Methylphenidate, Atomoxetine, Lisdexamfetamine▼, Dexamfetamine▼(Amfexa®) and Guanfacine (Intuniv▼)

(TLS Amber with shared care)

Shared Care Guidelines: For the treatment of Attention Deficit Hyperactivity Disorder (ADHD) in children ≥6 yrs and adolescents

AREAS OF RESPONSIBILITY FOR THE SHARING OF CARE

This shared care agreement outlines suggested ways in which the responsibilities for managing the prescribing of methylphenidate, guanfacine, atomoxetine, dexamfetamine and lisdexamfetamine for ADHD in children and adolescents can be shared between the specialist and general practitioner (GP). GPs are **invited** to participate. If the GP is not confident to undertake these roles, then he or she is under no obligation to do so. In such an event, the total clinical responsibility for the patient for the diagnosed condition remains with the specialist.

Sharing of care assumes communication between the specialist, GP and patient. The intention to share care is usually explained to the patient by the doctor initiating treatment. It is important that patients are consulted about treatment and are in agreement with it.

The doctor who prescribes the medication legally assumes clinical responsibility for methylphenidate, guanfacine, atomoxetine, dexamfetamine and lisdexamfetamine and the consequences of its use.

RESPONSIBILITIES and ROLES

	Specialist responsibilities
1	To confirm diagnosis following full assessment.
2	To undertake • a complete history including medication history • A review of physical health including height, weight measurement and exercise syncope or undue breathlessness • a physical examination for the presence of heart disease, including an ECG if necessary. • an assessment of baseline cardiovascular status, including blood pressure and heart rate before prescribing and get specialist cardiac advice if appropriate • An assessment of any history of psychiatric disorders
3	Carry out a general paediatric social and risk assessment for substance misuse. If an additional mental health disorder is apparent during the clinical review, then to refer to your local Children and Adolescent Mental Health Services (CAMHS).
3	To provide the patient and/or parent with information about the medication.
4	To prescribe the medication until the dosage is stabilised. This will include as a minimum at least one month's supply of medication (3 months for Guanfacine). The specialist will continue to prescribe medication for children less than 6 years of age. When the child reaches 6 years of age the GP can be asked to participate in shared care.
5	To look out for signs of diversion (transfer of the medicine from the individual for whom it was prescribed to one for whom it is not prescribed), misuse and abuse of methylphenidate, lisdexamfetamine or dexamfetamine.
6	To advise and support parents and teachers.
7	To review the patient and monitor the following on a six-monthly basis and communicate these results to the GP: • Height, weight and appetite, recorded on a growth chart. • Blood pressure and pulse, recorded on a centile chart (also following dose adjustments) • To refer patients who develop symptoms such as palpitations, exertional chest pain, unexplained syncope, dyspnoea, or other symptoms suggestive of heart disease for prompt cardiac evaluation. • The development of new or worsening of pre-existing, psychiatric symptoms (also following dose adjustments and at every visit)
8	To notify GP of patient's failure to attend appointments and give advice on stopping the medication.
9	To liaise with the child's school as appropriate.
10	To take responsibility for either stopping the drug, referring to adult services or agreeing aftercare when the patient reaches 18 years of age
11	All test results should be notified to the patient's GP.

	General Practitioner responsibilities
1	Initial referral to Secondary care with a full history of any diagnosis or history where caution is needed or methylphenidate, atomoxetine, guanfacine or lisdexamfetamine/dexamfetamine are contraindicated.
2	To inform specialist, giving reasoning, if unwilling to enter into shared care arrangements.
3	Complete relevant physical and cardiovascular assessments, if requested by the specialist.
4	To provide repeat prescriptions after stabilisation of dose. Prescriptions for methylphenidate, lisdexamfetamine and dexamfetamine should be restricted to a maximum of 30 day's supply and are only valid for 28 days from the date of signature. This is because these drugs are controlled drugs and subject to safe custody and specific regulations for prescribing.
5	To contact the specialist if deterioration in behaviour.
6	To refer patients who develop symptoms such as palpitations, exertional chest pain, unexplained syncope, dyspnoea, or other symptoms suggestive of heart disease for prompt specialist cardiac evaluation.
7	To look out for signs of diversion (transfer of the medicine from the individual for whom it was prescribed to one for whom it is not prescribed), misuse and abuse of methylphenidate, lisdexamfetamine and dexamfetamine.
8	To act upon results communicated by the specialist

	Patient's and guardian's role
1	Report to the specialist or GP if he or she does not have a clear understanding of the treatment.
2	Share any concerns in relation to treatment with medicine.
3	Report any adverse effects to the specialist or GP whilst taking the medicine.
4	Return any unused or no longer needed medication promptly to the supplying pharmacy for destruction

BACK-UP ADVICE AND SUPPORT

Contact details	Telephone number	E-mail
BaNES & Wiltshire: community child health office number (HCRG caregroup)	0300 2470055	hcrg.bathnesspa@nhs.net
Swindon: community paediatric service: **Please use Cinapsis system if possible**	01793 605421	

Please refer to the most recent clinic letter for the name of the paediatrician looking after the patient or ask for the duty paediatrician (one rotated every day).

Summary of medication used and licensed indications[1] for the full summary of product characteristics visit www.medicines.org.uk

First Choice: Methylphenidate IR or ER *(Xaggitin is the most cost-effective prolonged-release brand of choice locally)*

Methylphenidate (available as immediate or extended release forms).

Methylphenidate is a central nervous stimulant thought to regulate dopamine and noradrenaline neurotransmission. Methylphenidate is a Schedule 2 controlled drug and is not currently licensed for use in children less than 6 years old. It is available in immediate-release tablets (e.g. Ritalin®, Equasym®, Medikinet®) that are usually given in two or three daily doses. Methylphenidate is also available in modified-release formulations that enable once-daily dosing (e.g. Xaggitin®, Xenidate®, Delmosart®, Matoride®, Concerta XL®, Equasym XL®, Medikinet XL®, other brands are available). Modified-release brands provide different release profiles of methylphenidate and switching between brands should be only considered with specialist advice. All new patients requiring modified-release methylphenidate should be initiated on the Xaggitin brand locally. Patients already on other brands will be reviewed by the specialist team to see if a switch to Xaggitin is possible. GPs should not switch patients themselves without advice.

Second choice option

Lisdexamfetamine (Elvanse)▼[2] is a long acting prodrug of dexamfetamine, a CNS stimulant occasionally used where methylphenidate has not been effective. Lisdexamfetamine allows for once daily dosing and has a lower abuse potential than dexamfetamine. It is a schedule 2 controlled drug and not licenced in children under 6 years old. Lisdexamfetamine has a black triangle (▼) status. Serious suspected reactions (even if well recognised or causal link uncertain) should be reported to the MHRA.

Third choice options
Atomoxetine – Treatment of attention deficit hyperactivity disorder (under specialist supervision)
Atomoxetine is a non-stimulant, non-amphetamine inhibitor of noradrenaline reuptake, although the precise mechanism by which it works on ADHD is unknown. It is not currently licensed for use in children less than 6 years old, and is not a controlled drug. It is occasionally used when CNS stimulants have not been effective or poorly tolerated or concerns are raised over the abuse potential of the CNS stimulants. Atomoxetine usually takes between 4-12 weeks to be fully effective.

Dexamfetamine- Dexamfetamine is a sympathomimetic amine with a central stimulant and anorectic activity. It is not currently licensed for use in children less than 6 years old, and is a controlled drug. The NICE NG87 recommends dexamfetamine for children aged 5 years and over and young people whose ADHD symptoms are responding to lisdexamfetamine but who cannot tolerate the longer effect profile.

Guanfacine- Guanfacine is a selective alpha$_{2A}$-adrenergic receptor agonist in that it has 15-20 times higher affinity for this receptor subtype than for the alpha$_{2B}$ or alpha$_{2C}$ subtypes. Guanfacine is a non-stimulant. The mode of action of guanfacine in ADHD is not fully established. Preclinical research suggests guanfacine modulates signalling in the prefrontal cortex and basal ganglia through direct modification of synaptic noradrenalin transmission at the alpha$_{2A}$-adrenergic receptors. It is not currently licensed for use in children less than 6 years old (although is recommended in NICE NG87 off-label in 5 year olds) and is not a controlled drug. It is used for patients where their symptoms have not responded to separate 6-week trials of lisdexamfetamine and methylphenidate, having considered alternative preparations and adequate doses.

Treatment Aims (Therapeutic plan)
Attention deficit hyperactivity disorder is usually diagnosed according to criteria specified in the Diagnostic and Statistical Manual of Mental Disorders.

ADHD is a chronic condition, which may require long-term treatment. All children with ADHD will benefit from behavioural, educational and psychological input. For some this is all that is required, but for others pharmacological measures will also be needed. These are initiated by a hospital specialist and shared care can be used to minimise the disruption caused by multiple and ongoing outpatient appointments.

In March 2018, NICE updated clinical guidance titled "Attention deficit hyperactivity disorder: diagnosis and management." [1] (further updated in September 2019).

Please consult the NICE quick reference guide for more information:
https://www.nice.org.uk/guidance/NG87

Treatment Schedule (including dosage and administration)

Methylphenidate *(Xaggitin is the most cost-effective prolonged release brand of choice locally)*
The usual initial dose of the immediate release preparation is 5mg once or twice daily increased in weekly increments. Occasionally slower starting regimen may be used depending upon the individual patient. The dose should then be titrated to response and is usually divided two or three times a day. The maximum recommended dose for methylphenidate is 60mg daily and this is rarely exceeded in clinical practice. Modified release preparations usually start at the lowest available dose (18mg for Xaggitin® or Concerta® or 10mg for Equasym® Xl and Medikinet® XL) and are then increased gradually in weekly increments. The maximum licensed daily dose for e.g. Xaggitin® or Concerta® XL is 54mg daily while for Equasym® and Medikinet® is 60mg per day.

Lisdexamfetamine (Elvanse®)[2]
Lisdexamfetamine is usually initiated at 30mg daily and increased by 10-20mg weekly depending on response and tolerability. Occasionally a lower starting dose of 20mg per day is used if clinically indicated. The maximum daily dose is 70mg / day.

Atomoxetine
For children over 6 years/adolescents weighing less than 70kg, start with 0.5mg/kg/day. The initial dose should be maintained for a minimum of seven days prior to upward titration according to response and tolerability. The recommended maintenance dose is 1.2mg/kg/day (depending upon weight and available dosage strengths). No additional benefit has been demonstrated for doses above this but doses up to 1.8mg/kg/day may be used if thought to be appropriate under specialist advice.

For children/adolescents weighing more than 70kg the initial dose should be 40mg, maintained for a minimum of seven days before increasing according to response and tolerability. The recommended maintenance dose is 80mg per day. No additional benefit has been demonstrated for doses above this but the maximum recommended daily dose is 100mg. Doses can be taken with or after food.

Dexamfetamine (Amfexa®) NB *Do not prescribe generically as the generic 5mg tablets are not licensed for ADHD.*
The recommended starting daily dose is 5 mg once or twice daily (e.g. at breakfast and lunch), increasing if necessary by weekly increments of 5 mg in the daily dose according to tolerability and degree of efficacy observed.
In the treatment of hyperkinetic disorders / ADHD, the times at which the doses of Amfexa 5 mg Tablets are administered should be selected to provide the best effect when it is most needed to combat school and social behavioural difficulties. Normally the first increasing dose is given in the morning. Amfexa 5 mg Tablets should not be taken too late after lunch time to avoid disturbances of sleep.
The regimen that achieves satisfactory symptom control with the lowest total daily dose should be employed.
The maximum daily dose in children and adolescents usually is 20 mg, although doses of 40 mg may in rare cases be necessary for optimum titration.

Guanfacine (Intuniv▼)
Careful dose titration and monitoring is necessary at the start of treatment since clinical improvement and risks for several clinically significant adverse reactions (syncope, hypotension, bradycardia, somnolence and sedation) are dose- and exposure-related. Patients should be advised that somnolence and sedation can occur, particularly early in treatment or with dose increases. If somnolence and sedation are judged to be clinically concerning or persistent, a dose decrease or discontinuation should be considered.
For all patients, the recommended starting dose is 1 mg of guanfacine, taken orally once a day.
The dose may be adjusted in increments of not more than 1 mg per week. Dose should be individualised according to the patient's response and tolerability.
Depending on the patient's response and tolerability for Intuniv the recommended maintenance dose range is 0.05-0.12 mg/kg/day. The recommended dose titration for children and adolescents is provided below (see tables 1 and 2). Dose adjustments (increase or decrease) to a maximum tolerated dose within the recommended optimal weight-adjusted dose range based upon clinical judgement of response and tolerability may occur at any weekly interval after the initial dose. Pulse and blood pressure need to also be monitored during downward titration.

Contra-indications and precautions for use

Methylphenidate
- Anxiety or agitation; severe depression, suicidal ideation; tics or a family history of Tourette's syndrome; drug or alcohol dependence ; psychosis; hyperthyroidism; cardiovascular disease; breast feeding.
- Diagnosis or history of severe depression, anorexia nervosa or anorexic disorders, suicidal tendencies, psychotic symptoms, mania, schizophrenia, severe mood disorders, or psychopathic or borderline personality disorder.
- Diagnosis or history of severe and episodic (type1) bipolar (affective) disorder that is not well-controlled.
- Pre-existing cerebrovascular disorders – e.g cerebral aneurysm and vascular abnormalities, including vasculitis or stroke. Unless specialist cardiac advice has been obtained: in pre-existing cardiovascular disorders, including severe hypertension, heart failure, arterial occlusive disease, angina, haemodynamically significant.
- Congenital heart disease, cardiomyopathies, myocardial infarction, potentially life-threatening arrhythmias, and dysfunction of cardiac ion channels.
- Misuse and cardiovascular events: Misuse of stimulants of the central nervous system may be associated with sudden death and other serious cardiovascular adverse events.
- Growth: Moderately reduced weight gain and growth retardation have been reported with long-term use of methylphenidate
- Seizures: Methylphenidate may lower the convulsive threshold and should be used with caution in patients with epilepsy.

Lisdexamfetamine
As for methylphenidate above

Atomoxetine
- Cardiovascular disease including hypertension and tachycardia; monitor growth in children; QT interval prolongation (avoid concomitant administration of drugs that prolong QT interval); history of seizures;

susceptibility to angle-closure glaucoma; hepatic impairment or hepatic disorders; pregnancy; breast-feeding. Seizures are a potential risk with atomoxetine and therefore it should be used with caution in patients with a history of seizure. Discontinuation of atomoxetine should be considered in any patient developing seizure or if there is an increase in seizure frequency.

- Reports of QT interval prolongation have been received in association with atomoxetine. Therefore, it should be used with caution in those with congenital or acquired long QT or a family history of QT prolongation. This risk may be increased if atomoxetine is used concomitantly with other drugs that produce QT prolongation, drugs that can cause electrolyte disturbances and those that inhibit cytochrome P450 2D6 (may increase atomoxetine plasma levels).
- Due to concerns about an increased risk of suicidal thoughts and behaviour, patients should be monitored for signs of depression, suicidal thoughts or suicidal behaviour and referred for appropriate treatment if necessary. Patients and their carers should be informed about the risk and told to report clinical worsening, suicidal thoughts or behaviour, irritability, agitation, or depression.
- There is a risk of rare, but sometimes severe, hepatic disorders. Atomoxetine should be discontinued in patients with jaundice or laboratory evidence of liver injury, and should not be restarted. Patients and carers should be advised of the risk and be told how to recognise symptoms; prompt medical attention should be sought in case of abdominal pain, unexplained nausea, malaise, darkening of the urine or jaundice.
- In addition to these warnings, the MHRA issued a further safety update in March 2009 concerning atomoxetine and provides the following advice to healthcare professionals:
  - At normal doses, atomoxetine can be associated with treatment emergent psychotic or manic symptoms (e.g. hallucinations, delusional thinking, mania, or agitation) in children and adolescents without a history of psychotic illness or mania
  - If such symptoms occur, consideration should be given to a possible causal role of atomoxetine and discontinuation of treatment
  - It remains possible that atomoxetine might exacerbate pre-existing psychotic or manic symptoms.

Dexamfetamine

- Known hypersensitivity to the active substance or any of the excipients
- Known hypersensitivity to sympathomimetic amines
- Glaucoma
- Phaeochromocytoma
- Symptomatic cardiovascular disease, structural cardiac abnormalities and/or moderate or severe hypertension, heart failure, arterial occlusive disease, angina, haemodynamically significant congenital heart disease, cardiomyopathies, myocardial infarction, potentially life-threatening arrhythmias and channelopathies (disorders caused by the dysfunction of ion channels)
- Advanced arteriosclerosis
- Concomitant use of monoamine oxidase inhibitors (MAOI) or within 14 days of MAOI treatment
- Hyperthyroidism or thyrotoxicosis.
- Severe depression, anorexia nervosa/anorexic disorders, suicidal ideation, hyperexcitability, psychotic symptoms, severe and episodic (Type I) Bipolar (affective) Disorder (that is not well-controlled), schizophrenia, psychopathic/borderline personality disorder
- Gilles de la Tourette syndrome or similar dystonias.
- Cerebrovascular disorders (cerebral aneurysm, vascular abnormalities including vasculitis or stroke)
- Porphyria
- History of drug abuse or alcohol abuse

Guanfacine

- Hypersensitivity to the active substance or to any of the excipients. Guanfacine (Intuniv) contains lactose. Patients with rare hereditary problems of galactose intolerance, total lactase deficiency or glucose-galactose malabsorption should not take this medicinal product.
- Risk factors for torsades de pointes: bradycardia, heart block, hypokalaemia, history of QT interval prolongation, concomitant use of other medicines which may prolong the QT interval.
- History of cardiovascular disease, hypotension, orthostatic hypotension, or syncope.
- Family history of cardiac or unexplained death.
- Dehydration (may increase risk of syncope).
- Alcohol consumption (not recommended during treatment).
- Concomitant treatment with centrally acting depressants or antihypertensives.
- Suicidal ideation or behaviour.

Side-effects

Undesirable effects: Only very common (greater or equal than 10% incidence), and common (between 1% and 10% incidence) are listed, for all others consult the latest SmPC

Methylphenidate

Very common (≥1/10): Headache, insomnia, nervousness

Common (≥1/100 to ≥1/10): Nasopharyngitis, tic, aggression, anxiety, affect lability, mood swings, depressed mood, dizziness, cough, pharyngo-laryngeal pain, abdominal pain, vomiting, nausea, diarrhoea, stomach discomfort, irritability, pyrexia, decreased weight and appetite. Growth retardation during prolonged use and changes in blood pressure and heart rate (usually an increase).

Lisdexamfetamine

Very common (≥ 1/10): Decreased appetite, insomnia, headache, weight decreased.

Common (≥1/100 to ≥1/10): Anxiety, Tics, aggression, dizziness, somnolence, tachycardia, dry mouth, diarrhoea, constipation, nausea, vomiting, irritability.

Atomoxetine

Very common (≥ 1/10): decreased appetite, headache, somnolence, abdominal pain, vomiting, nausea, blood pressure and heart rate increased

Common (≥1/100 to ≥1/10): Anorexia, irritability, mood swings, insomnia, agitation, anxiety and depression, tics, dizziness, mydriasis, constipation, dyspepsia, rash, fatigue, lethargy, weight decreased

Dexamfetamine

Very common (≥ 1/10): Decreased appetite, reduced weight gain and weight loss during prolonged use in children, Insomnia, nervousness

Common (≥1/100 to ≥1/10): Arrhythmia, palpitations, tachycardia, Abdominal pain and cramps, nausea, vomiting, dry mouth, Changes in blood pressure and heart rate (usually increases), Arthralgia, Vertigo, dyskinesia, headache, hyperactivity, Abnormal behaviour, aggression, excitation, anorexia, anxiety, depression, irritability.

Cessation of, or reduction in amfetamine use that has been heavy and prolonged can result in withdrawal symptoms. Symptoms include dysphoric mood, fatigue, vivid and unpleasant dreams, insomnia or hypersomnia, increased appetite, psychomotor retardation or agitation, anhedonia, and drug craving.

Guanfacine

Result	Action for primary care
Cardiovascular Symptoms such as palpitations, exertional chest pain, unexplained syncope, dyspnoea or other signs or symptoms suggestive of cardiac disease	Refer for urgent specialist cardiac evaluation
Marked decrease from baseline in heart rate	Discuss with specialist team; dose reduction or cardiac evaluation may be required
Hypotension or orthostatic hypotension	Give lifestyle advice (e.g. drinking plenty of fluids, getting up slowly from standing or sitting) and repeat monitoring. If blood pressure decreases markedly from baseline, reduce dose by 1mg and discuss with specialist team.
Sedation and somnolence	Sedation and somnolence typically occur during the start of treatment and with dose increases. Review timing of dose; guanfacine may be taken in the morning or evening. Review lifestyle factors, and reinforce that alcohol should be avoided. Seek specialist advice if sedation persists. Dose reduction or discontinuation may be indicated.
Weight or BMI outside healthy range	Provide appropriate support on multicomponent interventions to increase physical activity levels, improve eating behaviour and quality of diet. Discuss with specialist if difficulty persists; dose reduction, or treatment break, or change of medicine may be required.

Psychiatric disorders Suicidal ideation or behaviour	Review patient and exclude other causes. Refer urgently to ADHD specialist team. Consider discontinuing guanfacine.

Pregnancy and Lactation

Consider the use of contraception in females of child-bearing potential (females post-menarche) if this is considered to be applicable. Please take expert advice if dealing with patient groups likely to be affected by pregnancy and lactation.

Interactions

Please consult the relevant SPC or the BNF for relevant information concerning drug interactions.

Issues to note are:-

Atomoxetine

Undergoes biotransformation primarily through the cytochrome P450 2D6. Caution in CYP2D6 inhibitors such as fluoxetine, paroxetine, quinidine and terbinafine.

Methylphenidate, lisdexamfetamine, dexamfetamine

Contraindicated in patients treated with an MAOI (currently or within the preceding 2 weeks), caution when administering with dopaminergic drugs (such as antipsychotics).

Guanfacine

- Drugs which prolong the QT interval. Concomitant use with guanfacine is not recommended.
- **CYP3A4 and CYP3A5 inhibitors**, e.g. ketoconazole, clarithromycin, erythromycin, ciprofloxacin, diltiazem, fluconazole, verapamil, grapefruit juice, ritonavir: increased exposure to guanfacine. Dose reduction may be required.
- **CYP3A4 inducers**, e.g. carbamazepine, modafinil, phenytoin, rifampicin, St John's wort: reduced exposure to guanfacine. Dose increase may be required.
- **Valproic acid**: concomitant use may increase concentrations of valproic acid
- **Antihypertensive medicines**: risk of additive effects, e.g. hypotension, syncope
- **CNS depressants**, e.g. alcohol, sedatives, hypnotics, benzodiazepines, barbiturates, antipsychotics: risk of additive effects, e.g. sedation, somnolence

Administration with high fat meals: increased exposure to guanfacine.

Monitoring for Methylphenidate, lisdexamfetamine and dexamfetamine

Parameter	Frequency of monitoring	Action	By whom
Full blood count	As clinically indicated	Low threshold for investigation rather than schedule for routine testing e.g. if recurrent infections or purpuric rash occur	Specialist/GP as agreed
Blood pressure and pulse (appendix 1)	At initiation, every 6 months or following a dose change	Monitor whilst taking medication to ensure within published range for age of child	Specialist/GP as agreed
Growth development (height and weight)	At initiation, every 6 months or following a dose change.	Failure to gain weight appropriately-may require withdrawal If adversely affected consideration should be given to dose reduction or interrupting therapy in those on long-term treatment.	Specialist/GP as agreed
Monitor for insomnia, mood and appetite changes and the development of tics	Ongoing basis and at follow up	If adversely affected consideration should be given to dose reduction or interrupting therapy in those on long-term treatment.	Specialist/GP as agreed
Patients should be monitored for the risk of diversion, misuse, and abuse of **dexamfetamine**	At initiation, every 6 months or following a dose change.	If diversion, misuse or abuse is suspected, contact the specialist for advice.	Specialist/GP as agreed

NOTE: 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, reduce their dose and refer them to a paediatric specialist.

Monitoring for atomoxetine

Parameter	Frequency of monitoring	Action	By whom
Appearance of suicidal behaviour, self-harm or hostility	Ongoing basis and at follow up	Patients/parents should be advised of this risk and made aware of possible signs/symptoms to report back to the specialist immediately if noticed	Specialist
Blood pressure and pulse (appendix 1)	At initiation, 6 monthly or following a dose change	Monitor whilst taking medication to ensure within published range for age of child	Specialist/GP as agreed
Growth development (height and weight)	At imitation, 6 monthly or following a dose change	If adversely affected consideration should be given to dose reduction or interrupting therapy in those on long-term treatment.	Specialist/GP as agreed
LFTs	As clinically indicated - If physical examination reveals jaundice or other signs of liver abnormalities	Atomoxetine should be discontinued in patients with jaundice or laboratory evidence of liver injury, and should not be restarted	Specialist/GP as agreed

Monitoring for Guanfacine

Monitoring to be carried out in primary care	**Frequency**
• Blood pressure and heart rate* • Somnolence and sedation • Height, weight, and BMI • Signs or symptoms of cardiovascular adverse effects, e.g. bradycardia and hypotension	Every 3 months for the first year of treatment, and every 6 months thereafter. N.B. More frequent monitoring is recommended following dose adjustment or discontinuation. Additional monitoring to be carried out by team initiating the dose change (usually secondary care).
• Assessment of adherence	As required based on the patient's needs and individual circumstances
• Suicidal ideation or behaviour	Annually or if dose is adjusted / titrated / discontinued
• Review to ensure patient has been offered and attended an annual review with a healthcare professional with expertise in ADHD	Annually

Costs of extended-release methylphenidate preparations
At June 2020 electronic drug tariff prices, the cost of 30 day's treatment is as follows:

Brand of XL product	Strength	Pack Size	Price
Concerta XL	54mg	30	£73.62
Xaggitin XL 1st line for all NEW pts	54mg	30	£36.80
Xenidate XL	54mg	30	£36.79
Delmosart	54mg	30	£36.79
Matoride XL	54mg	30	£36.80
Concerta XL	36mg	30	£42.45
Matoride XL	36mg	30	£21.22
Xenidate XL	36mg	30	£21.21
Xaggitin XL 1st line for all NEW pts	36mg	30	£21.22
Delmosart	36mg	30	£21.21

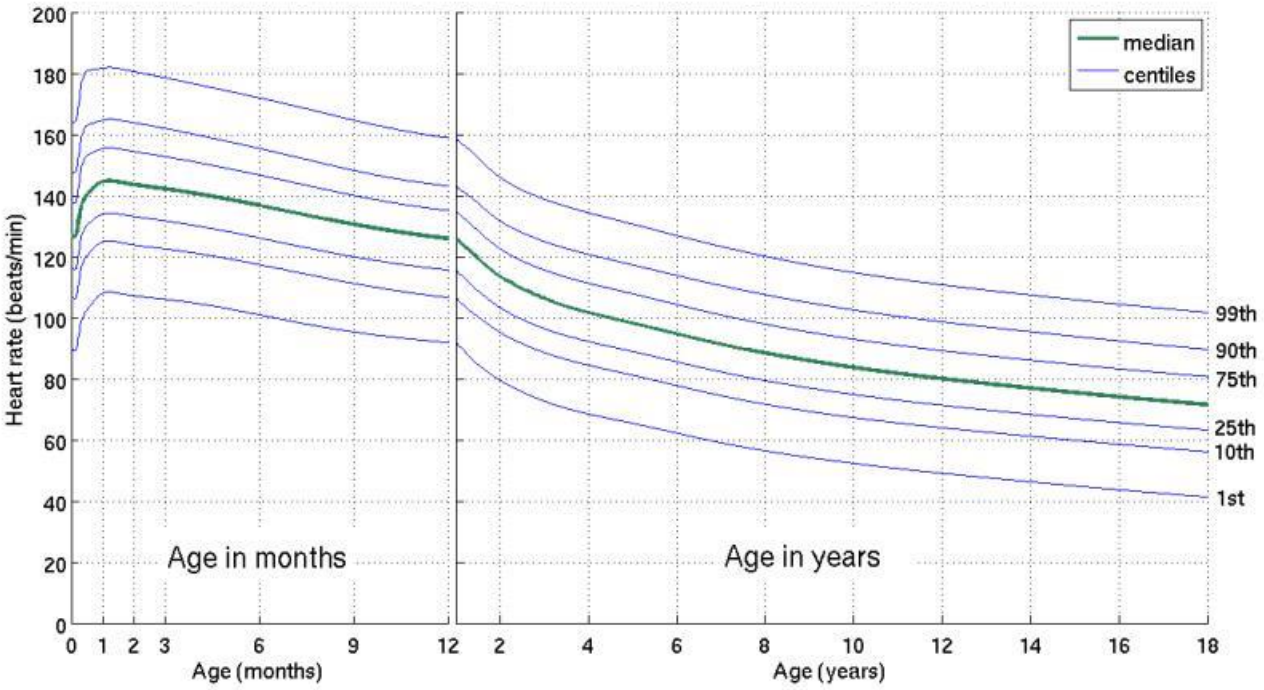
Concerta XL	27mg	30	£36.81
Xenidate XL	27mg	30	£18.39
Xaggitin XL 1st line for all NEW pts	27mg	30	£18.40
Delmosart	27mg	30	£18.39
Concerta XL	18mg	30	£31.19
Xenidate XL	18mg	30	£15.57
Delmosart	18mg	30	£15.57
Xaggitin XL 1st line for all NEW pts	18mg	30	£15.58
Matoride XL	18mg	30	£15.58
NOTE: Prescriptions written generically for methylphenidate XL would be charged as per the originator brand, Concerta XL. So for this drug, prescriptions should be written by BRAND NAME.			

Document review	Date	Whom
First edition	March 2010	Dr M Lewin Consultant Paediatrician
	March 2010	Approved by the Salisbury NHS Foundation Trust (SFT): Drugs and Therapeutics Committee (DTC)
Second edition	January 2017	Dr Tamsin Griffiths Consultant Paediatrician (SFT) Dr Patricia May Consultant Paediatrician (SFT) Steve Bleakley Chief Pharmacist (SFT)
	February 2017	Approved by the Salisbury NHS Foundation Trust: DTC
Third edition	March 2018	Approved by the Bath Area Partnership Therapeutics Committee March 2018
Minor update	July 2019	Removed brand name 'Strattera®' as atomoxetine is generic.
Minor update	November 2019	Changed to a BSW document, updated costs and Xaggitin as 1st line choice
Major update	June 2020	Changed to BSW document, added in dexamfetamine.
Major update	April 2023	Added in Guanfacine

References

1) National Institute for Health and Care Excellence. Attention deficit hyperactivity disorder: diagnosis and management. NG87; March 2018; available at: https://www.nice.org.uk/guidance/NG87
2) National Institute for Health and care Excellence. Attention deficit hyperactivity disorder in children and young people: lisdexamfetamine dimesylate. Evidence summary ESNM19. May 2013; available at www.nice.org.uk

Appendix 1: Centiles of heart rate for normal children from birth to 18 years of age (Flemming S et al. Lancet 2011: 377: 1011-1018)


median
centiles
99th
90th
75th
25th
10th
1st
Heart rate (beats/min)
Age in months
Age in years
Age (months)
Age (years)
0
20
40
60
80
100
120
140
160
180
200
0 1 2 3 6 9 12
2 4 6 8 10 12 14 16 18