Attention Deficit Hyperactivity Disorder (ADHD) – Prescribing Guideline for the Treatment of ADHD in Children, Young People and Adults

TARGET AUDIENCE	Medical, nursing and pharmacy staff working within primary care and secondary care settings in NHS Lanarkshire
PATIENT GROUP	Children and young people aged 6 to 17 years and adults aged 18 years or over in NHS Lanarkshire who have a diagnosis of ADHD

Clinical Guidelines Summary

- ADHD is a lifelong neurodevelopmental condition, which is highly heritable.
- The core symptoms are inattention, hyperactivity and impulsivity. Not all of these symptoms may be present. Although impulsivity and hyperactivity seem to diminish with age, attention problems often persist into adulthood.
- For an appropriate referral for assessment of ADHD, there should be evidence of specific ADHD symptoms being present in two or more settings and evidence of these symptoms affecting the patient's functioning. The symptoms should have been present before the age of 12 years.
- Assessment of ADHD should be part of a comprehensive neurodevelopmental and mental health assessment.
- Environmental modification (changes made to the physical environment in order to minimise the impact of ADHD on day-to-day life) is the first-line approach for all patients diagnosed with ADHD.
- ADHD medication is only indicated in patients whose ADHD symptoms continue to cause a persistent, significant impairment in at least one setting after environmental modifications have been implemented and reviewed.
- ADHD medication should only be initiated by specialist services and should be used in conjunction with environmental modifications and, where appropriate, non-pharmacological interventions.
- ADHD medication is not licensed in children under the age of 6 years.
- Immediate release methylphenidate and some modified-release preparations of methylphenidate are not licensed for use in adults, however, NICE recommends methylphenidate as a first-line option, as well as lisdexamfetamine for this population.
- ADHD medication requires regular monitoring by specialist services even when symptoms are well-controlled and medication dose is stable.
- Details of ongoing monitoring, including any changes to medication, must be communicated with primary care.

Contents

1. Aim

The aim of this document is to provide clear, evidence-based guidelines on the pharmacological treatment of Attention Deficit Hyperactivity Disorder (ADHD) and to ensure that treatment is safe, appropriate and standardised across NHS Lanarkshire. The evidence is summarised from established documents including the National Institute for Health and Care Excellence (NICE) guideline NG87 on diagnosis and management of ADHD[1], the British Association of Psychopharmacology (BAP) evidence-based guidelines for the pharmacological management of ADHD[2], the updated European Consensus Statement on diagnosis and management of adult ADHD[3] and the ADHD in adults: good practice guidance by the Royal College of Psychiatrists in Scotland[4].

2. Introduction

ADHD is a lifelong neurodevelopmental condition. The exact cause of ADHD is unknown, however, it is known to be highly heritable[3]. Patients with a family history of ADHD therefore have a higher likelihood of having ADHD themselves. Other patient groups who have an increased prevalence of ADHD compared to the general population include people with other neurodevelopmental conditions, mental health conditions, acquired brain injury, epilepsy, history of substance misuse and people known to adult/juvenile criminal justice systems[1]. There are high rates of comorbidity with ADHD and other neurodevelopmental disorders and mental health conditions, as well as an overlap of symptoms.

The core symptoms of ADHD are inattention, hyperactivity and impulsivity. Not all of these symptoms may be present. Although impulsivity and hyperactivity seem to diminish with age, attention problems often persist into adulthood.

ADHD is under-recognised in some populations, particularly females, and they are less likely to be referred for assessment of ADHD. This is thought to be because they typically have a lower severity of hyperactive/impulsive symptoms than males, in childhood, and so are less likely to be disruptive. Hyperactive/impulsive symptoms have been linked to higher clinic ascertainment rates, with inattention symptoms being less obvious and therefore less likely to be detected. Gender-based biases in teachers and parents also appear to affect referral likelihood. Inattention in females with ADHD may present as being easily distracted, disorganised, overwhelmed and lacking in effort or motivation. Compensatory behaviours in females, such as socially adaptive behaviour, compliance, increased resilience or coping strategies to mask behaviour may also contribute to a lower referral rate in females[5].

Low self-esteem, anxiety and affective disorders often occur in females with ADHD and it is possible that ADHD symptoms are mistakenly attributed to these comorbidities[3]. An incorrect diagnosis of another mental health or neurodevelopmental condition can lead to inappropriate treatment, which can subsequently affect quality of life[1]. ADHD symptoms may become more obvious later in females, often during periods of social or educational transition. This may explain

why, in adulthood, there is a more even male-to-female community prevalence and referral rate[5].

3. Referral to specialist services

It is recommended that a threshold is set for referral to specialist services[4] for assessment of ADHD. For an appropriate referral, there should be evidence of specific ADHD symptoms being present in two or more settings and evidence of these symptoms significantly and persistently affecting the quality of the patient's functioning. The symptoms should have been present before the age of 12 years.
For children and young people, referrals to the Neurodevelopmental Service are only accepted for children aged 5 years and over. Referrals are preferably made by schools and should include up to date information about school performance. If a referral is made by primary care, a copy of a recent school report must be included. For children aged under 5 years, they should be referred to other supports in nursery and/or school.

For adult patients presenting in primary care, it can be more difficult to gather evidence of ADHD symptoms being present in two or more settings and having been present since before the age of 12 years. It may be helpful to ask patients to gather supporting information from a variety of sources such as third parties, previous school records and previous health assessments[4].

Use of a symptom screener e.g. the Adult ADHD Self-Report Scale (ASRS-v1.1), can assist the referrer in assessing symptoms, however, **a symptom screener should not be used in isolation as a basis for referral.**

The need to demonstrate functional impairment is paramount in defining ADHD that may merit intervention[4]. The Weiss Functional Impairment Rating Scale (W-FIRS) may be helpful for referrers to enable evidence of impairment.

If there is evidence of ADHD symptoms being present in two or more settings, and they are impacting on the patient's functioning, a referral to specialist services is indicated.

A referral to specialist services should include information on the following:

- Symptoms of ADHD and settings they are present in
- Evidence of impairment
- Early developmental history
- Medical history and current physical examination, including readings of blood pressure and pulse to exclude any uncontrolled hypertension in adults (if uncontrolled hypertension is identified, this should be managed as per NICE's guideline on hypertension in adults: diagnosis and management to avoid any delay in starting ADHD medication. For more information, see section 10.1.).

Due to capacity in specialist services, it would not be appropriate to make a referral solely for confirmation or exclusion of an ADHD diagnosis, if there is no evidence of moderate-severe impact on functioning. Patients with mild symptoms of ADHD, that

have minimal impact on functioning, should be signposted to resources to help them self-manage their symptoms.

Appendix 1 contains a list of self-help resources, which can be shared with patients.

3.1. Classification of ADHD symptoms

Symptoms of ADHD		Impact on life	Outcome
Mild	Symptoms present and struggling to self-manage	Minimal impact on life which could be appropriately self-managed	Recommend use of non-pharmacological interventions and refer to recommended self-help resources (see Appendix 1)
Moderate-severe	Evidence of ≥5 symptoms of inattention, and/or ≥5 symptoms of hyperactivity, present since before the age of 12 and occurring in two or more settings	Clear evidence that symptoms interfere with, or reduce quality of social and educational/ work functioning. At risk of missing education/ work. Inability to maintain leisure activity and/or social relationships	Refer to relevant specialist service

Table adapted from NAIT Adult Neurodevelopmental Pathways report, 2023.

4. Assessment

As there are high rates of comorbidity with ADHD and other neurodevelopmental and mental health conditions, as well as an overlap of symptoms, assessment of ADHD should be part of a comprehensive neurodevelopmental and mental health assessment, to prevent misdiagnosis[4].

Assessments should be multidisciplinary, involving information gathered from a variety of sources, such as education settings, employers and previous health assessments. Consent must be obtained to approach relatives or other informants directly.

Clinicians carrying out assessments should have relevant training and experience in the presentation of neurodevelopmental disorders and mental health conditions and this training should be continuously maintained[4].

A comprehensive assessment should include:

- a full clinical and psychosocial assessment of the person, including discussion about behaviour and symptoms in the different domains and settings of the person's everyday life
- a full developmental and psychiatric history
- observer reports and assessment of the person's mental state (for children and young people, there should also be an assessment of their parents' or carers' mental health)
- family history including physical health, mental health and neurodevelopmental conditions

The assessment checklist in Appendix 6 can be used as a guide.

5. Diagnosis

A diagnosis of ADHD should only be made by a specialist psychiatrist, paediatrician or other appropriately qualified healthcare professional with training and expertise in the diagnosis of ADHD[1].

A diagnosis of ADHD should not be made solely on the basis of rating scales or observational data. However, questionnaires such as Conners for children and young people and Diagnostic Interview for ADHD in Adults (DIVA) are valuable adjuncts for supporting the diagnostic process. Observer reports e.g. from school or work are also useful.

For a diagnosis of ADHD, symptoms of hyperactivity/impulsivity and/or inattention should:

- meet the diagnostic criteria in DSM-5 or ICD-11
- cause at least moderate psychological, social and/or educational or occupational impairment based on interview and/or direct observation in multiple settings (mild impairment would not warrant a referral to specialist services for assessment)
- be pervasive, occurring in two or more settings including social, familial, educational and/or occupational settings
- be evident in early life, if only in retrospect, before the age of 12
- have been present for at least six months
- not occur exclusively during the course of a psychotic disorder and should not be better explained by other causes such as general or specific learning difficulties, anxiety, depression, trauma or medical conditions such as unsuspected hearing problems or epilepsy

As symptoms of ADHD can overlap with those of other related disorders, care in differential diagnosis is needed. Where ADHD coexists with other disorders, it is important to try and differentiate the level of impairment due to ADHD, as this will guide the treatment plan.

Following diagnosis, patients should be given an opportunity to discuss the diagnosis and its implications. The importance of psychoeducation and post-diagnostic support is highlighted by NICE[1]. The following should be addressed:

- what the symptoms of ADHD are and specifically relate this to the symptoms experienced by the patient
- patient strengths and weaknesses, in relation to ADHD
- available treatment options and how to access them
- other comorbid diagnoses
- the biological, psychological and social aspects of treatment
- environmental modifications that may be of benefit

Self-support information should additionally be provided and, if relevant, guidance on driving should also be provided. Consideration should be given to any additional support needs that may be required. Consent should be obtained to share relevant information about diagnosis and/or treatment with any other involved healthcare professionals.

6. Environmental modifications

Appropriate environmental modifications should be implemented before considering non-pharmacological or pharmacological intervention for ADHD. Environmental modifications are changes that are made to the physical environment in order to minimise the impact of the patient's ADHD on their day-to-day life. Appropriate environmental modifications will be specific to the circumstances of each person and should be determined from an assessment of their needs.

Examples include:

- changing seating arrangements
- changing lighting and noise
- reducing distractions (e.g. using noise-cancelling headphones)
- optimising education or work to have shorter periods of focus with movement breaks
- for children, appropriate use of teaching assistants in school
- implementing systems, such as regular review meetings, to assist with time management and task prioritisation
- encouraging use of notes, checklists and diaries/ planners
- reinforcing verbal requests with written instructions

If appropriate environmental modifications are made but symptoms of ADHD persist and have an impact on daily functioning, further interventions should be considered. Environmental modifications should continue to be implemented alongside any further intervention.

7. Planning treatment

A treatment plan should be formalised following initial diagnosis of ADHD, which is tailored to the specific needs of the patient. The treatment plan should consider:

- the severity of ADHD symptoms and impairment, and how these affect everyday life (including sleep)
- treatment goals
- resilience and protective factors
- the relative impact of other neurodevelopmental or mental health conditions
- psychological, behavioural, occupational and educational needs

Each patient, their family members or carers should be involved in regular discussions regarding treatment planning and any decisions should be made jointly. Children and young people should be encouraged to share their views[1]. Discussions should include:

- the potential benefits and harms of non-pharmacological and/or pharmacological interventions
- the benefits of a healthy lifestyle, including exercise
- preferences and concerns
- how other neurodevelopmental or mental health conditions might affect treatment choices
- the importance of adherence to treatment and any factors that may affect this
- the importance of using appropriate environmental modifications in conjunction with intervention

8. Non-pharmacological and pharmacological interventions

Children and young people

Following implementation of appropriate environmental modifications, non-pharmacological interventions are first-line for children and young people who have a diagnosis of ADHD. Psychoeducation as well as ADHD-focused support for parents and carers should be offered by the specialist service. This can be group-based and should include education and information on the causes and impact of ADHD and advice on parenting strategies.

With consent, information should be shared with school, college or university, including:

- the validity of a diagnosis of ADHD and how symptoms are likely to affect school, college or university life
- how any other coexisting conditions e.g. learning disabilities are distinct from ADHD and may require different adjustments

- the treatment plan and identified special educational needs, including advice for reasonable adjustments and environmental modifications within the educational placement

Pharmacological interventions are second-line for children and young people and should only be considered if ADHD symptoms continue to have an impact on functioning after environmental modifications and non-pharmacological interventions have been implemented.

Adults

Evidence directly comparing medication with non-pharmacological interventions supports the use of medication for first-line treatment of ADHD in adults, only if symptoms of ADHD persist in at least one setting, after appropriate environmental modifications have been implemented[1]. However, non-pharmacological interventions should be considered 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

Non-pharmacological interventions, in combination with medication, should be considered for adults with ADHD who have benefited from medication but whose symptoms are still causing a significant impairment in at least one setting.

When non-pharmacological interventions are indicated for adults with ADHD, NICE[1] recommend that the following should be offered as a minimum:

- a structured, supportive psychological intervention focused on ADHD, which may include elements of, or a full course of, CBT
- regular follow-up either in person or by phone

Patients should be informed of the commitment, time and organisational skills needed for successful adherence to non-pharmacological treatment.

9. General advice on the use of medication in ADHD

- Medication should only be initiated by a healthcare professional with training and expertise in managing ADHD. They should be familiar with the pharmacology and pharmacokinetic profiles of all the medications available for ADHD to ensure treatment is tailored effectively to the individual needs of the patient, considering optimal efficacy and avoiding excessive adverse effects.
- Medication should be used in conjunction with environmental modifications and, where appropriate, non-pharmacological interventions.
- Contraindications should be excluded before initiating medication.
- Consideration should be given to potential drug interactions with current medication.
- For the most up to date prescribing and monitoring information, these guidelines should be read together with the current British National Formulary (BNF) / BNF

for Children and the Summary of Product Characteristics (SmPC) for individual medications. Medications should be prescribed in line with the NHS Lanarkshire Joint Formulary.

9.1. Licensed indications

- ADHD medication is not licensed in children under the age of 6 years. These guidelines do not offer prescribing advice for children in this age group, however, NICE[1] discuss medication in children aged 5 years and over.
- Immediate release methylphenidate and some modified-release preparations of methylphenidate are not licensed for use in adults, although NICE[1] recommend methylphenidate as a first-line option, as well as lisdexamfetamine for this population. The substantial evidence base for use of methylphenidate in adults justifies prescribing on an off-licence basis[3,4], therefore the usual unlicensed medicine processes do not need to be followed for standard prescribing of methylphenidate in adults. If a more unusual prescribing regimen is prescribed, which has less evidence, the usual unlicensed medicines process should be followed and a Form C PC completed and sent to Primary Care. An example of this includes use of guanfacine in adults.

9.2. Patient information, informed consent and treatment expectations

- Before starting medication, any risks, benefits, preferences and concerns should be discussed with the patient and if appropriate, their parent/carer, ensuring the opportunity for them to be involved in any treatment decisions.
- The law in Scotland considers any person aged 16 years and older to have capacity to make decisions about their own medical treatment. A person under the age of 16 years may have also have capacity to consent if the clinician assessing them considers that they are capable of understanding what the treatment is and the possible consequences of it. If they have capacity, then only they can consent or refuse consent. However, it would be considered good practice for parents and/or carers to be included in the decision process. If there is evidence to suggest that an adult does not have capacity to consent, either permanently or temporarily, the Adults with Incapacity (Scotland) Act (2000) must be followed.
- Concerns may be raised regarding the uncertainty of the long-term adverse effects of ADHD medication, particularly the use of stimulants in growing children. There is no current evidence of significant long-term risks with stimulant medication[3] and recent research suggests that methylphenidate does not impact on growth, as previously thought[6]. Consideration should be given to evidence that untreated ADHD can have long-lasting negative impacts affecting academic performance, interpersonal relationships and work, and increases the risk of substance use[1].
- Medication should be discussed in the context of any comorbidities e.g. anxiety as it is usually more appropriate to treat these first (see section 10.2.).

- Expectations about the effects of medication must be explored and patients, parents or carers should be made aware that they may not receive total symptom control from medication. This is especially important where comorbidities are present as ADHD medication will not improve symptoms of other conditions e.g. Autism Spectrum Disorder (ASD).
- If prescribing is off-licence, it is good practice to obtain informed consent and document this in the patient's notes, even if there is substantial evidence for its use and the usual unlicensed medicines process is not required to be followed.
- Information about ADHD and ADHD medication should be shared with patients, parents and carers.
- Patients, parents and carers should be reminded that ongoing monitoring of medication is required, even when symptoms are well-controlled and medication dose is stable.

The ADHD medication information and consent form in Appendix 2 includes a list of resources that can be shared with patients, parents and carers.

10. General pre-treatment assessments

Before starting medication for ADHD, patients should have a full assessment by a medical or non-medical prescriber in the specialist service, which includes:

- a review to confirm they continue to meet the criteria for ADHD and require pharmacological treatment
- a review of mental health and social circumstances, including:
    - presence of coexisting neurodevelopmental and mental health conditions
    - current educational or employment circumstances
    - risk assessment for substance use and drug diversion
    - care needs
- a review of physical health, including:
    - medical history (including cardiovascular history and history of seizures and tics)
    - current medication
    - height and weight (for children and young people, this should be plotted on a centile chart. iGrow is a system for monitoring growth and is available on Clinical Portal)
    - blood pressure and pulse (measured with an appropriately sized cuff and compared with the normal range for age)
- a record of baseline parameters including ADHD symptoms and impairments, sleep and appetite

The ADHD pre-prescribing checklist in Appendix 3 can be used to facilitate the pre-treatment assessment process.

A summary of pre-treatment monitoring and ongoing monitoring requirements of ADHD medication can be found in Appendix 4.

10.1. Cardiovascular assessment

- Stimulant medications cause a modest increase in average blood pressure (approximately 2-4 mmHg) and average heart rate (approximately 3-6 bpm), however, some individuals may have larger increases[7]. Data analysed from clinical trials of methylphenidate in children and adolescents with ADHD showed that patients using methylphenidate may commonly experience changes in diastolic and systolic blood pressure of over 10 mmHg, relative to controls[8].
- While the mean changes alone would not be expected to have acute consequences, all patients should be monitored for larger changes. Caution is indicated in treating patients whose underlying medical conditions might be compromised by increases in blood pressure or heart rate, e.g. those with pre-existing hypertension, heart failure, recent myocardial infarction, or ventricular arrhythmia[7].
- Most patients taking atomoxetine experience a modest increase in heart rate (mean increase <10 bpm) and/or increase in blood pressure (mean increase <5 mmHg). However, some individuals experience more pronounced changes in heart rate (≥20 bpm) and blood pressure (≥15-20 mmHg)[9].
- Guanfacine can cause syncope, hypotension and bradycardia. Caution is advised when treating patients with guanfacine who have a history of hypotension, heart block, bradycardia, cardiovascular disease, or who have a history of syncope or a condition that may predispose them to syncope, such as hypotension, orthostatic hypotension, bradycardia, or dehydration. Caution is also advised when treating patients who are taking antihypertensive medication or other medication that can reduce blood pressure or heart rate or increase the risk of syncope[10].
- As guanfacine causes a decrease in heart rate, the concomitant use of guanfacine with medication known to prolong the QT interval should be avoided. Guanfacine should also be prescribed with caution in patients with a known history of QT prolongation and risk factors for torsade de pointes e.g. heart block, bradycardia, hypokalaemia[10].

- A thorough cardiovascular history is therefore required before considering ADHD medication. This will be taken by a medical or non-medical prescriber in the specialist service. An electrocardiogram (ECG) is not needed unless family medical history is not known, the patient is being treated with a medicine that may pose an increased cardiac risk or the patient has any of the following:
    - history of congenital heart disease or previous cardiac surgery
    - history of sudden death in a first-degree relative aged under 40 years, suggestive of 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
    - blood pressure that is classified as hypertensive for adults* or is consistently above the 95th centile for age and height for children and young people
- Further investigation and/or liaison with cardiology may be indicated in these situations or in the event of an abnormal ECG.

*If adult patients are referred by primary care to adult mental health services for assessment and/or treatment of ADHD, their blood pressure and pulse should be checked at the point of referral to exclude any uncontrolled hypertension. If uncontrolled hypertension is identified, this should be managed as per NICE's guideline on hypertension in adults: diagnosis and management. This will help reduce any delay in starting ADHD medication.

10.2. Comorbidities

There are a number of comorbidities that are often seen in people with ADHD and consideration should be given to the management of these.

Comorbidity	Management
Anxiety	General advice is to treat anxiety first as stimulants may exacerbate anxiety. Sensory processing/ modulation may be affecting anxiety symptoms and need to be understood.
Autism Spectrum Disorder (ASD)	There is no treatment for ASD but if ASD-related anxieties are present, optimise anxiety treatment and monitor for worsening of anxiety-related behaviour when ADHD medication is initiated.
Conduct disorder/ Oppositional Defiant Disorder	Possible concurrent treatment with risperidone. Conflicting mechanism of action with stimulants due to opposing dopaminergic action. Monitor for desired effects of each drug. Drug interactions are possible.
Epilepsy	Record baseline seizure activity. Treat for ADHD as per usual guidelines but monitor closely for any increase in seizure activity.
Mood disorders	General advice is to optimise treatment for mood disorder first. Monitor for worsening of depression, particularly with atomoxetine and guanfacine (possible increased risk of suicidal behaviour).
Sleep disorders	Sleep problems may be a symptom of ADHD and may benefit from treatment with ADHD medication by reducing overactive thought processes and restlessness. Advice about sleep hygiene should be given. Stimulants can cause sleep disturbance so consider the pharmacokinetic profiles of methylphenidate preparations and timing of administrations. Melatonin may be indicated if sleep continues to be disrupted, despite good sleep hygiene. More information can be found in the NHS Lanarkshire guideline on the use of melatonin for the management of sleep disorders.
Substance use	General advice is to treat substance misuse first. Avoid dexamfetamine and monitor stimulant use closely. If in doubt, use a non-stimulant.
Tics	Treat for ADHD as usual but monitor closely for any worsening of tics.

11. Medication options

If medication is indicated, the choice of medication to manage ADHD should depend on the individual patient's need and circumstances. Pharmacological treatment for ADHD is broadly classed as stimulant and non-stimulant medication.

Stimulants (methylphenidate, lisdexamfetamine, dexamfetamine) increase the levels of dopamine and noradrenaline in the prefrontal cortex to improve symptoms of impulsivity, hyperactivity and inattention. They have negligible activity on serotonergic systems.

Non-stimulants (atomoxetine, guanfacine) act primarily on noradrenaline and have little or no effect on dopamine. Atomoxetine is a selective noradrenaline reuptake inhibitor (NRI) and works by increasing the levels of noradrenaline and inhibiting noradrenaline reuptake. It also, to a lesser extent, inhibits serotonin reuptake. Guanfacine is a selective alpha$_{2a}$-adrenergic receptor agonist. Efficacy in ADHD is likely to be related to modulated signalling in the prefrontal cortex and basal ganglia through direct modification of synaptic noradrenaline transmission.

11.1. Stimulant medication

Stimulants are first-line pharmacological treatment for ADHD due to evidence of their superior efficacy[4] and tolerability. Methylphenidate is the first line option for children aged 6-17 years, unless it is contraindicated. Either methylphenidate or lisdexamfetamine are first-line options in adults aged 18 years and over.

Unless it is not tolerated, patients should have a six-week trial of stimulant medication at adequate dosage (i.e. after initial titration) to determine if there has been enough benefit in terms of reduced ADHD symptoms and associated impairments.

Treatment should be tailored for each patient and consideration should be given to the use of modified release (MR) methylphenidate preparations for the following reasons:

- convenience of once-daily dosing
- improved adherence
- reduced stigma (no need to take medication at school or in the workplace)
- reduced problems of storing and administering controlled drugs at school or work
- reduced risk of stimulant misuse and diversion compared to immediate-release (IR) preparations
- their pharmacokinetic profiles[1]

MR products vary in their pharmacokinetic profiles, with regards to the proportion of methylphenidate released immediately (peaking at 1-2 hours) and the proportion released from the MR matrix over a prolonged period. The table in section 11.3. shows the different MR products available.

IR preparations may be suitable if more flexible dosing regimens are needed or during initial titration in younger children to assess tolerability and to determine correct dosing levels. It may be appropriate to use both an MR preparation and an IR preparation in some patients to optimise treatment, e.g. using a small dose of IR methylphenidate in the evening when effects of the MR preparation are wearing off.

Effects of stimulants can be seen immediately, although it will take time to establish an optimal dose and response. If benefit is inadequate, after a six-week trial at optimal dose, a switch to lisdexamfetamine should be considered in children and young people and the alternative first-line option (lisdexamfetamine or methylphenidate) in adults, as some individuals may respond better to an alternative stimulant[1].

Lisdexamfetamine is a pro-drug of dexamfetamine, which is slowly metabolised to release the active drug. Dexamfetamine has a high potential for abuse and diversion and should only be considered in people who have had a good response to lisdexamfetamine but cannot tolerate the prolonged action profile.

Due to the potential for misuse and diversion, consideration should be given to risk prior to prescribing stimulants. For children, the risks of prescribing stimulant medication may relate to the potential for its misuse by family members. For young people and adults, the risk may relate to substance misuse and/or drug diversion for cognitive enhancement or weight loss. Where misuse or diversion is a potential issue, immediate release stimulants should not be prescribed. All stimulant use should be monitored for signs that it may be being misused[1].

All stimulant medications are Schedule 2 Controlled Drugs. Prescribers should be familiar with the requirements of controlled drug legislation governing the prescription and supply of stimulants as per local and national policies, including NICE's guideline on Controlled Drugs: safe use and management.

11.1.2. Treatment scheduling

Evidence suggests that better outcomes are achieved if stimulant medication is taken every day, however, some patients may prefer to only take medication on school or work days, with doses being omitted at weekends and during holidays. This will depend upon the target symptoms, the treatment benefits and the adverse effect profile. One of the potential benefits of omitting doses may be a chance to increase weight if appetite suppression is a concern. One of the risks may be poor overall adherence to medication as a result of taking breaks from treatment[1].

Any treatment schedule should be agreed with the clinician and the patient or parent/carer and details should be communicated to primary care. The treatment schedule should be regularly reviewed but it is recommended that it should only be changed after agreement between the clinician and the patient or parent/carer. Treatment scheduling does not apply to non-stimulant medication.

11.2. Non-stimulant medication

Third-line medication options are atomoxetine and guanfacine for children and atomoxetine for adults. Guanfacine is not licensed for use in adults and there is little clinical experience in adults for NICE to recommend it as a third-line option. In some cases, atomoxetine can be considered as a suitable first-line option where there is a risk of stimulant diversion or if stimulants are contraindicated.

Atomoxetine and guanfacine have a slower onset of action than stimulants and may take several weeks to show their full effect. Because of the hypotensive effects of guanfacine, re-titration is required if two or more consecutive doses are missed. If doses are missed, there is a risk of rebound hypertension.

Unless it is not tolerated, patients should have a 12-week trial of non-stimulant medication at adequate dosage (i.e. after initial titration) to determine if there has been enough benefit in terms of reduced ADHD symptoms and associated impairments.

11.3. ADHD medications used in NHS Lanarkshire

This table should be used in conjunction with the NHS Lanarkshire Joint Formulary, which will include any formulary updates.

Methylphenidate (first line in children and young people, first line option in adults)			
Product	Licensing	Swallowing issues	Maximum duration[4]
Methylphenidate immediate release tablets	Licensed in children aged 6-17 years Recognised off-label use in adults	Tablets can be crushed and mixed with water	4 hours
Medikinet XL capsules Similar products include: Meflynate XL, Metyrol XL	Licensed in children and adults	Capsules can be opened and contents sprinkled onto a small amount of apple sauce or yoghurt. Capsule contents must be swallowed whole	8 hours (50% of the dose released within 4 hours, 50% of the dose released later)
Equasym XL capsules	Licensed in children aged 6-17 years Recognised off-label use in adults	Capsules can be opened and contents sprinkled onto a small amount of apple sauce or yoghurt. Capsule contents must be swallowed whole	8 hours (30% of the dose released within 4 hours, 70% of the dose released later)
Xenidate XL tablets Bioequivalent products include: Affenid XL, Concerta XL, Delmosart, Matoride XL, Xaggitin XL	Licensed in children aged 6-17 years Licensed for continuation in adults, recognised off-label use for initiation in adults	Tablets cannot be crushed but can be halved along the score line if a smaller size of tablet is required for swallowing (27mg, 36mg and 54mg strengths only)	12 hours (22% of dose released within 4 hours, 78% of the dose released later)

Lisdexamfetamine (second line in children and young people, first line option in adults)			
Lisdexamfetamine dimesylate capsules	Licensed in children and adults	Capsules can be opened and the contents sprinkled on soft food or mixed with water or orange juice	13-14 hours
Dexamfetamine (should only be used when there is a good response to lisdexamfetamine but the longer duration of action is not tolerated)			
Dexamfetamine immediate release tablets and liquid	Licensed in children aged 6-17 years Not licensed for use in adults to treat ADHD	Tablets can be divided using the score line for ease of swallowing	4 hours
Atomoxetine (third line option in children, young people and adults)			
Atomoxetine capsules and liquid	Licensed in children and adults	Capsules are not intended to be opened. As per SMC advice, liquid can only be used if patients are unable to swallow capsules	
Guanfacine (third line option for children and young people)			
Guanfacine modified release tablets	Licensed in children aged 6-17 years Not licensed for use in adults	Tablets must be swallowed whole and cannot be crushed	

11.4. Dose titration

- ADHD symptoms, impairments and any adverse effects should be recorded at each dose change and progress reviewed. Feedback from parents, carers, teachers and partners should be encouraged.
- The dose should be titrated against symptoms and adverse effects in line with the BNF / BNF for Children until optimal dosage is achieved. The aim is to optimise the dose to achieve the desired pharmaceutical effect (e.g. reduced ADHD

symptoms, positive behaviour change, improvements in education, employment and relationships) with minimal adverse effects[1].

- Optimal dosage is variable in each individual so medication should be started at a low dose and titrated slowly to ensure this is achieved.
- A slower dose titration and more frequent monitoring should be considered for people with:
    - comorbid neurodevelopmental disorders such as ASD, tic disorders and learning disabilities
    - mental health conditions such as anxiety and mood disorders
    - physical health conditions such as cardiac disease, epilepsy and acquired brain injury

  A more cautious titration regime may also be required for people in a younger age group (e.g. 6-7 years).

12. Ongoing monitoring

All monitoring of physical observations, medication efficacy and adverse effects must be recorded in the patient's notes and communicated to primary care. For physical observations, figures must be recorded ('normotensive' or 'within range' are not acceptable).

Monitoring requirement	Rationale
Core ADHD symptoms, associated symptoms and functioning	The use of rating scales for symptoms of ADHD to assess response to treatment should be encouraged[1] e.g. SNAP-IV for parents and teachers and ASRS-v1.1 for adult self-reports. For stimulants, enquiry about how long the medication effects last is important in tailoring the preparation and dose.
Possible side effects	People taking ADHD medicines should be encouraged to self-monitor adverse effects[1]. Appendix 5 of this guide contains an ADHD medication monitoring form, which is suitable for this purpose. Specific potential side effects are discussed in more detail below. Suggested management of side effects is included in section 13 of this guidance.
Weight, height and growth	Methylphenidate, lisdexamfetamine, dexamfetamine and atomoxetine can all suppress appetite, which can subsequently cause weight loss. Appetite should therefore be asked about at each review. Nausea caused by these medicines may compound this, although this is usually a short lasting effect which can be minimised by taking medication with or after food. Guanfacine can cause weight gain and this should also be monitored. Height and weight should be monitored closely in children and each plotted on a centile chart (iGrow is available on Clinical Portal). Measurements should be taken before and after each dose change then at a minimum of every six months (every three months if aged under 10 years). If weight loss is a concern or the child is not meeting the height expectations for age, consider a planned treatment break e.g. over school holidays, a dose reduction or a change in treatment. There is little evidence to support the theory that methylphenidate affects growth in children and young people[6]. Weight should be measured in adults before and after each dose change then at a minimum of every six months. If there is concern about weight loss in adults, consider a planned treatment break, a dose reduction or a change in treatment.

Cardiovascular	Stimulants and atomoxetine can cause increases in blood pressure and heart rate. Blood pressure and heart rate should be measured before and after each dose change, then at least every six months. Monitor more frequently if there are any concerns. In children, plot these parameters on a centile chart and compare with the normal range for age. ECGs are not required routinely unless there is a clinical indication. If the person taking ADHD medication has sustained resting tachycardia (more than 120 beats per minute), arrhythmia or a clinically significant increase in systolic blood pressure measured on two occasions (greater than the 95th percentile in children), consider reducing the dose or stopping treatment and refer to cardiology. Guanfacine lowers blood pressure and heart rate. Blood pressure and heart rate should be monitored weekly during guanfacine dose titration and any re-titration. Once stabilised, blood pressure and pulse should be monitored three monthly for the first year of treatment then six monthly from the second year of treatment onwards. More frequent monitoring should be carried out if there are any concerns. If sustained orthostatic hypotension or fainting episodes are experienced by the patient, their dose should be reduced and consideration given about switching to another ADHD medication.
Sleep/ sedation	Sleep should be asked about at each review. Stimulants can cause insomnia if given late in the day. However, they can also have a positive effect on sleep disruption caused by ADHD by decreasing overactive thought processes and restlessness. It is important to have a record of baseline sleep pattern and to monitor for any adverse effect on sleep. Atomoxetine and guanfacine can cause somnolence and sedation. If this is troublesome, they should be taken at a different time of day. The dosage of atomoxetine can be split into a morning and afternoon/early evening dose rather than a single dose if required.
Epilepsy	Monitor for emerging or worsening epilepsy. Ensure baseline pattern and/or severity in patients with existing conditions is recorded prior to initiating treatment.
Tics	Monitor for emerging or worsening motor and/or vocal tics. Ensure baseline pattern and/or severity in patients with existing conditions is recorded prior to initiating treatment.

Mental health	Monitor for emerging or worsening mental health conditions. Ensure baseline pattern and/or severity in patients with existing conditions is recorded prior to initiating treatment. Suicide related behaviour (suicide attempts and suicidal ideation) has been reported in patients treated with atomoxetine. In double blind clinical trials, suicide related behaviours were uncommon but more frequently observed among children and adolescents treated with atomoxetine compared to those treated with placebo, where there were no events. In adults, there was no difference in the frequency of suicide related behaviour between atomoxetine and placebo[9]. There have been post-marketing reports of suicide related events (including suicidal ideation, attempts and completed suicide) in patients treated with guanfacine. In most cases, patients had underlying psychiatric disorders[10]. Patients and parents/carers should be informed of the risk and advised to monitor for the appearance or worsening of suicide related behaviour. Any concerns should be reported to their healthcare professional.
Liver function	Liver function tests are not necessary on a routine basis. However, as atomoxetine can very rarely cause hepatic injury, there may be occasions when it is clinically indicated to do so. Patients and carers should be advised of the risk and informed about potential symptoms. Prompt medical attention should be sought in case of abdominal pain, unexplained nausea, malaise, darkening of the urine, or jaundice. Atomoxetine should be discontinued in patients with jaundice or laboratory evidence of liver injury, and should not be restarted.
Adherence, misuse, diversion	Monitoring for adherence to treatment and the possibility of the misuse or diversion of stimulants should be part of routine management. As IR stimulants have a much higher risk of misuse/diversion, use of MR stimulants reduces the potential for abuse. However, in some patients, a non-stimulant may be more appropriate.
New diagnoses and medication	Ask about any new diagnosed conditions or medications, to ensure there is no contraindication or interaction with current ADHD treatment.

A summary of pre-treatment monitoring and ongoing monitoring requirements of ADHD medication can be found in Appendix 4.

12.1. Remote monitoring

During the COVID-19 pandemic, remote consultation methods were readily utilised, with guidance issued by the European ADHD Guidelines Group (EAGG)[11,12]. Although face to face consultations have since been reinstated, the option for remote consultations and remote monitoring remain an option for some patients and their families, particularly with titration appointments when contact with the specialist service is more frequent.

In NHS Lanarkshire, it is advised that ADHD medication initiations should be carried out face to face, however, a hybrid of face to face appointments and remote consultations can be used for ongoing appointments. The preferences of patients, families and clinicians should be considered when deciding which approach to take. Monitoring recommendations remain the same whether they are carried out in clinic or at home.

For home monitoring of blood pressure, pulse, weight and, if requested, height, patients or parents/carers must:

- have access to a reliable home blood pressure monitor, with an appropriate size cuff, and set of weighing scales
- feel able and confident to check requested measurements
- be able to access the relevant video consultation platform
- have readings of requested measurements readily available during the appointment (it may be appropriate to ask for the readings to be taken during the appointment, to ensure the equipment is being used appropriately)

Home monitoring equipment is **not** provided by the specialist service or primary care and must be purchased by the patient/parent/carer if they do not already have access to it.

If they do not have access to a blood pressure monitor and are unable to purchase one, there may be the option for one to be provided by the Lanarkshire Tech Programme if the specialist service is registered with Florence Home Monitoring. At the time of writing these guidelines, only East Kilbride CMHT is piloting the use of this.

It is **not** the responsibility of primary care services to check these measurements.

12.2. Assessment of ongoing requirement for medication

As some patients find that their ADHD symptoms improve with age or that ADHD medication allows them to develop new ways of coping with symptoms, manufacturers recommend that the ongoing need for medication should be reviewed at least once a year to confirm that it is still having a positive effect.

With stimulant medication, this can be assessed if the patient has forgotten to take a dose or doesn't take medication at weekends and they should be asked about the presence and impact of symptoms on these occasions.

The ongoing need for non-stimulants cannot be evaluated in the same way and instead of omitting doses, a trial of a lower dose of medication should be considered. Guanfacine should be reduced by no more than 1mg every 3 days.

If a dose reduction or treatment break is planned, considerations of risks and benefits should be taken into account as well as the timing e.g. for children, it may be preferable to consider this during times of school holidays. Early warning signs of relapse should be discussed, considering environmental stressors and self-awareness of the impact of these, aside from ADHD. If it is evident that ADHD symptoms are still present and causing significant impairment, medication should be reinstated at the previous dose[4] and the reasons for this should be documented.

The appropriateness of medication dose reduction or discontinuation will vary from patient to patient and should be considered on an individual basis, taking into account current ADHD symptoms and adverse effects.

13. Side effect management

Adverse effect	Management options
Anorexia, nausea	Gastrointestinal effects are often transient and can be minimised if medication is administered with or after food. Monitor weight closely and if adverse effect persists, consider reducing dose or switching medication.
Weight loss, growth concerns (stimulants/atomoxetine)	Eat small frequent meals and larger meals when medication effects are wearing off. Encourage high calorific food with good nutritional value. With stimulants, consider medication omission e.g. at weekends or planned medication breaks. Monitor weight closely and if adverse effect persists, consider reducing dose or switching medication.
Dizziness, headache	May occur temporarily after initiation or dose increase. If persists, monitor blood pressure. Consider dose reduction or switching medication if symptoms are due to blood pressure or are intolerable.
Involuntary movements or tics - new or exacerbation (stimulants only)	May be temporary but monitor closely and consider if related to other factor. If adverse effect persists, consider reducing dose or switching medication.
Dysphoria, agitation	Reduce dose and monitor effect. If adverse effect persists, consider switching medication.

Adverse effect	Management options
Sleep difficulties (stimulants only)	Give sleep hygiene advice and recommend use of sleep diaries. Consider cause of sleep difficulty. When using long-acting stimulants, rebound symptoms can occasionally occur when the stimulant is wearing off, leading to hyperactivity around bedtime, particularly in children or young people who have an earlier bedtime than adults. Using a short-acting stimulant in the late afternoon/early evening can help manage this[13]. If stimulant medication is keeping the patient awake: • change timing of medication administration to earlier in the day • consider a dose reduction • consider switching preparations e.g. shorter acting methylphenidate preparation or switching from lisdexamfetamine to dexamfetamine, if appropriate (consider risk of abuse and diversion). If adverse effect persists in children, consider melatonin. More information can be found in the NHS Lanarkshire guideline on the use of melatonin for the management of sleep disorders.
Tachycardia and/or hypertension (stimulants/atomoxetine)	Reduce dose and monitor effect. If heart rate >120 bpm, arrhythmia or significant increase in blood pressure (>95th percentile in children), reduce dose further or switch medication. If adverse effect persists, consider ECG and referral to cardiology.
Bradycardia and/or hypotension (guanfacine only)	Reduce dose and monitor effect. Consider ECG (bradycardia pre-disposes to QTc prolongation). If sustained hypotension or fainting due to orthostatic hypotension, switch medication.
Syncope suspected to have cardiac origin	Stop medication immediately and seek advice from cardiology.

Adverse effect	Management options
Symptoms suggestive of cardiac disease	Prompt cardiac evaluation and seek advice from cardiology if appropriate.
Jaundice, signs of liver disease or biliary obstruction (atomoxetine only)	Stop medication immediately and check LFTs. Seek specialist advice.
Self-harm or suicidal ideation	Stop medication if new onset of suicidal behaviour and arrange further assessment.
Somnolence (atomoxetine/guanfacine)	Somnolence and sedation may occur, predominantly during the first 2-3 weeks of guanfacine treatment and with dose increases. Administer at a different time of day or reduce dose. Atomoxetine dose can be split and given in two doses.
Seizures (new onset or worsening of existing seizures)	Reduce dose and monitor. Stop medication if thought to be contributing to seizures. If unlikely to be medication, cautiously re-introduce and seek specialist advice.
Worsening behaviour	Adjust medication. If adverse effect persists, review diagnosis.

14. Stopping ADHD medications

Stimulant medications can be stopped abruptly with no expected side effects. Depending on target symptoms and treatment aims, some patients have regular medication breaks from stimulants e.g. they only take stimulant medication on days of education/work and have breaks at weekends and during holidays.

There are no reported withdrawal effects associated with stopping atomoxetine. In cases of significant adverse effects, atomoxetine may be stopped abruptly, otherwise it may be tapered off over a suitable time period[9].

Guanfacine should be withdrawn by tapering the dose in decrements of not more than 1mg every 3 to 7 days. Blood pressure and pulse should be closely monitored. A slower dose reduction may be needed to minimise increases in blood pressure and pulse due to guanfacine withdrawal. If two or more consecutive doses of guanfacine are missed, the dose should be restarted at 1mg and re-titrated in line with initiation.

15. Restarting ADHD medications

There is no available information documenting the maximum period of time that methylphenidate, lisdexamfetamine or atomoxetine can be stopped for before having to restart at the initial starting dose. Each patient should be reviewed on an individual basis with consideration given to:

- presence and severity of ADHD symptoms whilst off medication – consider if the medication is still indicated or if a lower dose may have an optimal effect
- duration of time since medication last taken
- size of dose previously prescribed
- incidence of adverse effects when medication first started and titrated – consider if adverse effects might be experienced if restarting at a high dose

For any period of non-adherence to guanfacine, greater than two days, this should be restarted at the initial starting dose of 1mg.

If the patient and clinician agree to restart ADHD medication, it is recommended to check current ADHD symptoms using a rating scale and to confirm current medication and medical history to check for any development or exacerbation of comorbidities.

16. Switching ADHD medications

Generally, it is advisable to only use one medication at a time to assess efficacy and side effects of each medication. Therefore, it is often best to gradually reduce and stop the first medication before starting the second. However, there are some occasions where it may be preferable to cross-taper medications, particularly if ADHD symptoms are severe and impairing. If switching medications, consider doing this at a time when the least disruption will be caused e.g. during holidays[14].

Switching between methylphenidate medications	Stop the first preparation and start the second at the calculated equivalent dose, whilst taking into account the release profile (see section 16.1.)
Switching between methylphenidate-based medications and amphetamine-based medications (lisdexamfetamine/ dexamfetamine)	No direct equivalent dose. Stop the first medication and start the second medication at the initial starting dose.
Switching from a stimulant to a non-stimulant	As non-stimulants take time to show clinical response, it is important to decide if the stimulant needs to be stopped before starting the non-stimulant or if they are cross-tapered: • If the first medication shows no clinical effect, despite optimal dosing, stop it and start the non-stimulant as monotherapy, following usual titration strategies. • If the first medication shows important clinical effect and needs to be continued until the non-stimulant shows its effects (e.g. due to risks associated with untreated ADHD), continue it and add the non-stimulant slowly, following usual titration strategies. Reduce the dose of the first medication as the non-stimulant dose is increased, with a detailed plan of when to stop.
Switching from a non-stimulant to a stimulant	• If the non-stimulant shows no clinical effect or partial clinical effect, despite optimal dosing, stop it and start the stimulant as monotherapy, following usual titration strategies. • If the non-stimulant shows important clinical effect and needs to be continued until the stimulant shows its effects, add the stimulant to the non-stimulant, following usual titration strategies. Reduce the dose of the first medication as the stimulant dose is increased, with a detailed plan of when to stop.
Switching between atomoxetine and guanfacine	No direct equivalent dose. Stop the first medication and start the second at the usual starting dose.

16.1. Equivalent doses of methylphenidate preparations

Preparation	Release profile % (immediate release/ modified release)	Equivalent dose
Methylphenidate immediate release tablets	100/0	5mg twice a day
Medikinet XL capsules Similar products include: Meflynate XL, Metyrol XL	50/50	10mg once a day
Equasym XL capsules	30/70	10mg once a day
Xenidate XL tablets Bioequivalent products include: Affenid XL, Concerta XL, Delmosart, Matoride XL, Xaggitin XL	22/78	18mg once a day (lowest dose available - equivalent to 15mg daily dose of methylphenidate immediate release)

17. Concomitant prescribing of ADHD medications

Treatment of ADHD with more than one class of medication, e.g. the use of both a stimulant and a non-stimulant, is not licensed in the UK, however the concomitant use of guanfacine and stimulants is licensed in the USA and Canada. There has not been extensive research to assess the efficacy or safety of using more than one drug class for the management of ADHD, however, co-administration of stimulants and atomoxetine (or guanfacine in children and young people) is an option for patients showing limited clinical response to stimulants alone[2] or where the incidence of side effects from monotherapy has limited dose optimisation[15,16]. The use of guanfacine alongside stimulant medication has also been shown to be efficacious in children and young people with ADHD and comorbid tic disorder[16]. Administration of stimulants with guanfacine has not been studied in adults despite the possible synergic effects and complementary side-effect profile[2] in relation to effect on blood pressure.

As there is clinical experience of using adjunctive stimulant and non-stimulant medication for the treatment of ADHD, and the combination is included as a treatment option in the BAP evidence-based guidelines for the pharmacological management of ADHD[2], this is considered acceptable for being prescribed on an off-licence basis within NHS Lanarkshire and the usual unlicensed medicine processes do not need to be followed. Due to a potential increased risk of adverse effects from using two medications, it may be advisable to consider increased monitoring of adverse effects, particularly when the combination has recently been started.

Concomitant use of long and short-acting methylphenidate is relatively common in clinical practice. Small doses of short-acting preparations can act as a ‘top up’ when the long-acting preparation is wearing off[2].

18. Default from treatment

People of all ages with ADHD may struggle to adhere to treatment and/or attend planned clinic appointments. Support should be offered regarding helpful strategies

for managing medication regimes and appointments and the relevant policy followed regarding non-attendance at clinics.

If patients have not attended planned review appointments, information should be sent to primary care with a plan for further attempts to review the patient or notification that medication should be discontinued.

If a young person or adult withdraws consent to take medication when they have capacity, it cannot be continued unless the patient is subject to Mental Health act legislation. However, clinicians should consider that any patient who has stopped medication, may wish to resume treatment at a later date, particularly if their difficulties have become more severe and impairing, and that earlier treatment cessation should not be considered as a barrier to this.

19. Pregnancy and breastfeeding

Continuing ADHD medication or stopping ADHD medication during pregnancy both carry risks and benefits and each patient should be assessed on an individual basis. There is no evidence to indicate that pregnancy has any impact on ADHD symptoms. Methylphenidate, lisdexamfetamine and atomoxetine are classified by the FDA as category C, which includes drugs where animal studies have reported some harm without there being any robust evidence in humans[4]. However, there is new data emerging all the time. If ADHD medication is stopped, there may be risks associated with a return of ADHD symptoms.

The risks and benefits of breastfeeding whilst taking ADHD medication should be considered on an individual basis. Case reports suggest that methylphenidate is relatively safe but there is very little evidence about its longer-term effects. Caution should be exercised with atomoxetine, lisdexamfetamine and dexamfetamine[4] due to lack of data. Stopping ADHD medication may result in an increase in ADHD symptoms during a period which may be particularly challenging, due to the demands on organisation and planning.

For the most up-to-date information, the UK National Teratology Information Service (UKTIS) and/or the UK Drugs in Lactation Advisory service (UKDILAS) should be referred to or contacted. Further information can also be found in the Drugs in Pregnancy section of Choice and Medication, best use of medicines in pregnancy (BUMPS) and the Summary of Product Characteristics (SmPC) for each medication. The perinatal mental health team can also be contacted for advice, if needed.

20. ADHD and driving

ADHD symptoms may impair a person's driving and ADHD medication may improve this[1]. It is the patient's responsibility to notify the DVLA if ADHD or ADHD medication affects their ability to drive safely. More information can be found at https://www.gov.uk/adhd-and-driving.

Provisional licence applicants do not need to tell the DVLA about their ADHD diagnosis unless it could affect their ability to drive safely. If already a licence holder, the DVLA only needs to be notified if there is a change to the patient's condition that may result in unsafe driving or the patient is prescribed medications with side effects that may affect driving.

21. ADHD and travel

If travelling outside the UK with a controlled drug, it is recommended that the patient carries either a prescription or clinic letter to confirm that the medication is prescribed for them. It is good practice to copy clinic letters to patients or parents/carers to keep them informed of their treatment. Patients are advised to check with the embassy or high commission of the country that they plan to visit. More information can be found at https://www.gov.uk/guidance/controlled-drugs-personal-licences.

22. Service transition/ transfer of care

Although impulsivity and hyperactivity seem to diminish with age, attention problems often persist into adulthood. The support provided by school or living at home may no longer be available and increased demands placed on the young person can result in an exacerbation of symptoms. It is estimated that at least two thirds of children affected by ADHD continue to experience significant symptoms in adulthood[3,4]. Treatment started in childhood can be continued in adults whose symptoms continue to have an impact on functioning[4].

A young person taking ADHD medication should be reassessed at school-leaving age to establish the need for continuing treatment into adulthood. If treatment is necessary, a transition of care should be arranged with the relevant adult mental health service. A young person should be referred to adult services by the time of their 18th birthday, with transitions ideally planned at least six months before the intended transfer date.

If a young person with ADHD is not prescribed ADHD medication at the point of leaving school and they do not want to start/restart ADHD medication, they can be discharged if they are receiving no other input from the service. They should be informed that they would need to be re-referred to the relevant adult service if they wish to reconsider ADHD medications in the future. Individuals re-presenting with ADHD in adulthood, should be re-assessed to establish symptoms and impairments of ADHD and to screen for comorbid conditions.

Research shows that disruption of care during service transition adversely affects clinical outcome[3]. A smooth transfer of care can be achieved by adequate planning and ensuring good information transfer across services. Clear recommendations have been formulated to facilitate successful transition of patients with ADHD from child to adult mental health services[3], however these recommendations can be adapted and applied to transfer of care across all services:

- patients (and if appropriate, their parents/carers) should have sufficient information regarding the transfer process e.g. psychoeducational material and information about available services
- transfer should be planned in advance by both the referring service and the receiving service
- if necessary, a formal meeting involving both the referring and receiving services should be considered

Transitions/transfers of care is not limited to CAMHS and Adult Mental Health Services but also includes the Neurodevelopmental Service, Older Adult Mental Health Services, Learning Disability Services, Forensic Mental Health Services and Addictions Services. Transfers of care can also be made across health boards if a patient moves in or out of Lanarkshire. Any transition/transfer of care should be made directly between specialist services.

Monitoring medication is the responsibility of the relevant specialist service so arrangements must be in place to ensure a smooth transition of care across services and primary care must be kept informed of ongoing medication monitoring and any changes to medication.

NHS Lanarkshire Guidance and Standards for Transition Between Services and Professionals within Mental Health, Learning Disabilities and Addictions Services, is available on FirstPort. Further guidance and information on transition for young people can be found on NHS Inform.

23. Private prescription requests

General Practitioners (GPs) and other prescribing clinicians in primary care settings may be asked to prescribe ADHD medication for a patient, following a private ADHD diagnosis.

When a person is assessed for ADHD by an NHS service, differential diagnoses (including other neurodevelopmental and mental health conditions) should also have been considered. There is variability in non-NHS practice and there is a risk that private clinicians may have only assessed for ADHD and missed important information or more relevant diagnoses[17].

When considering private recommendations for ADHD medication, clinicians should be aware that it is their responsibility to ensure that assessment and diagnosis have been carried out in line with this document. It would be advisable to request diagnostic reports from the private clinician if these are not sent with the recommendation letter.

The assessment checklist in Appendix 6 can be used as a guide.

Assurance should be given that the private clinician who made the ADHD diagnosis has carried out appropriate pre-treatment monitoring and is intending to continue ongoing monitoring as detailed in Appendix 4 of this document. This includes monitoring of appropriate physical observations, ADHD symptoms, psychiatric status and potential for misuse and diversion of medication. Any other co-morbidities, including tics and substance misuse as well as concurrent medication should have also been considered.

If ongoing monitoring is at an additional cost to the patient, it would be helpful to confirm that they are prepared and able to continue to pay for this on a long-term basis. There is no facility for NHS Lanarkshire services to monitor patients prescribed ADHD medication unless they are referred to the service by standard referral processes. In these cases, the specialist service would need to confirm the patient meets criteria for ADHD treatment in order to recommend ADHD medication and provide ongoing monitoring.

If a clinician decides to prescribe ADHD medication on the basis of assurances from a private clinic, but then receives no evidence of ongoing monitoring, the prescriber reserves the right to cease prescribing. This should be communicated to the patient and the private clinician at the time of agreeing to share care.

For more information regarding NHS patients receiving healthcare services through private healthcare arrangements, official guidance can be found at http://www.sehd.scot.nhs.uk/cmo/CMO(2009)private.pdf.

24. Responsibilities

Specialist service

- Discuss potential benefits and side effects of medication with patient and/or parent/carer
- Obtain and document informed consent for any use of medication, especially medication prescribed off-licence
- Follow the usual unlicensed medicines process when indicated (if a more unusual prescribing regimen is prescribed, which has less evidence)
- Ensure pre-treatment screening and baseline parameters are assessed and documented, including a thorough cardiovascular history
- Request initiation of medication and ongoing prescribing by primary care
- Document personalised treatment plan and share with patient and primary care It is good practice to send a copy of clinic letters to patients
- Inform primary care of any dose adjustment, discontinuation or change in medication and expected timeframe for next review
- Provide patient information and support during initiation and titration
- Retain responsibility for medication monitoring, including required physical observations
- Inform primary care of monitoring carried out, including specific values of measurements taken during physical observations
- Liaise with primary care regarding any complications in treatment
- Retain patient on outpatient caseload for the duration of treatment
- Notify primary care if patient is discharged from outpatient care to ensure medication is discontinued. Give advice about safe way for medication to be discontinued, if required
- Liaise with other specialist services regarding patient service transitions/transfers of care

Primary care

- Prescribe medication on the advice of the specialist service (medical or non-medical prescriber)
- Liaise with specialist services regarding any complications in treatment
- Follow advice within this document if requested to prescribe ADHD medication following a private diagnosis
- If referring adults to mental health services for ADHD assessment, check blood pressure at point of referral to exclude any pre-existing hypertension, which could delay treatment with ADHD medication

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Appendices

Appendix 1 – ADHD self-help resources

- RCPsych ADHD in adults – includes information on ADHD charities and peer support groups
- UK Adult ADHD Network (UKAAN) – details of UK wide support groups
- Scottish ADHD Coalition – details of local groups in Scotland
- Scottish ADHD adults – details of peer support groups in Central Scotland
- Self-help resource pack compiled by NHS Lothian
- ADHD Foundation – UK Charity offering a strength-based, lifespan service for people living with ADHD

Appendix 2 – ADHD medication information and consent form

Patient name:	CHI number:

The Royal College of Psychiatrists have information about ADHD for adults, parents and carers:

A YouTube video with helpful information for children and young people about ADHD:

The websites below have reliable information about ADHD medications, for all ages, including how they work and common side effects:

Choice and Medication

Patient

Medicines for Children

EMC

Prescriptions

Prescriptions are organised through your GP practice, therefore please allow at least 7-10 days from the date of your appointment for your prescription to be ready. A letter needs to be dictated and typed before being electronically transferred to your GP practice. Your GP practice then needs to process your prescription.

Consent to treatment

By consenting to treatment, you also consent to follow the required monitoring schedule. You may be seen more regularly when you first start medication but you must be seen at least every six months when you are taking medication. If you cannot attend an appointment, please phone the specialist service to let us know and to ask for another appointment. If appointments are missed, we will write to you and your GP practice about this. If monitoring is not carried out, we cannot continue to recommend medication is prescribed and it is unlikely that the GP practice will continue to prescribe medication.

Queries

If you have any queries in between appointments, please phone the specialist service. The phone number will be on your appointment letter. Admin staff will pass on the information and we will assess if a sooner appointment is required. We cannot offer a phone call back the same day.

By signing this form, you confirm that you accept and understand the above information.

Signature:	Name:
Relationship to patient (if not signed by them):	Date:

Appendix 3 – ADHD medication pre-prescribing checklist

Patient name:	CHI number:

Before prescribing ADHD medication, please ensure a baseline ADHD symptoms checklist has been completed: ☐

Monitoring parameter	Measurement	For children only
Blood Pressure:		% centile:
Heart Rate:		Normal range for age:
Weight:		% centile:
Height (children only):		% centile:

Past medical history			
Family history (particularly cardiovascular history)			
Current medication			
Baseline sleep pattern			
Baseline appetite			
If indicated, has an ECG been requested?	Yes	No	N/A

Has patient/parent/carer been provided with information sources? ☐
Has this information been shared with primary care? ☐

Signed:	Print name:
Job title:	Date:

Adapted from original checklist created by Dr Leanne Rae and Dr Lisa Collin (Sigouin), Clydesdale CAMHS team

Appendix 4 - ADHD medication monitoring requirements

Monitoring parameter	Pre-treatment	Before and after each dose change	Every three months	Every six months
Severity of symptoms (use rating scales)	✓	✓		✓ Review ongoing need for medication at least once a year
Weight	✓	✓	✓ If aged under 10 years or taking guanfacine for the first year of treatment	✓
Height (for children only)	✓	✓ Not required but good practice		✓
Blood pressure and heart rate	✓	✓	✓ Guanfacine for the first year of treatment	✓
Sleep pattern	✓	✓		✓
Sedation/ somnolence (for guanfacine only)	✓ Weekly during titration		✓ For the first year of treatment	✓ From the second year of treatment onwards
Appetite	✓	✓		✓

Other	• ECG only required pre-treatment and during treatment if clinically indicated
	• Refer to specialist if any cardiovascular concerns emerge during treatment
	• If co-morbid epilepsy – check base line seizure frequency and review at each appointment
	• If history of tics – check baseline frequency and monitor for existing or emerging tics at each appointment
	• LFTs only required with atomoxetine if clinically indicated
	• Ongoing monitoring for:
	  ○ misuse and diversion with stimulants
	  ○ adherence – provide support
	  ○ worsening of behaviour - check diagnosis
	  ○ other emerging mental health problems e.g. psychosis
	• Ask about any changes to current medication and physical/mental health in the context of contraindications and drug interactions			

Appendix 5 – ADHD medication monitoring form

Patient name:	CHI number:

Medication currently taken for ADHD (include name of medication and dose)
Current ADHD symptoms (symptom checklist may be used)

Side effects (to be completed by patient, parent or carer)				
Have you noticed any of the following?	Not at all	Sometimes	Often	Very often
I have had a sore head				
I have felt dizzy				
I have felt sick and/or have been sick				
I have been sweating				
I have felt less hungry and/or have lost weight				
I have had sexual problems				
I have had diarrhoea				
I make sudden, repetitive movements				
I make sounds and/or say words without warning				
I find it hard to fall asleep and/or I wake up during the night				
I have felt angry				
I have felt restless				
I have felt sad				
I have felt my heart beating irregularly and/or unusually fast				
Other (please state)				

Adapted from the Royal College of Psychiatrists in Scotland College Report on ADHD in adults: Good practice guidelines 2023

Physical observations (to be completed by clinician)		
Monitoring parameter	Measurement	For children only
Blood Pressure		% centile:
Heart Rate		Normal range for age:
Weight		% centile:
Height (children only)		% centile:

Form completed by		
Patient/parent/carer name:	Relationship to patient:	Date:
Clinician name:	Job title:	Date:

Appendix 6 – ADHD assessment checklist

The diagnosis should have been made by a specialist psychiatrist, paediatrician or other appropriately qualified healthcare professional with training and expertise in the diagnosis of ADHD.

The assessment should include:	Y/N
A full developmental history	
Family history of medical, neurodevelopmental and mental health conditions	
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	
Observer reports from more than one setting e.g. education/work and home, showing symptoms of ADHD	
Observer reports over time, showing ADHD symptoms being present before the age of 12 years and being present for at least 6 months	
A review of physical health, including:	
Medical history (including cardiovascular history and history of seizures and tics)	
Current medication	
Weight (and height for children and young people) - for children and young people, these should be plotted on a centile chart	
Blood pressure and pulse (measured with an appropriately sized cuff and compared with the normal range for age)	
A record of baseline parameters including ADHD symptoms and impairments, sleep and appetite	
Appropriate formal assessments e.g. Conners, DIVA (not essential but may be helpful if diagnosis is unclear)	
Confirmation that they meet the criteria for ADHD and require pharmacological treatment	

1. Governance information for Guidance document

Lead Author(s):	Naomi Booker (Advanced Clinical Pharmacist)
Endorsing Body:	Mental Health and Learning Disability (MHLD) Drug and Therapeutics Committee Area Drug and Therapeutics Committee
Version Number:	4
Approval date	19th June 2024
Review Date:	June 2027
Responsible Person (if different from lead author)	

CONSULTATION AND DISTRIBUTION RECORD	
Contributing Author / Authors	Jennifer Bryant (Advanced Clinical Pharmacist Adult MH), David Cumming (Consultant Adult Psychiatrist), Andrew Maguire (Pharmacist Prescribing Advisor), Luana Padovan (Consultant Child and Adolescent Psychiatrist), Dipayan Roy (Consultant Adult Psychiatrist), Tyra Smyth (Medical Director Lanarkshire LMC, Secretary GP Sub Committee)
Consultation Process / Stakeholders:	Psychiatry (adult mental health, CAMHS and Neurodevelopmental Service), Primary Care (GPs and pharmacy), MHLD Pharmacy
Distribution	Dissemination to MHLD services, CAMHS and Neurodevelopmental Service, primary care including GPs and pharmacy NHSL Clinical Guidelines website and app

CHANGE RECORD

Date	Lead Author	Change	Version
June 2020	Lesley Dewar	Updated guidance replaces version 2 New Format and additional sections Updated in line with NICE 87 No change to local responsibilities	3
June 2024	Naomi Booker	Review and update of guideline in line with practice. New sections added: 3, 4, 6, 7, 8, 14, 15, 16, 17, 18, 19, 20, 21, 22 and 23. Appendix 1, 2 and 6 new.	4

2. Additional appendices with complimentary information

American Psychiatric Association's Diagnostic and Statistical Manual, Fifth edition (DSM-5) diagnostic criteria for ADHD:

People with ADHD show a persistent pattern of inattention and/or hyperactivity–impulsivity that interferes with functioning or development:	
Inattention: Six or more symptoms of inattention for children up to age 16 years, or five or more for adolescents age 17 years and older and adults; symptoms of inattention have been present for at least 6 months, and they are inappropriate for developmental level:	• Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or with other activities. • Often has trouble holding attention on tasks or play activities. • Often does not seem to listen when spoken to directly. • Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (e.g., loses focus, side-tracked). • Often has trouble organizing tasks and activities. • Often avoids, dislikes, or is reluctant to do tasks that require mental effort over a long period of time (such as schoolwork or homework). • Often loses things necessary for tasks and activities (e.g. school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones). • Is often easily distracted • Is often forgetful in daily activities.
Hyperactivity and Impulsivity: Six or more symptoms of hyperactivity-impulsivity for children up to age 16 years, or five or more for adolescents age 17 years and older and adults; symptoms of hyperactivity-impulsivity have been present for at least 6 months to an extent that is disruptive and inappropriate for the person's developmental level:	• Often fidgets with or taps hands or feet, or squirms in seat. • Often leaves seat in situations when remaining seated is expected. • Often runs about or climbs in situations where it is not appropriate (adolescents or adults may be limited to feeling restless). • Often unable to play or take part in leisure activities quietly. • Is often "on the go" acting as if "driven by a motor". • Often talks excessively. • Often blurts out an answer before a question has been completed. • Often has trouble waiting their turn. • Often interrupts or intrudes on others (e.g. butts into conversations or games).

ICD-11 diagnostic criteria for ADHD:

<table>
<tr><td colspan="2">Essential (Required) Features:
A persistent pattern (e.g. at least 6 months) of inattention symptoms and/or a combination of hyperactivity and impulsivity symptoms that is outside the limits of normal variation expected for age and level of intellectual development. Symptoms vary according to chronological age and disorder severity.</td></tr>
<tr><td>Inattention: Several symptoms of inattention that are persistent, and sufficiently severe that they have a direct negative impact on academic, occupational, or social functioning. Symptoms are typically from the following clusters:</td><td>• Difficulty sustaining attention to tasks that do not provide a high level of stimulation or reward or require sustained mental effort; lacking attention to detail; making careless mistakes in school or work assignments; not completing tasks.
• Easily distracted by extraneous stimuli or thoughts not related to the task at hand; often does not seem to listen when spoken to directly; frequently appears to be daydreaming or to have mind elsewhere.
• Loses things; is forgetful in daily activities; has difficulty remembering to complete upcoming daily tasks or activities; difficulty planning, managing and organizing schoolwork, tasks and other activities.</td></tr>
<tr><td colspan="2">Note: Inattention may not be evident when the individual is engaged in activities that provide intense stimulation and frequent rewards.</td></tr>
<tr><td>Hyperactivity impulsivity: Several symptoms of hyperactivity/impulsivity that are persistent, and sufficiently severe that they have a direct negative impact on academic, occupational, or social functioning. These tend to be most evident in structured situations that require behavioural self-control. Symptoms are typically from the following clusters:</td><td>• Excessive motor activity; leaves seat when expected to sit still; often runs about; has difficulty sitting still without fidgeting (younger children); feelings of physical restlessness, a sense of discomfort with being quiet or sitting still (adolescents and adults).
• Difficulty engaging in activities quietly; talks too much.
• Blurts out answers in school, comments at work; difficulty waiting turn in conversation, games, or activities; interrupts or intrudes on others conversations or games.
• A tendency to act in response to immediate stimuli without deliberation or consideration of risks and consequences (e.g., engaging in behaviours with potential for physical injury; impulsive decisions; reckless driving)
• Evidence of significant inattention and/or hyperactivity-impulsivity symptoms prior to age 12, though some individuals may first come to clinical attention later in adolescence or as adults, often when demands exceed the individual’s capacity to compensate for limitations.
• Manifestations of inattention and/or hyperactivity-impulsivity must be evident across multiple situations or settings (e.g., home, school, work, with friends or relatives), but are likely to vary according to the structure and demands of the setting.
• Symptoms are not better accounted for by another mental disorder (e.g., an Anxiety or Fear-Related Disorder, a Neurocognitive Disorder such as Delirium).
• Symptoms are not due to the effects of a substance (e.g., cocaine) or medication (e.g., bronchodilators, thyroid replacement medication) on the central nervous system, including and withdrawal effects, and are not due to a Disease of the Nervous System.</td></tr>
</table>