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Stimulant Versus Non-stimulant Treatment Options for ADHD

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- Prescription stimulants are the first-line treatment for most people with ADHD
- Side effects of stimulants include decreased appetite and sleep and risk for misuse
- Non-stimulant medications are less successful for treating symptoms of ADHD but are useful in those who cannot take stimulants due to side effects
- Stimulants work immediately, while non-stimulant medications may take weeks to see effects

Overview of treatment options for ADHD

Stimulant medications are the first-choice treatment for attention-deficit/hyperactivity disorder (ADHD) in children and adults. This group of medications is the most effective for reducing ADHD symptoms and greatly improving quality of life. Non-stimulant medications have also been approved for the treatment of ADHD. They may be used alone or together with stimulants. While non-stimulants do not work as well for treating ADHD, they may be used first when someone cannot take stimulants because of their side effects.[1] Overall, the effect of the medication can vary, and each person's response can be different.

What are stimulant medications?

There are two types of stimulant medications: amphetamine and methylphenidate. These medications work by increasing certain chemicals in your brain that improve symptoms of ADHD. These chemicals, dopamine and norepinephrine, help with concentration, hyper behaviors, and ability to control urges and emotional reactions. Amphetamine and methylphenidate medications are available as different products, either short-acting or long-acting. Short-acting stimulants work fast but for a short period of time and may need to be given 2 to 3 times each day. Long-acting stimulants are taken once a day and last all day for around 8 to 12 hours. Common side effects of stimulant medications include loss of appetite and decreased sleep. Side effects are often improved by changing the amount of medication given, the time the medication is given, or the form of the medication.[2] Because stimulant medications can increase heart rate and blood pressure, stimulants are not recommended for those at risk for severe heart problems.[1,3]

Choosing a stimulant

There is no way to tell in advance who responds better to amphetamine versus methylphenidate medications. Long-acting stimulants are good for those who forget to take medicine during the day and may have a lower risk for misuse.[3] These medications may decrease appetite all day, which can be a problem for growing children and adolescents. In addition, since long-acting medications take a while to wear off, they are more likely to cause problems with sleep, mainly when taken later in the day. Short-acting stimulants have a higher risk for misuse. Side effects of short-acting stimulants can be greater but may wear off sooner. A summary of things to consider when choosing a long-acting or short-acting stimulant can be seen in Table 1 below.

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Table 1. Summary of amphetamine and methylphenidate medication formulations

Product	Summary
Short-acting	Taken 2 to 3 times per day Work quickly and wear off in a few hours May have greater side effects but only for a short period of time Higher potential for misuse
Long-acting	Taken once a day and last 8 to 12 hours Side effects last longer throughout the day and may affect sleep Lower potential for misuse

What are non-stimulant medication options?

Non-stimulant medications to treat ADHD include atomoxetine, clonidine, guanfacine, and viloxazine. These medications are ideal for people who cannot take stimulants because of side effects, those who do not wish to use stimulants, or those with a history of substance use disorder.[1] Also, they are ideal for those with a medical history that would be worsened with stimulant medication, such as heart disease.[1] All non-stimulant medications take a few weeks to see the best effect. Non-stimulant medication options are summarized in Table 2 below.

Table 2. Non-stimulant medications

Medication	Side Effects	Considerations
Atomoxetine	Upset stomach, headache, trouble sleeping	Used in adults and children
Clonidine ER Guanfacine ER	Lowered heart rate and blood pressure (if suddenly stopped, can cause increased blood pressure)	Used mostly in children and adolescents; may decrease anger and urges to react to emotions with violence
Viloxazine	Increased blood pressure and heart rate, upset stomach, feeling sleepy, headache, trouble sleeping	Used in children and adults

ER = extended-release

What is the abuse or misuse potential with stimulants?

All stimulants have the risk for misuse, mainly when used without a prescription or in a different manner than instructed by the provider. Because of certain side effects, stimulants are misused for weight loss and better concentration or performance.[4] In addition, taking large doses, snorting, or injecting stimulants can produce a feeling of intense excitement or happiness and are misused for this specific feeling.[4] For someone with a history of a substance use disorder, starting a stimulant medication for ADHD does not necessarily increase the risk of misusing stimulant medications or other substances. Starting stimulant medication may decrease their risk of taking part in impulsive or risky behavior, though some providers may prefer to use a non-stimulant first for someone with a substance use disorder[3].

Go online to find more information and to view the references for this toolkit.

https://aapp.org/resource/patients

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