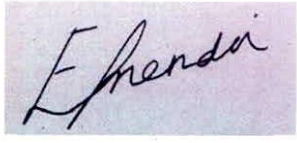
NHS Grampian

Prescribing Guidance For Attention Deficit Hyperactivity Disorder In Children And Adolescents (Between Their 6th And 18th Birthdays) In NHS Grampian

Co-ordinators:	Consultation Group:	Approver:
Child and Adolescent Mental Health Service Consultant Psychiatrist and Pharmacist	Mental Health Operational Medicines Management Group	Medicines Guidelines and Polices Group
Signature: 	**Signature:** 	**Signature:** 

Identifier:	Review Date:	Date Approved:
MGPG/Guide/ADHDp/1540	July 2027	July 2024 (Published November 2024)

Uncontrolled when printed

Version 4

Executive Sign-Off

This document has been endorsed by the Director of Pharmacy and Medicines Management

Signature: 

Replaces: NHSG/RxGuide/ADHDp/MGPG805, Version 3

Document application: NHS Grampian

Impact Assessed: 14th August 2024

Revision History:

Revision Date	Previous Revision Date	Summary of Changes (Descriptive summary of the changes made)	Changes Marked* (Identify page numbers and section heading)
June 2024	July 2016	The guidance has been updated in line with: • The most up-to-date evidence-based guidance on pharmacological management of ADHD, i.e. NICE Guideline 87 and The Maudsley Prescribing Guidelines in Psychiatry, 14th Edition. • Local pathways for diagnosis of ADHD, and subsequent prescribing and monitoring of ADHD medication. The order in which treatment options should be considered and trialled Appendices have also been added which summarise the prescribing process and physical monitoring requirements.	• baseline measurements • cardiology considerations • physical monitoring Treatment selection • off-label use of clonidine

Consultative Group

Name	Title
Dr Samantha Brown	Consultant Paediatrician with Expertise in Cardiology
Colette Cowie	ADHD Clinical Nurse Specialist
Dr Kandarp Joshi	Consultant Child and Adolescent Psychiatrist
Mental Health Operational Medicines Management Group	
Prescribers working within NHS Grampian CAMHS	

Prescribing Guidance For Attention Deficit Hyperactivity Disorder In Children And Adolescents (Between Their 6th And 18th Birthdays) In NHS Grampian

Contents **Page No**

Prescribing Guidance For Attention Deficit Hyperactivity Disorder In Children And Adolescents (Between Their 6th And 18th Birthdays) In NHS Grampian

1. Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterised by the core symptoms of hyperactivity, impulsivity and inattention. The core symptoms can present individually or in combination. Other neurodevelopmental disorders include Autism Spectrum Condition (ASC), Intellectual Disability (ID), Tics and Tourette's syndrome.

Children and adolescents with ADHD may experience significant social, academic and psychological impairment at every stage of their development.

Following diagnosis by a specialist, a treatment plan is formulated for each patient which addresses their psychological, behavioural, educational and occupational needs.

A treatment plan for ADHD will contain non-pharmacological management as well as, when clinically appropriate, pharmacological treatment.

Non-pharmacological interventions should be offered prior to considering medication for ADHD. Medication can be offered when a patient's ADHD symptoms are still causing persistent significant impairment in at least one domain, after non-pharmacological interventions have been implemented and reviewed. An exception would be where the ADHD is particularly severe and impairing.

Further discussion around non-pharmacological interventions are outwith the scope of this prescribing guidance, which will focus on the pharmacological management of ADHD, including how the responsibilities associated with prescribing are shared between the patient's specialist in ADHD and their primary care clinician.

2. Objectives

To provide guidance on prescribing and monitoring requirements for children and adolescents (between their 6th and 18th birthdays), who have a diagnosis of ADHD, and who are prescribed medication for this indication.

To define the responsibilities of the specialist prescriber in ADHD and the patient's primary care clinician, in the prescribing and monitoring of ADHD medications.

3. Patient Groups To Which This Document Applies

Children and adolescents between their 6th* and 18th birthdays who have been given a diagnosis of ADHD following an appropriate assessment by a specialist in either Child and Adolescent Mental Health Services (CAMHS) or Community Child Health (CCH).

**Medicines used for treating ADHD do not have a UK marketing authorisation for children aged 5 years or under (off-label use). ADHD diagnosis and pharmacological management before the age of 6 years old is rare, and pharmacological treatment of those <5 years old is not recommended. If ADHD medication is to be commenced in a 5 year old child, all prescribing and monitoring will be the responsibility of the specialist service until the child's 6th birthday, when the recommendations in this guidance can then be applied.*

4. Patient Groups To Which This Document Does Not Apply

Children under the age of 6 years and individuals over the age of 18 years.

Children and adolescents who do not have a diagnosis of ADHD from an appropriate NHS specialist service**.

***There is no facility for NHS Grampian CAMHS or CCH services to monitor and make prescribing recommendations for patients following a private diagnosis of ADHD. Patients with a private diagnosis of ADHD who would like to be considered for pharmacological treatment from NHS services, will first need to be referred to CAMHS and CCH services via the standard referral processes. In these cases, CAMHS and CCH services will need to confirm the patient meets criteria for ADHD diagnosis and treatment, before responsibility for prescribing recommendations and monitoring will be agreed.*

5. Roles And Responsibilities In The Prescribing Of ADHD Medication

In NHS Grampian, prescribers working within CAMHS and CCH, who have a specialist knowledge of the pharmacological management of ADHD, may recommend prescribing of ADHD medication for children and adolescents.

Recommendations will be communicated to the patient's primary care clinician, who will then issue a prescription.

A detailed explanation of the roles and responsibilities of the specialist prescriber in ADHD and the primary care clinician can be found below, in section 5.1 and section 5.2 respectively. A flow-chart summarising the process can also be found in Appendix 1.

5.1 Responsibilities of the specialist prescriber in ADHD

5.1.1 Assessment and diagnosis

In NHS Grampian, ADHD diagnostic assessment is completed by an appropriately qualified healthcare professional (e.g. psychiatrist, paediatrician, psychologist, nurse specialist), in one of the following specialist services: CAMHS and CCH.

Pharmacological treatment for ADHD is then considered when there is persistent significant impairment from ADHD in at least one setting, despite implementation of non-pharmacological measures. An exception would be when ADHD is particularly severe and impairing, and pharmacological treatment might therefore need to be considered earlier.

5.1.2 Baseline measurements and pre-treatment referral

Following diagnosis, and before starting medication for ADHD, the following should be undertaken:

- a review to confirm the patient continues to meet the diagnostic criteria for ADHD and needs pharmacological treatment
- a review of mental health and social circumstances, including:
  - personal/family history of coexisting mental health and neurodevelopmental conditions
  - current educational or employment circumstances
  - personal/family risk assessment for substance misuse and drug diversion (particularly prior to prescribing stimulants)
- a review of physical health, including:
  - personal/family medical history, taking into account conditions that may be contraindications for specific ADHD medications, e.g. cardiovascular history, psychiatric history
  - current medication
  - allergies
  - height and weight (measured and recorded against the normal range for age, height and sex)
  - baseline pulse and blood pressure (measured with an appropriately sized cuff and compared with the normal range for age)
  - a cardiovascular assessment, specifically chest auscultation and questioning around symptoms that indicate possible cardiovascular pathology, e.g. shortness of breath on exertion compared to peers, fainting on exertion or in response to fright or noise, palpitations that are rapid, regular or start and stop suddenly, chest pain suggesting cardiac origin, signs of heart failure.
  - baseline sleep pattern and appetite

An electrocardiogram (ECG) and cardiology opinion is needed before starting ADHD medication if, during the above review, it is identified that the patient has any of the features listed in Appendix 2, or a co-existing condition that is being treated with a medicine that may pose an increased cardiac risk.

All baseline information gathered above should be documented in the patient's notes, and considered alongside the cautions, contraindications and possible adverse effects of the various medications for ADHD, before choosing the most appropriate treatment for the child/adolescent. The prescribing decision should also take into account the first, second and third-line choices, as described in section 6.2 and as listed in the NHS Grampian Area Formulary.

Summaries of product characteristics for each medication, and pre-treatment checklists to support this process are available via www.medicines.org.uk.

5.1.3 Consent to treatment

Treatment options and goals should be discussed with the child/adolescent and their parent/carer. Information on the possible risks and benefits of medication should be provided, and the preferences and concerns of the child/adolescent and their parent/carer should be explored. The need for ongoing engagement with non-pharmacological strategies should also be emphasised.

Both verbal and printed information should be provided to the patient and/or their parent/carer, in order that fully informed consent can be given to pharmacological treatment.

Written information that is suitable for the child/adolescent and their parent/carer can be obtained from:

- Choice and Medication
- Medicines for Children
- YoungMinds
- Electronic Medicines Compendium

Where applicable, the use of a medicine off-label (e.g. use of a drug beyond the licensed dose range, use of a drug in a child outwith the licensed age range, use of a medication that is not licensed for ADHD), must be explained to the child/adolescent and their parent/carer, along with a discussion of the potential risks and benefits.

Written information on off-label prescribing can be obtained from:

- BAP Position Statement: Off-label prescribing of psychotropic medication to children and adolescents (for Healthcare Professionals)
- The use of unlicensed medicines or licensed medicines for unlicensed applications in paediatric practice (for Healthcare Professionals)
- Unlicensed medicines – Medicines For Children (for parents/carers)

Where applicable, the implications of taking ADHD medication on activities such as driving, travel and competitive sports, must also be discussed with the patient and their parent/carer. For girls of child-bearing potential, it is important to discuss contraception and to consider the safety of prescribing medication in pregnancy. Further information on these special considerations can be found in section 6.6

5.1.4 Initiation and titration of treatment

The specialist NHS prescriber will select the most appropriate medication and dose for the patient. The medication selected will be based on a variety of factors relating to the:

- patient (e.g. concurrent psychiatric and medical issues, family and individual attitudes to medication, goals of treatment),
- medications (e.g. evidence-base, efficacy, duration of action, adverse effects, formulation, formulary status).

The specialist NHS prescriber will make a written request to the patient's primary care clinician to provide a prescription for the selected medication. They will provide the primary care clinician with details of:

- diagnosis
- the medication (indication/formulation/strength/dose/frequency of administration/administration instructions)
- formulary/licensing status of medication (if off-label)
- plan for monitoring and review by specialist service
- information the patient has been provided with regarding the medication
- criteria for referral back to the specialist service between scheduled review appointments

The specialist ADHD prescriber should manage the expectations of the child/adolescent and/or their parent/carer by advising them of:

- the usual timeframe between submitting the written prescribing recommendation to the primary care clinician, and the prescription being available
- the maximum quantity that will be prescribed by the primary care clinician at a time, which is no more than 30 days' supply at a time for schedule 2 controlled drugs (preparations containing methylphenidate, lisdexamfetamine, dexamfetamine).

If the administration of medication at school is required then the specialist prescriber will (with appropriate consent from the child/adolescent and their parent/carer) liaise with school regarding this.

Finding the correct dose of medication for ADHD involves careful titration and monitoring. Specialist follow-up (either face-to-face/online/by telephone) should be arranged for soon after treatment initiation, and will be planned at regular intervals, and after each medication/dose change, until the optimum treatment is found for that patient. Optimum treatment is one that provides reduced ADHD symptoms, positive behaviour change, improvements in education, employment and relationships, with tolerable adverse effects.

During the titration phase, ADHD symptoms, impairment and medication adverse effects will be recorded after each dose change.

Physical observations required during this time (e.g. blood pressure, pulse, height, weight) can be undertaken by the recommending specialist service, or the specialist service may refer the patient to a Community Hub. Appendix 3 provides a summary of monitoring requirements during initiation and titration of the various medications for ADHD.

Dose titration will be slower and monitoring more frequent if any of the following are present:

- Neurodevelopmental disorders (e.g. autism spectrum disorder, tic disorders, learning disability).
- Mental health conditions (e.g. anxiety disorders, depression, eating disorder).
- Physical health conditions (e.g. epilepsy, cardiac disease, acquired brain injury).

Clear lines of contact should be established between the child/adolescent and/or parent/carer, the specialist prescriber and the primary care clinician during the titration period, in case of problems.

The child/adolescent's referrer (if not the primary care clinician) should also be kept informed during this process. The appropriate permission to do this should be sought from the child/adolescent and/or their parent/carer.

5.1.5 Monitoring (effectiveness, tolerability and suitability) and review of ongoing treatment

When dose optimisation has been achieved, the child/adolescent will continue on a maintenance dose. During this time, the effectiveness, tolerability and suitability of the medication will continue to be monitored by the specialist service. The child/adolescent should be seen by the specialist service every 3 to 6 months for this purpose.

Effectiveness

Standard ADHD symptom rating scales may be used to assist with monitoring the effectiveness of treatment. Collection of information from other settings (e.g. education) can also be useful in determining the ongoing effectiveness of the medication.

Examples of standard ADHD symptom rating scales include:

- Vanderbilt (teacher/parent)
- SNAP-IV (teacher/parent/self)

Tolerability/adverse effects

The specialist should enquire about the following possible adverse effects:

- sleep (stimulants can cause insomnia whilst the non-stimulants can cause somnolence and sedation)
- appetite (stimulants can cause appetite suppression; guanfacine and atomoxetine may also cause appetite changes)
- headaches
- palpitations
- chest pain
- shortness of breath
- dizziness/fainting
- nausea, vomiting
- tics (emerging, or worsening if pre-existing)
- mental health conditions/concerns, e.g. mood instability, agitation (emerging, or worsening if pre-existing)
- seizures (emerging, or worsening if pre-existing)
- somnolence/sedation (for guanfacine and atomoxetine)
- symptoms of liver dysfunction (for atomoxetine)

- unexplained bruising or bleeding
- for adolescent males, erectile or ejaculatory dysfunction as a potential adverse effect of atomoxetine

Adverse effect rating scales can be used to support this process, and can be accessed at the following link:

- Product-specific Risk Minimisation Materials (accessed via www.medicines.org.uk)

Physical observations

In addition to the above questioning on adverse effects, physical observations including height, weight, blood pressure and pulse should also be checked. This should be done by the specialist service or the specialist service may refer the patient to a Community Hub.

A summary of physical monitoring requirements for patients prescribed medication for ADHD can be found in Appendix 3. More detailed information is provided below.

Height and weight

Stimulant medications can suppress appetite and affect growth. Atomoxetine can also cause appetite suppression, whilst guanfacine prolonged-release (Intuniv®) can reduce appetite but may also cause weight gain. For these reasons:

- Height should be measured every 6 months in children and adolescents
- Weight should be measured every 3 months in children ≤10 years old
- In children and adolescents ≥10 years old, weight should be measured at 3 and 6 months after starting treatment, then every 6 months thereafter (if stable), or more frequently (if concerns arise).

Height and weight should be plotted on a growth chart.

If there are concerns about appetite, weight loss and/or the child/adolescent is not meeting the height expectations for their age, a number of strategies should be considered by the specialist, e.g. taking additional meals or snacks early in the morning or late in the evening when stimulant effects have worn off, consuming high-calorie foods of good nutritional value, taking a planned break from treatment (e.g. not taking stimulants at weekends or during school holidays), changing medication.

Referral to a paediatric endocrinologist/growth specialist should be considered if the height and/or weight values are below critical thresholds. Current data do not support specific guidance indicating what magnitude of height or weight gain deceleration should trigger such a referral, and this will be considered by the specialist on a case-by-case basis.

Cardiovascular

For stimulant medications (methylphenidate, lisdexamfetamine and dexamfetamine) and atomoxetine:

- Stimulant medications and atomoxetine may increase blood pressure and heart rate.
- Heart rate and blood pressure should be measured after each dose change and then every 6 months, or more frequently if concerns arise. These results should be compared with the normal range for age, sex and height.
- If a person taking ADHD medication has sustained resting tachycardia (more than 120 beats per minute), arrhythmia or systolic blood pressure greater than the 95th percentile (or a clinically significant increase) measured on 2 occasions, their dose should be reduced or even stopped, and they should be referred to a paediatric hypertension specialist.

For guanfacine prolonged-release (Intuniv®) and clonidine:

- Guanfacine prolonged-release (Intuniv®) and clonidine may lower blood pressure and heart rate.
- Heart rate and blood pressure should be measured after each dose change and then every 3 months for the first year. 6-monthly monitoring should follow thereafter, with more frequent monitoring following any dose adjustment or if concerns arise.

If a child/adolescent taking guanfacine prolonged-release (Intuniv®) or clonidine has sustained orthostatic hypotension or fainting episodes, the prescriber working within the ADHD specialist service may consider reducing the dose or gradually stopping the medication.

Other

It should also be established if there have been any of the following changes which may make the ADHD treatment unsuitable:

- new physical or mental health diagnoses
- new medications (prescribed, over-the-counter or illicit).

The effect of any missed doses, planned dose reductions and periods of no treatment should be enquired about.

The child/adolescent, parent/carer should be encouraged to discuss any preferences to stop or change medication.

The possibility of misuse or diversion of stimulants should be considered.

For girls of child-bearing potential, it is important to discuss contraception and the risks of pregnancy, and to consider the safety of prescribing medication in pregnancy.

Where applicable, the implications of taking ADHD medication on activities such as driving, competitive sports and travel should also be discussed with the patient and their parent/carer.

5.1.6 Liaison with Primary Care Clinician

During initiation and titration and after each ongoing review, the specialist service should advise the child's/adolescent's primary care clinician, in writing, about the plan for medication. They will provide details of:

- diagnosis
- the medication (indication/formulation/strength/dose/frequency of administration/administration instructions)
- formulary/licensing status of medication (if off-label)
- plan for monitoring and review by specialist service
- information the patient has been provided with regarding the medication
- criteria for referral back to the specialist service between scheduled review appointments.

If a child/adolescent does not attend for review and is not responding to attempts to re-engage them with the service, the specialist should advise the primary care clinician of this and whether it is appropriate or not to continue the medication.

5.1.7 Referral to Adult Mental Health Service

Between their 17th and 18th birthday, patients should be reviewed by the specialist and a referral made to Adult Mental Health/Learning Disabilities Service for ongoing management and monitoring of their ADHD medication. Good practice guidance on this can be found in the Scottish Government document entitled "Principles of Transition" (2018).

5.2 Responsibilities of the Primary Care Clinician

5.2.1 Prescribing ADHD medication

Issue prescriptions for the medication, dose and formulation advised by the specialist prescriber.

5.2.2 Liaison with recommending specialist service

Discuss any concerns regarding, for example, monitoring, side-effects, misuse/diversion or compliance with specialist.

Inform the specialist if there are any difficulties in obtaining the medication so that the specialist can advise on the most appropriate course of action and an alternative (if available and suitable).

6. Pharmacological Management: Treatment Options, Selection And Prescribing Information

6.1 Treatment options

The licensed medications used to treat ADHD can be broadly categorised as stimulants and non-stimulants.

Stimulants	Non-stimulants
Methylphenidate	Guanfacine prolonged-release (Intuniv®)
Lisdexamfetamine (Elvanse®)	Atomoxetine
Dexamfetamine	

A chart which compares and contrasts the stimulant and non-stimulant medications with regard to their mode of action, time to response, and main side-effects can be found at the following link: handychartadhduk.pdf (choiceandmedication.org)

Clonidine is another non-stimulant option. It is used off-label for children with ADHD and sleep disturbance, rages or tics. Clonidine does not have a UK licence to treat ADHD. Its use should only be considered where children/adolescents have not responded to the licensed medications. A risk-benefit assessment of its use should be undertaken. Informed consent to treatment should be obtained and documented.

6.2 Treatment selection and prescribing information

A table summarising prescribing information for each of the ADHD medications can be found in Appendix 4, Appendix 5, Appendix 6 and Appendix 7. Recommended starting doses and titration schedules should be used as a guide only, as efficacy and tolerability will vary between individual patients, i.e. the need to start at a lower dose and go at a slower pace than suggested.

During the titration phase, ADHD symptoms, impairment and adverse effects should be recorded at baseline and at each dose change, and progress reviewed regularly by the specialist. Further information on this can be found in section 5.1.5.

A start low and go slow approach is advocated, with the dose continuing to be increased until:

- the desired goals of treatment are met (e.g. reduced symptoms, positive behaviour change, improvement in education, employment or relationships) OR
- side-effects preclude further dose increases OR
- when maximum recommended dosage is reached.

6.2.1 First line option: methylphenidate (stimulant)

Methylphenidate, as a short or long acting preparation, is the first line pharmacological treatment for children and adolescents aged 6 years to 18 years (unless contraindicated or there is clinical justification to choose another agent first line).

The mode of action of methylphenidate in the treatment of ADHD is not fully understood. One hypothesis is that it inhibits the reuptake of the neurotransmitters dopamine and noradrenaline from the synaptic cleft.

The immediate-release (short acting) preparations of methylphenidate have a duration of action of approximately 4 hours.

Long-acting preparations of methylphenidate are those labelled as prolonged-release, modified-release, or sustained-release. There are three different types of methylphenidate once-a-day modified-release tablets/capsules, the differences between these are detailed in the table below.

Table 1: Type of long-acting methylphenidate preparation

Type	Approximate duration of action	Release of methylphenidate	Brand names
Type 1	~12 hours	Immediate-release component (22-25% of the dose) released between 0 and 4 hours. Modified-release component (75-78% of the dose) released later.	Affenid® XL* Concerta® XL* Delmosart modified-release tablets®* Matoride® XL* Xaggitin® XL* Xenidate® XL* *Please see Grampian Area Formulary for NHS Grampian preferred brand
Type 2	~8 hours	Immediate-release component (30% of the dose) released between 0 and 4 hours. Modified-release component (70% of the dose) released later.	Equasym® XL is Grampian Area Formulary preferred brand. Ritalin XL®, Exattent XL® and Addepta XL® are also available.
Type 3	~8 hours	Immediate-release component (50% of the dose) released between 0 and 4 hours. Modified-release component (50% of the dose) released later.	Medikinet® XL is Grampian Area Formulary preferred brand. Metyrol XL and Meflynate XL are also available.

The main difference between the types of long-acting methylphenidate preparations is their duration of action but, even within each type, other important differences exist, e.g. whether or not the product needs to be administered with food, the rate at which the contained dose of methylphenidate is released. For example, there are several brands of Type 1 products available and patients may not have the same response or tolerability to each of these. As such, long-acting formulations of methylphenidate must be prescribed by brand name. For more information on this see: Methylphenidate long-acting (modified-release) preparations: caution if switching between products due to differences in formulations - GOV.UK (www.gov.uk).

A short acting methylphenidate preparation might be preferred for:

- patients with physical and mental health co-morbidities where a slower and more gentle dose titration is necessary to determine correct dosing levels and reduce risk of adverse effects
- patients requiring a more flexible dosing regimen (e.g. morning administration only).

A long-acting methylphenidate preparation might be preferred because:

- it may improve adherence (no need for multiple daily doses)
- it may reduce stigma (no dose during school hours)
- it will avoid problems associated with storing and administering controlled drugs at school
- it may reduce rebound symptoms
- there is less risk of misuse or diversion with longer-acting preparations.

Methylphenidate should be started at a low dose and titrated up gradually according to the monitoring and prescribing guidance in section 5.1.4, section 5.1.5, Appendix 3, Appendix 4 and Appendix 5.

Long-acting preparations of methylphenidate should be taken in the morning (usually before 8am), as sleep can be disrupted if taken too late in the day.

After treatment with methylphenidate is initiated it will start to work within hours, but it may take a number of weeks for the full effect of any given dose to be realised.

Side-effects include decreased appetite, weight reduction, insomnia, nausea, headache, irritability, an increase in blood pressure and an increase in pulse rate.

Methylphenidate can be stopped quickly, e.g. at weekends, but, unless there is a clinical reason to recommend a treatment break or to stop methylphenidate abruptly, it should be taken daily and withdrawal done in a planned and perhaps stepwise manner to help the patient to manage the change. Some individuals may experience withdrawal from methylphenidate, particularly if dosages are high.

6.2.2 Second line option: lisdexamfetamine (stimulant)

Lisdexamfetamine (Elvanse®) is the second-line stimulant for children and adolescents aged 6 years to 18 years (unless contraindicated or there is clinical justification to choose another agent second-line). It can be considered where methylphenidate has not been tolerated or where the patient has 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.

If a patient is responding to lisdexamfetamine (Elvanse®) but cannot tolerate the long duration of effect, short acting dexamfetamine can be considered. The risk of diversion must be assessed before recommending dexamfetamine.

Lisdexamfetamine (Elvanse®) and dexamfetamine are thought to work by inhibiting the reuptake of the neurotransmitters dopamine and noradrenaline from the synaptic cleft. They may also increase the amount of dopamine and noradrenaline that are released into the synaptic cleft.

Elvanse® contains lisdexamfetamine dimesylate, which is a pharmacologically inactive prodrug. After oral administration, lisdexamfetamine is rapidly absorbed from the gastrointestinal tract and hydrolysed primarily by red blood cells to dexamfetamine, which is responsible for the drug's activity.

Lisdexamfetamine should be started at a low dose and titrated up gradually according to the monitoring and prescribing guidance in section 5.1.4, section 5.1.5, Appendix 3, Appendix 6.

Lisdexamfetamine must be taken in the morning (usually before 8am), as it can have an adverse effect on sleep if taken too late in the day.

Dexamfetamine should be started at a low dose and titrated up gradually according to the monitoring and prescribing guidance in section 5.1.4, section 5.1.5, Appendix 3, Appendix 6.

After treatment with lisdexamfetamine or dexamfetamine is initiated, it will start to work within hours, but it may take a few weeks for the full effect of any given dose to be realised.

Side-effects include decreased appetite, weight reduction, insomnia, nausea, headache and rebound irritability. Lisdexamfetamine and dexamfetamine can also increase blood pressure and pulse rate.

Lisdexamfetamine and dexamfetamine can be stopped quickly, e.g. at weekends, but, unless there is a clinical reason to recommend a treatment break or to stop the stimulant abruptly, it should be taken daily and withdrawal done in a planned and perhaps stepwise manner to help the patient to manage the change. Some individuals may experience withdrawal from lisdexamfetamine, particularly if dosages are high.

6.2.3 Third line option / alternative to stimulant

The non-stimulants, guanfacine prolonged-release (Intuniv®) or atomoxetine are third-line options. They can be offered to patients aged 6 years to 18 years*** who have either not tolerated or not responded to separate 6-week trials of methylphenidate and lisdexamfetamine at adequate doses.

The non-stimulants, guanfacine prolonged-release (Intuniv®) or atomoxetine can also be offered as an alternative to stimulants for the reasons stated below:

Medical factors:

- absolute or relative contraindication to the use of a stimulant
- tic disorder worsened by stimulants
- known sensitivity to stimulants
- significant interaction between a stimulant and another medication prescribed to the child/adolescent.

Environmental factors:

- substance use in child/adolescent or immediate family members (but still need to consider interactions between the prescribed medication and any other substance)
- involvement in competitive sport (stimulants are banned substances)
- family preference for non-stimulant medication
- unable to arrange appropriate stimulant dosing regimen at school/work.

***Guanfacine prolonged-release (Intuniv®) is licensed in children and adolescents age 6-17 years old, i.e. prescribing in those over 17 years old is off-label. This must be discussed with the patient/parent/carer as appropriate and consent for off-label used obtained and documented.

The onset of action of the non-stimulant medications is slower than the stimulants. They are not suitable where a rapid onset of action is needed or where the patient is not able to comply with daily administration. They need to be taken continuously for clinical effect.

Guanfacine prolonged-release (Intuniv®)

Guanfacine is a selective alpha-2A adrenergic receptor agonist. It is licensed for the treatment of ADHD in children and adolescents 6-17 years old for whom stimulants are not suitable, not tolerated or have been shown to be ineffective.

The mode of action of guanfacine in ADHD is not fully established but the hypothesis is that it mimics the action of the neurotransmitter noradrenaline in the synaptic cleft.

Guanfacine prolonged-release (Intuniv®) must be started at the minimum dose of 1mg once daily and titrated up gradually according to the monitoring and prescribing guidance in section 5.1.4, section 5.1.5, Appendix 3 and Appendix 7.

Common side-effects include somnolence and sedation, particularly after initiation and dose adjustments. Blood pressure and heart rate should be monitored as guanfacine can cause hypotension and bradycardia.

The maximum treatment effect from any given dose may not be reached for 2 to 4 weeks. Guanfacine prolonged-release (Intuniv®) has a 24 hour duration of effect.

The patient should be warned against sudden discontinuation. Guanfacine prolonged-release (Intuniv®) must be taken daily to avoid risk of rebound hypertension when stopped suddenly.

Guanfacine prolonged-release (Intuniv®) tablets must be swallowed whole (to maintain its prolonged-release properties).

If two or more consecutive doses of guanfacine prolonged-release (Intuniv®) are missed, the dose should be re-titrated in line with initiation.

It is recommended that guanfacine prolonged-release (Intuniv®) is taken in the early evening so that the peak of any somnolence occurs during the night, thereby reducing the effect of this on daytime activities.

Guanfacine is a CYP3A4/5 substrate and must be used cautiously if medications that inhibit or induce these enzymes are co-prescribed. The consumption of grapefruit juice should be advised against.

If a patient is stopping a stimulant and starting guanfacine prolonged-release (Intuniv®) then, the child/adolescent and their parents/carer must be warned that ADHD symptoms may return and remain for some weeks during this process. This is because it can take up to 4 weeks for the full effect of any given dose of guanfacine prolonged-release (Intuniv®) to be achieved. One option, to minimise the impact of this, is to continue the stimulant (if tolerated) whilst guanfacine prolonged-release (Intuniv®) is commenced and titrated, with close clinical monitoring for additional side-effects. Stimulant medications can be decreased once the ADHD symptoms in the early morning and late evening begin to improve, as this is an indicator that the therapeutic effect of guanfacine prolonged-release (Intuniv®) has commenced. Stimulant medication can then be withdrawn gradually.

If treatment is to be stopped, guanfacine prolonged-release (Intuniv®) should be withdrawn by tapering the dose in decrements of not more than 1mg every 3 to 7 days. Monitor pulse and blood pressure and withdraw more slowly, if necessary, to minimise increases in blood pressure and pulse rate due to guanfacine withdrawal.

Atomoxetine

Atomoxetine is a potent noradrenaline reuptake inhibitor – it inhibits the presynaptic noradrenaline transporter.

Atomoxetine must be started at a low dose and titrated up gradually according to the prescribing and monitoring guidance in Appendix 3 and Appendix 7.

Some effect from treatment may be seen within 1 week but the maximum treatment effect from any given dose may not be reached for 6 to 12 weeks. At least 6 weeks at the maximum tolerated dose should be allowed in order to assess efficacy.

Atomoxetine can be administered as a single daily dose in the morning but patients who do not achieve a satisfactory clinical response (tolerability, [e.g. nausea or somnolence] or efficacy) when taking atomoxetine as a single daily dose, might benefit from evenly dividing the daily dose and taking it twice daily instead – once in the morning and once in the late afternoon or early evening.

Common side effects include dizziness, drowsiness, dyspepsia, sexual side effects and decreased appetite. Less common but not rare (>2%) side effects include nausea, urinary hesitancy, QTc interval prolongation, depression, tremor, early morning awakening, and pruritus.

Atomoxetine can increase blood pressure and heart rate. This requires to be monitored regularly during treatment. An ECG may be indicated prior to commencing atomoxetine if there is a personal and/or family history of cardiac disease. The following link contains further information on cardiovascular considerations when prescribing atomoxetine, e.g. contraindications, warnings and advice for monitoring. Atomoxetine (Strattera▼): increases in blood pressure and heart rate - GOV.UK (www.gov.uk)

Following rare reports of hepatic disorders associated with atomoxetine, patients and carers should be advised of the risk and be told to seek prompt medical attention in case of abdominal pain, unexplained nausea, malaise, darkening of the urine, or jaundice. Liver function tests should be undertaken immediately if this occurs.

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. Patients and their carers should be informed about this risk and told to report the appearance or worsening of suicide-related behaviour. Appearance or worsening of suicide related behaviour should be monitored by the specialist.

Atomoxetine is associated with treatment-emergent psychotic or manic symptoms in children and adolescents - consider stopping this if symptoms occur. The following link contains further information on this: Atomoxetine: risk of psychotic or manic symptoms in children and adolescents - GOV.UK (www.gov.uk)

Atomoxetine is a CYP2D6 substrate and needs to be used cautiously when other medicines that inhibit or induce this enzyme are prescribed (e.g. paroxetine, fluoxetine, and quinidine).

If a patient is stopping a stimulant to start atomoxetine then, the child/adolescent and their parents/carer must be warned that ADHD symptoms may return and remain for some weeks during this process. This is because it can take up to 12 weeks for the full effect of atomoxetine to be achieved. One option, to minimise the impact of this,

is to continue the stimulant (if tolerated) whilst atomoxetine is commenced and titrated, with close clinical monitoring for side-effects. Stimulant medication can be decreased and withdrawn once the ADHD symptoms in the early morning and late evening begin to improve, as this is an indicator that the therapeutic effect of atomoxetine has commenced (due to its 24-hour duration of action).

There are not usually any withdrawal symptoms following abrupt discontinuation of atomoxetine. In cases of significant adverse effects, atomoxetine can be stopped abruptly; otherwise, consideration may be given to tapering off more gradually.

6.2.4 Other options: Clonidine (off-label use)

Clonidine is an alpha-adrenergic receptor agonist. It is not licensed for the treatment of ADHD but is noted as a treatment option in the NICE Guidelines (NG87). It can be considered in those unresponsive to or unable to tolerate treatment with stimulants, atomoxetine or guanfacine. It is most commonly used in patients who also have learning disability, sleep disturbance, rages or tics.

Clonidine is contraindicated in patients with baseline bradycardia and must be used with caution in patients with congenital heart disease, cardiac arrhythmia, cardiac failure, cardiomyopathy, family history of sudden or unexpected cardiac death, cerebrovascular disease, gut dysmotility (constipation), history of mood disorder/depression, polyneuropathy and Raynaud's Syndrome or other peripheral vascular disease. It should also be used cautiously when the child/adolescent is taking other medications that might affect cardiac conduction.

In addition to baseline measurements detailed in section 5.1.2 and Appendix 2, a pre-treatment ECG should be carried out before starting treatment with clonidine.

The specialist should consider a repeat ECG after the patient has commenced treatment with clonidine if:

1) The child/adolescent is on another medication(s) that affect cardiac conduction.
2) The child/adolescent develops signs/symptoms suggesting that clonidine may be causing cardiovascular side-effects.
3) The patient has an underlying cardiovascular condition.

Clonidine should be started at a low dose – usually 25micrograms once daily (at bedtime) for at least 1 to 2 weeks. The dose can then be increased to 25micrograms twice daily (morning and evening, preferably 10 to 12 hours apart). If required the daily dose can be further increased by 25micrograms every one to two weeks (side-effects permitting). The maximum dose is 5micrograms/kg/day (up to a maximum of 300micrograms/day). Administration of the daily dose should be divided – it can be taken in two or three divided doses throughout the day, as evenly spaced as possible, and with each dose ideally being separated by a minimum of 4 hours. If the doses are not equal then the higher dose should be given at bedtime.

During dose titration, weekly monitoring of blood pressure, pulse rate and symptoms of somnolence and sedation, should be performed. See Appendix 3 for further information.

Clonidine is usually well tolerated, but common side effects may include hypotension, sleepiness, sleep disturbances, dizziness, dry mouth, headache, mood changes, gut dysmotility and malaise. Rarely clonidine can cause bradycardia, hallucinations, increased drooling, itch, rash and, Raynaud's Syndrome.

After initial titration and during the first year of treatment, the patient should be assessed at least every 3 months for:

- somnolence and sedation
- hypotension
- bradycardia

6 monthly monitoring should follow thereafter, with more frequent monitoring following any dose adjustments or any other relevant clinical changes, e.g. the initiation of another medication with cardiovascular effects.

It may take up to 2-4 weeks for clonidine to be fully effective for ADHD.

The child/adolescent and/or their parent/carer must be warned against sudden discontinuation of clonidine as this is associated with an increased risk of a hypertensive crisis, which can be even more problematic if the patient is also prescribed a stimulant medication for ADHD.

Clonidine discontinuation must be carried out gradually, under the supervision and guidance of the specialist, with regular monitoring of blood pressure and pulse. The dose is usually tapered at a similar rate and increment as originally started.

Clonidine is available as 25microgram and 100microgram tablets. This is the preferred formulation. Tablets should be swallowed whole with a glass of water, milk or juice. If there are swallowing difficulties then the tablets can be crushed and either dispersed in water or mixed with a small amount of soft food such as yogurt, honey or jam. Note that crushing the tablets and dispersing in water/mixing with food is an unlicensed method of administration.

A 50microgram/5mL oral solution is also available. If the oral solution is requested then it must be confirmed that the excipients in the oral solution are safe for administration to the child/adolescent.

6.3 Dual therapy

Stimulant and non-stimulant medications may occasionally be combined. For example, a non-stimulant may be added to a stimulant to augment response in a patient who has had a sub-optimal response to their maximum tolerated dose of stimulant.

For example, guanfacine prolonged-release (Intuniv®) is sometimes combined with stimulant medication where patients have had a sub-optimal response to the maximum tolerated dose of a stimulant. This combination is not licensed in the UK but is licensed in the USA. Controlled trials have demonstrated that guanfacine prolonged-release (Intuniv®) and methylphenidate showed significantly greater improvement in ADHD symptoms over placebo and stimulant.

The place of combined therapies still requires evaluation. If co-prescribing is required and appropriate for the child/adolescent then this should be clearly stated in any correspondence with the patient's primary care clinician, and documented in the patient's notes. This should include an explanation and discussion with the child/adolescent and their parent/carer about combinations of ADHD medications being off-label and the potential risks and benefits associated with this.

Combining drugs increases the risk of potential adverse reactions. Appropriate monitoring is essential and dose reduction may be required.

6.4 Duration of treatment

In view of evidence for persistence of ADHD into adolescence and, in some cases, adulthood, and the rapid return of core symptoms when medication is discontinued, treatment may require to continue into adulthood.

Accepted practice is to undertake regular (e.g. annual) short (up to two weeks) trial periods off treatment, obtaining feedback from school as well as parents/carer and child/adolescent. This is best avoided at the beginning of a new school year. If there is no appreciable difference in the child's/adolescent's behaviour when he or she is on or off medication, it may be discontinued for a longer period.

Further information on how to safely discontinue each medication can be found in section 5.2.1, section 5.2.2 and section 5.2.3.

6.5 Adverse drug reactions

Suspected adverse drug reactions should be reported to the Medicines and Healthcare products Regulatory Agency (MHRA) through the Yellow Card Scheme (yellowcard.mhra.gov.uk). Healthcare professionals should report all suspected adverse drug reactions, no matter how minor, in children under 18 years even if the black triangle symbol has been removed. Patients and their carers can also report suspected adverse drug reactions to the MHRA through the Yellow Card Scheme, https://yellowcard.mhra.gov.uk/

6.6 Special considerations

Driving

ADHD symptoms can negatively impact the ability to drive safely.

Adolescents who drive must inform the DVLA and their insurance company of their diagnosis and if their ADHD medication affects their ability to drive safely. More information on this can be found at: Attention deficit hyperactivity disorder (ADHD) and driving - GOV.UK (www.gov.uk).

The adolescent should be advised if treatment is likely to affect their ability to drive. This applies especially to drugs with sedative effects (e.g. following initiation or dose-titration of a non-stimulant medication), but also following initiation and titration of any of the ADHD medications, whilst the adverse effects and tolerance of that particular drug and dose are still to be established.

Competitive sports

Stimulants are banned substances in competitive sport. If the child or adolescent plays sport and wants to compete to a high level, where testing will happen, other ways of managing the ADHD may need to be discussed, or a Therapeutic Use Exemption (TUE) considered. More information on TUE can be found at: https://www.ukad.org.uk/

Pregnancy

If the young person is pregnant, considering pregnancy or is breast feeding, specialist advice should be sought from the perinatal team.

Information regarding the safety of the various ADHD medications in pregnancy is available from the summaries of product characteristics (available via www.medicines.org.uk), bumps - best use of medicine in pregnancy (medicinesinpregnancy.org) and www.choiceandmedication.org/nhs24/printable-leaflets/drugs-in-pregnancy/

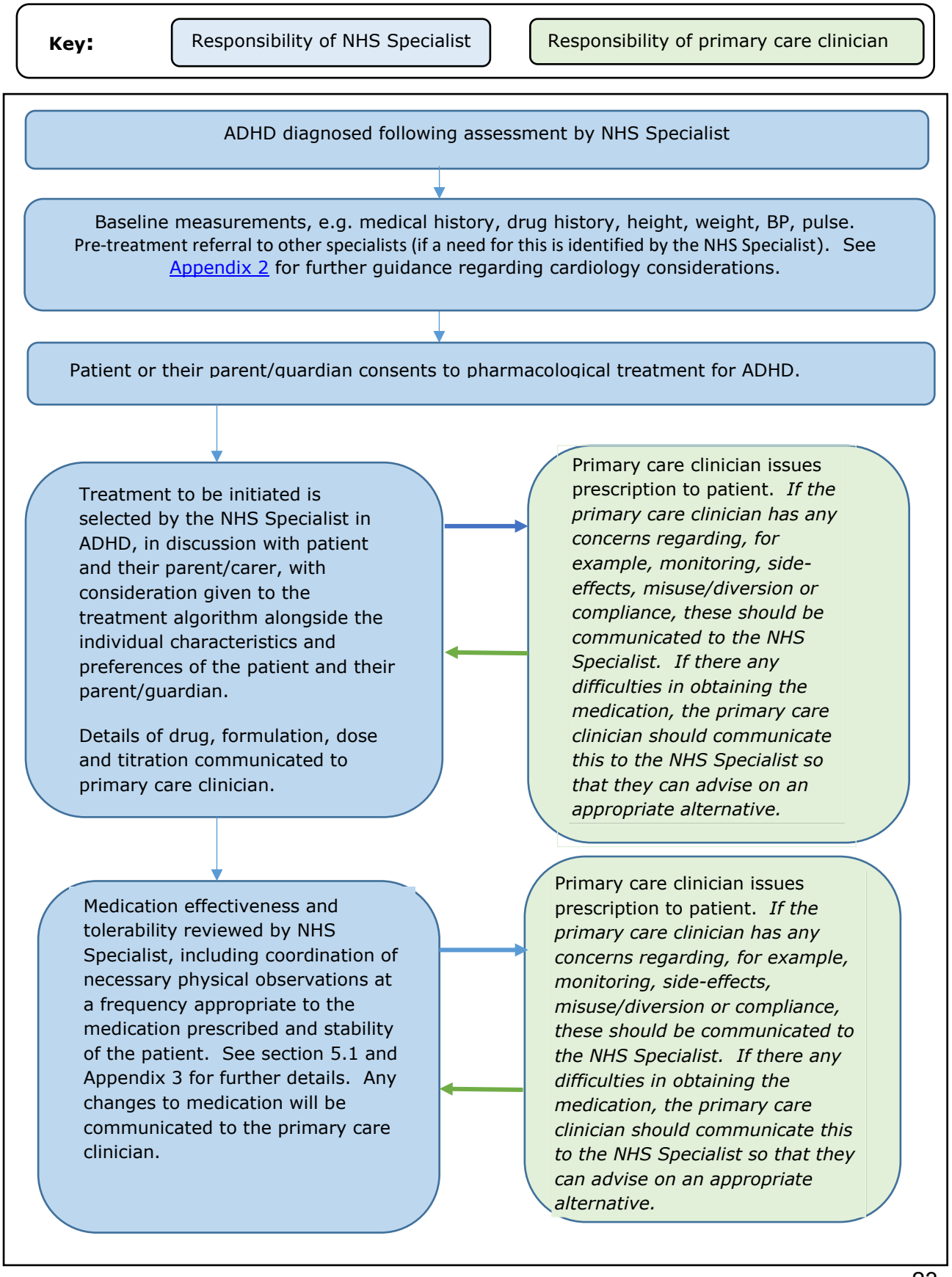
7. References

- CADDRA (2021). Canadian ADHD Practice Guidelines (4th Edition). Canadian ADHD Resource Alliance
- Choice and Medication (2023). Handy Fact Sheet – switching methylphenidate products. Available from: handyfactsheetmethylphenidateswitchinguk.pdf (choiceandmedication.org)
- Choice and Medication (2023). Handy Fact Sheet – ADHD formulations. Available from: handyfactsheetadhdformsuk.pdf (choiceandmedication.org)
- Chung L, Hariharan G, Varma S. (2023) Safety of stimulant medications for ADHD in congenital heart disease, Journal of Paediatrics and Child Health, 59 (3), pp 417- 602 Available from: https://onlinelibrary.wiley.com/doi/epdf/10.1111/jpc.16380
- Cortese S, Holtmann M, Banaschewski T, Coghill D, Buitelaar J et al. (2013) Practitioner Review: Current best practice in the management of adverse events during treatment with ADHD medications in children and adolescents, The Journal of Child Psychology and Psychiatry, 54(3), pp 227-246
- Dr Reddy's Laboratories (2021) Atomoxetine 18mg capsules summary of product characteristics. Electronic Medicines Compendium. Available at: ATOMAID 18 mg Capsules, Hard - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk)
- Martindale Pharma (2022) Xaggitin XL 18mg tablets summary of product characteristics. Electronic Medicines Compendium. Available at: Xaggitin XL 18mg Prolonged-release Tablets - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk)
- Medice UK Ltd (2023) Amfexa 5mg tablets summary of product characteristics. Electronic Medicines Compendium. Available at: Amfexa 5mg Tablets - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk)
- Medice UK Ltd (2023) Medikinet 5mg tablets summary of product characteristics. Electronic Medicines Compendium. Available at: Medikinet 5 mg tablets - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk)

- Medice UK Ltd (2023) Medikinet XL 10mg modified-release capsules summary of product characteristics. Electronic Medicines Compendium. Available at: Medikinet XL 10 mg modified-release capsules, hard - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk)
- National Institute for Health and Care Excellence. (2019). Attention Deficit Hyperactivity Disorder: Diagnosis and Management [NICE Guideline No. 87] https://www.nice.org.uk/guidance/ng87
- NHS Greater Glasgow and Clyde. NHSGGC Paediatrics for Health Professionals. Incidental Murmur. Glasgow; NHS Greater Glasgow and Clyde Available from: https://www.clinicalguidelines.scot.nhs.uk/nhsggc-guidelines/nhsggc-guidelines/emergency-medicine/incidental-murmur/
- Paediatric Formulary Committee. BNF for Children (online) London: BMJ, Pharmaceutical Press, and RCPCH Publications <http://www.medicinescomplete.com> [Accessed on September 30 2023]
- Sallee FR, Lyne A, Wigal T, et al: Long-term safety and efficacy of guanfacine extended release in children and adolescents with attention-deficit/hyperactivity disorder. J Child Adolesc Psychopharmacol 2009; 19(3):215-226.
- Takeda (2023) Intuniv 1mg prolonged-release tablets summary of product characteristics. Electronic Medicines Compendium. Available at: Intuniv 1 mg prolonged-release tablets - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk)
- Takeda (2023) Elvanse 20mg capsules summary of product characteristics. Electronic Medicines Compendium. Available at: Elvanse 20mg Hard Capsules - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk)
- Takeda (2022) Equasym XL 10mg capsules summary of product characteristics. Electronic Medicines Compendium. Available at: Equasym XL 10 mg Capsules - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk)
- Taylor, D. M., Barnes, T. R. E., & Young, A. H. (2021) The Maudsley Prescribing Guidelines, (14th Edition). Wiley Blackwell.
- Wilens TE, Bukstein O, Brams M, et al: A controlled trial of extended-release guanfacine and psychostimulants for attention-deficit/hyperactivity disorder. J Am Acad Child Adolesc Psychiatry 2012; 51(1):74-85

Appendix 1: Summary Of The Prescribing Process, Including Roles And Responsibilities Of The NHS Specialist In ADHD And The Primary Care Clinician

To be used in conjunction with the NHS Grampian Staff Prescribing Guidance for Attention Deficit Hyperactivity Disorder (ADHD) in Children and Adolescents



Appendix 2: Cardiology Considerations (Murmur, ECG And Referral Process)

An electrocardiogram (ECG) and cardiology opinion is needed before starting ADHD medication if the patient has any of the following features:

- history of congenital heart disease or previous cardiac surgery
- history of sudden death in a first degree relative under 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 with features that are not consistent with innocent murmur*
- blood pressure that is classified as hypertensive for adults
- blood pressure that is consistently above the 95th centile for age, sex and height for children and young people.

*If a murmur is heard on chest auscultation, the clinician listening to the murmur should try and delineate whether it is innocent or not. A checklist of characteristics of an innocent murmur is given in the box below.

If the murmur has features that are not consistent with an innocent murmur then the patient should be referred to Cardiology.

Characteristics of an innocent murmur:	
Always	**Usually**
Intensity <4/6, i.e. no thrill	Intensity less than 3/6
No radiation	Short in duration
Peripheral examination completely normal	Single
Not purely diastolic	Changes with position
	Musical or vibratory

ECG and Cardiology referral

- When an ECG is required, and local facilities to perform one do not exist, a paper referral can be sent to Aberdeen Royal Infirmary Cardiology Department (Purple Zone).

- Cardiology assistance with interpretation of an ECG can be requested by emailing gram.paedscardiology@nhs.scot with a brief clinical history (note, this mailbox is not accessed on a daily basis)

- When referral to Cardiology is required a letter should be uploaded to Trak for vetting.

Appendix 3: Summary Of Physical Monitoring Requirements

This is the responsibility of the specialist in ADHD – see section 5.1.5 Physical observations can be undertaken by the recommending specialist service or the specialist service may refer the patient to a Community Hub.

Measure	Baseline (prior to treatment)	Before and after each dose change	At 3 months	3 monthly	6 monthly until stable	6 monthly when stable
Chest auscultation	Yes	Consider if cardiovascular symptoms/possible cardiovascular adverse effects occur				
Weight*	Yes	Yes	Yes	If on stimulant and <10 years old For 1st year if on guanfacine or clonidine	If on stimulant and ≥10 years old	Yes
Height*	Yes	No	No	No	Yes	Yes
Heart rate	Yes	Yes	If on guanfacine or clonidine	For 1st year if on guanfacine or clonidine	Yes (stimulants, atomoxetine)	Yes
Blood pressure**	Yes	Yes	If on guanfacine or clonidine	For 1st year if on guanfacine or clonidine	Yes (stimulants, atomoxetine)	Yes
ECG	If clinically indicated or medicine can prolong QTc, e.g. clonidine	Throughout treatment if clinically indicated.				

*plot on percentile charts/growth charts for under 18 years

** compare result with the normal range for age, sex and height

Appendix 4: Prescribing Summary For Immediate-Release Methylphenidate

IMMEDIATE-RELEASE METHYLPHENIDATE TABLETS			
Brand name	**Dosage form**	**Dosing**	**Administration details/other information**
N/A – generic prescribing of methylphenidate immediate-release tablets	5mg, 10mg, 20mg tablets	For detailed prescribing information on starting dose, titration schedule, maximum dose, please access the following resources: **BNF for Children** **Summary of product characteristics for the individual product**	Not licensed for use in children under 6 years. For patients with swallowing difficulties, immediate-release methylphenidate tablets can be crushed and dispersed in water or crushed and mixed with a small amount of soft food such as yogurt or jam, immediately prior to administration. Duration of action of each dose is ~4 hours therefore is usually prescribed with a 4-hour interval between each dose e.g. 8am and 12 noon. Discontinue if no response after 6 weeks at adequate dose. Administration times are generally in the morning and early afternoon as administration too late in the afternoon/evening may result in sleep disturbances. If effect wears off in evening (with rebound hyperactivity) a dose at bedtime may be appropriate (establish need with trial bedtime dose).

Appendix 5: Prescribing Summary For Modified-Release Methylphenidate Preparations

MODIFIED-RELEASE METHYLPHENIDATE PREPARATIONS				
Type	**Brand Name**	**Dose and form**	**Dosing**	**Administration details/other information**
Type 1 Duration of action ~12 hours (22-25% of the dose released between 0 and 4 hours; 75-78% of the dose) released later.	**Xaggitin XL** is Grampian Area Formulary preferred brand. Affenid XL, Concerta XL, Delmosart, Matoride XL, Xenidate XL are also available.	18mg, 27mg, 36mg, 54mg tablets	For detailed prescribing information please access the following resources for the specific brand to be prescribed: **BNF for Children** **Summary of product characteristics for the individual product** When switching from *immediate-release* preparations to *modified-release* preparations—consult product literature.	Not licensed for use in children under 6 years. Prescribe by brand name. Xaggitin XL can be taken before, with or after breakfast. Do not chew, break, divide or crush the Xaggitin XL tablet. Prescribing for children aged 5 years old (and younger) is unlicensed. Discontinue if no response after 6 weeks at adequate dose.
Type 2 Duration of action ~8 hours (30% of dose released between 0 to 4 hours; 70% of dose released between 4 to 8 hours)	**Equasym XL®** is Grampian Area Formulary preferred brand. Ritalin XL®, Exattent XL® and Addepta XL® are also available with the same type of release (but do not claim to be equivalent)	10mg, 20mg, 30mg capsules	For detailed prescribing information, please access the following resources for the specific brand to be prescribed: **BNF for Children** **Summary of product characteristics for the individual product** When switching from *immediate-release* preparations to *modified-release* preparations—consult product literature.	Not licensed for use in children under 6 years. Prescribe by brand name. Equasym XL should be given in the morning before breakfast. Equasym XL capsules may be swallowed whole or the capsule may be opened and the contents sprinkled onto a tablespoon of apple sauce and given immediately. The capsules and the capsule contents must not be crushed or chewed. Discontinue if no response after 6 weeks at adequate dose.
Type 3 Duration of action ~8 hours (50% of dose released between 0 to 4 hours; 50% of dose released between 4 to 8 hours)	**Medikinet XL** is Grampian Area Formulary preferred brand. Metyrol XL and Meflynate XL are also available with the same type of release (but do not claim to be equivalent).	5mg, 10mg, 20mg, 30mg, 40mg, 50mg, 60mg capsules	For detailed prescribing information please access the following resources for the specific brand to be prescribed: **BNF for Children** **Summary of product characteristics for the individual product** When switching from *immediate-release* preparations to *modified-release* preparations—consult product literature.	Not licensed for use in children under 6 years. Prescribe by brand name. Medikinet XL should be given in the morning with or after breakfast. The capsules may be swallowed whole or the capsule may be opened, and the capsule contents sprinkled onto a tablespoon of apple sauce or yoghurt and given immediately. The capsules and the capsule contents must not be crushed or chewed. Discontinue if no response after 6 weeks at adequate dose.

Appendix 6: Prescribing Summary Of Products Containing Lisdexamfetamine Or Dexamfetamine

Lisdexamfetamine			
Brand name	**Dosage form**	**Dosing**	**Administration details/ other information**
Elvanse®	20mg, 30mg, 40mg, 50mg, 60mg, 70mg capsules	For detailed prescribing information on starting dose, titration schedule, maximum dose, please access the following resources for the specific brand to be prescribed: **BNF for Children** **Summary of product characteristics for the individual product**	Not licensed for use in children under 6 years. Duration of action ~13 to 14 hours. Elvanse may be taken with or without food. Elvanse may be swallowed whole, or the capsule opened and the entire contents emptied and mixed with a soft food such as yogurt or in a glass of water or orange juice. Administer in the morning - administration too late in the afternoon/evening may result in sleep disturbances. Discontinue if no response after 6 weeks at adequate dose.
Dexamfetamine			
Brand name	**Dosage form**	**Dosing**	**Administration details/ other information**
N/A – generic prescribing of dexamfetamine sulfate immediate-release tablets	5mg, 10mg, 20mg tablets 1mg/mL oral solution	For detailed prescribing information on starting dose, titration schedule, maximum dose, please access the following resources for the specific brand to be prescribed: **BNF for Children** **Summary of product characteristics for the individual product**	Not licensed for use in children under 6 years. Duration of action ~4 hours Administration times are generally in the morning and early afternoon as administration too late in the afternoon/evening may result in sleep disturbances. Can be offered to children and adolescents whose ADHD symptoms are responding to Elvanse (lisdexamfetamine) but who cannot tolerate the longer duration of action. Discontinue if no response after 6 weeks at adequate dose. Liable to abuse/diversion.

Appendix 7: Prescribing Summary Of Non-Stimulant Medications For ADHD

Guanfacine prolonged-release (Intuniv®)			
Brand Name	**Dosage form**	**Dosing**	**Administration details/other information**
Intuniv (guanfacine prolonged-release)	1mg, 2mg, 3mg, 4mg tablets	For detailed prescribing information on starting dose, titration schedule, maximum dose, please access the following resources for the specific brand to be prescribed: **BNF for Children** **Summary of product characteristics for the individual product**	Licensed for children and adolescents aged 6 to 17 years old. Guanfacine is taken once daily either morning or evening. When starting, recommend dose is taken in the evening as the medication may cause somnolence. Tablets should not be crushed, chewed or broken before swallowing because this increases the rate of guanfacine release. Guanfacine can be administered with or without food but should not be administered with high fat meals. Guanfacine should not be administered together with grapefruit juice. If a dose is missed, the prescribed dose can resume the next day. If two or more consecutive doses are missed, re-titration is recommended based on the patient's tolerability to guanfacine. When stopping treatment, the dose must be tapered with decrements of no more than 1 mg every 3 to 7 days, and blood pressure and pulse should be monitored.
Atomoxetine			
Brand Name	**Dosage form**	**Dosing**	**Administration details/other information**
N/A – generic prescribing of atomoxetine capsules or oral solution	10mg, 18mg, 25mg, 40mg, 60mg, 80mg, 100mg 4mg/mL oral solution	For detailed prescribing information on starting dose, titration schedule, maximum dose, please access the following resources for the specific brand to be prescribed: **BNF for Children** **Summary of product characteristics for the individual product**	Not licensed for use in children under 6 years. Atomoxetine can be administered as a single daily dose in the morning. Patients who do not achieve a satisfactory clinical response when taking atomoxetine as a single daily dose might benefit from taking it as twice daily evenly divided doses in the morning and late afternoon or early evening. Atomoxetine can be administered with or without food. No distinct withdrawal symptoms have been described. In cases of significant adverse effects, atomoxetine may be stopped abruptly; otherwise the drug may be tapered off over a suitable time period.