

# **Portsmouth and South East Hampshire Area Prescribing Committee**

## **Shared Care Agreement**

### **Licensed ADHD Medications for the Treatment of Childhood ADHD For Fareham & Gosport and South East Hampshire Patients**

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**Authorised by Area Prescribing Committee: February 2019**

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This shared care protocol is produced to support the combination of the best of both primary and secondary care for the benefit of the patient. It facilitates seamless transfer of patient treatment from secondary to primary care and provides an information resource to support clinicians providing primary care to the patient.

It supports but does not replace discussion and agreement on an individual patient basis about transfer of care.

#### **1. Introduction**

ADHD is one of the most common chronic mental health problems among young children. The UK prevalence of ADHD is estimated at 3.62% in boys and 0.85% in girls, with an overall prevalence of 2.23% between 5 and 15 years of age (McCarthy et al, 2012). Estimates vary on those ADHD patients who are medicated, being dependent on age, gender and social circumstances, with an average percentage in the region of 0.84% (NICE NG 87 March 2018).

Medication would be considered by a Childhood and Adolescent Mental Health Services (CAMHS) specialist or paediatrician when the following criteria have been met:

- The patient meets the ICD10 criteria for hyperkinetic disorder, or DSM-V criteria for Attention Deficit Hyperactivity Disorder (ADHD).
- The symptoms cause impairments across more than one setting.
- Psychological, educational and social measures alone have been insufficient.
- Severe problems of inattention, hyperactivity and impulsivity indicate that other treatments alone will prove ineffective.
- Comorbid ADHD and Conduct Disorder subtype is unlikely to respond to psychological intervention alone and more likely to respond to medication.
- Comorbid ADHD and Anxiety Disorder subtype may respond to psychological treatment.
- Comorbid ADHD and Specific Learning Disorder are more likely to need medication for the child's Specific Learning Disorder to respond to remedial/education intervention.

## 2. Referral Criteria

Attention Deficit Hyperactivity Disorder is usually diagnosed according to criteria specified in the Diagnostic and Statistical Manual of Mental Disorders 5th Edition (DSM-V).

- Universal screening for ADHD should not be undertaken in nursery, primary and secondary schools.
- When a child or young person with disordered conduct and suspected ADHD is referred to a school's special educational needs coordinator (SENCO), the SENCO, in addition to helping the child with their behaviour, should inform the parents about local parent-training/education programmes. See NICE's guideline on antisocial behaviour and conduct disorders in children and young people.
- Referral from the community to secondary care may involve health, education and social care professionals (for example, GPs, paediatricians, educational psychologists, SENCOs, social workers) and care pathways can vary locally. The person making the referral to secondary care should inform the child or young person's GP.
- When a child or young person presents in primary care with behavioural and/or attention problems suggestive of ADHD, primary care practitioners should determine the severity of the problems, how these affect the child or young person and the parents or carers, and the extent to which they pervade different domains and settings.
- If the child or young person's behavioural and/or attention problems suggestive of ADHD are having an adverse impact on their development or family life, consider:
  - A period of watchful waiting of up to 10 weeks
  - Offering parents or carers a referral to group-based ADHD-focused support (this should not wait for a formal diagnosis of ADHD).
- If the behavioural and/or attention problems persist with at least moderate impairment, the child or young person should be referred to secondary care (that is, a child psychiatrist, paediatrician, or specialist ADHD CAMHS) for assessment.
- If the child or young person's behavioural and/or attention problems are associated with severe impairment, referral should be made directly to secondary care (that is, a child psychiatrist, paediatrician, or specialist ADHD CAMHS) for assessment.
- Primary care practitioners should not make the initial diagnosis or start medication in children or young people with suspected ADHD

## 3. Indication

Recent NICE guidance (NICE NG 87 March 2018) now advocates that medication can be considered for children aged 5 years and above. Prior to this, 6 years old was the recommendation and hence this makes prescribing in 5 year olds unlicensed but is supported by NICE if deemed clinically appropriate.

**Methylphenidate, dexamfetamine, and lisdexamfetamine** are stimulant drugs used in the treatment of severe Attention Deficit Hyperactivity Disorder (ADHD), Attention Deficit Disorder (ADD) and Hyperkinetic Disorder (HKD) as part of a comprehensive treatment approach when remedial measures alone prove insufficient. Methylphenidate is licensed in children of 6 years old and over. Lisdexamfetamine is licensed in children aged 6 years of age and over when response to previous methylphenidate treatment is considered clinically inadequate. Dexamfetamine is licensed for the treatment of refractory ADHD in children over 3 years.

### **Atomoxetine:**

Atomoxetine (a non stimulant) is licensed for the treatment of attention deficit hyperactivity disorder (ADHD) in children aged 6 years and over, and in adolescents as part of a comprehensive treatment plan.

**Guanfacine:**

Guanfacine is licensed after the use of stimulant medication in patients aged 6 – 17 years old. Current NICE guidance indicates that guanfacine is an option after the use of stimulant medication where these were either ineffective or not tolerated, Guanfacine can also be considered for patients who might be prescribed clonidine – this is generally rare and primarily restricted to those where stimulants and atomoxetine have been tried and failed.

An audit was conducted by SPfT clinicians in 2018 on the effectiveness and tolerability of guanfacine and found that ~30% of patients had a good response and 30% had a partial response. Generally guanfacine was well tolerated, with sedation and slight weight gain being the most common side effects noted. This audit supports NICE's current positioning of guanfacine

**NB:** Comprehensive treatment programme is defined to include psychological, education and social measures.

Drug treatment should only be initiated by an appropriately qualified healthcare professional with expertise in ADHD and should be based on a comprehensive assessment and diagnosis. GPs may continue prescribing and monitoring drug treatment under shared care arrangements (NICE NG 87 March 2018)

**Choice of ADHD Medication****Medication choice – children aged 5 years and over and young people (NICE NG 87)**

Offer methylphenidate (either short or long acting) as the first line pharmacological treatment for children aged 5 years and over and young people with ADHD.

Consider switching to lisdexamfetamine for children aged 5 years and over and young people who have had a 6-week trial of methylphenidate at an adequate dose and not derived enough benefit in terms of reduced ADHD symptoms and associated impairment.

Consider dexamfetamine 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.

Offer atomoxetine or guanfacine to children aged 5 years and over and young people if:

- they cannot tolerate methylphenidate or lisdexamfetamine **or**
- their symptoms have not responded to separate 6-week trials of lisdexamfetamine and methylphenidate, having considered alternative preparations and adequate doses

Furthermore the decision regarding which product to use should also be based on the following:

- The presence of co-morbid conditions (for example tic disorders, Tourette's syndrome, epilepsy).
- The different adverse effects of the drugs.
- Specific issues regarding compliance identified for the individual child or adolescent, for example problems created by the need to administer in school.
- The potential for drug diversion and/or misuse.
- The individual preferences of the child/adolescent and/or their parent/guardian.

If there is a choice of more than one appropriate drug, the product with the lowest cost (taking into account the cost per dose and number of daily doses) should be prescribed.

## 4. Dosage

### **Methylphenidate:**

**Plain – Ritalin® and Medikinet®:** Child 4-5 years old (unlicensed), initially 2.5 mg twice daily, increased in steps of 2.5 mg daily if required, at weekly intervals

For Children over 6 years initially 5mg once, or twice daily with or after breakfast and lunch, increasing if necessary in weekly intervals of 5-10mg in 2 to 3 divided doses. The maximum licensed dose for methylphenidate is 60mg daily, with 90mg daily used in some specialist centres, which is supported by NICE (NICE NG 87 March 2018).

In some children rebound hyperactivity may occur if the effect of the drug wears off in the evening. An additional dose later in the day may eliminate this difficulty but may disturb sleep.

**Equasym XL®:** Child 6\* years or over, initially 10mg once daily (in the morning before breakfast), increasing if necessary in weekly intervals to a maximum of 60mg daily. For children 4-5 years 10mg daily (in the morning with breakfast) could be considered but this is unlicensed.

**Medikinet XL®:** Child 6\* years or over, initially 10mg once daily (in the morning with breakfast), adjusted according to response at weekly intervals to a maximum of 60mg daily. For children 4-5 years old Medikinet XL 5mg once daily (in the morning before breakfast) could be considered, with this being unlicensed

**Concerta XL®, Xaggitin XL Matoride XL® & Xenidate XL®:** Child 6\* years or over initially 18mg once daily (in the morning), increasing if necessary in weekly increments of 18mg up to a maximum licensed dose of 54mg once daily. For children 4-5 years 18mg daily (in the morning with breakfast) could be considered but this is unlicensed.

**Branded Concerta XL Generics** – all are considered by MHRA as being bioequivalent to Concerta XL preparations

<b>Branded Generic</b>	<b>Doses Available</b>
Xaggitin XL	18mg, 27mg, 36mg & 54mg
Delmosart XL	18mg, 27mg, 36mg & 54mg
Matoride XL	18mg, 36mg & 54mg
Xenidate XL	18mg, 27mg, 36mg & 54mg

**Note:** SPfT endorses Xaggitin XL as a suitable 12 hour MPH option for new patients and for switching appropriate existing Concerta XL patients due to its cost effectiveness (50% reduction in acquisition costs), same doses available and pilot studies suggesting ease of switching.

A 15mg dose of all other formulations of methylphenidate is considered equivalent to Concerta XL® 18mg and branded generic versions of this. The unlicensed dose of Concerta XL® 72mg is therefore equivalent to the licensed maximum 60mg dose of Ritalin®, Medikinet®, Equasym XL® or Medikinet XL®.

### **Dexamfetamine (Amfexa® & generic versions):**

The usual starting dosage for children aged 3-5 years is 2.5mg a day, increased if necessary by 2.5mg a day at weekly intervals; for children aged 6 years and over, the usual starting dose is 2.5mg 2 to 3 times per day increasing if necessary by 5mg per day at weekly intervals. The usual upper limit is 20mg a day though some older children have needed 40mg or more for optimal response. Maintenance dose should be given in 2 to 4 divided doses.

**Lisdexamfetamine (Elvanse®):**

Lisdexamfetamine is a pro-drug formulation of dexamfetamine, which is converted to free dexamfetamine by enzymes present on red blood cells. The starting dose in children of 5\* years and over is 20mg once daily taken in the morning, which can be increased in dose by 10-20mg increments, at minimum intervals of one week up to a maximum of 70mg once daily.

\*NICE (NG 87 March 2018) supports the unlicensed use in 5 year olds.

**Methylphenidate, dexamfetamine and lisdexamfetamine are schedule 2 controlled drugs and therefore all controlled drug prescription writing legislation set down in the section on “Controlled Drugs and drug dependence” in the British National Formulary (BNF) applies.**

**Atomoxetine:*****Dosing in children/adolescents up to 70kg body weight:***

Initially a total daily dose of approximately 0.5mg/kg per day. This should be maintained for a minimum of 7 days, before titrating upwards according to clinical response and tolerability. Maintenance dose is approximately 1.2mg/kg per day (depending on the patient's weight and available dosage strengths of atomoxetine). No additional benefit has been demonstrated for doses higher than 1.2mg/kg/day. The safety of doses above 1.8mg/kg has not been systematically evaluated.

***Dosing of children/adolescents over 70 kg body weight:***

An initial dose of 40mg per day, which should be maintained for a minimum of 7 days, before titrating upwards according to clinical response and tolerability. Maintenance dose is 80mg per day. Maximum licensed dose is 100mg/day; however no additional benefit has been demonstrated for doses higher than 80mg. The safety of single doses over 120mg and total daily doses above 150mg have not been systematically evaluated.

**Note:** Atomoxetine should be administered as a single daily dose with or without food.

For adolescents whose ADHD symptoms persist into adulthood and who have shown clear benefit from treatment, it may be appropriate to continue treatment into adulthood. Atomoxetine is now licensed as suitable to commence in adults if the presence of symptoms of ADHD that were pre-existing in childhood are confirmed.

**Guanfacine:**

Guanfacine is to be initially prescribed at 1mg daily (morning or evening), which can be increased by 1mg at a minimum interval of 1 week up to a maximum dose of 7mg once daily, with the lowest effective dose to be used for maintenance treatment. The usual maximum dose is 4 mg in children and 4-7 mg in adolescents, based on weight - Adolescent subjects must weigh  $\geq 34$ kg, with those titrated up to 7mg daily being  $\geq 58.5$ kg.

Depending on the patient's response and tolerability to guanfacine the recommended maintenance dose range is 0.05-0.12 mg/kg/day.

When initiating guanfacine the Summary of Product Characteristics (SmPC) recommends that monitoring weekly blood pressure and pulse are conducted for the first 4 weeks.

**5. Contraindications****Methylphenidate, dexamfetamine, and lisdexamfetamine:**

Known hypersensitivity to methylphenidate, dexamfetamine, lisdexamfetamine or any of the other product ingredients.

Marked anxiety and tension, hyperthyroidism/thyrotoxicosis, hyperexcitability or agitated states, family history or diagnosis of Tourette's syndrome, history of drug or alcohol abuse, glaucoma, pregnancy and breastfeeding.

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

Stimulants should not be used in combination with monoamine oxidase inhibitors (MAOIs). Stimulant medication should not be used within two weeks after discontinuing therapy with a MAOI. Treatment with a MAOI should not be initiated within two weeks of discontinuing stimulant therapy.

Unless specialist cardiac advice has been obtained: in pre-existing cardiovascular disorders, including moderate to severe hypertension and advanced arteriosclerosis, heart failure, arterial occlusive disease, angina, haemodynamically significant congenital heart disease, cardiomyopathies, myocardial infarction, phaeochromocytoma, potentially life-threatening arrhythmias, and dysfunction of cardiac ion channels

**Atomoxetine:**

Known hypersensitivity to atomoxetine or any of the other product ingredients.

Atomoxetine should not be used in combination with monoamine oxidase inhibitors (MAOIs). Atomoxetine should not be used within two weeks after discontinuing therapy with a MAOI. Treatment with a MAOI should not be initiated within two weeks of discontinuing atomoxetine.

Atomoxetine should not be used in patients with severe cardiovascular or cerebrovascular disorders whose condition would be expected to deteriorate if they experienced increases in blood pressure or heart rate that could be clinically important.

Phaeochromocytoma.

Atomoxetine should not be used in patients with narrow angle glaucoma.

If the patient develops jaundice and/or other signs of liver injury, then atomoxetine should be immediately discontinued and not restarted.

**Guanfacine:**

Known hypersensitivity to guanfacine or any of the other product ingredients.

**6. Responsibilities and Roles**

<b>Consultant / Specialist responsibilities</b>
1. Confirmation of diagnosis and identification of suitable patients following full assessment
2. Initiation of appropriate therapy, and once stable request agreement of shared care with primary care
3. Discussion of risks and benefits with patients, outline possible side effects and explain their roles
4. To undertake a complete history, documenting: concomitant medicines; past and present medical and psychiatric disorders or symptoms; family history of sudden cardiac death, unexplained death, or malignant arrhythmia
5. To assess baseline cardiovascular status, including blood pressure and heart rate and taking a cardiac history before prescribing, getting specialist cardiac advice if appropriate.
6. Issuing initial prescription(s) until the patient is stabilised (minimum of one month) on treatment

7. To provide a copy of this information sheet to the patient to ensure that they are familiar with all roles
8. To request the GP takes over prescribing under this agreement using the approved form. (see appendix 2)
10. To review the patient and monitor the following (if relevant to specific drug) usually on a six monthly basis (though well-established adolescents & adults may be seen annually. A move to annual monitoring must be communicated to the primary care prescriber), act on the results appropriately and communicate these results to the primary care prescriber: <ul style="list-style-type: none"> <li>• Height, weight and appetite, recorded at baseline, following dosage changes &amp; 6 monthly. Recorded on a growth centile chart. ( the six monthly check may be done at the G.P surgery or as part of the new pharmacy project. Similar for the next three points )</li> <li>• Weight recorded at baseline and every 3 months for children 10 years and under. Recorded on a growth centile chart.</li> <li>• Measure weight at 3 and 6 months after starting treatment in children over 10 years and young people, and every 6 months thereafter, or more often if concerns arise. Recorded on a growth centile chart.</li> <li>• Blood pressure and pulse for all age groups, recorded at baseline, following dosage adjustments and 6 monthly.</li> <li>• Do not conduct blood tests (e.g. LFTs) or ECGs to people taking medication for ADHD unless there is a clinical indication.</li> <li>• As stimulant medications are controlled drugs, the specialist or parents should inform the school concerning any medication for these indications. In order to assess the effects of the drug on the child's emotional, physical or behavioural states the specialist should request further information from the school about the child's behaviour.</li> <li>• To counsel and refer patients if appropriate to primary care or if serious to A&amp;E who develop symptoms such as palpitations, exertional chest pain, unexplained syncope, dyspnoea, or other symptoms suggestive of heart disease for cardiac evaluation.</li> <li>• To monitor for the development of new, or the worsening of pre-existing, psychiatric symptoms following initiation and dose changes and at every visit.</li> </ul>
11. For guanfacine only <ol style="list-style-type: none"> <li>a. Parents/carers and patients must be reminded to report missing more than one consecutive dose to the prescriber. In the event of more than one consecutive dose being missed, re-titration is recommended</li> <li>b. During the first year of treatment a patient should be assessed at least every 3 months for: <ul style="list-style-type: none"> <li>• Signs and symptoms of somnolence &amp; sedation, hypotension and bradycardia</li> <li>• Weight increase/risk of obesity</li> </ul> </li> </ol>
12. Agree with the patient/parent when medication should be taken as many patients who are taking stimulants will be able and prefer to take such medications on school / college / work days only
13. Notify the GP of the patient's failure to attend for clinical review or drug monitoring and give advice on stopping the medication.
14. When stimulant medication is being used, 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.
15. If prescribing M/R methylphenidate this must be by 'Brand' to avoid the risk of the wrong formulation being dispensed. <b>Branded Generic versions of Concerta XL are available and information is provided in this document for brands suitable to switch too</b>
16. Ensure that all newly treated patients (and/or their carers) receive appropriate education and advice regarding their drug therapy and shared care arrangements. This should include written information

17. Providing primary care prescriber with clinic letter stating planned introduction and reviews and additional advice if appropriate
18. Provide outpatient reviews, monitor effectiveness/side effects
19. To liaise and advise primary care prescriber to interrupt treatment at least annually to assess ongoing need.
20. To take responsibility for stopping the drug and organising medication breaks.

#### General Practitioner (GP) or Primary Care Prescriber responsibilities

1. To inform the consultant if unwilling to enter into shared-care arrangements at the time of initial referral
2. To provide repeat prescriptions of the ADHD medication at the dose recommended once the patient is stabilised (at least one month stabilisation period).
3. A demonstrable system should be in place to ensure that continued prescribing is reviewed by the primary care prescriber if there is no record of the fact that monitoring has taken place within the agreed time scales.
4. Prescriptions for stimulants should be restricted to a 30 day supply and are only valid for 28 days from the date of signature, as stimulant medications are controlled drugs subject to safe custody and specific regulations for prescribing.
5. Record prescribing changes on receipt of such communication from secondary care and to act upon these.
6. To monitor prescribing rate of ADHD medications for individual patients. Additional requests for stimulants may indicate abuse or diversion. Some patients may only be taking stimulants on days when at school/college so may not be collecting monthly scripts. Both atomoxetine and guanfacine however need to be taken continuously and pick up of less than monthly may indicate non-adherence. Any concerns should be discussed with the specialist.
7. To contact consultant / specialist if deterioration in behaviour and to report adverse drug reactions or interactions to the consultant / specialist.
8. 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.
9. Liaise with consultant / specialist if any cause for concern or drug discontinued.
10. If prescribing M/R methylphenidate this must be by 'Brand' to avoid the risk of the wrong formulation being dispensed. <b>Branded Generic versions of Concerta XL are available and information is provided in this document for brands suitable to switch too</b>

#### Patient / Carer role

1. Ask the consultant / specialist or GP or Primary Care Prescriber for information, if he or she does not have a clear understanding of the treatment.
2. Share any concerns in relation to treatment with any medication covered by this agreement
3. Tell the specialist or primary care prescriber of any other medication being taken, including over-the-counter products.
4. Inform the specialist of more than one consecutive missed dose by patient, for those patients taking guanfacine.
5. Read the patient information leaflet included with your medication and report any side effects or concerns you have to the consultant / specialist or primary care prescriber.
6. To attend appointments.
7. Arrange blood tests as per consultant / specialist request
8. To be aware of side effects and report to their specialist or primary care prescriber any relevant symptoms such as: palpitations, exertional chest pain, unexplained fainting, shortness of breath, development of new or worsening of pre-existing psychiatric symptoms.

## 7. Stopping medication

If there is concern about the medication and the GP wishes to stop the medication, stimulants (methylphenidate, dexamfetamine and lisdexamfetamine) and atomoxetine can be stopped immediately with no ill effects. After stopping a stimulant the ADHD symptoms will become apparent within a day of stopping. It may take several days for the symptoms to re-emerge after stopping atomoxetine.

### **Guanfacine:**

#### *Missed dose:*

In the event of a missed dose, guanfacine dosing 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.

Therefore parents/carers and patients must be informed to report such missing of doses to the prescriber and this should be documented on the completed medication consent form. The prescriber must also give advice on re-titrating the medication if appropriate.

#### *Withdrawal of guanfacine*

Patients/caregivers should be instructed not to discontinue guanfacine without consulting their specialist or primary care prescriber.

Blood pressure and pulse may increase following discontinuation of guanfacine. Increases in mean systolic and diastolic blood pressure, of approximately 3 mmHg and 1 mmHg respectively, above original baseline were observed upon discontinuation of guanfacine. Whilst this may appear relatively small, there can be large individual patient variations when discontinuing guanfacine therapy. Patients who are discontinuing this therapy should have it withdrawn in decrements of no more than 1mg every 3 to 7 days.

## 8. Adverse Effects

### **Methylphenidate, dexamfetamine, and lisdexamfetamine:**

#### ***Very Common (frequency estimate >10%) side effects include:***

- Insomnia, nervousness and headache
- Decreased appetite and weight loss (lisdexamfetamine)

#### ***Common (frequency estimate 1% to 10%) side effects include:***

- Abdominal pain, nausea, vomiting, diarrhoea, dry mouth, appetite suppression (usually transient), weight loss, anorexia
- Drowsiness, dizziness, dyskinesia
- Tachycardia, palpitations, arrhythmias, changes in BP and heart rate
- Rash, pruritus, urticaria, fever, alopecia, arthralgia and muscle tightness

#### ***Less Common (frequency estimate 0.1% to 1%) side effects include:***

- Hypersensitivity reactions, constipation, tremor, blurred vision and dry eyes
- Psychotic symptoms, suicidal ideation and irritability
- Chest pain

### **Atomoxetine:**

#### ***Very Common (frequency estimate >10%) side effects include:***

- Decreased appetite (usually transient), headache, somnolence, abdominal pain, nausea and vomiting (usually transient).

#### ***Common (frequency estimate 1% to 10%) side effects include:***

- Anorexia (loss of appetite), irritability, mood swings, insomnia, dizziness, constipation, dyspepsia, dermatitis, rash, fatigue, lethargy, weight loss (0.5kg average and greatest during initiation and at higher doses), increased blood pressure.

**Less Common (frequency estimate 0.1% to 1%) side effects include:**

- Early morning awakening, syncope, migraine, peripheral coldness, allergic reaction, palpitations and sinus tachycardia

Post marketing reports of psychosis, suicidal ideation, seizure, QT prolongation, abnormal liver function tests and hepatitis have all been reported.

**Guanfacine:**

**Very Common (frequency estimate >10%) side effects include:**

- Somnolence, headache, abdominal pain & fatigue

**Common (frequency estimate 1% to 10%) side effects include:**

- Sedation, dizziness, lethargy, bradycardia, hypotension, constipation, dry mouth, vomiting, diarrhoea, nausea, decreased appetite, depression, anxiety, insomnia & nightmares

**Less Common (frequency estimate 0.1% to 1%) side effects include:**

- Hypersensitivity, agitation, hallucinations, convulsions, syncope, tachycardia, sinus arrhythmia, pallor, dyspepsia, pruritus & chest pain

## 9. Drug Interactions

**Methylphenidate, dexamfetamine and lisdexamfetamine:**

- Methylphenidate may possibly enhance anticoagulant effect of coumarins.
- Risk of hypertensive crisis when stimulants given with MAOIs and moclobemide. Amphetamine should not be administered during or within 14 days following the administration of monoamine oxidase inhibitors (MAOI) as it can increase the release of norepinephrine and other monoamines.  
This can cause severe headaches and other signs of hypertensive crisis. A variety of toxic neurological effects and malignant hyperpyrexia can occur, sometimes with fatal outcomes.
- Methylphenidate possibly inhibits metabolism of SSRIs and tricyclics and so contributes to increase risk of side effects from these medications.
- Stimulants may decrease the effect of drugs used to treat hypertension.
- Because a predominant action of stimulants is to increase extracellular dopamine levels, caution is recommended when administering stimulants with dopaminergic drugs, including antipsychotics.
- Seizures are a potential risk with stimulant medication. Caution is advised with concomitant use of medicinal drugs which are known to lower the seizure threshold (such as antidepressants, neuroleptics, mefloquine, bupropion, or tramadol).
- QT interval prolongation is an increased risk when stimulants are administered with other QT prolonging drugs (such as antipsychotics, anti-arrhythmics, moxifloxacin, erythromycin, methadone, mefloquine, tricyclic antidepressants, lithium) and drugs that cause electrolyte imbalance (such as thiazide diuretics).
- Methylphenidate possibly increases plasma concentration of phenytoin, phenobarbital and primidone.
- Alcohol may exacerbate adverse CNS effects therefore it is advisable to abstain from alcohol during treatment.
- Ascorbic acid and other agents and conditions (diets high in fruits and vegetables, urinary tract infections and vomiting) that acidify urine increase urinary excretion and decrease the half-life of amphetamine. Sodium bicarbonate and other agents and conditions (thiazide diuretics, diets high in animal protein, diabetes, respiratory acidosis) that alkalise urine decrease urinary excretion and extend the half-life of amphetamine.

### Atomoxetine:

- Risk of hypertensive crisis when given with MAOIs and moclobemide
- Combining with potent cytochrome P450 inhibitors particularly CYP2D6 inhibitors (*e.g.*, *fluoxetine*, *paroxetine*, *quinidine*, *terbinafine*): in patients receiving treatment with these drugs, atomoxetine exposure may be 6- to 8- fold increased as atomoxetine is primarily metabolised by CYP2D6.
- Slower titration and lower final dosage of atomoxetine may be necessary in those patients who are also taking CYP2D6 inhibitor drugs.
- Atomoxetine should be administered with caution to patients being treated with high dose nebulised or systemically administered salbutamol (or other beta-2 agonists) because the action of salbutamol on the cardiovascular system can be potentiated, resulting in increases in heart rate and blood pressure.
- QT interval prolongation is an increased risk when atomoxetine is administered with other QT prolonging drugs (such as antipsychotics, anti-arrhythmics, moxifloxacin, erythromycin, methadone, mefloquine, tricyclic antidepressants and lithium), drugs that cause electrolyte imbalance (such as thiazide diuretics) and drugs that inhibit CYP2D6.
- Seizures are a potential risk with atomoxetine. Caution is advised with concomitant use of medicinal drugs which are known to lower the seizure threshold (such as antidepressants, neuroleptics, mefloquine, bupropion, or tramadol).
- Because of possible effects on blood pressure, atomoxetine should be used cautiously with pressor agents.
- Drugs that affect noradrenaline should be used cautiously when co-administered with atomoxetine because of the potential for additive or synergistic pharmacological effects. Examples include antidepressants, such as imipramine, venlafaxine, and mirtazapine, or decongestant pseudoephedrine

### Guanfacine

- Caution should be used when guanfacine is administered to patients taking ketoconazole and other moderate and strong CYP3A4/5 inhibitors such as macrolide antibiotics, ciprofloxacin, diltiazem, verapamil, fluconazole and grapefruit juice. Co-administration of guanfacine with moderate and strong CYP3A4/5 inhibitors elevates plasma guanfacine concentrations and increases the risk of adverse reactions such as hypotension, bradycardia, and sedation. Such prescribing often requires a decrease in the dose of guanfacine within the recommended dose range.
- Patients taking guanfacine concomitantly with a CYP3A4 inducer are likely to require an increase in the dose of guanfacine within the recommended dose range. Examples of such inducers are; carbamazepine, phenobarbital, phenytoin, modafinil, rifampicin, oxcarbazepine and St. John's Wort
- When guanfacine is co-administered with valproic acid, patients should be monitored for potential additive central nervous system (CNS) effects and consideration should be given to the monitoring of serum valproic acid concentrations. This is due to the potential of increased plasma levels of valproic acid. Adjustments in the dose of valproic acid and guanfacine may be indicated when co-administered.
- Caution should be used when guanfacine is administered concomitantly with antihypertensive medicinal products, due to the potential for additive pharmacodynamic effects such as hypotension and syncope.
- Caution should be used when guanfacine is administered concomitantly with CNS depressant medicinal products (*e.g.* alcohol, sedatives, hypnotics, benzodiazepines, barbiturates, and antipsychotics) due to the potential for additive pharmacodynamic effects such as sedation and somnolence.
- Guanfacine should not be administered with high fat meals due to increased exposure, as it has been shown that high fat meals have a significant effect on the absorption of guanfacine.

## Sources of Information

	Name / position	Telephone	Email
<b>CAMHS Specialist / Consultant:</b>	Consultant		
	Havant: Dr Julie Waive	0300 304 0099	N/A
	Fareham & Gosport: Dr Ravi Thyagarajan	0300 304 0447	N/A
<b>Hospital Pharmacy:</b>	Lead CAMHS Pharmacist	07825 118323	<a href="mailto:graham.brown@wsht.nhs.uk">graham.brown@wsht.nhs.uk</a>
<b>Out of hours:</b>	On call physicians	N/A	N/A

## Version History

Document Name:	Shared Care Agreement for Licensed Medications for Attention Deficit Hyperactivity Disorder (ADHD) in Children (under 18 years old)		
Document Type:	Shared Care Agreement		
Relevant to:	All primary care prescribers working within Portsmouth and South East Hampshire area and all relevant clinicians at Sussex Partnership NHS Foundation Trust		
Version No.	Date	Author of original development or review	Details of document development
1	03/14	Graham Brown, Lead CAMHS Pharmacist	Original development
2	11/18	Graham Brown, Lead CAMHS Pharmacist,	General review due to recent updated NICE guidance and to also include guanfacine

## Approval for organisational use

<b>Authorised for use in Portsmouth and South East Hants Area</b>	<b>Specialist/consultant:</b> Dr Nishchint Warikoo, Lead Psychiatrist , Hants CAMHS
	<b>Portsmouth and South East Hampshire Area Prescribing Committee (APC):</b>

## 10. References

McCarthy S, Wilton L, Murray ML et al. The epidemiology of pharmacologically treated attention deficit hyperactivity disorder (ADHD) in children, adolescents and adults in UK primary care. BMC Paediatr. 2012;12:78

National Institute of Health and Clinical Excellence. NICE NG87. Attention deficit hyperactivity disorder: Diagnosis and management of ADHD in children, young people and adults. 2018. Full guideline. Accessed via <https://www.nice.org.uk/guidance/ng87/resources/attention-deficit-hyperactivity-disorder-diagnosis-and-management-pdf-1837699732933>

Drug Tariff. Figures accessed from <http://www.drugtariff.nhsbsa.nhs.uk/#/00616707-DB/DB00616702/Home>  
Costs correct as of 08/11/18 (inc VAT).

Link to the relevant SPC at [www.medicines.org.uk](http://www.medicines.org.uk)

### **Methylphenidate:**

Xaggitin XL: <https://www.medicines.org.uk/emc/product/2704>

Concerta XL: <https://www.medicines.org.uk/emc/product/6872>

Equasym XL: <https://www.medicines.org.uk/emc/search?q=%22Equasym%22>

Medikinet Tablets: <https://www.medicines.org.uk/emc/search?q=medikinet>

Medikinet XL capsules: <https://www.medicines.org.uk/emc/search?q=medikinet>

Ritalin: <https://www.medicines.org.uk/emc/product/1035>

### **Dexamfetamine:**

Immediate release: <https://www.medicines.org.uk/emc/search?q=%22Dexamfetamine+%22>

### **Lisdexamfetamine:**

<https://www.medicines.org.uk/emc/search?q=%22lisdexamfetamine+dimesylate%22>

**Atomoxetine:** <https://www.medicines.org.uk/emc/search?q=%22atomoxetine+hydrochloride%22>

**Guanfacine:** <https://www.medicines.org.uk/emc/search?q=%22guanfacine+hydrochloride%22>

## Appendix 1 – Cost of Licensed ADHD medications

Medication	Strength	Cost / single dose unit (£)	Original pack cost;(Pack Size)	Cost per year (365 days)*
Methylphenidate instant release	5mg	£0.10	£3.03 (30)	5mg OD is £36.87; 5mg TDS is £110.61
	10mg	£0.18	£5.49 (30)	10mg OD is £66.80; 10mg BD is £133.60
Concerta XL	18mg	£1.04	£31.19 (30)	£379.48
	27mg	£1.23	£36.81 (30)	£447.86
	36mg	£1.42	£42.45 (30)	£516.48
	45mg**	£2.27 (1x 18mg & 1x 27mg)	£68.00 (30)	£827.33
	54mg	£2.45	£73.62 (30)	£895.71
Xaggitin XL	18mg	£0.52	£15.60 (30)	£189.74
	27mg	£0.61	£18.30 (30)	£222.65
	36mg	£0.71	£21.23 (30)	£258.24
	45mg**	£1.13 (1x 18mg & 1x 27mg)	£33.90 (30)	£412.45
	54mg	£1.14	£36.81 (30)	£447.85
Equasym XL	10mg	£0.83	£25.00 (30)	£314.17
	20mg	£1.00	£30.00 (30)	£365.00
	30mg	£1.17	£35.00 (30)	£425.83
	60mg	£2.34 (2 x 30mg)	£70.00 (30)	£851.66
Medikinet XL	5mg	£0.80	£24.04 (30)	£292.49
	10mg	£0.80	£24.04 (30)	£292.49
	20mg	£0.96	£28.86 (30)	£351.13
	30mg	£1.12	£33.66 (30)	£409.53
	40mg	£1.93	£57.72 (30)	£702.63
	60mg	£2.24 (2 x 30mg)	£67.32 (30)	£819.06
Guanfacine MR	1mg	£2.00	£56.00 (28)	£730.00
	2mg	£2.09	£58.52 (28)	£762.85
	3mg	£2.34	£65.52 (28)	£854.10
	4mg	£2.72	£76.16 (28)	£992.80
	5mg (2mg & 3mg)	£4.43	£124.04 (28)	£1616.95
	6mg (2 x 3mg)	£4.68	£131.04 (28)	£1708.20
	7mg (3mg & 4mg)	£5.06	£141.68 (28)	£1846.90
Atomoxetine	10mg, 18mg,25mg, 40mg & 60mg	£2.23 (£4.46)***	£62.46 (28) (£124.92)***	£813.95 (1627.90)***
	80mg & 100mg	£2.97 (£5.20)*** [£2.23 + £2.97]]	£83.28 (28) (£145.60)***	£1084.05 (£1898.00)***
Lisdexamfetamine	20mg	£1.95	£54.62 (28)	£712.01
	30mg	£2.08	£58.24 (28)	£759.20
	40mg	£2.24	£62.82 (28)	£818.90
	50mg	£2.45	£68.60 (28)	£894.25
	60mg	£2.69	£75.18 (28)	£980.03
	70mg	£2.97	£83.16 (28)	£1084.05
Dexamfetamine	5mg	£0.88	£24.75 (28)	5mg OD is £321.20; 10mg BD is £1284.80

\*Assumes drug used 365 days a year with no break at weekends or during school holidays.

\*\* No single dose for this strength, hence made up of 2 doses combined.

\*\*\* Based on one dose being prescribed. Dosing is based on body weight, so two doses are sometimes prescribed, this doubles the cost – indicated in brackets.

Costs correct as of 08/11/18 (inc. VAT). Figures from <http://www.drugtariff.nhsbsa.nhs.uk/#/00616707-DB/DB00616702/Home>

## Shared Care Agreement Form

### CONSULTANT REQUEST

Dear Dr.

Your patient:	NHS No:
Was seen on:	
With a diagnosis of:	
I recommend that the following drug is continued:	

This drug has been accepted as suitable for shared care by the Portsmouth and South Eastern Hampshire Area Prescribing Committee. I agree to the responsibilities set out in the shared care guideline (copy attached).

I am requesting your agreement to sharing the care of the patient named above. The preliminary tests, monitoring and stabilisation of prescribing have been carried out in accordance with the shared care guidance.

Please prescribe the next course of treatment due:
The dose required is:

If you are in agreement with shared care for this patient then I would be grateful if you could continue treatment effective from the date given above. The medical staff of the department are available at all times to give advice. Contact information is included in the shared care guideline.

If you have any concerns about the treatment or monitoring arrangements, please contact me to discuss **before** returning this document.

I confirm I have explained to the patient, the risks and benefits of treatment, the baseline tests conducted, the need for monitoring, how monitoring will be arranged, and the roles of the consultant, GP, pharmacist and patient in shared care. I confirm the patient has understood and is satisfied with this shared care arrangement at this time. This has been recorded in the patient's records.

### CONSULTANT

Name	Signed	Date
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As shared care is a three way agreement between the patient, GP and specialist, I have also asked for the agreement of the patient and/or their carer:

### PATIENT/CARER AGREEMENT

I have discussed my responsibilities for shared care with the specialist and agree to be treated under shared care. I understand there may be instances when my GP feels shared care is not appropriate and my treatment may remain under the care of the hospital specialist. I am the patient  I am the carer of the above named patient  (*tick*)

Name	Signed	Date
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### GP RESPONSE *(Please circle the appropriate number below detailing your response)*

1. I am willing to undertake shared care as set out in the received shared care guideline for this patient
2. I would like further information. Please contact me on: .....
3. I am unable to undertake shared care for this patient. Details below

Name	Signed	Date