A PHYSICIAN’S PERSPECTIVE
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INTRODUCTION

Human beings are rarely created in perfect form, so the great majority of us arrive in this world with unique differences. Some differences are blessings, others are handicaps. Poor vision, for example is a common handicapping condition that affects millions of people throughout the world. I consider poor vision a condition of “human-ness”. People can also have other conditions such as diabetes, asthma, thyroid conditions, ADHD, etc.—all well recognized differences that can impair the pursuit of a normal lifestyle if not dealt with in some manner.

ADHD is characterized by a prolonged history of inattention, impulsiveness and variable amount of hyperactivity. It is important to emphasize that all of these symptoms are normal human characteristics. All of us are forgetful, and inattentive at times. We all at times becomes nervous and fidgety, and we certainly are impulsive to some degree. It is part of our “human-ness”. ADHD, then, is not diagnosed by the mere presence of these normal and characteristic human behaviors, but from the DEGREE to which we manifest these symptoms. ADHD individuals have an over-abundance of these normal characteristics.

WHO SHOULD TAKE MEDICATIONS, AND WHY?

Returning to the vision analogy, there are a number of options open to an individual who has bad eyesight. One option is to attempt to correct the problem. This could involve wearing glasses to correct the visual deficiency. Perhaps glasses can totally correct the problem or perhaps only partially help. After the glasses are in place we are in a position to assess what further problems are interfering with success. Then we can address these issues as well.

ADHD is a medical condition. Recent research out of Harvard University has documented an abnormality in the dopamine transporter system in the central nervous system of ADHD adults. This transporter system is responsible for moving neurotransmitter chemicals from the synaptic space into the nerve cell. ADHD adults have 70% more dopamine transporter than non-ADHD individuals and thus appear to have an overactive transport system. If a person meets the clinical criteria for a diagnosis of ADHD and is not succeeding academically or socially up to age appropriate expectations, medication should be a PRIMARY OPTION for therapeutic intervention. The opportunity to eliminate the symptoms of medical condition partially or completely should be available to all. Many children and
adults benefit enormously from the use of medication. Families who understand ADHD and its clinical manifestations prefer to try medication as a PART of their treatment plan. Over 90% of individuals with ADHD will have a positive response to one of the medical treatments.

**WHAT IMPROVEMENT SHOULD BE SEEN?**

In the early 1930’s, Dr. Charles Bradley noted some dramatic effects of stimulant medications on patients with behavior and learning disorders. He found that the use of stimulants “normalized” many of the systems that we use for successful living. People of medication IMPROVED their attention span, concentration, memory, motor coordination, mood, and on-task behavior. At the same time they DECREASED daydreaming, hyperactivity, immature behavior, defiance, and oppositional behavior. It was evident that medical treatment allowed intellectual capabilities that were already present to function more appropriately. (2,3)

When medication is used appropriately, patients notice a significant improvement in control. Objective observers should notice better control of focus, concentration, attending skills, and task completion. Many individuals are able to cope with stress and frustration more appropriately with fewer temper outbursts, less anger and better compliance. They relate and interact better with siblings and friends. Less restlessness with decreased motor activity and impulsiveness is noted.

It is very important to remember what medicine does and does not do. Using medication is like putting on glasses. It enables the system to function more appropriately. Glasses do not MAKE you behave, write a term paper or even get one up in to morning. They allow your eyes to function more normally IF YOU CHOOSE to open them. You, the individual, are still in charge of your vision. Whether you open your eyes or not, and what you choose to look at, are controlled by you. Medication allows your nervous system to send its chemical messages more efficiently, and thus allows your skills and knowledge to function more normally. Medication does not provide skills or motivation to perform.

ADHD individuals often complain of forgotten appointments, incomplete homework, miscopied assignments, frequent arguments with siblings and parents, excessive activity, and impulsive behaviors. With medication, many of these problems dramatically improve. Patients successfully treated with medications typically can go to bed at night and find that most of the day went the way they had planned.

**WHO SHOULD PRESCRIBE MEDICATIONS?**

Medications can be prescribed by a licensed physician only. This person may serve as a coordinator to assist with the multiple therapies often needed, such as educational advocacy, counseling, parent training and social skill assistance. Parents should look for a physician who has a special interest and knowledge in dealing with ADHD individuals. This professional should be skilled in working closely with families to try the many and varied medical treatments that are available until the correct therapeutic response is attained. Members of CH.A.D.D. chapters are an excellent source for referrals to appropriate professionals.

**MEDICAL TRIALS**

It is necessary to establish a team for an appropriate evaluation of the medication trial. I gather information from sources who spend time with my patients. This might include parents, teachers, grandparents, tutors, piano teachers coaches, etc. As gradually increasing dosages are administered, input is gathered from these observers. Various ADHD rating scales are available to assist in gathering factual data. However, the true assessment is whether the ADHD patient’s quality of success in life has improved. For this information, I find no scale takes the place of conversations with patient and family members.

When evaluating patients during a trial of medication, I will treat them throughout the day, seven days a week. Treating them only at school is totally inadequate. I need all involved observers, especially parents, assisting in the evaluation process. Furthermore, I want to know if treatment has an effect on non-academic issues. Recent studies have found that treatment is necessary for most ADHD individuals throughout the full day, thus allowing full development not only of academic skills, but also the all important social skills that are utilized with friends and family. After the
trial of medication, if positive results are evident, then the family and the patient can make informed decisions as to when the medication is helpful. Most need the medication throughout the day.

**WHAT IS THE CORRECT MEDICATION?**

At the present stage of medical knowledge there is not a method of predicting which medication will be most helpful for any individual. At best, physicians can make educated decisions based on information about success rates with individual medications. Over 80% of ADHD individuals will respond favorably to the stimulant medications, methylphenidate and dextroamphetamine. Both of these should be tried before the use of other medications. If one stimulant does not work, the others should be tried, for experience has proven that individuals may respond quite differently to each one. If the stimulants are not effective or have associated side effects that are not acceptable, many patients respond well to the tricyclic, nortriptyline. Each family and physician must be willing to try different medications in order to determine the best and most effective therapy. This is the only way to find the appropriate medical treatment.

In some children who have multiple diagnoses such as ADHD and depression, or ADHD and anxiety, or ADHD and Tourette Syndrome, combinations of medications are being successfully utilized for treatment.

**WHAT IS THE CORRECT DOSAGE?**

If medications work, there is a best dose for each individual. Unfortunately, medical knowledge is not at a point where it can predict what the correct medication or dose will be. This is not an unusual circumstance in medicine, however. For a person with diabetes, we must try different forms and amount of insulin to achieve the best control of blood sugar levels. For people with high blood pressure, there are many medications that can be effective, and often a trial of multiple medications and dosages is necessary to determine the best treatment. For ADHD medications, there is no magic formula. The dose cannot be determined by age, body weight or severity of symptoms. In fact, it appears that the correct dose is extremely individual and is not at all predictable. Again, similar to people who need glasses, the kind of prescription and the thickness of the lenses in not dependent on any measurable parameter other than what you say enable you to see well.. The dose of medication is determined solely by what ADHD patients need to reduce their symptoms. One must be willing to experiment with carefully observed dosage changes to determine the correct dosage. Once the correct dose is determined, it does not seem to change very much with age or growth. Medication continues to work effectively through the teenage years and through adulthood.

**WHAT ABOUT “NATURAL” THERAPIES?**

At this time, there is no evidence that natural therapies are therapeutic. There are many anecdotes about various “magical” cures for ADHD but none have been found to be valid. At this time traditional medical therapy is the most effective treatment. Natural therapies such as grapeseed extract, blue algae, biofeedback, magnets, megavitamins, diet, and other “natural products” do not seem to have any lasting therapeutic benefit. This is quite similar to other medical illnesses such as diabetes where insulin is THE best form of treatment., or thyroid disorder where thyroid pills are THE best therapy. Furthermore, natural health food treatments are not regulated by the government and are therefore highly suspect for contamination. Please be cautious where experimenting with alternative therapies with your child.

**SUMMARY**

Individuals with ADHD with present with a variety of well defined symptoms and behaviors. Medication may be extremely helpful in alleviating some of these symptoms and will allow the other therapeutic modalities to be much more successful. Families must be willing to work closely with their physician to identify the correct medications and establish the best dosage levels.

1. Dougherty, DD  
   Dopamine transporter density in patients with ADHD  
   Lancet 1999: 354: 2132
2. Bradley, C  
   The behavior of children receiving Benzedrine  
   Am J Psychiatry: 1939; 99: 577-585
3. Bradley, C  
   Benzedrine and Dexedrine in treatment of children’s behavior disorders  
   Pediatrics 1950; 5: 24-37
MEDICATION OVERVIEW

**METHYLPHENIDATE (Ritalin)**

**Form:** Short acting tablets administered by mouth. Ritalin 5mg, 10mg, 15mg

**Dosage:** Very individual. Average 5-20mg every 4 hour. I prescribe 5mg to start and raise by 5mg every 4-5 days with close observation until correct dose is achieved.

**Duration of Action:** Rapid acting MPH starts to work in 15-20 minutes, which is extremely helpful for the child who has trouble starting the day. Some children will need medication 20 minutes BEFORE arising. The medication lasts about 3-4 hours and will need to be repeated every 3-4 hours to maintain a therapeutic level during all the waking hours. By virtue of its short duration of action, MPH is discontinued each night, and restarted each AM.

**Effects:** MPH is one of the best and most dependable medications for treatment of ADHD symptoms. It specifically improves concentration, focus, and control.

**Possible Side Effects:** Moderate appetite suppression, mild sleep disturbance, transient weight loss, irritability. Motor tics may occur if dose too high (lower dose if occurs) Patients with Tourette Syndrome---If MPH makes tics worse, discontinue. In some patients tics will actually improve. Overdose effects: depression, irritability, lethargy, “loss of spark” If these occur, lower the dose.

**Pros:** Excellent safety record. Very easy to use and evaluate. Very specific control of medication timing. Most dramatic improvement for many individuals. May be used with most other commonly prescribed medications.

**Cons:** Must be administered frequently during the day (3-5 times/day). Inconvenient to use at school. May experience moderate rebound reaction at end of day—anger, frustration temper when medication wears off. Possible roller coaster effect during the day as the level of medication fluctuates.

**METHYLPHENIDATE SUSTAINED RELEASE (Ritalin SR20)**

**Form:** Long acting tablets administered by mouth Ritalin SR20

**Dosage:** Two to three tablets may be needed. I use it primarily in conjunction with regular methylphenidate to smooth out the peaks and valleys and prevent rebound. I will give ½ to 1 tablet with each dose of short acting methylphenidate.

**Duration of Action:** Long acting, about 6-8-hours BE AWARE—although called SR20, it actually released only 5-7mg of medication (not 20mg) over 6-8 hours, and often works very erratically. Not a very satisfactory medication for most people.

**Effects:** Same as Ritalin

**Pros:** May be most effective when used in conjunction with regular Ritalin Tends to smooth out the peaks and valleys of regular tablets. Given with regular Ritalin 15-20 it will prolong the effect of the regular tablets by about one hour

**Cons:** Does not always work in a predictable fashion

**METHYLPHENIDATE (OROS) Concerta**

**Form:** 12 hour long acting tablet...unique delivery system that delivers a constant therapeutic level of methylphenidate for twelve full hours. Concerta 18mg, 36mg 54mg

**Dosage:** Dosage will very as with all methylphenidate products. Concerta 18mg is approximately equivalent to Ritalin 5mg three times a day. Concerta 36mg approx. equals Ritalin 10mg three times a day. Concerta 54mg approx. equals Ritalin 15mg three times a day.

**Duration of Action:** 12 hours of consistent therapy with no highs or lows throughout the day.
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**Dextroamphetamine Spansules (Dexedrine)**

Form: Long acting, administered by mouth. Dexedrine Spansules 5mg, 10mg, 15mg
Dosage: Very individual. Average is 5-20 mg.
Duration of Action: Very individual. May take up to one hour to be effective. Usually last 6-8 hours. In some individuals it may last all day. In others it may last only 4 hours.
Effects: Same as methylphenidate.
Possible Side Effects: Same as Ritalin
Pros: Excellent safety record. May be the best drug for some individuals. Long acting, smooth course of action. May avoid lunch time dose at school.
Cons: Slow onset of action. May require a short acting medication at the start of the day.

**Dextroamphetamine Tablets (Dexedrine, Dextrostat)**

Form: Short acting tablets administered by mouth. Dexedrine 5mg, 10mg
Dosage: Very individual. Average 1-3 tablets each dose every 4-5 hours.
Duration of Action: Rapid onset of action, approx. 20 min. Last 4-5 hours.
Effects: Same as methylphenidate.
Possible Side Effects: Same as Ritalin
Pros: Excellent safety record. Rapid acting. Some patients who do well on dextroamphetamine prefer the tablets over the spansules. The rapid rate of onset is apparently more effective for these individuals.
Cons: Same as Ritalin.

**Clonidine (Catapres)**

Form: Patches applied to back or shoulder. Catapres TTS-1, TTS-2, TTS-3. Tablets administered by mouth. Clonidine tablets—0.1, 0.2, 0.3.
Dosage: Very individual
Duration of Action: Patches will last 5-6 days. Tablets are short action, 4-5 hours.
Effects: Often will improve ADHD symptoms, particularly aggressive and hyperactive behaviors. Not too helpful for focus and attention. Decreases motor and vocal tics. Can have a dramatic effect on oppositional defiant behavior and anger management. Often used as one dose at night about 1½ hours before bedtime to assist with getting asleep.
Possible Side Effects: Major side effect is tiredness, particularly if dose raised too quickly. This disappears with time. Dizziness, dry mouth. Some will notice increased activity, irritability.
Pros: Excellent delivery system if patch is used. No pills required.
Cons: Does not usually work as well as stimulants. Patch can cause skin irritation in many individuals and can not be tolerated.
ADDERALL (4 Amphetamine Salts)

Form: Long-acting tablets: 10mg and 20 mg.
Dosage: Very individual, usually between 5mg and 20mg, once or twice a day.
Duration of Action: Usually lasts 6-12 hours. May be given once or twice a day depending on length of therapeutic effect. Duration of effect varies from person to person.
Effects: Same as Ritalin.
Possible Side Effects: Same as Ritalin, but frequently much less pronounced. Very positive comments of less effect on sleep, appetite and growth, and rebound. No roller coaster effect.
Pros: Only needs to be given once or twice a day: often fewer side effects. Very nice medication when effective.
Cons: Does not work well for everybody. Relatively new on the market and not much clinical experience at this time.

WELLBUTRIN (Bupropion Hcl)

Form: 75mg (yellow-gold), 100mg (red).
Dosage: 75mg-300mg daily (average), in three divided doses.
Duration of Action: Long acting medication (half-life of 24 hours).
Effects: A few studies suggest improvement in ADHD. In general not as good as stimulants. Very helpful in conjunction with stimulants for depression.
Possible Side Effects: Can cause seizures (1/4000) if dose STARTED too rapidly. Raise dose slowly. Cannot use if seizure disorder present. May cause dry mouth, anorexia, rash, sweating, tremor, tinnitus.
Pros: Very good medication to use for treatment of depression.
Cons: Very little evidence that it is helpful for ADHD. Studies are in progress.

WELLBUTRIN SR (Bupropion Hcl Long-Acting)

Form: 100mg (blue), 150mg (purple).
Dosage: 100-150mg twice a day.
Duration of Action: Effective for over 24 hours.
Effects: Same as Wellbutrin.
Possible Side Effects: Same as Wellbutrin.
Pros: Same as Wellbutrin.
Cons: Same as Wellbutrin.

For an excellent reference book regarding all of the medications that might be used for ADHD individuals, including not only medications for ADHD but also medications for all of the associated co-morbid conditions, please refer to the following book:

STRAIGHT TALK ABOUT PSYCHIATRIC MEDICATIONS FOR KIDS
by Timothy Wilens M.D.

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