Shared care guideline
Methylphenidate, Dexamfetamine, Lisdexamfetamine and Atomoxetine for Adults with ADHD

1. Scope and Purpose

This document has been written to facilitate the continuation of care by General Practitioners (GPs) of patients initiated on methylphenidate, dexamfetamine, lisdexamfetamine or atomoxetine by the Cambridgeshire and Peterborough NHS Foundation Trust (CPFT) specialist Adult ADHD service.

2. Abbreviations used

ADHD	attention deficit hyperactivity disorder
BNF	British National Formulary
CPFT	Cambridgeshire and Peterborough NHS Foundation Trust
GP	General Practitioner
MPH	methylphenidate
NICE	National Institute for Health and Care Excellence

3. Introduction

Attention deficit hyperactivity disorder (ADHD) is the most prevalent neurodevelopmental disorder in children. Symptoms of ADHD persist into adulthood in more than two thirds of all patients. Adults with ADHD have problems in higher education, at work and in their relationships; they have high rates of underachievement at university, frequent job loss, relationship breakup and divorce, criminal offending and traffic violations or accidents.

Pharmacological treatment is recommended as a first-line treatment for adults with ADHD by the NICE clinical guideline (CG72 2008). Stimulants, and atomoxetine have well-documented therapeutic effects on ADHD symptoms, psychosocial functioning and can reduce criminal offending (Lichtenstein et al. 2012).

ADHD medication should be initiated by a specialist. Methylphenidate (MPH) is recommended as first choice by NICE (2008). D-amfetamine and atomoxetine are second-line treatments when MPH cannot be safely prescribed or when MPH treatment was not successful. Some prescribing of ADHD medication is 'off-label' but clearly supported by the NICE guideline and British National Formulary (BNF). Prescribers should be familiar with the pharmacokinetic profiles of ADHD preparations and controlled drug legislation governing prescription and supply of stimulants (methylphenidate, dexamfetamine and lisdexamfetamine are controlled drugs).

The CPFT Adult ADHD service offers diagnostic assessments, initiation and pharmacological treatment and psychoeducation/CBT. Dose titration is performed by a Nurse Prescriber under supervision of a consultant psychiatrist.

This shared care guideline specifies the initiation/continuation, prescribing and monitoring of ADHD medication in adults.

Following an adequate response, drug treatment for ADHD should be continued for as long as it is clinically effective. This should be reviewed annually.

According to NICE quality standard 39 (2013), a specialist review should be undertaken either by an ADHD specialist or, if agreed by the person with ADHD and their specialist, in primary care under a locally agreed shared care arrangement after titration and dose stabilisation.

4. Dose and UK licenses

Details of the dosage will be specified by the consultant or nurse prescriber and will be in line with NICE guidance and BNF. Some of these treatments are not currently licensed for initiation in adult patients but primary care will only be requested to take over prescribing of them in line with NICE Clinical Guideline CG72.

Methylphenidate, dexamfetamine and lisdexamfetamine are Schedule 2 Controlled drugs and need to be prescribed according to legal requirements. Supplies should be limited to no more than 30 days.

4.1 Methylphenidate

Oral doses up to 100mg/d (108mg for Concerta XL) are recommended by NICE 2008 and BNF. Concerta XL has a continuation licence for adults, other preparations and initiation of Concerta XL is 'off label'.

4.2 Atomoxetine

Oral doses up to 100mg/d are recommended by NICE 2008 and up to 120mg/d by BNF. Licensed for adults since March 2013.

4.3 Dexamfetamine

Oral doses up to 60mg/d are recommended by NICE 2008 and BNF. Off-label prescribing in adults

4.4 Lisdexamfetamine

Oral doses up to 70mg/d are recommended by BNF. Elvanse has a continuation licence for adults.

5. Adverse effects

Please see the latest edition of the BNF for more details, or the Summary of Product Characteristics (SPC) for further information.

5.1 Methylphenidate, dexamfetamine and lisdexamfetamine

The most common side effects are insomnia, anxiety, decreased appetite, abdominal pain, nausea and vomiting, headaches, emotional liability and changes in blood pressure and heart rate. Temporary growth retardation is no problem in (grown-up) adults.

5.2 Atomoxetine

Common adverse effects of treatment include abdominal pain, decreased appetite, nausea and vomiting, early morning waking, irritability and mood swings. Increased heart rate and small increases in blood pressure. Rare reports of hepatic disorders and suicidal ideation (particularly in those under 30 yrs).

6. Cautions

Atomoxetine is cautioned in patients with cardiovascular disease including a family history of QT prolongation and in patients with a history of seizure.

Population-based research showed that the use of ADHD medications in young and middle aged adults was not associated with an increased risk of serious cardiovascular events (Habel et al., JAMA 2011).

7. Contraindications

Atomoxetine should not be used in patients with severe cardiovascular or cerebrovascular disorders in which clinical deterioration would be expected with increases in blood pressure or heart rate that could be clinically important (e.g., 15–20 mm Hg in blood pressure or 20 beats per minute in heart rate). Examples of these severe cardiovascular or cerebrovascular disorders are included in the SPC.

See Drug Safety Update 5(6), January 2012 for increases in blood pressure and heart rate – new contraindications, warnings and advice for monitoring.

8. Drug interactions

Methylphenidate has been reported to inhibit the metabolism of warfarin, phenytoin, SSRI and tricyclic antidepressants. The CNS effects of methylphenidate can be increased by alcohol.

MAOI's (including) moclobemide should not be used in combination with methylphenidate, dexamfetamine, lisdexamfetamine and atomoxetine.

The main interactions with atomoxetine concern the potentiation of adverse cardiac effects – increased risks of arrhythmias have been reported with amiodarone, tricyclic antidepressants, antipsychotics, disopyramide, diuretics, methadone and sotolol when prescribed in combination with atomoxetine.

The above details are not a complete list; please see the BNF and the Summary of Product Characteristics (SPC) (https://www.medicines.org.uk/emc) for further information.

9. Monitoring standards

9.1 Monitoring side effects (same standards for all ADHD medications)

Cardiac function and blood pressure

- Monitor heart rate and blood pressure before and after each dose change, and every 6 months.
- Arrhythmia, increase of heart rate 20 beats per minute over normal or 15-20 mm Hg increase in systolic blood pressure measured on two occasions should prompt dose reduction and referral to the Specialist ADHD service. This does not preclude that smaller increases may be significant for individual patients.

Weight

- Measure 3 and 6 months after the start of treatment, and every 6 months thereafter.
- In adults, if any weight loss is associated with drug treatment, consider monitoring body mass index and referral to the Specialist ADHD service to consider changing the drug if weight loss persists.
- Strategies to reduce weight loss:

- taking medication either with or after food, rather than before meals
- eating additional meals or snacks early morning or late evening when stimulant effects have worn off
- obtaining dietary advice and eating high-calorie foods of good nutritional value

9.2 Duration of treatment and follow up

Continue treatment for as long as it is effective as assessed in the annual review

9.3 Annual review

Include in the review:

- clinical need, benefits and side effects
- the views of the person with ADHD, and those of parents, carers, a spouse or close friend, as appropriate
- the effect of missed doses, planned dose reductions and brief periods of no treatment
- the preferred pattern of drug use
- coexisting conditions; treat or refer if necessary
- the need for psychological, social and occupational support for the person and their carers/relatives, if appropriate.
- Consider working with the person to find the best pattern of drug use, which may include periods without treatment.
- Drug holidays are not routinely recommended, but may be useful to ascertain the need of continuation of treatment (BAP 2013)
- Adopt an individual treatment approach for adults. Review patterns of use at least annually, considering the effect of drug treatment on coexisting conditions and mood changes.

10. Cardiovascular problems

Patients with hypertension should be treated according to the relevant NICE guideline.

Patients with irregular pulse and/or a first-degree relative history of major cardiovascular events (stroke, sudden death, myocardial infarction) should have an ECG undertaken by their GP. The majority of patients will not need an ECG.

For patients with other cardiovascular problems the Consultant Psychiatrist will discuss planned ADHD medications with the GP or a cardiologist as appropriate.

11. Shared care

Prescribing is started by the Adult ADHD specialist and continued in primary care.
Patients are discharged to GP after successful dose titration and stabilisation. Individual handover meetings with the Nurse Prescriber will be offered as appropriate.
Patients will be seen by the Adult ADHD team for annual reviews.

12. Shared care responsibilities

12.1 Specialist ADHD Service team (Consultant Psychiatrist, Clinical Psychologist or Specialist Nurse Prescriber)

- Diagnostic assessment, assessment report and decision about the indication for treatment with ADHD medication.
- To discuss benefits and side effects of treatment with the patient/carer.

- Informed consent for the off label use of the drugs be obtained and documented prior to starting treatment.
- To initiate methylphenidate, atomoxetine, dexamfetamine or lisdexamfetamine in appropriate patients and prescribe the first three months or until patient has been stabilised for one month.
- To follow-up the patient during dose titration and monitor the patients BP and pulse before any dose increase.
- To contact patient's GP to request prescribing under shared care and send a link to or copy of the shared care protocol. Agreement to shared care cannot be assumed.
- To advise the GP regarding continuation of treatment, including the length of treatment, any changes to the treatment plan or any planned drug treatment breaks/periodical discontinuation.
- To discuss any concerns with the GP regarding the patient's therapy.
- To conduct an annual medication and effectiveness review for each patient including the recommended physical monitoring.

12.2 Attendance

The Adult ADHD team operates outpatient clinics in Cambridge and Peterborough. All efforts will be made to make contact with referred service users, and offer appointments that they can attend. Prior to the appointment we will call the patient to remind them of their appointment. After one missed appointment we will send an opt-in letter to rearrange another appointment. Should we be unable to make contact with the patient we will discharge them back to primary care.

12.3 General Practitioner

- To refer appropriate patients to secondary care for assessment.
- To agree to prescribe for patients in line with the shared care agreement.
- To treat hypertension according to relevant NICE guidance (if necessary)
- To report any adverse reaction to the CSM and the referring consultant or nurse prescriber.
- To continue to prescribe for the patient as advised by the consultant or nurse prescriber.
- To review the patient at 6 months (in between their specialist annual review) to monitor the patients weight, pulse and BP as per the recommendations.
- To inform the consultant if the patient discontinues treatment for any reason.
- To seek the advice of the consultant if there are any concerns with the patient's treatment.

13. Re-referral guidelines

Adult ADHD often comes along with other co-morbid mental health problems.

For ADHD-related problems the patients can be re-referred to the Adult ADHD team via ARC (or directly in South Cambridgeshire until roll-out of ARC is completed).

For any other deterioration in mental state/behaviour that causes concern and could not be managed by the GP the patients should be referred to CPFT via ARC.

14. Contact numbers for advice and support

Dr Ulrich Müller
Adult ADHD team
Block 7 / Specialist Services
Ida Darwin
Cambridge
CB21 5EE
01223 884098
adult.adhd@cpft.nhs.uk

15. Monitoring compliance with and the effectiveness of this guideline

CPFT will regularly review incidents and feedback from GPs with regard to the use of this drug and update the guideline accordingly.

16. Equality and diversity statement

This document complies with the CPFT service equality and diversity statement.

17. References

- British Association for Psychopharmacology [BAP] (2006) Evidence-based guidelines for management of attention deficit/hyperactivity disorder in adolescents in transition to adult services and in adults: Recommendations from the British Association for Psychopharmacology. J Psychopharmacol 21: 10–41.
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- Habel LA, Cooper WO, Sox CM, Chan KA, Fireman BH, Arbogast PG, Cheetham TC, Quinn VP, Dublin S, Boudreau DM, Andrade SE, Pawloski PA, Raebel MA, Smith DH, Achacoso N, Uratsu C, Go AS, Sidney S, Nguyen-Huynh MN, Ray WA, Selby JV. ADHD medications and risk of serious cardiovascular events in young and middle-aged adults. JAMA. 2011 Dec 28;306(24):2673-83.
- Lichtenstein P, Halldner L, Zetterqvist J, Sjölander A, Serlachius E, Fazel S, Långström N, Larsson H. Medication for attention deficit-hyperactivity disorder and criminality. N Engl J Med. 2012 Nov 22;367(21):2006-14.
- National Institute for Health and Clinical Excellence [NICE] (2008) Attention Deficit Hyperactivity Disorder – Diagnosis and Management of ADHD in Children, Young People and Adults. NICE clinical guideline 72. London (www.nice.org.uk).
- National Institute for Health and Care Excellence [NICE] (2013) Attention Deficits Hyperactivity Disorder. NICE Quality Standard 39. London (www.nice.org.uk).

18. Document Management

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