Facts About Approved Medications for Adults with ADHD

Very often treatment for adults with ADHD includes a combination of medication and non-medication interventions (also known as psychosocial interventions). This combination of treatments is considered to be the most effective way to help adults with ADHD manage their condition. It has been said that pills cannot teach skills, meaning medication alone is frequently insufficient for treating adults with ADHD as they may need to learn specific skills in areas such as time management, organization, task completion, financial management, etc. to improve their lives.

The purpose of this fact sheet is to provide basic knowledge about FDA approved medications to treat adults with ADHD. We will discuss what they are, how they work, their similarities and differences, and the beneficial and adverse effects that adults with ADHD experience when prescribed these medications.

While much is known about the medication treatment of children and adolescents with ADHD, such treatment of adult ADHD has not been as well studied. The studies that do exist have focused on the effectiveness of medication on symptom reduction and minimization of the negative effects of ADHD on adults’ daily functioning. With proper medical treatment, the core symptoms of ADHD—inattention, hyperactivity, and impulsivity—can be improved and the effect that these symptoms have on daily life can be reduced.

One of the earliest drugs to treat hyperactivity in children was benzedrine. In 1937 it was discovered that benzedrine administered to hyperactive children could result in improvements in attention and behavior. Over the past seventy years different medications were specifically developed to treat ADHD in children. Scientists have investigated how such medications worked in the body, if they were safe and well tolerated in children, if they were effective in reducing symptoms, and, most importantly, if the medications improved the quality of life for children with ADHD. However, only a handful of studies by comparison have examined the use of stimulants in adults with ADHD. This is not surprising because for many years ADHD was thought to be a childhood disorder that diminished in adolescence and was outgrown by adulthood.

However, awareness that ADHD can be a lifetime disorder has led to greater study of this condition in adults. Impairments in social and school functioning that had substantial impact on children and adolescents as a result of their ADHD became obvious in adults with ADHD who experienced problems in higher education, in the workplace, in relationships, and in their overall quality of life. Adults with ADHD seeking help for their condition found benefit to taking the same ADHD medications that were approved for children.

Although there are several medications approved for children and adolescents with ADHD, only five medications have been approved by the US Food and Drug Administration for use in treating adults with ADHD. Of these, four are in the class of medicines called stimulants and one is a non-stimulant. These medications have been well studied and they all have similar effectiveness in treating symptoms of ADHD in adults.

The first non-stimulant ADHD medication, atomoxetine (Strattera®) was FDA approved for adults with ADHD in 2002. Stimulants followed with mixed amphetamine salts (Adderall XR®) approved in 2004, dextmethylphenidate (Focalin XR®) approved in 2005, and lisdexamfetamine (Vyvanse®) and OROS methylphenidate (Concerta®) approved in 2008 for adults with ADHD. See the chart on the following page for a list of FDA approved medications to treat ADHD in adults.

HOW DO ADHD MEDICATIONS WORK?

ADHD medications are thought to primarily affect certain brain neurotransmitters. These are chemical molecules that facilitate the transmission of messages from one neuron (brain cell) to another. Dopamine and norepinephrine are two neurotransmitters involved in ADHD and are thought to play a role in a person’s ability to regulate attention and behavior. While the exact role that each neurotransmitter plays in the development of ADHD symptoms is unknown, we do know that by altering the action of these neurotransmitters symptoms of ADHD can be modified.

Methylphenidate and amphetamine are the two most commonly used medications for treatment of ADHD in adults. They are in the stimulant class. They both block dopamine and norepinephrine reuptake in certain parts of the brain and, as a result, more of these neurotransmitters are available in the synapse (space between the neurons) to facilitate brain functioning. In addition, amphetamine causes the neuron to release more of these neurotransmitters from the presynaptic neuron. While methylphenidate and amphetamine don’t work in exactly the same way in the brain they generally have a similar effect in terms of improvement of ADHD symptoms. However, the differences in mechanism of action may explain why response and tolerance of these compounds varies within an individual. Various factors may be taken into consideration by your medical professional that may lead to prescribing methylphenidate or an amphetamine. It is not unusual for patients to try both forms of stimulants at different times to see which provides the best result and is best tolerated.

While stimulants have been around the longest and have been widely studied and prescribed for treatment of ADHD in children and adults, many adults with ADHD can also benefit from, atomoxetine (Strattera®). This non-stimulant works somewhat differently than methylphenidate or amphetamine as it primarily affects the neurotransmitter norepinephrine and it is a norepinephrine reuptake inhibitor. Atomoxetine also boosts dopamine, but this effect is more limited than it is with stimulants. Other non-stimulant medications are sometimes prescribed to treat ADHD, but they are not FDA approved for this purpose.

WHY USE MEDICATION TO TREAT ADHD?

Having ADHD can lead to impaired functioning in a variety of areas, but it is not directly life threatening. Sometimes adults with ADHD prefer to treat their condition with education and self-help, counseling, coaching, working with tutors, professional organizers, time management specialists, and others. They prefer such psychosocial treatments to medication or have reduced their need for ADHD medication because of their use of these other therapies.

However, for many who regard ADHD as a biological disorder that affects neurological functioning, taking medicine to improve brain functioning makes sense and they choose that treatment option. There are a large number of research studies that point to the effectiveness and safety of ADHD medications with children and adolescents, and although there are fewer studies of medication use in adults with ADHD, the scientific literature demonstrates that they can benefit as well and show improvements in attention, hyperactivity, and impulsivity. These improvements are frequently demonstrated by comparing scores on ADHD rating scales before and after medication use.

WHICH TO CHOOSE—STIMULANT OR NON-STIMULANT?

The decision to try a stimulant or non-stimulant to improve your ADHD symptoms is up to you and your doctor. As indicated earlier, stimulants have been used for over 70 years with children who have ADHD and many doctors are familiar with this class of medications for treating ADHD. They are highly effective, have good safety and tolerability records, and their effect can be seen within hours or days of administration. With the
availability of FDA approved long-acting (8 to 12 hours) stimulants, adults with ADHD who need medication "on-board" to help them throughout the day and into the evening, find these very beneficial.

Prescribers may choose to use the FDA approved non-stimulant medication, atomoxetine, to treat adult ADHD for a number of reasons. First, a patient's inadequate response to stimulants may motivate the clinician to see if a better response occurs with a non-stimulant. Second, adverse reactions that a patient may have to a stimulant (i.e., problems with sleep, appetite loss, irritability, etc.) may be too uncomfortable to tolerate even with modification of dosing or brand of stimulant leading the clinician to try a non-stimulant trial. Third, a non-stimulant medication pose no risk for misuse, abuse, or diversion and some clinicians may be apprehensive about prescribing stimulants to some patients because of this. Since atomoxetine is not a controlled Schedule II drug (like the stimulants are), it can be prescribed with refills by phone. Fourth, the non-stimulant, atomoxetine, has the advantage of being longer acting than even the long-acting stimulants.3

WHICH STIMULANT WORKS BEST: METHYLPHENIDATE OR AMPHETAMINE?

At this point in our understanding of these medications, there is no scientific evidence that will help your doctor decide that methylphenidate will work better for you than amphetamine or vice versa. Both methylphenidate and amphetamine affect dopamine and norepinephrine, but do so somewhat differently, therefore, individuals may respond differently to each of them.3

After a trial with one stimulant (either methylphenidate or amphetamine), a trial with the other is warranted to determine which gives the best result.

LONG-ACTING VS SHORT-ACTING STIMULANTS

Only long-acting stimulants are FDA approved for adults with ADHD. Long-acting stimulants generally last eight or more hours and deliver a consistent pattern of symptom relief throughout the day, whereas short-acting stimulants may only last three to four hours and require more than once a day dosing for most people with ADHD. Doctors often prefer to prescribe long-acting medications as they promote better compliance in patients. It can be an unnecessary burden for the patient with ADHD to remember to take medication at appropriate times throughout the day. In addition, the long-acting medication offers the adult more privacy safeguards as medication can be taken at home, in the morning, and not when out in public.

STIMULANTS AND SUBSTANCE ABUSE

Does taking stimulant medication lead to substance abuse? This question has been the subject of a few research studies. No evidence exists that stimulant use increases the chances of a person developing problems with substance abuse or dependence. In fact, studies indicate that stimulant use in the successful treatment of adults with ADHD can actually reduce the chances of a person developing a substance use disorder in comparison to adults untreated for ADHD.3

ADVERSE EFFECTS OF ADHD MEDICATIONS IN ADULTS

Common side effects of stimulants are decreased appetite, headache, stomach ache, trouble sleeping, weight loss, dry mouth, nervousness, mood swings, dizziness, fast heart beat. Stimulants can also cause agitation and they are not indicated for use by people who are highly anxious, agitated, or who suffer from psychosis.3

To be safe, your health provider should take a complete medical history, paying particular attention to heart health, before prescribing stimulants. Stimulants can cause small increases in blood pressure, which may be troubling for some patients with preexisting hypertension. Furthermore, patients with narrow angle glaucoma should avoid stimulants, and stimulants may worsen symptoms in patients with Tourette's syndrome or a history of tics.

Common side effects of the non-stimulant, atomoxetine, are constipation, dry mouth, nausea, fatigue, decreased appetite, insomnia, erectile dysfunction, urinary hesitation and/or urinary retention and/or dysuria, dysmenorrhea, and hot flush. Atomoxetine may cause sedation which is a reason that sometimes it is initially prescribed it to be taken in the evening. Mild increases in blood pressure have been reported and blood pressure and pulse should be monitored. Gastrointestinal complaints may occur, but generally abate within the first week of treatment and it may help if atomoxetine is taken with meals to avoid nausea. Patients with pre-existing heart disease or cardiac abnormalities, hypertension or hypotension, or liver disease should avoid atomoxetine. Atomoxetine, in rare cases, can cause an allergic reaction such as a skin rash and when this occurs the doctor should be contacted and the drug discontinued.

MONITORING THE EFFECTS OF MEDICATION

Whenever medication is prescribed for ADHD, there should be a system in place to monitor its effectiveness over time. Initial prescribing doses often have to be adjusted to reach optimal improvement. Tolerability may vary and some patients may experience uncomfortable or unhealthy adverse effects that will require a change in administration, dosing, or medication. Your doctor may use an ADHD rating scale to monitor the effects of medication on core symptoms of inattention, hyperactivity or impulsivity or may simply ask you questions about these symptoms to see how well you are doing in treatment.

Other problems associated with ADHD, however, may not be easily measured by a simple rating scale and will require you to have a conversation with your doctor. Letting your doctor know about your overall, real-life experiences (i.e., being on time, being able to read for more than a few minutes, finishing boring tasks, staying on track at work, managing your spending, etc.) while taking medication is very important so don’t forget to have these conversations. With careful monitoring, communication, and fine-tuning over time the right medication, dose, and time of administration to achieve optimal results generally occurs.

WHAT NON-MEDICAL TREATMENTS ARE USED IN ADDITION TO MEDICATION?

Frequently, medication alone is not sufficient to treat ADHD symptoms in adults, particularly if the symptoms are severe and causing serious impairment in daily functioning. Even though medications may offer improvements in core symptoms, these changes may not always result in satisfactory improvement in areas such as time management, organization, planning, task-completion, anger management, etc. For this reason, many adults with ADHD seek further assistance in the form of psychosocial treatment. These interventions often include cognitive behavior therapy, time management, coaching, social skills training, money management, relationship counseling, vocational counseling, and very importantly, self-education about ADHD.

ADHD MEDICATION AND COMORBID PSYCHIATRIC DISORDERS

Adults with ADHD can have comorbid (co-existing) conditions such as Generalized Anxiety Disorder, Social Phobia, Major Depressive Disorder, Bipolar Disorder, Substance Use Disorder, personality disorders, or other psychiatric conditions. While there is guidance for doctors on how to treat ADHD and comorbid disorders in children and adolescents, there are less guidelines for adults with ADHD and comorbidities and none of the FDA approved ADHD medications are approved for treating these other conditions. When you speak with your doctor it is best to explain the problems that are bothering you the most and target those symptoms for treatment. Significant co-existing conditions are usually treated first, before ADHD, particularly if they are causing a great deal of impairment and unhappiness. Sometimes, medications used to treat one condition may improve or worsen symptoms of other conditions so frequent communication with your doctor is important especially if you have ADHD and another psychiatric disorder.

REFERENCES

FDA APPROVED MEDICATIONS FOR ADULTS WITH ADHD
(listed alphabetically)

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Form</th>
<th>Recommended Dosing</th>
<th>Common Side Effects</th>
<th>Duration of Action *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adderall XR®</td>
<td>5 mg, 10 mg 15 mg, 20 mg, 25 mg, 30 mg</td>
<td>Start with 20 mg/day and titrate at weekly intervals to appropriate efficacy and tolerability. Maximum daily recommended dose is 30 mg/day.</td>
<td>Decreased appetite, headache, stomach ache, trouble sleeping, weight loss, dry mouth, nervousness, mood swings, dizziness, fast heart beat.</td>
<td>10 – 12 hours</td>
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<tr>
<td>Concerta®</td>
<td>18 mg, 27 mg 36 mg, 54 mg</td>
<td>Start with 18 mg or 36 mg each morning and increase by 18 mg/day at weekly intervals to appropriate efficacy and tolerability. Maximum recommended daily dose is 72 mg.</td>
<td>Decreased appetite, headache, dry mouth, nausea, insomnia, anxiety, dizziness, weight decreased, irritability, and hyperhidrosis.</td>
<td>10 – 12 hours</td>
</tr>
<tr>
<td>Focalin XR®</td>
<td>5 mg, 10 mg 15 mg, 20 mg 30 mg</td>
<td>Start with 10 mg/day and increase by 5 to 10 mg increments.</td>
<td>Dry mouth, dyspepsia, headache and anxiety for adult patients.</td>
<td>10 – 12 hours</td>
</tr>
<tr>
<td>Strattera®</td>
<td>10 mg, 18 mg 25 mg, 40 mg 60 mg, 80 mg 100 mg</td>
<td>Start with 40 mg and increase after a minimum of 3 days to a target total daily dose of approximately 80 mg. Either in the morning or as evenly divided doses in the morning and late afternoon/early evening. After 2 to 4 additional weeks, the dose may be increased to a maximum of 100 mg to appropriate efficacy and tolerability.</td>
<td>Constipation, dry mouth, nausea, fatigue, decreased appetite, insomnia, erectile dysfunction, urinary hesitation and/or urinary retention and/or dysuria, dysmenorrhea, and hot flush.</td>
<td>24 hours</td>
</tr>
<tr>
<td>Vyvanse®</td>
<td>20 mg, 30 mg 40 mg, 50 mg 60 mg, 70 mg</td>
<td>Start with 30 mg once daily in the morning and increase by 10 to 20 mg at approximately weekly intervals to appropriate efficacy and tolerability. Recommended maximum dose 70 mg once daily in the morning.</td>
<td>Upper abdominal pain, diarrhea, nausea, fatigue, feeling jittery, irritability, anorexia, decreased appetite, headaches, anxiety, and insomnia.</td>
<td>12 – 13 hours</td>
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Refer to specific prescribing information published by drug manufacturers for more information particularly with respect to precautions and warnings about the use of these drugs. Stimulant drugs above are classified as Schedule II and have significant potential for abuse or diversion.

The information in this publication is not intended to replace the advice of a physician.

* Duration of action is estimated and may vary from person to person.

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