



## Attention deficit hyperactivity disorder (ADHD)

**NICE NG87; 2018**

This guideline covers diagnosis and management of attention deficit hyperactivity disorder (ADHD) in children, young people and adults.

### Definition of terms

<b>ADHD</b>	attention deficit hyperactivity disorder
<b>BP</b>	blood pressure
<b>CAMHS</b>	child and adolescent mental health services
<b>CBT</b>	cognitive behavioural therapy
<b>CD</b>	controlled drug
<b>ECG</b>	electrocardiogram
<b>mr</b>	modified release

### Recognition, identification and referral – see [NICE Pathway](#).

- ◆ Primary care practitioners should not make the initial diagnosis or start medication in children/young people with suspected ADHD.
- ◆ Referral from community to secondary care may involve health, education and social care professionals (e.g. GPs, paediatricians, educational psychologists, SENCOs, social workers) and care pathways can vary locally. The person making the referral to secondary care should inform the child/young person's GP.
- ◆ When a child/young person presents in primary care with behavioural and/or attention problems suggestive of ADHD, primary care practitioners should determine the severity of the problems, how these affect the child/young person and their parents/carers and the extent to which they pervade different domains and settings.
- ◆ If the child/young person's behavioural and/or attention problems are having an adverse impact on their development or family life, consider:
  - a period of watchful waiting of up to 10 weeks,
  - offering parents/carers a referral to group-based ADHD-focused support (without waiting for a formal diagnosis),
  - if the behavioural and/or attention problems persist with at least moderate impairment refer the child/young person to secondary care (ie a child psychiatrist, paediatrician, or specialist ADHD CAMHS) for assessment.
- ◆ If the child/young person's behavioural and/or attention problems are associated with severe impairment, refer them directly to secondary care (ie a child psychiatrist, paediatrician, or specialist ADHD CAMHS) for assessment.
- ◆ Adults presenting with symptoms of ADHD in primary care or general adult psychiatric services, who do not have a childhood diagnosis of ADHD, should be referred for assessment by a mental health specialist trained in the diagnosis and treatment of ADHD, where there is evidence of typical manifestations of ADHD (hyperactivity/impulsivity and/or inattention) that:
  - began during childhood and have persisted throughout life,
  - are not explained by other psychiatric diagnoses (although there may be other coexisting psychiatric conditions),
  - have resulted in or are associated with moderate or severe psychological, social and/or educational or occupational impairment.
- ◆ Adults who have previously been treated for ADHD as children or young people and present with symptoms suggestive of

continuing ADHD should be referred to general adult psychiatric services for assessment. Symptoms should be associated with at least moderate or severe psychological and/or social or educational or occupational impairment.

### Diagnosis – see [NICE Pathway](#).

### Treatment and Management

These recommendations are for health care professionals with training and expertise in diagnosing and managing ADHD.

#### Children <5 years

- ◆ **First-line:** offer an ADHD-focused group parent-training programme to parents/carers.
  - ◆ If after an ADHD-focused group parent-training programme, ADHD symptoms across settings are still causing a significant impairment after environmental modifications have been implemented and reviewed, obtain advice from a specialist ADHD service\*.
  - ◆ **Do NOT** offer medication for ADHD for any child <5 years without a second specialist opinion from an ADHD service\*.
- \*with expertise in managing ADHD in young children, ideally a tertiary service.

#### Children/young people aged ≥5 years

- ◆ **First-line:** give ADHD-focused information and offer additional group based and ADHD-focused support to parents/carers. This may be as few as 1 or 2 sessions and should include:
  - education and information on the causes and impact of ADHD,
  - advice on parenting strategies,
  - both parents and carers if feasible.
- ◆ If a child/young person has symptoms of oppositional defiant disorder or conduct disorder, offer parents/carers a parent-training programme in line with NICE's recommendations on [Antisocial behaviour and conduct disorders in children/young people](#) as well as group-based ADHD-focused support.
- ◆ Consider individual parent-training/education programmes for parents/carers when:
  - there are particular difficulties for families in attending group sessions,
  - a family's needs are too complex to be met by group-based parent-training/education programmes.
- ◆ Offer medication for children/young people aged ≥5 years only if their symptoms are still causing a persistent significant impairment in at least one domain after their parents/carers have received ADHD-focused information, group-based support has been offered and environmental modifications have been implemented and reviewed. See **Box 1**.
- ◆ Consider a course of CBT for young people who have benefited from medication but whose symptoms are still causing a significant impairment in at least one domain, addressing the following areas:
  - social skills with peers,
  - problem-solving,
  - self-control,
  - active listening skills,
  - dealing with and expressing feelings.

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**Adults**

- ◆ Offer medication to adults if their ADHD symptoms are still causing a significant impairment in at least one domain after environmental modifications have been implemented and reviewed. See **Box 1**.
- ◆ Consider non-pharmacological treatment for adults with ADHD who have:
  - made an informed choice not to have medication,
  - difficulty adhering to medication,
  - found medication to be ineffective or cannot tolerate it.
- ◆ Consider non-pharmacological treatment in combination with medication for adults who have benefited from medication but whose symptoms are still causing a significant impairment in at least one domain.
- ◆ When non-pharmacological treatment is indicated offer the following as a minimum:
  - a structured supportive psychological intervention focused on ADHD,
  - regular follow-up either in person or by phone,
- ◆ Treatment may involve elements of or a full course of CBT.

**Dietary advice**

- ◆ Healthcare professionals should stress the value of a balanced diet, good nutrition and regular exercise for children/young people and adults with ADHD.
- ◆ **Do NOT** advise elimination of artificial colouring and additives from the diet as a generally applicable treatment for children/young people with ADHD.
- ◆ Ask about foods or drinks that appear to influence hyperactive behaviour as part of the clinical assessment in children/young people, and:
  - if there is a clear link, advise parents/carers to keep a diary of food and drinks taken and ADHD behaviour,
  - if the diary supports a relationship between specific foods and drinks and behaviour, offer referral to a dietitian,
  - ensure that further management (e.g. specific dietary elimination) is jointly undertaken by the dietitian, mental health specialist or paediatrician, and the parent/carer and child/young person.
- ◆ **Do NOT** advise or offer dietary fatty acid supplementation for treating ADHD in children/young people.
- ◆ Advise family members/carers of children that there is no evidence about the long-term effectiveness or potential harms of a 'few food' diet for children with ADHD, and only limited evidence of short-term benefits.

**Planning treatment – see [NICE Pathway](#)****Pharmacological management**

- ◆ Healthcare professionals initiating medication should:
  - be familiar with the pharmacokinetic profiles of all the short- and long-acting preparations available for ADHD,
  - ensure that treatment is tailored effectively to the individual needs of the child/young person or adult,
  - take account of variations in bioavailability or pharmacokinetic profiles of different preparations to avoid reduced effect or excessive adverse effects.

**Baseline assessment**

- ◆ Before starting medication, people with ADHD should have a full assessment including a review to confirm they continue to meet the criteria for ADHD and need treatment, a review of mental health and physical health.
- ◆ A review of mental health and social circumstances, including:
  - presence of co-existing mental health and neurodevelopmental conditions,

- current educational or employment circumstances,
- risk assessment for substance misuse and drug diversion,
- care needs.
- ◆ A review of physical health, including:
  - a medical history, taking into account conditions that may be contraindications for specific medicines,
  - current medication,
  - height and weight (measured and recorded against the normal range for age, height and sex),
  - baseline pulse and BP (measured with an appropriately sized cuff and compared with the normal range for age),
  - a cardiac examination (including checking for new murmurs),
  - an ECG if the treatment may affect the QT interval.
- ◆ Refer for a cardiology opinion before starting medication for ADHD if any of the following apply:
  - history of congenital heart disease or previous cardiac surgery,
  - history of sudden death in a first-degree relative <40 years suggesting a cardiac disease,
  - shortness of breath on exertion compared with peers,
  - fainting on exertion or in response to fright or noise,
  - palpitations that are rapid, regular and start and stop suddenly (fleeting occasional bumps are usually ectopic and do not need investigation),
  - chest pain suggesting cardiac origin,
  - signs of heart failure,
  - a murmur heard on cardiac examination,
  - BP that is classified as hypertensive for adults – see [NICE Pathway](#).
- ◆ Refer to a paediatric hypertension specialist before starting medication for ADHD if BP is consistently above the 95th centile for age and height for children/young people.

**Prescribing****Stimulants (methylphenidate, lisdexamfetamine, dexamfetamine, atomoxetine)**

- ◆ When prescribing think about mr once-daily preparations for the following reasons:
  - convenience,
  - improving adherence,
  - reducing stigma (because there is no need to take medication at school or in the workplace),
  - reducing problems of storing and administering CDs at school,
  - the risk of stimulant misuse and diversion with immediate-release preparations,
  - pharmacokinetic profiles.
- ◆ Immediate-release preparations may be suitable if more flexible dosing regimens are needed, or during initial titration to determine correct dosing levels.
- ◆ Be aware that effect size, duration of effect and adverse effects vary from person to person.
- ◆ Think about using immediate and mr preparations to optimise effect (e.g. mr preparation of methylphenidate in the morning and an immediate-release preparation of methylphenidate at another time of the day to extend the duration of effect).
- ◆ Be cautious about prescribing stimulants if there is a risk of diversion for cognitive enhancement or appetite suppression.
- ◆ **Do NOT** offer immediate-release or mr stimulants that can be easily injected or insufflated if there is a risk of stimulant misuse or diversion.
- ◆ Prescribers should be familiar with the requirements of CD legislation governing the prescription and supply of stimulants – see [NICE NG46: Controlled drugs: safe use and management](#).

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## Box 1

## Choice of medication

## Children/young people aged ≥5 years

- ◆ Offer methylphenidate<sup>U</sup><sup>55 years</sup> (either short or long acting) for ADHD symptoms that are still causing a persistent significant impairment in at least one domain after parents have received ADHD-focused information, group-based support has been offered and environmental modifications have been implemented and reviewed.
- ◆ Consider switching to lisdexamfetamine<sup>U</sup><sup>55 years</sup> for children/young people who have had a 6-week trial of methylphenidate at an adequate dose and not derived enough benefit in terms of reduced ADHD symptoms and associated impairment.
- ◆ Consider dexamfetamine<sup>U</sup><sup>55 years</sup> for children/young people whose ADHD symptoms are responding to lisdexamfetamine but who cannot tolerate the longer effect profile.
- ◆ Offer atomoxetine<sup>U</sup><sup>55 years</sup> **OR** guanfacine<sup>U</sup><sup>55 years</sup> if:
  - they cannot tolerate methylphenidate or lisdexamfetamine, **OR**
  - symptoms have not responded to separate 6-week trials of lisdexamfetamine and methylphenidate, having considered alternative preparations and adequate doses.

## Adults

- ◆ **First-line:** offer lisdexamfetamine\*\* or methylphenidate.\*\*
- ◆ Consider switching to the other (either lisdexamfetamine\*\*/methylphenidate\*\*) for adults who have had a 6-week trial of one at an adequate dose but have not derived enough benefit in terms of reduced ADHD symptoms and associated impairment.
- ◆ Consider dexamfetamine<sup>U</sup> for adults whose ADHD symptoms are responding to lisdexamfetamine but who cannot tolerate the longer effect profile.
- ◆ Offer atomoxetine\*\* to adults if they:
  - cannot tolerate lisdexamfetamine or methylphenidate, **OR**
  - have symptoms that have not responded to separate 6-week trials of lisdexamfetamine and methylphenidate, having considered alternative preparations and doses.

## All ages

- ◆ Obtain a second opinion or refer to a tertiary service if symptoms are unresponsive to ≥1 stimulants and one non-stimulant.
- ◆ **Do NOT** offer any of the following medication for ADHD without advice from a tertiary ADHD service:
  - clonidine<sup>U</sup> for children with ADHD and sleep disturbance, rages or tics,
  - guanfacine<sup>U</sup> for adults,
  - atypical antipsychotics in addition to stimulants for people with ADHD and coexisting pervasive aggression, rages or irritability,
  - medication not included in the recommendations above.

## People with coexisting conditions

- ◆ Offer the same medication choices to people with ADHD and anxiety disorder, tic disorder or autism spectrum disorder as other people with ADHD.
- ◆ For children/young people aged ≥5 years and adults experiencing an acute psychotic or manic episode:
  - stop any medication for ADHD,
  - consider restarting or starting new ADHD medication after the episode has resolved, taking into account the individual circumstances, risks and benefits of the ADHD medication.

\*\*At time of publication, lisdexamfetamine and atomoxetine are licensed for use in adults only if they are continuing treatment from adolescence. Some brands of methylphenidate are licensed for use in adults, check individual SmPc for details.

## Dose titration

- ◆ During the titration phase, ADHD symptoms, impairment and adverse effects should be recorded at baseline and at each dose change on standard scales by parents and teachers, and progress reviewed regularly (e.g. by weekly telephone contact, with a specialist).
- ◆ Titrate the dose against symptoms and adverse effects in line with the BNF or BNF for Children until dose optimisation is achieved, that is, reduced symptoms, positive behaviour change, improvements in education, employment and relationships, with tolerable adverse effects.
- ◆ Ensure that dose titration is slower and monitoring more frequent if any of the following are present:
  - neurodevelopmental disorders, e.g. autism spectrum disorder, tic disorders, learning disability (intellectual disability),
  - mental health conditions e.g. anxiety disorders (including obsessive-compulsive disorder), schizophrenia or bipolar disorder, depression, personality disorder, eating disorder, post-traumatic stress disorder, substance misuse,
  - physical health conditions, e.g. cardiac disease, epilepsy or acquired brain injury.
- ◆ After titration and dose stabilisation, prescribing and monitoring of ADHD medication should be carried out under Shared Care Protocol arrangements with primary care.

## Monitoring

- ◆ If a person develops new seizures or a worsening of existing seizures, review their medication and stop any medication that might be contributing to the seizures. After investigation, cautiously reintroduce ADHD medication if it is unlikely to be the cause of the seizures.
- ◆ Monitor behavioural response to medication, and if behaviour worsens adjust medication and review the diagnosis.
- ◆ Monitor effectiveness of medication and adverse effects, and document in the person's notes.
- ◆ Encourage people taking medication to monitor and record any adverse effects, e.g. by using an adverse effect checklist.
- ◆ Consider using standard symptom and adverse effect rating scales for clinical assessment and throughout the course of treatment.
- ◆ For people taking medication for ADHD:
  - measure height every 6 months in children/young people,
  - measure weight every 3 months in children ≤10 years,
  - measure weight at 3 and 6 months after starting treatment in children/young people aged >10 years, and every 6 months thereafter, or more often if concerns arise,
  - measure weight every 6 months in adults,
  - plot height and weight of children/young people on a growth chart and ensure review by the healthcare professional responsible for treatment.
- ◆ If weight loss is a clinical concern, consider the following strategies:
  - taking medication either with or after food, rather than before meals,
  - taking additional meals or snacks early in the morning or late in the evening when stimulant effects have worn off,
  - obtaining dietary advice,
  - consuming high-calorie foods of good nutritional value,
  - taking a planned break from treatment,
  - changing medication.

**U** unlicensed indication. Obtain and document informed consent.

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- ◆ If a child/young person's height over time is significantly affected by medication, that is, they have not met the height expected for their age, consider a planned break in treatment over school holidays to allow 'catch-up' growth.
- ◆ Consider monitoring BMI of adults if there has been weight change as a result of their treatment, and changing the medication if weight change persists.
- ◆ Monitor changes in sleep pattern (e.g. with a sleep diary) and adjust medication accordingly.
- ◆ See [NICE ESUOM2: Sleep disorders in children/young people with attention deficit hyperactivity disorder: melatonin](#)
- ◆ Healthcare professionals and parents/ carers should monitor changes in the potential for stimulant misuse and diversion, which may come with changes in circumstances and age.
- ◆ Monitor young people and adults for sexual dysfunction, including erectile and ejaculatory dysfunction, as potential adverse effects of atomoxetine.

**Cardiovascular**

- ◆ Monitor heart rate and BP and compare with normal range for age before and after each dose change and every 6 months.
- ◆ **Do NOT** offer routine blood tests (including liver function tests), or ECGs to people taking medication unless there is a clinical indication.
- ◆ If a person taking ADHD medication has sustained resting tachycardia (>120 beats per minute), arrhythmia or systolic BP >95th percentile (or a clinically significant increase) measured on 2 occasions, reduce their dose and refer them to a paediatric hypertension specialist or adult physician.
- ◆ If a person taking guanfacine has sustained orthostatic hypotension or fainting episodes, reduce their dose or switch to another ADHD medication.

**Tics**

- ◆ If a person taking stimulants develops tics, think about whether:
  - the tics are related to the stimulant (tics naturally wax and wane), **AND**
  - the impairment associated with the tics outweighs the benefits of ADHD treatment.
- ◆ If tics are stimulant related, reduce the stimulant dose, or consider changing to guanfacine<sup>U<sup>55 years</sup></sup>, <sup>\*\*</sup>atomoxetine<sup>U<sup>55 years</sup></sup> or stopping medication.
- ◆ See [NICE ESNM70: ADHD in children and young people – guanfacine prolonged-release](#)

**Adherence to treatment**

- ◆ See [NICE Pathway: Medicines optimisation](#) to improve the care for children/young people and adults with ADHD.
- ◆ Be aware that the symptoms of ADHD may lead to people having difficulty adhering to treatment plans, e.g. remembering to order and collect medication.
- ◆ Ensure that people are fully informed of the balance of risks and benefits of any treatment for ADHD and check that problems with adherence are not due to misconceptions, e.g. tell people that medication does not change personality.
- ◆ Encourage the person to use the following strategies to support adherence to treatment:
  - being responsible for their own health, including taking their medication as needed,
  - following clear instructions about how to take the medication in picture or written format, which may include information on dose, duration, adverse effects, dosage schedule. The instructions should stay with the medication (e.g. a sticker on the side of the packet),

**U** unlicensed indication. Obtain and document informed consent.

- using visual reminders to take medication regularly (e.g. apps, alarms, clocks, pill dispensers, or notes on calendars or fridges),
- taking medication as part of their daily routine,
- attending peer support groups (for both the person with ADHD and for their families/carers).
- ◆ Encourage parents/carers to oversee ADHD medication for children/young people.
- ◆ Support adherence to non-pharmacological treatments (e.g. CBT) by discussing the following:
  - the balance of risks and benefits (e.g. how the treatment can have a positive effect on symptoms),
  - the potential barriers to continuing treatment, including:
    - ❖ not being sure if it is making any difference,
    - ❖ the time and organisational skills needed to commit to the treatment,
    - ❖ the time that might be needed outside of the sessions, e.g. to complete homework.
  - strategies to deal with any identified barriers (e.g. scheduling sessions to minimise inconvenience or seeking courses with child care provision),
  - a possible effect of treatment being increased self-awareness and the challenging impact this may have on the person and the people around them,
  - the importance of long-term adherence beyond the duration of any initial programme (e.g. by attending follow-up/refresher support to sustain learned strategies).

**Review of medication and discontinuation**

- ◆ Ensure that children/young people and adults receiving treatment for ADHD have review and follow-up according to the severity of their condition, regardless of whether or not they are taking medication.
- ◆ A healthcare professional with training and expertise in managing ADHD should review medication at least once a year and discuss with the person and their families/carers as appropriate, whether medication should be continued.

**Information and support** – see [NICE Pathway](#).

**Resources**

**London Medicines Information Service. Extended release methylphenidate – a review of the pharmacokinetic profiles of available preparations. April 2018.**  
<https://www.sps.nhs.uk/articles/extended-release-methylphenidate-a-review-of-the-pharmacokinetic-profiles-of-available-preparations/>

Please go to [www.nice.org.uk](http://www.nice.org.uk) to check for any recent updates to this guideline.

**Recommendations** – wording used such as 'offer' and 'consider' denote the [strength of the recommendation](#).  
**Drug recommendations** – the guideline assumes that prescribers will use a drug's [Summary of Product Characteristics \(SPC\)](#) to inform treatment decisions.