psychiatryUK

ADHD Medication for Adults

Stimulant and non-stimulant medications for ADHD

Stimulant medication

Non-stimulant medication

Supplements

With medication, we will aim to get you a balance between the best symptom relief for your ADHD with the least side effects. We may not achieve complete eradication of symptoms. These medications are not a permanent cure for ADHD but may help someone with the condition concentrate better, be less impulsive, feel calmer, and learn and practise new skills.

There is no magic pill that will fix all the problems. That is why it is so important to also make lifestyle changes that include a healthy diet, regular exercise and sufficient sleep.

ADHD medications generally belong to one of two broad classes: stimulants (e.g., methylphenidate, lisdexamfetamine) or non-stimulants (atomoxetine, guanfacine). Non-stimulants need to be taken every day, but stimulants can be taken just on week/work/school days.

It is worth noting that, with regard to medical management of ADHD, we only consider prescribing the following medications: stimulant medication, atomoxetine and occasionally guanfacine.

We do our best to avoid polypharmacy as this is not recommended by NICE guidelines.

Stimulant medications

Stimulants are the first-line treatment for ADHD. The response rate is around 70-80% for the management of ADHD.

Do not drink alcohol while taking stimulant medicines. Alcohol may make the side effects of stimulants worse. Remember that some foods and medicines contain alcohol.

It is potentially fatally dangerous to use illicit drugs, such as cocaine and amphetamines, when prescribed ADHD medication.

Methylphenidate

Mechanism of action

- Methylphenidate is a **central nervous system stimulant.**
- Methylphenidate works by increasing the levels of the neurotransmitters **dopamine and norepinephrine** in the brain. These chemicals help regulate attention, behaviour, and focus.
- It blocks the reuptake of dopamine and norepinephrine, making more of these neurotransmitters available in the brain to improve attention and reduce impulsivity and hyperactivity.

Forms

Methylphenidate comes in immediate-release (IR), extended-release and long-acting preparations. There are several brands, for example: **Concerta, Xaggitin, Delmosart, Ritalin, Medikinet.**

Potential side effects

Common side effects include:

- Decreased appetite (can lead to weight loss, especially in children)
- Nervousness or anxiety
- Insomnia
- Headaches
- Dry mouth
- Nausea or upset stomach

Less common but serious side effects:

- Increased blood pressure and heart rate
- Mood swings, irritability, or aggression
- Tics (sudden repetitive movements or sounds)
- Psychiatric effects like paranoia or hallucinations, though rare

Serotonin syndrome

Risk of misuse and dependence

- Like other stimulants, methylphenidate is a **Schedule II controlled substance,** which means it has a high potential for abuse and dependence.
- Misuse of methylphenidate for its stimulating effects (such as improving focus or staying awake) can lead to tolerance, dependence, and addiction.
- Recreational misuse can also cause euphoria, raising the risk of abuse.

Pregnancy and breastfeeding

- It is classified as **Category C** in pregnancy, meaning risk to the foetus cannot be ruled out.
- Methylphenidate may pass into breast milk, so it's important for breastfeeding women to consult their doctors before use.

Lisdexamfetamine

Mechanism of action

- Lisdexamfetamine is a **prodrug,** meaning it's inactive until the body metabolises it into its active form, **dextroamphetamine.**
- Dextroamphetamine increases levels of neurotransmitters **dopamine and norepinephrine** in the brain, improving focus, attention and impulse control.

Potential side effects

Common side effects include:

Loss of appetite

Dry mouth

Insomnia or difficulty sleeping

Irritability or mood swings

Weight loss (particularly in children)

Increased heart rate or elevated blood pressure

Less common but serious side effects:

Cardiovascular problems, like increased heart rate or blood pressure, which may be dangerous for people with heart conditions.

Mental health issues, such as increased anxiety, irritability, or even psychosis in rare cases.

Serotonin syndrome

Risk of misuse and dependence

- Lisdexamfetamine is a **Schedule II controlled substance** due to its potential for misuse, abuse, and dependence, particularly because it is a stimulant related to amphetamines.
- While lisdexamfetamine itself has a lower risk of abuse compared to other stimulants, once it is converted to dextroamphetamine in the body, there is still potential for abuse.

Pregnancy and breastfeeding

- It is classified as **Category C** in pregnancy, meaning that risk to the foetus cannot be ruled out.
- Lisdexamfetamine may pass into breast milk, so it's important for breastfeeding women to consult their doctors before use.

What is the difference between Methylphenidate and Lisdexamfetamine?

Methylphenidate and lisdexamfetamine are both stimulants used primarily to treat Attention Deficit Hyperactivity Disorder (ADHD), but they differ in several key ways, including their mechanism of action, duration of effect, formulation, side effects and potential for misuse. Here is a detailed comparison:

Mechanism of action

1

Methylphenidate

- Works by blocking the **reuptake of dopamine and norepinephrine** in the brain, increasing the levels of these neurotransmitters in the **synaptic cleft,** which helps improve focus and impulse control.
- Acts more quickly after being absorbed, but wears off faster.

2

Lisdexamfetamine

- It is a **prodrug of dextroamphetamine,** meaning it's inactive until metabolised in the body. It is converted to dextroamphetamine, which then increases the release of dopamine and norepinephrine while also blocking their reuptake.
- This conversion leads to a **slower onset** of action but provides a **longer duration** of effect.

Onset and duration of action

1

Methylphenidate

- Available in i**mmediate-release (IR) and extended-release (ER)** formulations.
- Immediate-release formulations act within 30 to 60 minutes, with effects lasting **3 to 4 hours.**
- Extended-release forms (such as Concerta) can last u**p to 12 hours.**

2

Lisdexamfetamine

- Typically has a **slower onset** (about **1 to 2 hours).**
- It lasts longer, providing therapeutic effects for **10 to 14 hours** after a single dose, making it a **once-daily** medication.

Non-stimulant medications

Atomoxetine

Atomoxetine, marketed under the brand name Strattera, is a **non-stimulant medication** used primarily for the treatment of Attention Deficit Hyperactivity Disorder (ADHD).

It differs from stimulant medications like methylphenidate or lisdexamfetamine, and is particularly suitable for individuals who may not respond well to stimulants or who have conditions that make stimulants inappropriate.

Mechanism of action

- Atomoxetine is a **selective norepinephrine reuptake inhibitor (NRI).**
- It works by **increasing levels of norepinephrine** (a neurotransmitter) in the brain, which helps improve attention, focus, and impulse control. Unlike stimulants, it does not increase dopamine levels directly, making it different in the way it affects the brain.

Onset and duration of action

- Atomoxetine has a **delayed onset** compared to stimulant medications.
- While stimulant medications like methylphenidate or lisdexamfetamine work within 30 minutes to an hour, atomoxetine can take **2-4 weeks** to show significant improvement in ADHD symptoms. Full therapeutic benefits may take **6-8 weeks.**
- It provides a c**onsistent effect** throughout the day without the peaks and crashes associated with some stimulant medications.

Potential side effects

Common side effects:

These side effects are generally mild and often decrease over time as the body adjusts to the medication:

Gastrointestinal issues; nausea, vomiting, stomach pain, decreased appetite (may lead to weight loss).	Dry mouth
Fatigue or drowsiness	Dizziness
Insomnia (trouble sleeping)	Headaches
Constipation	Sweating

Less common but potentially serious side effects:
These side effects may require medical attention and should be monitored closely:

Increased heart rate and blood pressure: Atomoxetine can cause tachycardia (increased heart rate) and hypertension (increased blood pressure). Regular monitoring of cardiovascular health is advised.

Mood changes: Irritability, agitation, or mood swings can occur.

Suicidal thoughts: Atomoxetine has been associated with an increased risk of suicidal thoughts in children, adolescents, and young adults, especially during the initial weeks of treatment. This risk requires close monitoring by healthcare providers and caregivers.

Liver damage: (Your liver function must be reviewed every 6 months whilst on this medication). Rare but serious liver injury can occur. Symptoms include:

- Yellowing of the skin or eyes (jaundice)
- Dark urine
- Upper abdominal pain
- Unusual fatigue

Psychiatric symptoms: Anxiety, depression, or new/worsening aggression can appear.

Urinary retention or difficulty urinating.

Serotonin syndrome.

Rare side effects:
These side effects may be rare but important to be aware of:

Severe allergic reactions: Symptoms include rash, hives, swelling of the face or throat, and difficulty breathing. These require immediate medical attention.

Priapism (prolonged and painful erections): This is a rare but serious side effect that requires urgent medical intervention to prevent long-term damage.

Sexual side effects:
Atomoxetine can cause sexual side effects in adults, such as:

Decreased libido or erectile dysfunction.

Difficulty achieving orgasm.

Cardiovascular effects:

Palpitations: Sensation of an irregular or racing heartbeat.

Chest pain: Any chest pain should be taken seriously and reported to a healthcare provider immediately.

Guanfacine

This is considered a third-line treatment. We occasionally prescribe this, especially if the other treatment options are not available to the patient due to cardiac risks.

Mechanism of action

- Guanfacine is an **alpha-2 adrenergic agonist.** It works by stimulating alpha-2 receptors in the brain, leading to decreased sympathetic nerve impulses. This action results in reduced blood pressure and heart rate, as well as improvements in attention and impulse control.
- By activating these receptors, guanfacine can enhance **prefrontal cortex function,** which is involved in attention, behaviour regulation, and executive functions.

Dosage and administration

- Guanfacine is available in immediate-release and extended-release formulations:

Immediate release	Extended release
(e.g., Tenex)	(e.g., Intuniv)
Typically taken 2-3 times daily	Taken once daily, often at bedtime

- The dosage for ADHD typically starts low and is gradually increased based on the patient's response and tolerability. The usual dose ranges from **1mg to 4mg per day** for ADHD, with higher doses used for hypertension.

Onset and duration of action

Onset
Guanfacine can take several weeks to show full therapeutic effects for ADHD, often requiring a gradual titration of dosage.

Duration
The effects of the extended-release formulation last throughout the day, providing a smoother, more sustained control of ADHD symptoms.

Side effects

Common side effects include:

Drowsiness or sedation: This is one of the most common side effects and may affect daytime functioning.

Fatigue: A feeling of tiredness or lack of energy.

Dry mouth: Can be uncomfortable for some patients.

Constipation: May require dietary changes or medications to manage.

Low blood pressure (hypotension): This can occur, particularly when standing up, leading to dizziness or fainting.

Bradycardia: Slower than normal heart rate.

Less common but more serious side effects include:

Mood changes: Symptoms such as irritability, agitation or depression can occur, particularly during dosage adjustments.

Severe allergic reactions: Though rare, signs may include rash, itching, or swelling, especially of the face, throat, or tongue.

Warnings and precautions

Cardiovascular concerns: Caution is advised in patients with a history of heart problems, as guanfacine can lower blood pressure and heart rate.

Withdrawal: Abrupt discontinuation, particularly after prolonged use, can lead to rebound hypertension (a sudden increase in blood pressure) or other withdrawal symptoms. A gradual tapering of the dose is recommended.

Caution with driving: Due to the sedative effects, patients should be cautious about driving or operating heavy machinery until they know how guanfacine affects them.

Pregnancy and breastfeeding

- Guanfacine is classified as **Category B** for pregnancy, meaning there is no evidence of risk in humans, but it should still be used with caution.
- It is not known if guanfacine is excreted in breast milk, so nursing mothers should discuss the risks and benefits with their healthcare provider.

Supplements

We cannot prescribe these for you

Supplements are **not a replacement** for established ADHD treatments like behavioural therapy or medications, but can be useful as a complementary strategy, especially when tailored to individual needs, such as addressing nutrient deficiencies.

Omega-3 fatty acids
Particularly EPA, have the strongest evidence for managing ADHD symptoms, though their effects are modest compared to medications.

Omega-3 fatty acids are found in: fish like salmon, flaxseeds, walnuts, avocados, and chia seeds.

Zinc, iron, magnesium, and vitamin D
Supplementation **can help when deficiencies are present** but are less useful in individuals with normal levels.

These minerals help regulate neurotransmitters that affect mood and concentration. Magnesium can be found in foods like leafy greens, seeds, nuts and legumes. Iron and zinc can be found in red meat, spinach and beans.

B-vitamins (B6, B12, folate)
The vitamins support brain function and energy levels, helping with sustained attention. They can be found in foods like chicken, eggs, dairy and leafy greens.

Melatonin
Melatonin is effective for managing sleep problems in ADHD, which can indirectly improve behaviour and focus.

PLEASE NOTE: we cannot prescribe this and sadly it is not licensed for use in adults.

Probiotics

Emerging research highlights the gut-brain connection, where a healthy gut microbiome may positively influence mental health and behaviour. Probiotic-rich foods like yogurt, kefir, and fermented vegetables can support gut health, which may indirectly benefit ADHD symptoms.

For more information about ADHD medications, visit the Choice and Medication website.