critical for parents to learn what these accommodations are and to work to see that they are put in place across different environments-school, home, community. Children with ADHD need strong advocates. They also need to be taught self-advocacy skills if they are to successfully manage their symptoms throughout life. Self-advocacy should begin early in life. Parents need to help their children understand and identify their difficulties. Teaching them how to ask for help and accommodations is an essential part of attaining success.

Medication

The MTA study found medication to be very effective in the management of ADHD symptoms. However, pharmacological treatment remains one of the most common, yet most controversial, forms of ADHD treatment. It is important to note that the decision to prescribe any medicine is the responsibility of medical not educational professionals, after consultation with the family and agreement on the most appropriate treatment plan.

Pharmacological treatment includes the use of psychostimulants, antidepressants, antianxiety medications, antipsychotics, and mood stabilizers (NIMH, 2000). Stimulants predominate in clinical use and have been found to be effective with 75 to 90 percent of children with ADHD (DHHS, 1999). Stimulants include Methylphenidate (Ritalin), Dextroamphetamine (Dexedrine), and Pemoline (Cylert). Other types of medication (antidepressants, anti-anxiety medications, antipsychotics, and mood stabilizers) are used primarily for those who do not respond to stimulants, or those who have coexisting disorders. The results of the Multimodal Treatment Study (MTA), which are discussed in further detail in the next section, confirm research findings on the use of pharmacological treatment for patients with ADHD. Specifically, the study found that the use of medication was almost as effective as the multimodal treatment of medication and behavioral interventions (Edwards, 2002).

Administering Medication at School

Researchers believe that psychostimulants affect the portion of the brain that is responsible for producing neurotransmitters. Neurotransmitters are chemical agents at nerve endings that help electrical impulses travel among nerve cells. Neurotransmitters are responsible for helping people attend to important aspects of their environment. The appropriate medication stimulates these underfunctioning chemicals to produce extra neurotransmitters, thus increasing the child's capacity to pay attention, control impulses, and reduce hyperactivity.

Medication necessary to achieve this typically requires multiple doses throughout the day, as an individual dose of the medication lasts for a short time (1 to 4 hours). However, slow- or timed-release forms of the medication (for example, Concerta) may allow a child with ADHD to continue to benefit from medication over a longer period of time. Doctors, teachers, and parents should communicate openly about the child's behavior and disposition in order to get the dosage and schedule to a point where the child can perform optimally in both academic and social settings, while keeping side effects to a minimum. If it is determined that the child should receive medication during the school day, it is important to develop a plan to ensure that medication is administered in accordance with the plan. Such a plan would be an appropriate component of the child's IEP. In addition, schools must ensure that the child's and parent's rights to medical confidentiality are maintained.

The American Academy of Pediatrics (AAP) found that at least 80 percent of children will respond to one of the stimulants if they are administered in a systematic way. Under medical care, children who fail to show positive effects or who experience intolerable side effects on one type of medication may find another medication helpful. The AAP reports that children who do not respond to one medication may have a positive response to an alternative medication, and concludes that stimulants may be a safe and effective way to treat ADHD in children (AAP, 2001).

The medications that seem to be the most effective are a class of drugs known as stimulants.

The U.S. Food and Drug Administration (FDA) recently approved a medication for ADHD that is not a stimulant. The medication, Strattera®, or atomoxetine, works on the neurotransmitter norepinephrine, whereas the stimulants primarily work on dopamine. Both of these neurotransmitters are believed to play a role in ADHD. More studies will need to be done to contrast Strattera with the medications already available, but the evidence to date indicates that over 70 percent of children with ADHD given Strattera manifest significant improvement in their symptoms.

Some people get better results from one medication, some from another. It is important to work with the prescribing physician to find the right medication and the right dosage. For many people, the stimulants dramatically reduce their hyperactivity and impulsivity and improve their ability to focus, work, and learn. The medications may also improve physical coordination, such as that needed in handwriting and in sports.

The stimulant drugs, when used with medical supervision, are usually considered quite safe. Stimulants do not make the child feel "high," although some children say they feel different or funny. Such changes are usually very minor. Although some parents worry that their child may become addicted to the medication, to date there is no convincing evidence that stimulant medications, when used for treatment of ADHD, cause drug abuse or dependence. A review of all long-term studies on stimulant medication and substance abuse, conducted by researchers at Massachusetts General Hospital and Harvard Medical School, found that teenagers with ADHD who remained on their medication during the teen years had a lower likelihood of substance use or abuse than did ADHD adolescents who were not taking medications.

The stimulant drugs come in long- and short-term forms. The newer sustained-release stimulants can be taken before school and are long-lasting so that the child does not need to go to the school nurse every day for a pill. The doctor can discuss with the parents the child's needs and decide which preparation to use and whether the child needs to take the medicine during school hours only or in the evening and on weekends too.

If the child does not show symptom improvement after taking a medication for a week, the doctor may try adjusting the dosage. If there is still no improvement, the child may be switched to another medication. About one out of ten children is not helped by a stimulant medication. Other types of medication may be used if stimulants don't work or if the ADHD occurs with another disorder.

Antidepressants and other medications can help control accompanying depression or anxiety.

Sometimes the doctor may prescribe for a young child a medication that has been approved by the FDA for use in adults or older children. This use of the medication is called "off label." Many of the newer medications that are proving helpful for child mental disorders are prescribed off

label because only a few of them have been systematically studied for safety and efficacy in children. Medications that have not undergone such testing are dispensed with the statement that "safety and efficacy have not been established in pediatric patients."

The decision to place a child on medication may not be an easy one, especially given the controversy that surrounds the stimulants, specifically Ritalin. There have been many reports that medication is overprescribed for treatment of ADHD. However, according to the American Medical Association's Council on Scientific Affairs (Goldman et al., 1998), "There is no widespread over-prescription of methylphenidate by physicians" (p. 1100).

By following good diagnostic procedures, the chances of overprescribing this medication are significantly reduced. Some children cannot take stimulant medications. In these cases, the physician knows what other medications can be helpful in relieving ADHD symptoms. Medication may not be the right approach for every child.

Side Effects of ADHD Medications

Most side effects of the stimulant medications are minor and are usually related to the dosage of the medication being taken. Higher doses produce more side effects. The most common side effects are decreased appetite, insomnia, increased anxiety, and/or irritability. Some children report mild stomach aches or headaches.

Appetite seems to fluctuate, usually being low during the middle of the day and more normal by suppertime. Adequate amounts of food that is nutritional should be available for the child, especially at peak appetite times.

If the child has difficulty falling asleep, several options may be tried a lower dosage of the stimulant, giving the stimulant earlier in the day, discontinuing the afternoon or evening dosage, or giving an adjunct medication such as a low-dosage antidepressant or clonidine. A few children develop tics during treatment. These can often be lessened by changing the medication dosage. A very few children cannot tolerate any stimulant, no matter how low the dosage. In such cases, the child is often given an antidepressant instead of the stimulant.

When a child's schoolwork and behavior improve soon after starting medication, the child, parents, and teachers tend to applaud the drug for causing the sudden changes. Unfortunately, when people see such immediate improvement, they often think medication is all that's needed. But medications don't cure ADHD; they only control the symptoms on the day they are taken. Although the medications help the child pay better attention and complete school work, they can't increase knowledge or improve academic skills. The medications help the child to use those skills he or she already possesses.

Finally, some parents are reluctant to place their child on medication for fear that doing so may lead to later substance abuse. Researchers have looked into this concern quite seriously. Research supports previous findings that stimulant medication treatment may actually prevent later substance abuse (Zametkin & Ernst, 1999). As with any medication, though, parents must carefully monitor its use to be sure that the medication is taken as prescribed.

Final Points About Medication for ADHD

Since ADHD is a neuro-biochemically-based problem, it stands to reason that medication that gets to the core of the problem would be effective. The medication most often used is stimulant medication, especially methylphenidate. Most people know this medication as the drug Ritalin. There are other stimulant medications-Concerta, Metadate, Dexedrine, Cylert, and Adderall, an amphetamine compound.

These medications are believed to work by stimulating the action of the brain's neurotransmitters, especially dopamine. With the brain's systems working more efficiently, attention, memory, and executive functions, including inhibition, are improved. The result is better concentration, increased working memory capacity, greater recall, less hyperactivity, and more impulse control. Stimulant medications do not tend to help with symptoms of anxiety or depression (Barkley, DuPaul, & O'Connor, 1999).

Parents should always discuss any medication treatment thoroughly with their child's physician. He or she should explain the benefits and the drawbacks of medication to them and also to their child, if appropriate. When medication is first prescribed, the physician should start with a low dose and then gradually raise it until the symptoms improve.

Parents will need to dispense the medication as prescribed and closely monitor its effects, including any side effects. With stimulants, most side effects are quite mild and go away over time. Since a child spends a large portion of his or her day at school, parents will also need to be in contact with their child's teachers to determine positive effects and side effects. Communicate with the physician often, especially when medication is started. Parents should call immediately with any problems or questions. Also be aware that during adolescence many teens actively resist taking medication. If this happens, it's wise for parents to discuss the situation with the child's doctor. While medication cannot be forced on an unwilling patient, the doctor may have some ideas of how to work with the teenager about any resistance to taking the medication. Bottom line with medication: Medications for ADHD help many children focus and be more successful at school, home, and play. About 80 percent of children who need medication for ADHD still need it as teenagers. Over 50 percent need medication as adults.

Behavioral Therapy

As parents and teachers know, ADHD can cause significant inappropriate behavior. Frequent complaints include failure to follow rules, listen to commands, complete tasks, delay gratification, or control impulse. In addition, some youth may be aggressive or anxious. These symptoms lead to their own set of problems, such as fighting or avoiding tasks. It is very easy for everyone involved-the child, the parents, and the teacher(s)-to be worn down into a pattern of negative, and sometimes hostile, interactions. This cycle, however, can be broken, and different, more positive interactions and behavior patterns can be developed. Knowing more about behavior and how to support behavior that is positive and appropriate is extremely useful information for any parent or teacher of a child with ADHD.

Behavioral approaches represent a broad set of specific interventions that have the common goal of modifying the physical and social environment to alter or change behavior (AAP, 2001). They are used in the treatment of ADHD to provide structure for the child and to reinforce appropriate

behavior. Those who typically implement behavioral approaches include parents as well as a wide range of professionals, such as psychologists, school personnel, community mental health therapists, and primary care physicians. Types of behavioral approaches include behavioral training for parents and teachers (in which the parent and/or teacher is taught child management skills), a systematic program of contingency management (e.g. positive reinforcement, time outs, response cost, and token economy), clinical behavioral therapy (training in problem-solving and social skills), and cognitive-behavioral treatment (e.g., self-monitoring, verbal self-instruction, development of problem-solving strategies, self-reinforcement) (AAP, 2001; Barkley, 1998b; Pelham, Wheeler, & Chronis, 1998). In general, these approaches are designed to use direct teaching and reinforcement strategies for positive behaviors and direct consequences for inappropriate behavior. Of these options, systematic programs of intensive contingency management conducted in specialized classrooms and summer camps with the setting controlled by highly trained individuals have been found to be highly effective (Abramowitz, et al., 1992; Carlson, et al., 1992; Pelham & Hoza, 1996). A later study conducted by Pelham, Wheeler, and Chronis (1998) indicates that two approaches parent training in behavior therapy and classroom behavior interventions also are successful in changing the behavior of children with ADHD. In addition, home-school interactions that support a consistent approach are important to the success of behavioral approaches.

The research results on the effectiveness of behavioral techniques are mixed. While studies that compare the behavior of children during periods on and off behavior therapy demonstrate the effectiveness of behavior therapy (Pelham & Fabiano, 2001), it is difficult to isolate its effectiveness. The multiplicity of interventions and outcome measures makes careful analysis of the effects of behavior therapy alone, or in association with medications, very difficult (AAP, 2001). A review conducted by McInerney, Reeve, and Kane (1995) confirms that the effective education of children with ADHD requires modifications to academic instruction, behavior management, and classroom environment. Although some research suggests that behavioral methods offer the opportunity for children to work on their strengths and learn self-management, other research indicates that behavioral interventions are effective but to a lower degree than treatment with psychostimulants (Jadad, Boyle, & Cunningham, 1999; Pelham, et al., 1998).

Behavior therapy has been found to be effective only when it is implemented and maintained (AAP, 2001). Indeed, behavioral strategies can be difficult to implement consistently across all of the settings necessary for it to be maximally effective. Although behavioral management programs have been shown to enhance the academic performance and behavior of children with ADHD, followup and maintenance of the treatment is often lacking (Rapport, Stoner, & Jones, 1986). In fact, some research has shown that behavioral techniques may fail to reduce ADHD's core characteristics of hyperactivity, impulsivity, and inattention (AAP, 2001; U.S. Department of Health and Human Services [DHHS], 1999). Conversely, one must consider that the problems of children with ADHD are seldom limited to the core symptoms themselves (Barkley, 1990a). Children frequently demonstrate other types of psychosocial difficulties, such as aggression, oppositional defiant behavior, academic underachievement, and depression (Barkley, 1990a). Because many of these other difficulties cannot be managed through psychostimulants, behavioral interventions may be useful in addressing ADHD and other problems a child may be exhibiting.

Educational Interventions

One of the most critical areas in which to offer support is in the school arena. This is where most children with ADHD experience the greatest difficulty. That is because schools require great skill in the areas where students with ADHD are the weakest: attention, executive function, and memory. Although ADHD does not interfere with the ability to learn, it does wreak havoc on performance. Behavior problems, which usually get the most attention, may actually be by-products of the school environment and ADHD. These usually occur when tasks are too long, too hard, or lack interest. Many behavior problems can be avoided or lessened by adapting the school setting to fit the needs of the student.

In the school arena, ADHD is an educational performance problem. When little or nothing is done to help children with ADHD improve their performance, over time they will show academic achievement problems. This underachievement is not the result of an inability to learn. It is caused by the cumulative effects of missing important blocks of information and skill development that build from lesson to lesson and from one school year to the next. (It should be noted that a number of students with ADHD also have learning disabilities, and these do interfere with the ability to learn.)

Generally, ADHD will affect the student in one or more of the following performance areas:

- starting tasks
- staying on task
- completing tasksmaking transitions
- interacting with others
- following through on directions
- producing work at consistently normal levels
- organizing multi-step tasks.

Those teaching or designing programs for students with ADHD need to pinpoint where each student's difficulties occur. Otherwise, valuable intervention resources may be spent in areas where they are not critical.

For example, one child with ADHD may have difficulty starting a task because the directions are not clear. Another student may fully understand the directions but forget to follow all of them. Another may have difficulty making transitions and, as a result, get stuck in the space where one task ends and another begins. With the first child, intervention needs to focus upon making directions clear and in helping the child to understand those directions. The second child would need guidance to follow all the directions. The third child would need help in making transitions from one activity to another. The sooner educational interventions begin, the better. They should be started when educational performance problems become evident and should not be delayed because the child is still holding his or her own on achievement tests.

Conclusion

Research indicates that for many children the best way to mitigate symptoms of ADHD is the use of a combined approach. A recent study by the NIMH the Multimodal Treatment Study of Children with ADHD (MTA) is the longest and most thorough study of the effects of ADHD interventions (MTA Cooperative Group, 1999a, 1999b). The study followed 579 children between the ages of 7 and 10 at six sites nationwide and in Canada. The researchers compared

the effects of four interventions: medication provided by the researchers, behavioral intervention, a combination of medication and behavioral intervention, and no-intervention community care (i.e., typical medical care provided in the community). Multimodal intervention improves:

- Academic performance
- Parent-child interaction
- School-related behavior
- reduces:
 - o Child anxiety
 - o Oppositional behavior

Of the four interventions investigated, the researchers found that the combined medication/behavior treatment and the medication treatment work significantly better than behavioral therapy alone or community care alone at reducing the symptoms of ADHD. Multimodal treatments were especially effective in improving social skills for students coming from high-stress environments and children with ADHD in combination with symptoms of anxiety or depression. The study revealed that a lower medication dosage is effective in multimodal treatments, whereas higher doses were needed to achieve similar results in the medication-only treatment.

Researchers found improvement in the following areas after using a multimodal intervention: child anxiety, academic performance, oppositional behavior, and parent child interaction. Positive results also were found in school-related behavior when multimodal treatment is coupled with improved parenting skills, including more effective disciplinary responses, and appropriate reinforcements (Hinshaw, et al., 2000). These findings were replicated across all six research sites, despite substantial differences among sites in their samples sociodemographic characteristics. The study's overall results appear to apply to a wide range of children and families identified as in need of treatment services for ADHD (NIMH, 2000). Other studies demonstrate that multimodal treatments hold value for those children for whom treatment with medication alone is not sufficient (Klein, Abikoff, Klass, Ganeles, Seese, & Pollack, 1997).

In October 2001, the AAP released evidence-based recommendations for the treatment of children diagnosed with ADHD. Their guidelines state that:

- Primary care clinicians should establish a treatment program that recognizes ADHD as a chronic condition
- The treating clinician, parents, and the child, in collaboration with school personnel, should specify appropriate target outcomes to guide management
- The clinician should recommend stimulant medication and/or behavioral therapy as appropriate to improve target outcomes in children with ADHD
- When the selected management for a child with ADHD has not met target outcomes, clinicians should evaluate the original diagnosis, use of all appropriate treatments, adherence to the treatment plan, and the presence of coexisting conditions
- The clinician should periodically provide a systematic follow up for the child with ADHD. Monitoring should be directed to target outcomes and adverse effects, with information gathered from parents, teachers, and the child

The AAP report stressed that the treatment of ADHD (whether behavioral, pharmacological, or multimodal) requires the development of child-specific treatment plans that describe not only the methods and goals of treatment, but also include means of monitoring over time and specific plans for follow up. The process of developing target outcomes requires careful input from

parents, children, and teachers as well as other school personnel where available and appropriate. The AAP concluded that parents, children, and educators should agree on at least three to six key targets and desired changes as requisites for constructing the treatment plan. The goals should be realistic, attainable, and measurable. The AAP report found that, for most children, stimulant medication is highly effective in the management of the core symptoms of ADHD. For many children, behavioral interventions are valuable as primary treatment or as an adjunct in the management of ADHD, based on the nature of coexisting conditions, specific target outcomes, and family circumstances (AAP, 200