# FORMULARY AND PRESCRIBING GUIDANCE

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<thead>
<tr>
<th>GUIDELINE VERSION</th>
<th>23</th>
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<tbody>
<tr>
<td>RATIFYING GROUP (individual formulary decisions and linked guidelines)</td>
<td>Drugs and Therapeutics Group (DTG)</td>
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<tr>
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<td>July 2019</td>
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<td>FORMULARY SPONSOR</td>
<td>Chief Medical Officer</td>
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<tr>
<td>FORMULARY EDITOR</td>
<td>Ray Lyon, Chief Pharmacist</td>
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If you require this document in an alternative format, i.e. easy read, large text, audio, Braille or a community language please contact the pharmacy team on 01243 623349 (Text Relay calls welcome)

## KEY DOCUMENT ISSUES:
- List of approved psychotropic medicines
- Identification of high risk prescribing areas
- Rapid tranquillisation algorithms for all age groups*
- Anti-infective prescribing guidance.
- Guidance on prescribing and monitoring in selected areas high risk areas, e.g. lithium, insulin
- MHA aide memoire relating to medication use

This document supersedes:
- Formulary and Prescribing Guidance – version 22 - published in March 2019

*See the Rapid Tranquillisation Policy for more information and monitoring paperwork
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Formulary

and

Prescribing Guidance

Including:

- Rapid tranquillisation – guidance being reviewed at time of publication covers:
  - Acutely disturbed working age adults
  - Acutely disturbed older persons
  - Acutely disturbed patients with dementia
  - Acutely disturbed children and adolescents
  - Acutely disturbed adults with a learning disability
  - Monitoring, remedial action and flumazenil use guidance post RT.
- Anti-infective guidelines
- Anticoagulant guidelines
- Lithium prescribing and monitoring guidelines
- Insulin prescribing guidelines
- Prescribing opiates safely
- Mental Health Act (MHA) aide memoire

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* See Rapid Tranquillisation Policy for more information and monitoring paperwork.
High Risk Areas of Prescribing and Administration

1. **Allergies** – drug charts where the allergies box has not been completed.
2. **As required prescribing** – make sure the indication, maximum dose and minimum interval between doses is clearly stated.
3. **Antibiotic allergies** – co-amoxiclav (Augmentin®) is often inappropriately prescribed for penicillin allergic patients, yet it contains amoxicillin. See the BNF Chapter 5.
4. **Drugs with similar names**, e.g. flupentixol and fluphenazine.
5. **Fentanyl and buprenorphine patches** should only be initiated under the advice of a palliative care or pain specialist. How long different brands can remain on varies. Check the BNF for information on when patches should be removed and replaced.
6. **Initiating drugs requiring increasing doses** over the first few days of treatment e.g. quetiapine.
   Use Xs in the administration boxes to ensure the higher doses are not started too soon.
7. **Insulins** (see appendices for more information) – double check the dose with the patient or carer and write out ‘units’ in full separating the word from the dose to avoid the ‘u’ being misread as a ‘0’. Only using a ‘u’ could be misinterpreted as a ‘0’, resulting in a 10 x increased dose being administered.
8. **Lithium** (see appendices for more information)
   - Double check the dose with the patient or carer if already on the drug at admission.
   - Ensure all relevant blood tests are up to date and the lithium levels are within target range.
   - Patients already on lithium should have a monitoring booklet with relevant monitoring information in it.
   - If the patient does not have a monitoring booklet or you are starting lithium make sure one is given to them. An A4 version of the information in the booklet is available on the website.
   - A number of significant drug interactions can occur. *See page 52 for more information.*
9. **Methotrexate**
   - The dosage regimen is usually once weekly administration.
   - Block out the other six days using a ‘X’ when prescribing and write the day the dose is given, e.g. ‘Administer only on Wednesdays’ in the additional information box.
   - Ask the patient if they are expecting a dose when administering it.
   - Be aware of symptoms of overdose or intolerance; breathlessness, dry persistent cough, vomiting and diarrhoea.
   - If folic acid is prescribed there should be a prescribed omission on the day the methotrexate is administered.
10. **NSAIDs** – are they really needed instead of simple analgesia? Is gastro-protection indicated? SSRIs and NSAIDs increase the risk of gastro bleeds, heart failure and renal damage. See the Trust’s guidance on the Trust’s website. [www.sussexpartnership.nhs.uk/node/1498/attachment](http://www.sussexpartnership.nhs.uk/node/1498/attachment)
11. **Oral cancer drugs** - when prescribing, access is needed to the written protocol and treatment plan from the hospital where treatment was initiated. Advice should be obtained if needed from a pharmacist with experience in cancer treatment in that hospital.
12. **Unfamiliarity with opioid analgesics** can lead to serious prescribing and administration errors. **The key points to minimising the risks are:** familiarity with the therapeutic characteristics of the opioid, confirmation of any previous formulation and dose if previously prescribed and the starting dose if newly prescribed.
14. **Paracetamol** – do not co-prescribe with paracetamol containing combinations like co-dydramol or co-codamol, as overdosing is a significant risk.
15. **Warfarin** (see Formulary appendices for more information) – double check the dose with the patient or carer. Use the Trust’s anticoagulant chart. Make sure warfarin level tests are carried out when due. Double check that any newly prescribed medicine or one you have just stopped, does not affect the blood level of warfarin. If it does, then monitor the INR until stable.
16. **Complementary medicines** – check with pharmacy first before continuing any patient’s own complementary medicines to ensure there are no potential problems.

17. Clinicians must ensure that girls and women of childbearing potential treated on valproate must have an annual review with a specialist and a MHRA approved review form completed and a copy sent to the patient’s GP. The patient or carer must be given information at the annual review about how their mental health problem and its treatment might affect them or their baby if they become pregnant. Unless there are exceptional circumstances, the woman or girl must be on **highly effective contraception**, e.g. coil or depot contraceptive.

**Benzodiazepine and Hypnotic Prescribing**

Benzodiazepine and Z-drug prescribing can create long-term problems for patients. Prolonged use in exceptional circumstances may be warranted, but any such decision must be fully discussed with the patient, and carer if appropriate. GPs must be given clear reasons for the decision and this decision must be reviewed at regular intervals.

1. Benzodiazepine/hypnotics are not to be initiated when there is a history of any dependency or potential for abuse - either directly by the client or through onward sale.

2. The use and problems associated with benzodiazepines/hypnotics should be discussed fully with the patient, and the carer if appropriate. Patient leaflets on the subject are available. [www.choiceandmedication.org/sussex](http://www.choiceandmedication.org/sussex)

3. No patient should be discharged from hospital on a benzodiazepine/hypnotic unless:
   - He or she was admitted on it and it had not been initiated within a few weeks of admission, or
   - Continued use is supported by the documented recommendation of a consultant psychiatrist.

4. Any patient discharged or initiated in the community on a short course of hypnotics benzodiazepines must have this explained to them, emphasizing that they will not be getting a repeat from their GP. Prescribe enough to complete the course.

5. If the GP is expected to continue the prescribing of a new benzodiazepine/hypnotic then full information must be provided on why the medicine was started, whether the treatment is long term or short term and what information the patient or carer has been given.

6. Junior doctors only have authority to prescribe inpatients hypnotics/benzodiazepines for 48 hours (72 at weekend). Continued use to be supported by the consultant.

7. An inpatient admission should be seen as an opportunity to wean a patient off benzodiazepines/hypnotics if deemed clinically appropriate. **Gradual dose reductions are likely to be necessary.** Discontinuing benzodiazepines, particularly short acting ones, can however increase the risk of suicide.

8. Particular caution should be used when prescribing benzodiazepines/hypnotics for patients with personality disorders as the risk of misuse, non-adherence, disinhibition, paradoxical aggression and dependency may be greater than in other patient groups.

9. Trust pharmacists have the authority to discontinue inpatient ‘prn’ hypnotics if they have not been required within a two week period. Similarly, they may also discontinue inpatient ‘prn’ anxiolytics, after confirming there is no continuing need with nursing staff.

10. Two benzodiazepine daily dosage calculators are available on the Trust’s staff intranet: [http://staff.sussexpartnership.nhs.uk/high-dose-calculator](http://staff.sussexpartnership.nhs.uk/high-dose-calculator)

**‘Report and learn’ - The Trust fosters a culture of reporting and learning.** You can help by reporting significant medication related incidents or ‘near misses’ on the Trust’s incident forms. All medication related incidents are reviewed to identify areas where system and documentation changes could be made to minimise future errors. These reports also feed into a national database to help identify areas of risk. We also have a responsibility to report adverse reactions to the Committee on Safety of Medicines via the ‘yellow card’ scheme. These cards are available at the back of BNFs. Please report all adverse reactions for black triangle drugs and only serious adverse reactions for all other. Reports can also be made via [https://yellowcard.mhra.gov.uk](https://yellowcard.mhra.gov.uk). Your local clinical pharmacist will be pleased to help you complete these forms.
Mental Health, Substance Misuse and Learning Disability Formulary

Introduction

This edition of the Formulary incorporates a wide range of medicines currently used across the Trust. Requests to add new drugs and unlicensed indications can be made at any time utilizing the approved documentation available on the Trust’s website. Any decision to introduce a new medicine on to the Formulary must involve the clinical commissioning groups. The first criteria on deciding whether a medicine should be used will be a clinical one. However the affordability of a new treatment may delay or restrict its use. Where a formulary entry is linked to a NICE Technology Appraisal (TA) the appraisal number will be referenced against the drug entry.

The Sussex Partnership NHS Foundation Trust recognises that medicines initiated or recommended by Trust prescribers must be listed in this formulary and if an unlicensed medicine or a medicine prescribed outside of its licence, the unlicensed use must be recognised in the Formulary with the following exceptions:

- The medicine is to treat a physical condition, in which case it must be listed in the healthcare formulary of the locality the service is based in.
- The medicine is part of an approved clinical trial.
- The Drugs and Therapeutics Group has given the prescriber authority to prescribe the non-formulary medicine or the medicine outside of its licence. This may be:
  - On a named patient basis.
  - To allow a named consultant(s) to evaluate a new treatment with a view to reporting back to the Drugs & Therapeutics Group.
  - For specific treatments limited to named consultants or specialities.

The clinical pharmacists and the Chief Pharmacist will hold a list of these exceptions.

Some medicines are now designated as ‘Can only be initiated by consultants and associate specialists’. This does not mean patients already stable on these medicines and admitted to an inpatient unit cannot have these medicines prescribed by the admitting doctor if deemed appropriate. Once initiated continuation prescribing can be done by more junior doctors and non-medical prescribers competent in that area of practice.

Unlicensed Indications

It is recognised that medicines are sometimes used outside their licensed indication or at a doses outside those recommended in the BNF. Where this is common practice, with a recognised established body of evidence, these have been listed in the right hand column of the Formulary. For information about appropriate use in these indications, and for references relating to their clinical evidence base, please refer to the following sources (as shown in brackets).

(1) Psychotropic Drug Directory
(2) The Maudsley Prescribing Guidelines
(3) Trust prescribing guidelines and protocols (available on the Trust’s website)
(4) The BNF or BNF for Children
(5) NICE Technology Appraisals and Clinical Guidelines

Ensure where possible that the patient is giving informed consent to use a medicine for an unlicensed indication. Record the decision and supporting reasons in the patient’s Carenotes. Medication consent forms are also available on the Trust’s website: [www.sussexpartnership.nhs.uk/charts-and-forms](http://www.sussexpartnership.nhs.uk/charts-and-forms)

Prescribers are reminded that suspicion of an adverse reaction to a drug or combination of drugs should be reported on a Yellow Card if appropriate. Please report all reactions for black triangle drugs and only serious adverse reactions for established drugs.
### Oral Treatment

Approved off-licence use and notes

#### 1.1 Hypnotics

*For full NICE Technical Appraisal TA77 see link: [http://guidance.nice.org.uk/TA77](http://guidance.nice.org.uk/TA77)*

**Z Drugs**

<table>
<thead>
<tr>
<th>Drug</th>
<th>TA77</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Zolpidem</td>
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<td>First line in older people. Unlicensed if person suffering from psychotic illness. (3)</td>
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<tr>
<td>Zopiclone</td>
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**Benzodiazepines**

<table>
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<tr>
<th>Drug</th>
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<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>Loprazolam</td>
<td>TA77</td>
<td></td>
</tr>
<tr>
<td>Temazepam</td>
<td>TA77</td>
<td><strong>Controlled drug – schedule 2</strong></td>
</tr>
</tbody>
</table>

**Other hypnotics**

- Cloral Betaine
- Clomethiazole
- Promethazine

- Can only be initiated by senior medical staff (see note below).
- Rapid tranquillisation (specialist advice WAMHS/OPMH) (2)(5).
- Rapid tranquillisation CAMHS (2)(3).

#### 1.2 Anxiolytics

**Benzodiazepines**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Notes</th>
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<td>Clonazepam</td>
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</tr>
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<td>Anxiolytic (1),(2)</td>
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<td></td>
<td>Mania (1)</td>
</tr>
<tr>
<td>Diazepam</td>
<td>Mania (1)</td>
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<tr>
<td></td>
<td>Rapid tranquillisation (2),(3)</td>
</tr>
<tr>
<td></td>
<td>Adjunct to treatment resistant schizophrenia (3)</td>
</tr>
<tr>
<td></td>
<td>Akathisia (1)</td>
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<tr>
<td>Lorazepam</td>
<td>Rapid tranquillisation (2),(3)</td>
</tr>
<tr>
<td></td>
<td>Behavioural disturbances (1)</td>
</tr>
<tr>
<td></td>
<td>Delirium (severe only) (3)</td>
</tr>
<tr>
<td>Oxazepam</td>
<td>Hypnotic (2)</td>
</tr>
</tbody>
</table>

**Other Anxiolytics**

- Buspirone
- Escitalopram
- Hydroxyzine
- Pregabalin
- Propanolol
- Sertraline

- General anxiety disorder (1)
- Prescribe as a twice daily dose rather than three times a day. **Controlled drug – schedule 3**
- Akathisia (1)
- General anxiety disorder, panic disorders (5)

*Note: Senior medical staff are defined as consultants, associate specialists and speciality doctors with at least 3 years’ experience.*
Formulary Guidance: Antipsychotics

Which medicine to use?

With the exception of clozapine, the efficacy for antipsychotics is very similar and the choice should primarily be governed by the side effect profile of the antipsychotic and its relative importance to the service user. When prescribing a new medication follow the algorithm below. Use the tables entitled ‘Helping you to choose the right antipsychotic medication’ to help you and the patient decide which antipsychotic is the most suitable. These tables are widely available and can be found in the ward medication folders and on the Trust’s website.

If, after these issues have been considered, there is still a choice of treatment to be made, then the relative cost and the black triangle status of the treatment should be used to help govern the choice.

Treatment resistance

It is important to make the distinction between treatment resistance and treatment intolerance. Treatment resistance is described as being resistant to adequate trials of at least two antipsychotics, at least one of which being an atypical. In such circumstances patients must be offered a trial of clozapine at the earliest opportunity. Treatment intolerance could be described as experiencing adverse effects to such a degree that continuation with treatment is unwarranted. However, this does not mean that the patient is resistant to treatment and in such circumstances an alternative antipsychotic, other than clozapine, should be offered.

Baseline monitoring

The following tests and measurements must be performed wherever possible prior to treatment: weight, fasting glucose, LFT’s, U&E’s, thyroid function tests and an ECG.

Regular monitoring

Considerable thought should be given to the on-going monitoring arrangements for patients on long-term therapy. A clear medication care plan advising on what monitoring arrangements are necessary and how often they will be conducted should be completed in consultation with the patient and included in the CPA.

High dose antipsychotic therapy (HDAT)

Patients prescribed an antipsychotic above BNF maximum daily dose, or a combination of antipsychotics where total daily dose exceeds 100% of the BNF cumulative dose, present additional risk and must be closely monitored. The Trust has a special HDAT form that must be completed and that must be kept with the drug chart on the wards and be entered into the clinical record on Carenotes in the community. An antipsychotic dose ‘ready-reckoner’ is available to assist with the identification of HDAT prescribing on the Trust’s staff intranet: http://staff.sussexpartnership.nhs.uk/high-dose-calculator
This suggested treatment plan cannot cover every eventuality, e.g. non-adherent patients who refuse injection or patients with treatment resistant schizophrenia who cannot tolerate or do not respond to clozapine. Further advice on other treatment options can be obtained from your local clinical pharmacist.

*Discuss depot / long acting injection options with patient – it is increasingly becoming a preferred option.
### 1.3 Psychoses and Related disorders (for injectable antipsychotics – see section 2)

For full NICE Technical Appraisal TA213 see link: [http://guidance.nice.org.uk/TA213](http://guidance.nice.org.uk/TA213)

<table>
<thead>
<tr>
<th>Atypical Antipsychotics</th>
<th>Approved off-licence use and notes</th>
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<tr>
<td>Amisulpride</td>
<td>Clozapine augmentation (2)</td>
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<tr>
<td>Aripiprazole TA213</td>
<td>Schizophrenia 15 – 17 year olds (5)</td>
</tr>
<tr>
<td></td>
<td>Bipolar affective disorder (2)</td>
</tr>
<tr>
<td></td>
<td>Rapid tranquillisation (specialist advice only) (3)</td>
</tr>
<tr>
<td>Aripiprazole TA292</td>
<td>Bipolar disorder</td>
</tr>
<tr>
<td></td>
<td>Hyperprolactinaemia (3)</td>
</tr>
<tr>
<td>Clozapine</td>
<td>Bipolar and schizoaffective disorders (5 th line)(2)</td>
</tr>
<tr>
<td>Lurasidone</td>
<td>Only to be used third line (second line if significant risk of diabetes) but always after aripiprazole has been tried (see Trust guidance) <a href="http://www.sussexpartnership.nhs.uk/node/2252/attachment">www.sussexpartnership.nhs.uk/node/2252/attachment</a></td>
</tr>
<tr>
<td>Olanzapine</td>
<td>Rapid tranquillisation (3)</td>
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<tr>
<td>Quetiapine</td>
<td>Behavioural disturbances with dementia (1)</td>
</tr>
<tr>
<td></td>
<td>Rapid tranquillisation (specialist advice only) (3)</td>
</tr>
<tr>
<td>Risperidone</td>
<td>Rapid tranquillisation (specialist advice only) (3)</td>
</tr>
</tbody>
</table>

**Typical Antipsychotics**

| Benperidol              | Can only be initiated by senior medical staff (see note below). |
| Chlorpromazine          | Can only be initiated by senior medical staff (see note below). |
| Flupentixol             | Delirium (severe only) (3) |
| Levomepromazine (Methotrimeprazine) | Rapid tranquillisation (specialist advice only) (3) |
| Pimozide                | Can only be initiated by senior medical staff (see note below). |
| Promazine               | Can only be initiated by senior medical staff (see note below). |
| Sulpiride               | Clozapine augmentation (2) |
| Trifluoperazine         | Can only be initiated by senior medical staff (see note below). |
| Zuclopenthixol          |                                      |

### 1.4 Mood Stabilisers

| Asenapine               | See Trust guidance [www.sussexpartnership.nhs.uk/node/1458/attachment](http://www.sussexpartnership.nhs.uk/node/1458/attachment) |
| Carbamazepine           | Behavioural disturbances in dementia (1) |
| Lamotrigine             | Bipolar affective disorder prophylaxis (2) |
| Lithium (guidance is available on page 49) | Adjunct treatment of schizophrenia with mood disturbance (1) |
| Sodium valproate*       | Bipolar affective disorder CAMHS (2) |
|                         | Acute and prophylactic treatment of mania (2) |
|                         | Bipolar affective disorder CAMHS (2) |
|                         | Behavioural disturbances with dementia (1) |

Suggested Depression treatment plan (1) (version 4 – Jan 2018 - Review Jan 2021)
(For special groups e.g. in pregnancy and breast-feeding, see Trust Guidance on the Use of Antidepressants, available on the Trust website)

Mild depression – Generally, antidepressant drugs are not recommended as an initial treatment, and should only be offered when simpler methods (e.g. active monitoring, life style advice, guided self-help or exercise) have failed. In the vast majority of cases mild depression will be treated in primary care.

1st line - in moderate to severe depression. Use a generic form of an SSRI. Ensure a recognised therapeutic dose is used. Assess efficacy over 3-4 weeks. If effective continue for at least 6 months at full treatment dose after remission of symptoms. Consider longer-term treatment in recurrent depression. (See below).

2nd line – choose a different generic SSRI, or mirtazapine. Ensure a recognised therapeutic dose is used. Assess efficacy over 3-4 weeks. If effective continue for at least 6 months at full treatment dose after remission of symptoms. Consider longer-term treatment in recurrent depression. (See below).

3rd line – mirtazapine, escitalopram, an SNRI a tricyclic antidepressant, vortioxetine or agomelatine. (Consider augmentation therapy if severe). Ensure a recognised therapeutic dose is used. Assess efficacy over 3-4 weeks. If effective continue for at least 6 months at full treatment dose after remission of symptoms. Consider longer-term treatment in recurrent depression. (See below).

Discuss treatment choices with patient
- therapeutic effects
- adverse effects
- discontinuation effects
- give written information

Choice of treatments in refractory depression. To be considered if standard treatment has failed.

Augment one antidepressant with another. Some evidence for SSRIs plus mirtazapine and for venlafaxine plus mirtazapine. Caution re. serotonin syndrome.

Other augmentation strategies, e.g. lithium, CBT, atypical antipsychotics, (see section 3 of full guidance)

Venlafaxine up to 375mg. Treatment should only be implemented by specialist practitioners for those requiring doses of 300mg or above.

Recurrent Depression
Continue maintenance therapy for at least two years and longer in some cases
Consider use of psychological therapies.

Psychotic Depression
Usually augment with an antipsychotic. ECT is effective and may be protective against a relapse.

Atypical Depression
Consider phenelzine if failed to respond to alternatives. Care with side effects and dietary restrictions. Stabilise and provide information to GP on co-prescribing risks and dietary advice before asking them to prescribe.
1.5 Antidepressants

Selective Serotonin Reuptake Inhibitors (SSRIs)
- Citalopram
- Escitalopram
- Fluoxetine
- Fluvoxamine
- Paroxetine
- Sertraline
  - PTSD (general use where psychology is not appropriate) (5)

Tricyclic Antidepressants and Related Antidepressant Medicines
- Amitriptyline
- Clomipramine
- Imipramine
- Lofepramine
- Nortriptyline
- Trazodone
  - Behavioural disturbances/agitation in dementia (1)
- Trimipramine

Monoamine-Oxidase Inhibitors (MAOIs)

Stabilize and provide information on co-prescribing risks and dietary advice to any GP before asking them to prescribe a non-reversible MAOI. An information sheet and dietary advice is available at the links:
- www.sussexpartnership.nhs.uk/node/3345/attachment
- www.sussexpartnership.nhs.uk/node/1667/attachment

The Crawley CCG and the Horsham & Mid Sussex CCG have decided that all non-reversible MAOIs be classified as red drugs (hospital only) from May 2016 and any secondary care prescribers will need to take on long-term prescribing responsibility for their use in these two localities.

- Phenelzine
  - Can only be initiated by senior medical staff (see note below).
  - PTSD (specialist only) (5)

Reversible Inhibitors of Monoamines (RIMAs)
- Moclobemide

Important note: though approved for use by the Trust, GPs will not take over prescribing. It also needs monitoring due to its potential adverse effects on the liver. See Trust website: www.sussexpartnership.nhs.uk/node/1445/attachment

Other Antidepressants
- Agomelatine

Important note: though approved for use by the Trust, GPs will not take over prescribing. It also needs monitoring due to its potential adverse effects on the liver. See Trust website: www.sussexpartnership.nhs.uk/node/1445/attachment

- Duloxetine

Note: Senior medical staff are defined as consultants, associate specialists and speciality doctors with at least 3 years’ experience.
1.5 Other Antidepressants (continued)

Approved off-licence use and notes

- **Flupentixol**
- **Lithium** (for recurrent depression).
- **Mirtazapine**
- **Tri-iodothyronine (T3)**
- **Tryptophan**
- **Venlafaxine**
- **Vortioxetine**

Refractory depression (1)(2)
PTSD (general use where psychology is not appropriate) (5)
Refractory depression (2) (very, very high cost)
Can only be initiated by senior medical staff (see note below). Special ordering criteria applies.
Third-line use only in major depressive illness

1.6 Antimuscarinic Medicines for Medicine Induced Parkinsonism

- **Orphenadrine**
- **Procyclidine**
- **Trihexyphenidyl (Benzhexol)**

(Greater risk of fatality in overdose. Not to be used first line or a risk of self-harm.)
Can only be initiated by senior medical staff (see note below).

1.7 Medicines Used in Substance Dependence

For full NICE Technical Appraisal TA114 see link: [http://guidance.nice.org.uk/TA114](http://guidance.nice.org.uk/TA114)
For full NICE Technical Appraisal TA115 see link: [http://guidance.nice.org.uk/TA115](http://guidance.nice.org.uk/TA115)

- **Acamprosate**
- **Buprenorphine** TA114
- **Chlordiazepoxide**
- **Clomethiazole**
- **Diazepam**
- **Lofexidine**
- **Methadone** TA114
- **Naltrexone** TA115, Adjunct therapy to prevent relapse in formerly alcohol-dependent patients.
- **Suboxone®** Combination of buprenorphine and naloxone – see special guidance on the Trust’s website

1.8 Medicines for Essential Tremors, Tics and Related Disorders

- **Tetrabenazine**

1.9 Medicines for the Treatment of Hypersalivation

- **Hyoscine hydrobromide** Clozapine related Hypersalivation (2)
- **Pirenzepine (named patient only)** Clozapine related Hypersalivation (2) Special ordering criteria apply
- **Atropine eye drops (sublingual)** Clozapine related Hypersalivation (2)

Note: Senior medical staff are defined as consultants, associate specialists and speciality doctors with at least 3 years’ experience.
1.10 Medicines for Dementia

Approved off-licence use and notes

For full NICE Technical Appraisal TA217 and NICE Guidelines NG97 see link:

Rivastigmine TA217 and NG97
Galantamine XL TA217 and NG97
Donepezil TA217 and NG97
Memantine TA217 and NG97

1.11 Antiepileptics

Carbamazepine
Clonazepam
Lamotrigine
Levetiracetam
Midazolam (buccal) Rapid tranquillisation (specialist advice WAMHS/OPMH (2)(3).
Phenytoin
Sodium Valproate*
Topiramate

* Note that valproate medicines are contraindicated in women and girls of childbearing potential unless national guidance is met, see link:
https://www.gov.uk/guidance/valproate-use-by-women-and-girls

1.12 Drugs used in the Treatment of Attention-Deficit Hyperactivity Disorder

For full NICE Guidance NG87 see link: https://www.nice.org.uk/guidance/NG87

Atomoxetine NG87

Second-line when stimulants have proved ineffective or there are intolerable side effects. Shared care policy with GPs applies in some localities.

Bupropion

Third-line when stimulants and atomoxetine are ineffective or inappropriate (1)(5)

Clonidine

Hyperactive Behaviour (2)

Dexamfetamine NG87

Third-line when other stimulants or atomoxetine ineffective of inappropriate.

Imipramine

Third-line when stimulants and atomoxetine are ineffective or inappropriate (1)(5)

Guanfacine NG87

Third-line when other stimulants or atomoxetine are ineffective of inappropriate. Initiation in adults must be supported by a specialist centre. Shared care policy with GPs in some localities.

Lisdexamfetamine

Second-line when methylphenidate has proved ineffective or there are intolerable side effects. Shared care policy with GPs applies in some localities. Controlled drug – schedule 2
Approved off-licence use and notes

Methylphenidate NG87

- Plain
- Xaggitin® XL
- Equasym® XL
- Medikinet® XL

First-line. Shared care with GPs applies in some localities. **Controlled drug – schedule 2**

Melatonin (unlicensed) (Ramatonin® (first-line), Circadin® brands only.

CAMHS only. Sleep disturbance due to neuro-development conditions or stimulant medication. Most localities have a postal service using Ramatonin® prescribed only by secondary care.

2. INJECTABLE MEDICATION

2.1 Medicines Used in Psychoses and Related disorders

**Shorter Acting Typical Antipsychotics**

- Haloperidol
- Olanzapine
- Zuclopenthixol Acetate

Other

- Lorazepam
- Promethazine

**Rapid tranquillisation** (2)(3).

CAMHS (2)(3)

2.2 Medicines Used in Psychoses and Related disorders

**Long Acting Typical Antipsychotics**

- Flupentixol Decanoate (Flupenthixol)
- Fluphenazine Decanoate
- Haloperidol Decanoate
- Zuclopenthixol Decanoate

**Long Acting Atypical Antipsychotics**

- Aripiprazole
- Olanzapine
- Paliperidone (1 and 3 monthly)
- Risperidone

See the Trust’s website for specific guidance.

Named patient only. See the Trust’s website for specific guidance and application form.

See the Trust’s website for specific guidance.

See antipsychotic guidelines on the Trust’s website for further information on use.

Link to the Trust website: [www.sussexpartnership.nhs.uk/medication-related-guidance](http://www.sussexpartnership.nhs.uk/medication-related-guidance)
2.3 Antimuscarinic Medicines for Medicine Induced Parkinsonism

Procyclidine

2.4 Medicines Used in Substance Dependence

Naloxone

3. RECTALLY ADMINISTERED MEDICINE

3.1 Antiepileptics

Diazepam
Specific Prescribing Guidance

If any guidance below has passed its review date while this Formulary is current, please check on our website to ensure it is the current version: https://www.sussexpartnership.nhs.uk/medication-related-guidance

- Rapid tranquillisation – to be reviewed November 2020 - covers:
  - Acutely disturbed working age adults
  - Acutely disturbed older persons
  - Acutely disturbed patients with dementia
  - Acutely disturbed children and adolescents
  - Acutely disturbed adults with a learning disability
  - Monitoring, remedial action and flumazenil use guidance post RT.

Link to latest guidance:
https://www.sussexpartnership.nhs.uk/node/1523/attachment

Each ward has a printed copy of the latest relevant flow chart in their clinic room.

- Anti-infective guideline (to be reviewed January 2021)
- Anticoagulant guidelines (to be reviewed April 2022)
- Lithium prescribing and monitoring guidelines (to be reviewed March 2020)
- Insulin prescribing guidelines (to be reviewed January 2022)
- Principles for the safe prescribing and administration of opioids for analgesia (to be reviewed June 2021)
- Mental Health Act (MHA) – an aide memoire for medical, nursing and pharmacy staff (to be reviewed February 2020)
Algorithm 1: Rapid Tranquillisation - Working Age Adult (18-65 years)

**Aims:**
- To reduce suffering for the patient: psychological or physical (through self-harm or accidents).
- To reduce risk of harm to others by maintaining a safe environment.
- To do no harm (by prescribing safe regimes and monitoring physical health).

**De-Escalation & Non-Drug Approaches:**
- Maintain adequate distance.
- Ensure environment is conductive to calmness.
- Move to a safe place or seclude
- Use non-threatening, non-verbal communication
- Converse and try to develop a therapeutic relationship with patient throughout

**ADMINISTRATION OF RAPID TRANQUILLISATION**

**Before administering drugs for rapid tranquillisation:**
- Consult any advance decisions / statements.
- Agree suitable therapeutic goal (e.g. level of sedation or control).
- Note previous medicines/response and total medicines in the last 24 hours (including regular).
- If the total dose is above BNF limits you must contact the consultant psychiatrist.
- Consider individual risk factors (e.g. physically ill patients may require lower doses than healthy adults).
- Always offer oral medication first.

**Unknown or Neuroleptic Naïve Patient:**
Consider physical health, drug use & presentation

**Oral Medication:**
lorazepam

Allow at least 1 hour for response to oral. Continue non-drug approaches. If unsuccessful or patient refuses:

**IM Medication:**
lorazepam Wait 30 minutes for response. Repeat if partial response.

If no response:
olanzapine
(Only after >1 hour post lorazepam IM).

OR haloperidol with either promethazine OR lorazepam
(only in patient with no cardiac disease – confirmed by ECG).

**Known and Confirmed History of Antipsychotic use:**

**Oral Medication:**
lorazepam OR olanzapine
OR haloperidol AND promethazine

Allow at least 1 hour for response to oral. Continue non-drug approaches. If unsuccessful or patient refuses:

**IM Medication:**
Haloperidol with either promethazine OR lorazepam
Wait 30 minutes for response.
Repeat if partial response.

If no response:
Lorazepam (if not already used) OR Olanzapine

**Unknown or confirmed cardiac disease**

**IM Medication:**
lorazepam
Wait 30 minutes for response.
OR olanzapine
Repeat if partial response.

If no response:
lorazepam OR olanzapine (Leave >1 hour between lorazepam IM and olanzapine IM).

**Oral Medication Dosing:**
Lorazepam 1-2mg (Max 4mg/24 hours)
Haloperidol 5-10mg (Max 20mg/24 hours)
Promethazine 25-50mg (Max 100mg/24 hrs)
Olanzapine 5-10mg (Max 20mg/24mg hours)

**IM Medication Dosing:**
Lorazepam 1-2mg (Max 4mg/24 hours)
Haloperidol 2.5-5mg (Max 20mg/24 hours)
Promethazine 25-50mg (Max 100mg/24 hrs)
Olanzapine 5-10mg (Max 20mg/24 hours)

**Monitor:** Ensure baseline & ongoing monitoring is recorded appropriately (where possible) on relevant monitoring form:
- Oral PRN monitor hourly for minimum one hour on NEWS form. Further monitoring as clinically appropriate.
- IM monitor every 15 minutes for minimum 1 hour on RT monitoring form. Further monitoring as deemed clinically appropriate.

**Review:**
- Seek advice from senior experienced doctor or MDT.
- Document on individual patient clinical record
- Review all “as required” medicines
- Undertake post RT review, within 72 hours, and document.

- Document as incident reports: include drugs given, dose and response.
Algorithm 1: Rapid Tranquillisation - Working Age Adult (18-65 years)

a. Evidence
   i. The best evidence for benefit over risk of harm is for IM lorazepam used alone and the combination of IM haloperidol plus an IM promethazine.
   ii. When IM haloperidol is combined with IM promethazine there is some suggestion that risk of movement-related side effects may be reduced.
   iii. In contrast, the combination of an IM benzodiazepine plus IM haloperidol does not appear to be more effective than an IM benzodiazepine used alone.
   iv. While IM haloperidol used alone is more effective than placebo, it clearly carries greater risk of extrapyramidal and other side effects when compared with placebo or an IM benzodiazepine.

b. Choice depends on current treatment.
   i. If patient is established on antipsychotics, lorazepam may be used alone.
   ii. If the patient uses 'street drugs' or already receives regular benzodiazepines, an antipsychotic may be used alone.

c. Ensure procyclidine injection is available. Antipsychotics may cause acute dystonic reaction.

d. Ensure flumazenil injection is available to reverse effects of lorazepam injection.

e. The maximum dose of olanzapine is 20mg/24 hours by any (combined) route(s) – this should not be exceeded without obtaining specialist advice – and not more than 3 I/M doses may be given in any 24-hour period. **Wait 2 hours between doses.**

f. Intramuscular olanzapine, intramuscular lorazepam or intramuscular promethazine must not be administered within 1 hour of each other.

g. Olanzapine IM needs to be diluted before administration in 2.1ml water for injection. It is stable for up to 1 hour after reconstitution. The following table provides injection volumes for delivering various doses of olanzapine:

<table>
<thead>
<tr>
<th>Dose (mg)</th>
<th>Volume of Injection (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>1.0</td>
</tr>
<tr>
<td>7.5</td>
<td>1.5</td>
</tr>
<tr>
<td>10</td>
<td>2.0</td>
</tr>
</tbody>
</table>

h. Lorazepam should be mixed 1:1 with water for injection before injecting. The following table provides injection volumes for delivering various doses of lorazepam **once diluted.**

<table>
<thead>
<tr>
<th>Dose of lorazepam Required</th>
<th>Volume of undiluted lorazepam (4mg/mL)</th>
<th>Volume of WFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>0.125mL</td>
<td>0.125mL</td>
</tr>
<tr>
<td>1.0</td>
<td>0.25mL</td>
<td>0.25mL</td>
</tr>
<tr>
<td>2.0</td>
<td>0.5mL</td>
<td>0.5mL</td>
</tr>
</tbody>
</table>

i. The maximum daily dose of haloperidol is either 20mg orally or 20mg by intramuscular injection. Maximum doses will need to be adjusted if a combination of both routes is used. The bioavailable equivalence of haloperidol being approximately 10mg oral: 6mg intramuscular.

j. The recommended dose of promethazine is 25mg to 50mg (including adolescents aged 16 years and over). The lower dose should normally be used initially and titrated upwards according to response if necessary. Repeat doses should not be considered within an hour of a previous dose and a maximum dose of 100mg in 24 hours should not be exceeded. Doses of up to 150mg have been used but this would be unlicensed use.
Algorithm 2: Rapid Tranquilisation – Older Persons (>65 years) exc. dementia

**Aims:**
- To reduce suffering for the patient: psychological or physical (through self-harm or accidents).
- To reduce risk of harm to others by maintaining a safe environment.
- To do no harm (by prescribing safe regimes and monitoring physical health).

**De-escalation & Non-Drug Approaches:**
- Maintain adequate distance.
- Ensure environment is conducive to calmness.
- Move to a safe place or seclude.
- Use non-threatening, non-verbal communication.
- Converse and try to develop a therapeutic relationship with patient throughout.

**ADMINISTRATION OF RAPID TRANQUILLISATION**

**Before administering drugs for rapid tranquillisation:**
- Consult any advance decisions / statements.
- Agree suitable therapeutic goal (e.g. level of sedation or control).
- Note previous medicines/response and total medicines in the last 24 hours (including regular).
- If the total dose is above BNF limits you must contact the consultant psychiatrist.
- Consider individual risk factors (e.g. physically ill patients may require lower doses than healthy adults).
- Always offer oral medication first.

**Unknown or Neuroleptic Naïve Patient:**
Consider physical health, drug use & presentation

**Oral Medication:**
- lorazepam

**IM Medication:**
- lorazepam
  - Wait 30 minutes for response. Repeat if partial response.
- olanzapine (Only after >1 hour post lorazepam IM).
  - OR haloperidol with either promethazine OR lorazepam.

**Known and Confirmed History of Antipsychotic use:**

**Oral Medication:**
- lorazepam OR olanzapine
  - OR haloperidol AND promethazine

**IM Medication:**

**No cardiac disease (confirmed by ECG)**
- Haloperidol with either promethazine OR lorazepam
  - Wait 30 minutes for response.
  - Repeat if partial response.
- If no response:
  - Olanzapine (if not already used) OR Olanzapine

**Unknown or confirmed cardiac disease**
- lorazepam
  - Wait 30 minutes for response.
- OR olanzapine
  - Repeat if partial response.
- If no response:
  - lorazepam OR olanzapine (Leave >1 hour between lorazepam IM and olanzapine IM).

**Oral Medication Dosing:**
- Lorazepam 0.5-1mg (Max 2mg/24 hours)
- Haloperidol 0.5-2.5mg (Max 5mg /24 hours)
- Promethazine 10-25mg (Max 50mg/24 hrs)
- Olanzapine 2.5-5mg (Max 20mg/24 hours)

**IM Medication Dosing:**
- Lorazepam 0.5-1mg (Max 2mg/24 hours)
- Haloperidol 1-2.25mg (Max 5mg/24 hours)
- Promethazine 12.5-25mg (Max 50mg/24 hrs)
- Olanzapine 2.5-5mg (Max 20mg/24 hours)

**Monitor:** Ensure baseline & ongoing monitoring is recorded appropriately (where possible) on relevant monitoring form:
- Oral PRN monitor hourly for minimum one hour on NEWS form. Further monitoring as clinically appropriate.
- IM monitor every 15 minutes for minimum 1 hour on RT monitoring form. Further monitoring as deemed clinically appropriate.

**Review:**
- Seek advice from senior experienced doctor or MDT.
- Review all "as required" medicines
- Document as incident reports: include drugs given, dose and response.
- Document on individual patient clinical record
- Undertake post RT review, within 72 hours, and document.
Algorithm 2: **Rapid Tranquillisation** – Older Persons (>65 years) exc. dementia

### a. Evidence

i. The best evidence for benefit over risk of harm is for IM lorazepam used alone and the combination of IM haloperidol plus an IM promethazine.

ii. When IM haloperidol is combined with IM promethazine there is some suggestion that risk of movement-related side effects may be reduced.

iii. In contrast, the combination of an IM benzodiazepine plus IM haloperidol does not appear to be more effective than an IM benzodiazepine used alone.

iv. While IM haloperidol used alone is more effective than placebo, it clearly carries greater risk of extrapyramidal and other side effects when compared with placebo or an IM benzodiazepine.

### b. Choice depends on current treatment.

i. If patient is established on antipsychotics, lorazepam may be used alone.

ii. If the patient uses ‘street drugs’ or already receives regular benzodiazepines, an antipsychotic may be used alone.

### c. Ensure procyclidine injection is available. Antipsychotics may cause acute dystonic reaction.

### d. Ensure flumazenil injection is available to reverse effects of lorazepam injection.

### e. The maximum dose of olanzapine is 20mg/24 hours by any (combined) route(s) – this should not be exceeded without obtaining specialist advice – and not more than 3 I/M doses may be given in any 24-hour period. **Wait 2 hours between doses.**

### f. Intramuscular olanzapine and intramuscular lorazepam must not be administered within 1 hour of each other.

### g. Olanzapine IM needs to be diluted before administration in 2.1ml water for injection. It is stable for up to 1 hour after reconstitution. The following table provides injection volumes for delivering various doses of olanzapine:

<table>
<thead>
<tr>
<th>Dose (mg)</th>
<th>Volume of Injection (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>1.0</td>
</tr>
<tr>
<td>7.5</td>
<td>1.5</td>
</tr>
<tr>
<td>10</td>
<td>2.0</td>
</tr>
</tbody>
</table>

### h. Lorazepam should be mixed 1:1 with water for injection before injecting. The following table provides injection volumes for delivering various doses of lorazepam **once diluted**.

<table>
<thead>
<tr>
<th>Dose of lorazepam Required</th>
<th>Volume of undiluted lorazepam (4mg/mL)</th>
<th>Volume of WFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>0.125mL</td>
<td>0.125mL</td>
</tr>
<tr>
<td>1.0</td>
<td>0.25mL</td>
<td>0.25mL</td>
</tr>
<tr>
<td>2.0</td>
<td>0.5mL</td>
<td>0.5mL</td>
</tr>
</tbody>
</table>

### i. The maximum daily dose of haloperidol is either 5mg orally or 5mg by intramuscular injection. Maximum doses will need to be adjusted if a combination of both routes is used. The bioavailable equivalence of haloperidol being approximately 10mg oral: 6mg intramuscular.

### j. For promethazine, in the elderly, (and in physically debilitated patients and those with impaired renal, hepatic, cardiac or respiratory function), there are no specific dose recommendations but lower doses should be considered and particular caution should be exercised in patients with a diagnosis of dementia.
Algorithm 3: Rapid Tranquillisation – Dementia Services

Aims:
- To reduce suffering for the patient: psychological or physical (through self-harm or accidents).
- To reduce risk of harm to others by maintaining a safe environment.
- To do no harm (by prescribing safe regimes and monitoring physical health).

De-Escalation & Non-Drug Approaches:
- Maintain adequate distance.
- Ensure environment is conductive to calmness.
- Move to a safe place or seclude
- Use non-threatening, non-verbal communication
- Converse and try to develop a therapeutic relationship with patient throughout

ADMINISTRATION OF RAPID TRANQUILLISATION

Before administering drugs for rapid tranquillisation:
- Consult any advance decisions / statements.
- Agree suitable therapeutic goal (e.g. level of sedation or control).
- Note previous medicines/response and total medicines in the last 24 hours (including regular).
- If the total dose is above BNF limits you must contact the consultant psychiatrist.
- Consider individual risk factors (e.g. physically ill patients may require lower doses than healthy adults).
- Always offer oral medication first.

Unknown or Neuroleptic Naive Patient:
Consider physical health & presentation

Oral Medication:
Lorazepam OR Promethazine

Allow at least 1 hour for response to oral. Continue non-drug approaches. If unsuccessful or patient refuses:

IM Medication:
Lorazepam
Wait 30 minutes for response.
Repeat if partial or no response.

Known and Confirmed History of Antipsychotic use:

Oral Medication:
Lorazepam OR Haloperidol AND Promethazine

Do not use haloperidol in Lewy Body dementia or Parkinson’s disease dementia

Allow at least 1 hour for response to oral. Continue non-drug approaches. If unsuccessful or patient refuses:

IM Medication:
No cardiac disease (confirmed by ECG)

Haloperidol AND Promethazine
Wait 30 minutes for response.
Repeat if partial response.

If no response:
Lorazepam

Unknown or confirmed cardiac disease

Lorazepam
Wait 30 minutes for response.
Repeat if partial or no response.

Oral Medication Dosing:
Lorazepam 0.5-1mg (Max 2mg/24 hours)
Haloperidol 0.5-2.5mg (Max 5mg /24 hours)
Promethazine 10-25mg (Max 50mg/24 hrs)

IM Medication Dosing:
Lorazepam 0.5-1mg (Max 2mg/24 hours)
Haloperidol 1-2.2.5mg (Max 5mg/24 hours)
Promethazine 12.5-25mg (Max 50mg/24 hrs)

Monitor: Ensure baseline & ongoing monitoring is recorded appropriately (where possible) on relevant monitoring form:
- Oral PRN monitor hourly for minimum one hour on NEWS form. Further monitoring as clinically appropriate.
- IM monitor every 15 minutes for minimum 1 hour on RT monitoring form. Further monitoring as deemed clinically appropriate.

Review:
- Seek advice from senior experienced doctor or MDT.
- Review all “as required” medicines
- Document as incident reports: include drugs given, dose and response.
- Document on individual patient clinical record
- Undertake post RT review, within 72 hours, and document.
Algorithm 3: Rapid Tranquillisation – Dementia Services

a. Evidence
   i. The best evidence for benefit over risk of harm is for IM lorazepam used alone and the combination of IM haloperidol plus an IM promethazine.
   ii. When IM haloperidol is combined with IM promethazine there is some suggestion that risk of movement-related side effects may be reduced.
   iii. In contrast, the combination of an IM benzodiazepine plus IM haloperidol does not appear to be more effective than an IM benzodiazepine used alone.
   iv. While IM haloperidol used alone is more effective than placebo, it clearly carries greater risk of extrapyramidal and other side effects when compared with placebo or an IM benzodiazepine.

b. Choice depends on current treatment.

c. Ensure procyclidine injection is available. Antipsychotics may cause acute dystonic reaction.

d. Avoid antipsychotics in patients with Lewy Body Dementia

e. Ensure flumazenil injection is available to reverse effects of lorazepam injection.

f. Lorazepam should be mixed 1:1 with water for injection before injecting. The following table provides injection volumes for delivering various doses of lorazepam once diluted.

<table>
<thead>
<tr>
<th>Dose of lorazepam Required</th>
<th>Volume of undiluted lorazepam (4mg/mL)</th>
<th>Volume of WFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>0.125mL</td>
<td>0.125mL</td>
</tr>
<tr>
<td>1.0</td>
<td>0.25mL</td>
<td>0.25mL</td>
</tr>
<tr>
<td>2.0</td>
<td>0.5mL</td>
<td>0.5mL</td>
</tr>
</tbody>
</table>

g. The maximum daily dose of haloperidol is either 20mg orally or 12mg by intramuscular injection. Maximum doses will need to be adjusted if a combination of both routes is used. The bioavailable equivalence of haloperidol being approximately 10mg oral: 6mg intramuscular.

h. For promethazine, in the elderly, (and in physically debilitated patients and those with impaired renal, hepatic, cardiac or respiratory function), there are no specific dose recommendations but lower doses should be considered and particular caution should be exercised in patients with a diagnosis of dementia.
Algorithm 4: Rapid Tranquillisation – Child & Adolescent (12-17 years)

**Aims:**
- To reduce suffering for the patient: psychological or physical (through self-harm or accidents).
- To reduce risk of harm to others by maintaining a safe environment.
- To do no harm (by prescribing safe regimes and monitoring physical health).

**De-Escalation & Non-Drug Approaches:**
- Maintain adequate distance.
- Ensure environment is conducive to calmness.
- Move to a safe place or seclude
- Use non-threatening, non-verbal communication
- Converse and try to develop a therapeutic relationship with patient throughout

**ADMINISTRATION OF RAPID TRANQUILLISATION**

Before administering drugs for rapid tranquillisation:
- Consult any advance decisions and consent given.
- Agree suitable therapeutic goal (e.g. level of sedation or control).
- Note previous medicines/response and total medicines in the last 24 hours (including regular).
- If the total dose is above BNF limits you must contact the consultant psychiatrist.
- Consider individual risk factors (e.g. physically ill patients may require lower doses than healthy adults).
- Always offer oral medication first.

**Non-Psychotic illness or Neuroleptic Naïve Patient:**
Consider physical health, drug use & presentation

<table>
<thead>
<tr>
<th>Oral Medication:</th>
<th>IM Medication:</th>
</tr>
</thead>
<tbody>
<tr>
<td>lorazepam OR promethazine</td>
<td>lorazepam</td>
</tr>
<tr>
<td>Wait 30 minutes for response. Repeat if partial response.</td>
<td>Allow at least 1 hour for response to oral. Continue non-drug approaches. If unsuccessful or patient refuses:</td>
</tr>
<tr>
<td>If no response, allow further 30 minutes, if still no response: promethazine</td>
<td>If no response, allow further 30 minutes, if still no response: olanzapine OR promethazine</td>
</tr>
<tr>
<td>(Leave &gt;1 hour between lorazepam IM and olanzapine IM).</td>
<td></td>
</tr>
</tbody>
</table>

**Psychotic illness or Known and Confirmed History of Antipsychotic use:**

<table>
<thead>
<tr>
<th>Oral Medication:</th>
<th>IM Medication:</th>
</tr>
</thead>
<tbody>
<tr>
<td>olanzapine</td>
<td>lorazepam</td>
</tr>
<tr>
<td>WITH/WITHOUT lorazepam</td>
<td>OR promethazine</td>
</tr>
</tbody>
</table>

Oral Medication:
- lorazepam
- Promethazine
- Olanzapine

IM Medication:
- lorazepam
- Wait 30 minutes for response. Repeat if partial response.
- If no response, allow further 30 minutes, if still no response: olanzapine OR promethazine

**Oral Medication Dosing:**
- Lorazepam 1-2mg (Max 4mg/24 hours)
- Promethazine 10-25mg (Max 50mg/24 hours)
- Olanzapine 5mg (Max 20mg/24 hours)

**IM Medication Dosing:**
- Lorazepam 1-2mg (Max 4mg/24 hours)
- Promethazine 10-25mg (Max 50mg/24 hrs)
- Olanzapine 5-10mg (Max 20mg/24 hours)

Monitor: Ensure baseline & ongoing monitoring is recorded appropriately (where possible) on relevant monitoring form:
- Oral PRN monitor hourly for minimum one hour on NEWS form. Further monitoring as clinically appropriate.
- IM monitor every 15 minutes for minimum 1 hour on RT monitoring form. Further monitoring as deemed clinically appropriate.

**Review:**
- Seek advice from senior experienced doctor or MDT.
- Review all “as required” medicines
- Document as incident reports: include drugs given, dose and response.
- Document on individual patient clinical record
- Undertake post RT review, within 72 hours, and document.
Algorithm 4: Rapid Tranquillisation – Child & Adolescent (12-17 years)

a. Evidence
   i. Evidence in young people is limited & extrapolated from adult population.
   ii. Haloperidol should be avoided due to the high potential for EPSE and treatment naivety within the population.

b. Choice depends on current treatment.
   i. If patient is presenting with psychotic illness, lorazepam or olanzapine may be used alone.
   ii. For treatment naïve and non-psychotic illness lorazepam should be consider first line.

c. Ensure procyclidine injection is available. Antipsychotics may cause acute dystonic reaction, although less likely for 2nd generation antipsychotics.

d. Ensure flumazenil injection is available to reverse effects of lorazepam injection.

e. The maximum dose of olanzapine is 20mg/24 hours by any (combined) route(s) – this should not be exceeded without obtaining specialist advice – and not more than 3 I/M doses may be given in any 24-hour period. **Wait 2 hours between doses.**

f. Intramuscular olanzapine and intramuscular lorazepam must not be administered within 1 hour of each other.

g. Olanzapine IM needs to be diluted before administration in 2.1ml water for injection. It is stable for up to 1 hour after reconstitution. The following table provides injection volumes for delivering various doses of olanzapine:

<table>
<thead>
<tr>
<th>Dose (mg)</th>
<th>Volume of Injection (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>1.0</td>
</tr>
<tr>
<td>7.5</td>
<td>1.5</td>
</tr>
<tr>
<td>10</td>
<td>2.0</td>
</tr>
</tbody>
</table>

h. Lorazepam should be mixed 1:1 with water for injection before injecting. The following table provides injection volumes for delivering various doses of lorazepam once diluted.

<table>
<thead>
<tr>
<th>Dose of lorazepam Required</th>
<th>Volume of undiluted lorazepam (4mg/mL)</th>
<th>Volume of WFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>0.125mL</td>
<td>0.125mL</td>
</tr>
<tr>
<td>1.0</td>
<td>0.25mL</td>
<td>0.25mL</td>
</tr>
<tr>
<td>2.0</td>
<td>0.5mL</td>
<td>0.5mL</td>
</tr>
</tbody>
</table>

i. In children and adolescents, younger than 12 years of age the recommended dose of promethazine is 5-10mg (max 25mg/day). In those older than 12 years of age the recommended dose is 10-25mg (max 50mg/day). The product must not be used in children under 2 years of age.
Algorithm 5: Rapid Tranquillisation – Learning Disabilities

Aims:
- To reduce suffering for the patient: psychological or physical (through self-harm or accidents).
- To reduce risk of harm to others by maintaining a safe environment.
- To do no harm (by prescribing safe regimes and monitoring physical health).

De-Escalation & Non-Drug Approaches:
- Maintain adequate distance.
- Ensure environment is conductive to calmness.
- Move to a safe place or seclude.
- Use non-threatening, non-verbal communication
- Converse and try to develop a therapeutic relationship with patient throughout.

Before administering drugs for rapid tranquillisation:
- Consult any advance decisions / statements.
- Agree suitable therapeutic goal (e.g. level of sedation or control).
- Note previous medicines/response and total medicines in the last 24 hours (including regular).
- If the total dose is above BNF limits you must contact the consultant psychiatrist.
- Consider individual risk factors (e.g. physically ill patients may require lower doses than healthy adults).
- Always offer oral medication first.

Unknown or Neuroleptic Naïve Patient:
Consider physical health, drug use & presentation

Oral Medication:
Lorazepam OR Promethazine
Allow at least 1 hour for response to oral. Continue non-drug approaches. If unsuccessful or patient refuses:

IM Medication:
Lorazepam
Wait 30 minutes for response. Repeat if partial response.
If no response: olanzapine (Only after >1 hour post lorazepam IM).
OR haloperidol AND promethazine (in patient with no cardiac disease – confirmed by ECG).

Oral Medication Dosing:
Lorazepam 0.5-2mg (Max 4mg/24 hours)
Haloperidol 2.5-5mg (Max 20mg/24 hours)
Promethazine 10-25mg (Max 50mg/24 hrs)
Olanzapine 5-10mg (Max 20mg/24 hours)

IM Medication Dosing:
Lorazepam 0.5-2mg (Max 4mg/24 hours)
Haloperidol 2.5-5mg (Max 20mg/24 hours)
Promethazine 10-25mg (Max 100mg/24 hrs)
Olanzapine 5-10mg (Max 20mg/24 hours)

Monitor: Ensure baseline & ongoing monitoring is recorded appropriately (where possible) on relevant monitoring form:
- Oral PRN monitor hourly for minimum one hour on NEWS form. Further monitoring as clinically appropriate.
- IM monitor every 15 minutes for minimum 1 hour on RT monitoring form. Further monitoring as deemed clinically appropriate.

Review:
- Seek advice from senior experienced doctor or MDT.
- Review all “as required” medicines
- Document as incident reports: include drugs given, dose and response.
- Document on individual patient clinical record
- Undertake post RT review, within 72 hours, and document.

ADMINISTRATION OF RAPID TRANQUILLISATION

Known and Confirmed History of Antipsychotic use:

Oral Medication:
Lorazepam AND/OR haloperidol
OR olanzapine
Allow at least 1 hour for response to oral. Continue non-drug approaches. If unsuccessful or patient refuses:

IM Medication:
No cardiac disease (confirmed by ECG)
haloperidol AND promethazine
Wait 30 minutes for response. Repeat if partial response.
If no response:
Lorazepam OR Olanzapine
Unknown or confirmed cardiac disease
lrorazepam
Wait 30 minutes for response. Repeat if partial response.
OR olanzapine
If no response:
lorazepam OR olanzapine
(Leave >1 hour between lorazepam IM and olanzapine IM).
Algorithm 5: Rapid Tranquillisation – Learning Disabilities

a. Evidence
   i. The evidence for use in patients with learning disability is limited and extrapolated from adult population.
   ii. The best evidence for benefit over risk of harm for general adult population is for IM lorazepam used alone and the combination of IM haloperidol plus an IM promethazine.
   iii. When IM haloperidol is combined with IM promethazine there is some suggestion that risk of movement-related side effects may be reduced.
   iv. In contrast, the combination of an IM benzodiazepine plus IM haloperidol does not appear to be more effective than an IM benzodiazepine used alone.
   v. While IM haloperidol used alone is more effective than placebo, it clearly carries greater risk of extrapyramidal and other side effects when compared with placebo or an IM benzodiazepine.

b. Choice depends on current treatment.
   i. Particular consideration needs to be given to the higher susceptibility of patients with learning disability to side effect and the potential for paradoxical reactions to benzodiazepines.
   ii. If patient is established on antipsychotics, lorazepam may be used alone.
   iii. If the patient uses ‘street drugs’ or already receives regular benzodiazepines, an antipsychotic may be used alone.

c. Ensure procyclidine injection is available. Antipsychotics may cause acute dystonic reaction.

d. Ensure flumazenil injection is available to reverse effects of lorazepam injection.

e. The maximum dose of olanzapine is 20mg/24 hours by any (combined) route(s) – this should not be exceeded without obtaining specialist advice – and not more than 3 I/M doses may be given in any 24-hour period. **Wait 2 hours between doses.**

f. **Intramuscular olanzapine, intramuscular lorazepam or intramuscular promethazine must not be administered within 1 hour of each other.**

g. Olanzapine IM needs to be diluted before administration in 2.1ml water for injection. It is stable for up to 1 hour after reconstitution. The following table provides injection volumes for delivering various doses of olanzapine

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h. Lorazepam should be mixed 1:1 with water for injection before injecting. The following table provides injection volumes for delivering various doses of lorazepam once diluted.

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</tr>
<tr>
<td>2.0</td>
<td>0.5mL</td>
<td>0.5mL</td>
</tr>
</tbody>
</table>
i. The maximum daily dose of haloperidol is either 20mg orally or 12mg by intramuscular injection. Maximum doses will need to be adjusted if a combination of both routes is used. The bioavailable equivalence of haloperidol being approximately 10mg oral: 6mg intramuscular.

j. For promethazine, in LDS, (and in physically debilitated patients and those with impaired renal, hepatic, cardiac or respiratory function), there are no specific dose recommendations but lower doses should be considered.
Appendix 1  Physical health monitoring and remedial measures\(^{(6)}\)

### Rapid Tranquillisation – monitoring

If possible, after any parenteral drug administration, monitor the following:

- Temperature
- Pulse
- Blood Pressure
- Hydration
- Level of Consciousness
- Respiratory Rate

Every 15 minutes, for at least one hour.

If the patient is over-sedated, asleep or significantly unwell, the use of pulse oximetry to continuously measure oxygen saturation must be used. The patient must remain under **within eyesight observation** at least until they are fully ambulatory again.

ECG and haematological monitoring are also strongly recommended when parenteral antipsychotics are given, especially when higher doses are used. Hypokalaemia, stress, and agitation place the patient at risk of cardiac arrhythmias.

### Remedial measures in rapid tranquillisation

**Get urgent medical assistance if not already present:**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Remedial measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute dystonia (including oculogyric crises)</td>
<td>Give procyclidine 5 – 10mg IM</td>
</tr>
<tr>
<td>Reduced respiratory rate (&lt;10/min) or oxygen saturation (&lt;90%)</td>
<td>Give oxygen; raise legs; ensure patient is not lying face down. Give flumazenil if benzodiazepine-induced respiratory depression suspected. If induced by any other sedative agent, ventilate mechanically.</td>
</tr>
<tr>
<td>Irregular or slow (&lt;50/min) pulse</td>
<td>Refer to specialist medical care immediately.</td>
</tr>
<tr>
<td>Fall in blood pressure (&gt;30mmHg orthostatic drop or &lt;50mmHg diastolic)</td>
<td>Lie patient flat, tilt bed towards head. Monitor closely.</td>
</tr>
<tr>
<td>Increased temperature</td>
<td>Withhold antipsychotics (risk of NMS and perhaps arrhythmias). Check creatinine kinase urgently.</td>
</tr>
</tbody>
</table>
### Guidelines for the use of intravenous flumazenil

<table>
<thead>
<tr>
<th><strong>Indication for use</strong></th>
<th>If respiratory rate falls below 10/minute after the administration of lorazepam, midazolam or diazepam.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contra-indications</strong></td>
<td>Patients with epilepsy who have been receiving long-term benzodiazepines.</td>
</tr>
<tr>
<td><strong>Caution</strong></td>
<td>Dose should be carefully titrated in hepatic impairment.</td>
</tr>
<tr>
<td><strong>Dose and route</strong></td>
<td><em>Initial</em> 200mcg <em>intravenously</em> over 15 seconds - if required level of consciousness not achieved then, <em>Subsequent dose</em>: 100mcg over 10 seconds</td>
</tr>
</tbody>
</table>

NB. Children and adolescents 12-18 years of age as above. Children <12 years of age as 10mcg/kg (max. single dose 200mcg).

<table>
<thead>
<tr>
<th><strong>Administration</strong></th>
<th>Only by practitioners fully trained in IV technique</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time before dose can be repeated</strong></td>
<td>60 seconds</td>
</tr>
<tr>
<td><strong>Maximum dose</strong></td>
<td>1mg in 24 hours (one initial dose and eight subsequent doses).</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Patients may become agitated, anxious or fearful on awakening. Seizures may occur in regular benzodiazepine users.</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>Side effects usually subside.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Monitoring</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What to monitor?</strong></td>
</tr>
<tr>
<td><strong>How often?</strong></td>
</tr>
</tbody>
</table>

Note: If respiratory rate does not return to normal or patient is not alert after initial doses assume sedation due to some other cause.
Principles of treatment:
1. This guidance is based on the best available evidence, but use professional judgement and involve patients in management decisions.
2. This guidance should not be used in isolation; it should be supported with patient information about safety netting, delayed/back-up antibiotics, self-care, infection severity and usual duration, clinical staff education, and audits. Materials are available on the RCGP TARGET website.
3. Prescribe an antibiotic only when there is likely to be clear clinical benefit, giving alternative, non-antibiotic self-care advice, where appropriate.
4. Consider a ‘no’ or ‘delayed-back-up’ antibiotic strategy for acute self-limiting upper respiratory tract infections and mild UTI symptoms.
5. In severe infection, or immunocompromised, it is important to initiate antibiotics as soon as possible, particularly if sepsis is suspected. If patient is not at moderate to high risk for sepsis, give information about symptom monitoring, and how to access medical care if they are concerned.
6. Where an empirical therapy has failed or special circumstances exist, microbiological advice can be obtained from your local acute hospital.
7. Limit prescribing over the telephone to exceptional cases. Any remote prescribing must be backed up by electronic confirmation (e.g. e-mail or entry in CareNotes®)
8. Use simple, generic antibiotics if possible. Avoid broad spectrum antibiotics (eg co-amoxiclav, quinolones and cephapozolin) as they increase the risk of Clostridium difficile, MRSA and resistant unlike the narrow spectrum antibiotics
10. A dose and duration of treatment for adults is usually suggested, but may need modification for age, weight, renal function, or if immunocompromised. In severe or recurrent cases, consider a larger dose or longer course.
11. Refer to the BNF for further dosing and interaction information (e.g. the interaction between macrolides and statins), and check for hypersensitivity.
12. Have a lower threshold for antibiotics in immunocompromised, or in those with multiple morbidities; consider culture/specimens, and seek advice.
13. Avoid widespread use of topical antibiotics, especially in those agents also available systemically; in most cases, topical use should be limited.
14. In pregnancy, take specimen to inform. Where possible, avoid tetracyclines, aminoglycosides, quinolones, azithromycin (except in chlamydial infection), clarihamycin, and high dose metronidazole (2g stat), unless the benefits outweigh the risks. Penicillins, cephapozolin, and erythromycin are safe in pregnancy. Short-term use of nitrofurantoin is not expected to cause foetal problems (theoretical risk of neonatal haemolysis). Trimethoprim is also unlikely to cause problems unless poor dietary folate intake, or taking another folate antagonist.
15. This guidance is developed alongside the NHS England Antibiotic Quality Premium. The required performance in 2017/19 is: a 10% reduction (or greater) in the number of E. coli blood stream infections across the whole health economy; a 10% reduction (or greater) in the trimethoprim: nitrofurantoin prescribing ratio for UTI in primary care, and a 10% reduction (or greater) in the number of trimethoprim items prescribed to patients aged 70 years or greater; sustained reduction of inappropriate prescribing in primary care.

### Upper Respiratory Tract Infections (consider no antibiotic or delayed prescription)

<table>
<thead>
<tr>
<th>ILLNESS</th>
<th>GOOD PRACTICE POINTS</th>
<th>TREATMENT</th>
<th>ADULT DOSE</th>
<th>COURSE DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Influenza</strong></td>
<td>Follow PHE influenza guidance.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHE Influenza</td>
<td>Annual vaccination is essential for all those “at risk”* of influenza.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NICE Influenza</td>
<td><strong>Older people, the very young, pregnant women, immunocompromised patients and those with underlying diseases, particularly chronic respiratory or cardiac disease.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute sore throat</strong></td>
<td>Avoid antibiotics as 82% of cases resolve in 7 days and pain is only reduced by 16 hours.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NICE NG48</td>
<td>Use FeverPAIN Score:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FeverPAIN</td>
<td>Fever in last 24 hours, Purulence; Attends rapidly within 3 days; Inflamed tonsils; No cough or coryza.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Score 0-1: 13-18% streptococci - no antibiotic.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Score 2-3: 34-40% streptococci - 3 day delayed antibiotic.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Score 4-5: 62-65% streptococci - if severe, immediate antibiotic or 48-hour delayed antibiotic.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Advise paracetamol, self-care, and safety net. Complications are rare: antibiotics to prevent quinsy NNT&gt;4000; otitis media NNT200. 10 days penicillin has lower relapse than five days in patients under 18 years of age.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phenoxy methylpenicillin</td>
<td></td>
<td>500mg QDS OR 1g BD</td>
<td>5-10 days</td>
</tr>
<tr>
<td></td>
<td>Clarithromycin</td>
<td></td>
<td>500mg BD</td>
<td>5 days</td>
</tr>
</tbody>
</table>

### Acute Otitis Externa

<table>
<thead>
<tr>
<th>ILLNESS</th>
<th>GOOD PRACTICE POINTS</th>
<th>TREATMENT</th>
<th>ADULT DOSE</th>
<th>COURSE DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acute Otitis Externa</strong></td>
<td>First use analgesia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NICE otitis externa</td>
<td>Cure rates similar at 7 days for topical acetic acid or antibiotic +/- steroid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>First line: EarCalm spray (acetic acid 2%, prescribe brand name)</td>
<td></td>
<td>1 Spray TDS</td>
<td>7 days</td>
</tr>
<tr>
<td></td>
<td>Second Line: neomycin sulphate with corticosteroid</td>
<td></td>
<td>3 drops TDS</td>
<td>7-14 days</td>
</tr>
</tbody>
</table>
Acute Rhinosinusitis
CKS sinusitis
NICE NG79

Avoid antibiotics as 80% resolve in 14 days without, and they only offer marginal benefit after 7 days (NNT15).

Use adequate analgesia
Consider 7-day delayed or immediate antibiotic when purulent nasal discharge (NNT8). In persistent infections use an agent with anti-anaerobic activity.

Phenoxymethylpenicillin OR doxycycline
For severe and persistent symptoms: Co-amoxiclav

Avoid antibiotics as 80% resolve in 14 days without, and they only offer marginal benefit after 7 days (NNT15).

Use adequate analgesia
Consider 7-day delayed or immediate antibiotic when purulent nasal discharge (NNT8). In persistent infections use an agent with anti-anaerobic activity.

Phenoxymethylpenicillin OR doxycycline
For severe and persistent symptoms: Co-amoxiclav

ILLNESS GOOD PRACTICE POINTS TREATMENT ADULT DOSE COURSE DURATION

LOWER RESPIRATORY TRACT INFECTIONS Note: Low doses of penicillins are more likely to select out resistance, we recommend 500mg of amoxicillin. Do not use quinolones (ciprofloxacin, ofloxacin) first line due to poor pneumococcal activity and reserve them for proven resistant organisms.

Acute cough, bronchitis
CKS cough
NICE CG69

Antibiotic little benefit if no co-morbidity. Symptom resolution can take 3 weeks. Consider 7-day delayed antibiotic with symptomatic advice/leaflet
Consider immediate antibiotics if Over 80 years old with ONE of below:
- Hospitalisation in past year
- Oral steroids
- Diabetic
- Congestive heart failure
OR over 65 years old with 2 of above

Amoxicillin OR doxycycline

Acute exacerbation of COPD
NICE CG101
GOLD COPD

Treat exacerbations promptly with antibiotics if purulent sputum and increased shortness of breath and/or increased sputum volume.
Risk factors for antibiotic resistant organisms include co-morbid disease, severe COPD, frequent exacerbations and antibiotic treatments in the last 3 months.

First line: Amoxicillin
Second line: Doxycycline
If risk of resistance: Third line: Co-amoxiclav

Community-acquired pneumonia - treatment in the community
BTA 2009
NICE CG191

Use CRB65 score to help guide and review:
Each scores 1:
- Confusion (AMT<8)
- Respiratory rate >30/min
- BP systolic <90 or diastolic ≤ 60

Age65
Score 0: suitable for treatment in mental health ward
Score 1-2: intermediate risk consider acute hospital assessment
Score 3-4: urgent acute hospital admission
Always give safety net advice and likely duration of treatment. Mycoplasma infection is rare in over 65 years old.

If CRB65= 0 Amoxicillin OR doxycycline
If CRB65= 1 or 2 suitable for treatment on Mental Health ward Amoxicillin and Clarythromycin OR doxycycline alone

MENINGITIS
Prevention of secondary cases of meningitis: Only prescribe following advice from Public Health.

Suspected meningococcal disease
PHE meningitis
NICE CG102

TRANSFER ALL PATIENTS TO AN ACUTE HOSPITAL IMMEDIATELY.
If time before admission, and non-blanching rash, give IV benzylpenicillin or cefotaxime unless definite history of hypersensitivity
Recommended treatment is for information only as there are no IV antibiotics stocked in wards

Benzylpenicillin IV or IM OR Cefotaxime IV or IM

Age10+ years: 1200mg
Age 12+ years: 1000mg
Give IM if vein cannot be found
**URINARY TRACT INFECTIONS**

As *E. coli* bacteremia and antimicrobial resistance is increasing use nitrofurantoin first line, always give safety net and self-care advice and consider risk of resistance. Give TARGET UTI leaflet.

Catheter in situ: antibiotics will not eradicate asymptomatic bacteriuria; only treat if systemically unwell or pyelonephritis likely. Do not use prophylactic antibiotics for catheter changes unless history of catheter-change-associated UTI or trauma. Take sample if new onset of delirium, or two or more symptoms of UTI.

<table>
<thead>
<tr>
<th>Lower UTI in adults</th>
<th>UTI in pregnancy</th>
<th>Acute pyelonephritis</th>
<th>Recurrent UTI in non-pregnant women</th>
<th>Acute prostatitis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NICE NG109</strong></td>
<td><strong>PHE Urine CKS</strong></td>
<td><strong>NICE NG111</strong></td>
<td><strong>NICE NG112</strong></td>
<td><strong>NICE NG110</strong></td>
</tr>
<tr>
<td><strong>PHE diagnosis of UTI</strong></td>
<td><strong>PHE Urine CKS</strong></td>
<td><strong>CKS pyelonephritis</strong></td>
<td><strong>Acute prostatitis</strong></td>
<td><strong>CKS prostatitis</strong></td>
</tr>
<tr>
<td><strong>SIGN</strong></td>
<td></td>
<td><strong>EMA Oct 18</strong></td>
<td></td>
<td><strong>EMA Oct 18</strong></td>
</tr>
<tr>
<td><strong>CKS women</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CKS men</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>RCGP UTI</strong></td>
<td></td>
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<tr>
<td><strong>Clinical module</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>SAPG UTI</strong></td>
<td></td>
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<th><strong>ADULT DOSE</strong></th>
<th><strong>COURSE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Treat women with severe ≥ 3 symptoms: All patients first line antibiotic: nitrofurantoin if GFR ≥45mls/min; if GFR30-44 only use if resistance and no alternative</td>
<td>Nitrofurantoin if GFR≥45</td>
<td>100mg MR BD</td>
<td>All treatments (except fosfomycin - see dose schedule for details)</td>
</tr>
<tr>
<td>Women with mild/ ≤ 2 symptoms: Pain relief and consider back-up/delayed antibiotic. If urine not cloudy, 97% Negative Predictive Value of no UTI. If urine cloudy, use dipstick to guide treatment.</td>
<td>If first line option unsuitable: Trimetoprim</td>
<td>200mg BD</td>
<td>Women 3 days</td>
</tr>
<tr>
<td>Men under 65: consider prostatitis and send pre-treatment MSU OR if symptoms mild/non-specific, use negative dipstick to exclude UTI &gt;65 years: treat if fever ≥38°C or 1.5°C above base twice in 12h AND dysuria OR ≥2 other symptoms If treatment failure: always perform culture</td>
<td>If low risk of resistance* Pivmecillinam **</td>
<td>400mg STAT then 200mg TDS (400mg TDS if high risk of resistance)</td>
<td>Men: 7 days</td>
</tr>
<tr>
<td>Avoid trimethoprim if low folate status or on folate antagonist.</td>
<td>If penicillin allergy Fosfomycin</td>
<td>Women: 3g stat Men 3g stat +3g 3 days later</td>
<td></td>
</tr>
</tbody>
</table>

**First line:**
- Nitrofurantoin if GFR≥45
- amoxicillin if sensitive

**Second line:**
- Trimethoprim
- Cefalexin

**First line:**
- Nitrofurantoin
- amoxicillin if sensitive
- Co-amoxiclav only if sensitive
- Ciprofloxacin **EMA Oct 18**

**Second line:**
- Trimeprprim only if sensitive
- Ofloxacin
- Ciprofloxacin **EMA Oct 18**

**Third line:**
- Ceftizoxime
- EMA Oct 18

**Choice driven by cultures**
- Nitrofurantoin if GFR≥45
- Trimeprprim

**NB:** If increased resistance risk, send culture with FIRST presentation for susceptibility testing & give safety net advice.

- Low risk of resistance: younger women with acute UTI & no resistance risks.
- **This is a penicillin**

**Risk factors for increased resistance include:**
- Care home resident, recurrent UTI (2 in 6 months, ≥3 in 12 months), hospitalisation for >7 days in the last 6 months, unresolved urinary symptoms, recent travel to a country with increased resistance, previous UTI resistant to trimethoprim, cephalosporins, or quinolones.

<table>
<thead>
<tr>
<th><strong>TRTMENT</strong></th>
<th><strong>ADULT DOSE</strong></th>
<th><strong>COURSE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrofurantoin</td>
<td>100mg MR BD</td>
<td>All treatments (except fosfomycin - see dose schedule for details)</td>
</tr>
<tr>
<td>amoxicillin</td>
<td>500mg TDS</td>
<td>7 days all treatments</td>
</tr>
<tr>
<td>sensitive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trimethoprim</td>
<td>200mg BD</td>
<td>7 days all treatments</td>
</tr>
<tr>
<td>Cefalexin</td>
<td>500mg BD</td>
<td>7-10 days</td>
</tr>
<tr>
<td>Co-amoxiclav</td>
<td>500/125mg TDS</td>
<td>7-10 days</td>
</tr>
<tr>
<td>only if sensitive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trimeprprim only if sensitive</td>
<td>200mg BD</td>
<td>14 days</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>500mg BD</td>
<td>7 days</td>
</tr>
<tr>
<td><strong>EMA Oct 18</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ofloxacin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrofurantoin</td>
<td>100mg MR OD @ night</td>
<td>Review after 3-6 months</td>
</tr>
<tr>
<td>Trimeprprim</td>
<td>100mg OD @ night</td>
<td></td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>500mg BD</td>
<td>14 days then review and stop or continue for further 14 days</td>
</tr>
<tr>
<td>Ofloxacin</td>
<td>200mg BD</td>
<td></td>
</tr>
<tr>
<td><strong>EMA Oct 18</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trimethoprim</td>
<td>200mg BD</td>
<td></td>
</tr>
</tbody>
</table>
### Vaginal candidiasis

**CKS Vag. candidiasis**

Only topical preparations are appropriate in pregnancy with recommended course duration of 7 days.

- **Fluconazole oral**
- **Clotrimazole pessary**
- **Clotrimazole 10% cream**

**150mg STAT**

500mg STAT

5g applicator full STAT

Repeat in 3 days in severe cases

<table>
<thead>
<tr>
<th>ILLNESS</th>
<th>GOOD PRACTICE POINTS</th>
<th>TREATMENT</th>
<th>ADULT DOSE</th>
<th>COURSE DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fluconazole</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clotrimazole</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clotrimazole 10% cream</strong></td>
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</table>

<table>
<thead>
<tr>
<th><strong>ERADICATION OF HELICOBACTER PYLORI</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NICE CG184</strong></td>
</tr>
<tr>
<td><strong>PHE H. pylori</strong></td>
</tr>
<tr>
<td><strong>CKS dyspepsia</strong></td>
</tr>
</tbody>
</table>

Eradication is beneficial in known DU, GU or low grade malta

Consider test and treat in persistent uninvestigated dyspepsia

Do not offer eradication for GORD

Do not use clarithromycin or metronidazole if used in the past year for any infection

If patient fits outside this guideline, please refer to microbiology

In relapse see **NICE**

<table>
<thead>
<tr>
<th>ILLNESS</th>
<th>GOOD PRACTICE POINTS</th>
<th>TREATMENT</th>
<th>ADULT DOSE</th>
<th>COURSE DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GERD</strong></td>
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<tr>
<td><strong>Dyspepsia</strong></td>
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</tbody>
</table>

### Oral candidiasis

**CKS oral candida**

Oral candidiasis rare in immunocompetent adults; consider undiagnosed risk factors including HIV.

**Mild-moderate**

- miconazole oral gel OR
- Nystatin suspens. 100 .000 IU

**Moderate-severe**

- fluconazole oral tablets

**2.5mL **for 7 days after asymptomatic**

**1ml QDS** **for 2 days after asymptomatic**

50mg OD OR

100mg OD if extensive, severe, HIV or immunocompromised

**7 days **

<table>
<thead>
<tr>
<th>ILLNESS</th>
<th>GOOD PRACTICE POINTS</th>
<th>TREATMENT</th>
<th>ADULT DOSE</th>
<th>COURSE DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abdominal sepsis</strong></td>
<td></td>
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<tr>
<td><strong>e.g. diverticulitis</strong></td>
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</tr>
<tr>
<td><strong>CKS diverticulitis</strong></td>
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</tbody>
</table>

Assess the need for admission.

If treated at home, use broad spectrum antibiotics.

**co-amoxiclav**

**Penicillin Allergy:**

- ciprofloxacin
- metronidazole

<table>
<thead>
<tr>
<th>ILLNESS</th>
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<th>COURSE DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Threadworm</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>CKS threadworm</strong></td>
<td></td>
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</tbody>
</table>

Treat all household contacts at the same time PLUS advise hygiene measures for 2 weeks (hand hygiene, pants at night, morning shower) PLUS wash sleepwear, bed linen, dust, and vacuum on day one

**mebendazole**

<table>
<thead>
<tr>
<th>ILLNESS</th>
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<th>TREATMENT</th>
<th>ADULT DOSE</th>
<th>COURSE DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infectious diarrhoea</strong></td>
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</tr>
<tr>
<td><strong>PHE diarrhoea</strong></td>
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</tbody>
</table>

Antibiotic therapy not indicated unless systemically unwell.

If very sick and **Campylobacter** suspected (e.g. undercooked meat and abdominal pain)

Consider recent antibiotics / hospital admission and risk of **Clostridium difficile**

**Clarithromycin**

<table>
<thead>
<tr>
<th>ILLNESS</th>
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<th>COURSE DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clostridium difficile</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>PHE C. diff</strong></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Stop unnecessary antibiotics and/or PPIs. Admit to an acute hospital if severe: T >38.5; WCC >15, rising creatinine or signs/symptoms of severe colitis

No Hx of CDI or > 30 days ago

**Metronidazole**

**CDI within 30 days (Severe / recurrent)**

**Vancomycin (oral)**

<table>
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<th>COURSE DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SKIN INFECTIONS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Eczema</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CKS eczema</strong></td>
<td></td>
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</tbody>
</table>

If no visible signs of infection use of antibiotics (alone or with steroids) encourages resistance and does not improve healing.

In cases with visible signs of infection, use treatment as in impetigo.
### Impetigo

**CKS impetigo**
- For extensive, severe, or bullous impetigo use oral antibiotics
- Reserve local antibiotics for very localized lesions
- Discuss with Micro if MRSA positive

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dose</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flucloxacillin</td>
<td>500mg QDS</td>
<td>7 days</td>
</tr>
<tr>
<td><em>If penicillin allergy:</em> Clarithromycin</td>
<td>500mg BD</td>
<td>7 days</td>
</tr>
<tr>
<td>Topical fusidic acid 2%</td>
<td>TDS</td>
<td>5 days</td>
</tr>
</tbody>
</table>

### Cellulitis

**CKS cellulitis**
- Class I: If patient afebrile and healthy other than cellulitis, use oral flucloxacillin alone
- Class II: If febrile and ill, or comorbidity, consider IV treatment by community team
- Class III: Toxic appearance: admit to an acute hospital. If river or sea water exposure, discuss with microbiologist

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<th>Duration</th>
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<td>500mg BD</td>
<td>7 days</td>
</tr>
</tbody>
</table>

### Cellulitis

**If slow response continue for further 7 days**

### Leg Ulcers

**CKS leg ulcers**
**PHE VLU**
- Ulcers are always colonized.
- Antibiotics do not improve healing unless active infection (cellulitis, increased pain, pyrexia, purulent exudate, odour)
- If active infection, send pre-treatment swab.
- Review antibiotics after culture results

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<td>Flucloxacillin</td>
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<tr>
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</tbody>
</table>

### Burns, wound infections and abscesses

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dose</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flucloxacillin</td>
<td>500mg QDS</td>
<td>7 days</td>
</tr>
<tr>
<td><em>If penicillin allergy:</em> Clarithromycin</td>
<td>500mg BD</td>
<td>7 days</td>
</tr>
</tbody>
</table>

### Contaminated Lacerations

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dose</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-amoxiclav 500/125</td>
<td>500/125 mg TDS</td>
<td>7 days</td>
</tr>
</tbody>
</table>

### Bites Human: Cat or dog:

**CKS bites**
- Review at 24 & 48 hours
- Ensure thorough irrigation and assess risk of tetanus, rabies, HIV and hepatitis B & C.
- Prophylactic treatment if wound < 48 hrs and high infection risk:
  - All cat bites and puncture wounds to hand, foot, face, joint, tendon and ligaments
  - Immunocompromised, diabetic, asplenic and cirrhotic patients

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dose</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prophylaxis or treatment: Co-amoxiclav</td>
<td>500/125mg TDS</td>
<td>7 days</td>
</tr>
</tbody>
</table>

### Burns, wound infections and abscesses

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dose</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flucloxacillin</td>
<td>500mg QDS</td>
<td>7 days</td>
</tr>
<tr>
<td><em>If penicillin allergy:</em> Clarithromycin</td>
<td>500mg BD</td>
<td>7 days</td>
</tr>
</tbody>
</table>

### Contaminated Lacerations

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dose</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-amoxiclav 500/125</td>
<td>500/125 mg TDS</td>
<td>7 days</td>
</tr>
</tbody>
</table>

### Scabies

**CKS scabies**
**NHS scabies**
- Treat all home & sexual contacts within 24h
- Treat whole body from ear/chin downwards and under nails. If elderly, also face & scalp.
- Permethrin 5% cream
- If allergy: Malathion 0.5% aqueous liquid

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dose</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permethrin 5% cream</td>
<td></td>
<td>2 applications 1 week apart</td>
</tr>
</tbody>
</table>

### Dermatophyte infection – skin

**CKS body & groin**
**CKS foot**
**CKS scalp**
**PHE nail & skin**
- Terbinafine is fungicidal, so treatment time shorter than with fungistatic azoles
- If scalp affected: discuss with dermatology

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dose</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topical terbinafine 1%</td>
<td></td>
<td>7 -14 days</td>
</tr>
<tr>
<td>Topical azole 1%</td>
<td></td>
<td>For 1 – 12 days after healing</td>
</tr>
<tr>
<td>Alternative for athlete’s foot only:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topical undecanoates (Mycota®)</td>
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<td></td>
</tr>
</tbody>
</table>

### Dermatophyte infection – fingernail or toenail

**CKS nail**
**PHE nail & skin**
- Take nail clippings: start therapy only if infection is confirmed by laboratory
- Oral terbinfine is more effective than oral azole. Liver reactions rare with oral antifungals.
- If candida or non-dermatophyte infection confirmed, use oral itraconazole

**If superficial:**
- Amorolfine 5% nail lacquer
- *First line:* Terbinafine
- *Second line:* Itraconazole

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dose</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 weekly</td>
<td>50mg OD</td>
<td>Finger 6 months</td>
</tr>
<tr>
<td>200mg BD</td>
<td></td>
<td>Toes 12 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fingers 6 weeks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Toes 12 weeks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fingers 2 courses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Toes 3 courses</td>
</tr>
</tbody>
</table>
**Surgical site infection (SSI)**

*Not all SSI require antibiotic treatment, minor infections may respond to drainage of pus and topical antiseptics.*

*Consider local resistance patterns and microbiological test to ensure appropriate treatment as antibiotic therapy carries the risk of adverse reaction and the development of resistant bacteria and *Clostridium difficile*.*

---

**Varicella zoster/chickenpox**

*CKS chickenpox, PHA varicella*

- Pregnant/ immunocompromised/ neonate: seek urgent specialist advice
- Chicken pox: if onset of rash <24h & older than 14 years old or severe pain or dense/oral rash or 2° household case or steroids or smoker consider aciclovir.

**Herpes zoster/shingles**

*PCDS herpes, Zoster, CKS shingles*

- Shingles: treat if >50 yrs and within 72 hrs of rash (PHN rare if <50yrs); or if active ophthalmic or Ramsey Hunt or eczema.

**Insect bites**

*CKS insect bites*

- Consider antimicrobials if evidence of secondary infection

**Pilonidal sinus**

*CKS pilonidal sinus*

- Consider antibiotic treatment only if cellulitis suspected and “wait and watch” approach for asymptomatic patients recommending meticulous hygiene with regular baths/showers. Refer for consideration of surgery if discharge

---

**ILLNESS**

<table>
<thead>
<tr>
<th>GOOD PRACTICE POINTS</th>
<th>TREATMENT</th>
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<th>COURSE DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EYE INFECTIONS</strong></td>
<td></td>
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</tr>
<tr>
<td><em>Conjunctivitis</em></td>
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<td></td>
</tr>
<tr>
<td><em>CKS conjunctivitis</em></td>
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<tr>
<td><em>AAO conjunctivitis</em></td>
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</tr>
<tr>
<td>Treat only if severe (most viral or self-limiting). Bacterial conjunctivitis is usually unilateral and self-limiting. It is characterized by red eye with mucopurulent discharge (not watery). 65% resolve on placebo by day five. Fusidic acid has less gram negative activity</td>
<td>First line: Chloramphenicol 0.5% drops and chloramphenicol 1% ointment Second line: Fusidic acid 1% gel</td>
<td>2 hourly for 2 days then, 4 hourly (whilst awake) At night</td>
<td>Continue for 48 hours after resolution</td>
</tr>
<tr>
<td><em>Blepharitis</em></td>
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<tr>
<td><em>CKS blepharitis</em></td>
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</tr>
<tr>
<td>It is a chronic condition. Treatment can control symptoms preventing complications although, periodic relapses and exacerbations may occur. Successful management is dependent on treatment compliance and good eye lid hygiene*.</td>
<td>First line: *Avoid cosmetics, warm compresses, gentle washes, lid massage and scrubs. If not effective after 2 weeks Second line: Chloramphenicol 1% ointment *</td>
<td>BD</td>
<td>For 6 weeks</td>
</tr>
<tr>
<td><strong>DENTAL INFECTIONS</strong></td>
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- **Dental abscess**

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</thead>
<tbody>
<tr>
<td><em>CKS dental abscess</em></td>
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<tr>
<td><em>SDCEP dental problems</em></td>
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<tr>
<td>This is intended for short term treatment whilst awaiting dental evaluation If signs of airways obstruction, refer urgently to hospital If pus, drain by incision, tooth extraction or root canal. Send pus to microbiology If spreading infection (lymph involvement or systemic signs such as fever/malaise) ADD metronidazole If severe refer to an acute hospital</td>
<td>Amoxicillin If severe or spreading infection: Add metronidazole If penicillin allergy: Metronidazole 2° line if penicillin allergy: Clarithromycin</td>
<td>500mg TDS 400mg TDS 400mg TDS 500mg BD</td>
<td>5 days all treatments Review after 3 days</td>
</tr>
</tbody>
</table>
Summary:

This guidance aims to assist staff in:

- The safe prescribing, administration and monitoring of oral and sub-cutaneous anticoagulant therapy for the treatment and prophylaxis of venous thromboembolism.

**Note:** Warfarin is by far the most commonly used oral anticoagulant. However, the use of direct oral anticoagulants (eg, rivaroxaban) is gradually increasing. These directly act on clotting factors and do not require routine monitoring of INR value.
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<th>Guidelines for the prescribing, administration and monitoring of</th>
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<td>vitamin K antagonist oral anticoagulant therapy on inpatient units (e.g. warfarin)</td>
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</tr>
<tr>
<td>1B</td>
<td>direct oral anticoagulant (DOAC) therapy on inpatient units (e.g. ribaroxaban)</td>
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</tr>
<tr>
<td>2</td>
<td>Guidelines for the prescribing, administration and monitoring of low molecule weight heparins (LMWHs) on inpatient units</td>
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</tr>
<tr>
<td>3</td>
<td>Guidelines for the prescribing, administration and monitoring of unfractionated heparins and fondaparinux sodium on inpatient units</td>
<td>44</td>
</tr>
<tr>
<td>4</td>
<td>Advice on what to do if patients on anticoagulants need dental treatment.</td>
<td>45</td>
</tr>
</tbody>
</table>

Bibliography

Appendix 1:
Anticoagulation duration and target INR range when using Vitamin K Antagonists (VKAs) for common indications. (Warfarin, phenindione and acenocoumarol).

Appendix 2:
A summary of common supplements and foods which interact with Vitamin K Antagonists.

Appendix 3:
Information for clinicians on managing warfarin drug interactions.

Appendix 4:
Summaries of prescribing information for the use of Low Molecular Weight Heparin in the Treatment / Prophylaxis of Venous Thromboembolism (VTE). (Deep vein thrombosis and/or pulmonary embolism).
Guidelines for the prescribing, administration and monitoring of Vitamin K antagonist (VKA) oral anticoagulants (warfarin, acenocoumarol and phenindione) which require regular INR monitoring on inpatient units.

**Important note:** Throughout part 1 A of these guidelines the term “warfarin” is usually referred to rather than the generic term ‘Vitamin K antagonists’. This is because warfarin is by far the most commonly used oral anticoagulant. However, the two other vitamin K antagonist should be treated in exactly the same way as warfarin.

**Section 1: On admission**

**The admitting doctor must:**

- Read the patient’s notes, previous prescription and protocol, check Anticoagulant Record Book (‘yellow’ book) and identify any special instructions. Review the results of all relevant investigations (including blood test results) and identify the indication for the VKA prescription and any issues on which you may need to seek advice.

- At the earliest opportunity, contact the patient’s GP and/or anticoagulant clinic (or acute hospital ward if transferred from there) for advice, if the patient is admitted without an up-to-date “yellow book”.

- Ensure that the patient understands their anticoagulant treatment and monitoring requirements. If not give clear explanation.

- Discuss with the patient / carer any verbal or written information they have received concerning their on-going anticoagulant therapy.

- Undertake and document measurement of the INR in accordance with the patient’s treatment plan. (guideline INR target values are given in Appendix 1).

- Establish baseline FBC, LFTs, U&Es and clotting screen.

- Attach a warfarin warning label on main Drug Prescription and Administration Record chart, and write “warfarin” in the regular prescription section, and “see anticoagulant prescription chart” in the additional instructions section.

- Prescribe the VKA on the appropriate Trust supplementary prescription chart ensuring all sections are correctly completed. Prescribe the anticoagulant treatment legibly making sure that the intention for treatment and monitoring is clear, accurate and there are no ambiguities.

  Link to form: [https://www.sussexpartnership.nhs.uk/node/1626/attachment](https://www.sussexpartnership.nhs.uk/node/1626/attachment)

- Prescribe the dose of warfarin in milligrams and not as a number of tablets.

- Prescribe constant daily dosing avoiding alternate day dosing.

**Section 2: During admission**

- Where necessary, the care team must update the patient-held ‘yellow book’.
• The care team must seek advice and support from the anticoagulant clinic, or appropriate acute services medical team when the needs of the individual and the complexity of the case are beyond their competence and capability.

• In the case of overdose / excessively raised INR levels warfarin should be stopped and vitamin K prescribed either orally or intravenously as recommended by the local haematology department.

Doctors need to:

• Be aware of any significant interacting drugs – See appendices 2 and 3.
• Avoid the use of “as required” aspirin or NSAIDs.
• Retest INR levels if they initiate or discontinue any interacting drugs. (Test at 2 to 3 day intervals initially).
• Ensure that the prescription is kept updated and INR levels are monitored at appropriate intervals.
• When administering warfarin, half tablets should not be used. The least number of whole tablets per day should be used.
• Warfarin tablets are normally available in 0.5mg, 1mg, 3mg and 5mg strengths.

Nurses need to:

• Administer warfarin at the same time each day (usually 6pm), or at the frequency prescribed using whole tablets.
• Ensure that INR tests are done regularly as requested by the prescriber.
• Tell anyone who is involved in the patient’s care, (including dentists, ECT team, etc), that the patient is taking warfarin.
• Advise the patient to avoid eating excessive amounts of broccoli, spinach and cod liver oil as all of these contain high level of vitamin K that can thicken the blood. Normal portion sizes should not present a problem. (Appendix 2)
• Advise the patient to avoid medicines containing aspirin or ibuprofen and “over the counter” vitamin supplements.
• Monitor the patient and report to the ward doctor without delay if:
  • There is excessive or extensive bruising.
  • There are cuts to the skin that bleed longer than usual.
  • There is darkening of the patient’s stools or urine.
  • There is any unusual bleeding.
  • Any other unusual side effect.
Section 3: On Discharge

The doctor must:

- Ensure that the primary care team is sent information concerning the clinical indication for use, target INR, intended duration of therapy, current prescription and recent laboratory test results. This also applies to when the patient is transferred to another secondary care team.

- Prescribe the discharge quantity of warfarin in accordance with local protocol. This may be sufficient to cover the period to the next blood test (where known), or may be the ‘normal’ discharge quantity, or may be linked to one-stop dispensing procedures.

- Ensure that the ‘yellow book’ is FULLY and appropriately completed and return to the patient/carer. Also, ensure that the patient /carer are also verbally informed of any further blood tests required.

The Nursing Team must:

- Ensure that the following are discussed with the patient:
  - Their current dose, number and colour of tablets – (caution – different brands can vary in appearance).
  - Their increased bleeding risk due to being on warfarin and the need to seek advice if they are unable to stop bleeding.
  - The importance of the ‘yellow book’ and that they read and understand its contents.
  - The importance of telling other health professionals, such as the dentist, pharmacist, physiotherapist etc. about being on warfarin, and the importance of showing them the ‘yellow book’.
  - That warfarin interacts with other medication both prescribed and purchased over the counter (e.g. NSAIDS and herbal remedies).
  - Interactions with food and awareness of alcohol limits
  - The need to take warfarin at the same time each day (usually 6pm).
  - Who they should contact in an emergency.
  - That they must seek urgent medical attention if
    - They are involved in a major trauma
    - Suffer a significant blow to the head

- Ensure that the warfarin Prescription Chart is faxed (in its entirety) to the G.P. within 24 hours of discharge from the ward/unit.

Note - Multi-Dose Systems (MDS), or compliance aids (e.g. Dosette®), should not be used for warfarin, even if the patient’s other drugs are packed in these systems.
Part 1 B

Guidelines for the prescribing, monitoring and administration of direct oral anticoagulants (DOACs) (apixaban, dabigatran, edoxaban and rivaroxaban) on inpatient units

**Important note:** Patients on DOACs do not require INR monitoring.

**Section 1: Prescribing**

- Read the patient’s notes, previous prescription and protocols, identify any special instructions such as intended duration of treatment.
- Identify the indication for the prescription of the DOAC and any issues you need to seek advice on.
- Ensure renal function is adequate and review the results of any other relevant investigations such as FBC & LFTs.
- DOACs provide immediate anticoagulant effect. Peak effects range from 1 to 4 hours.
- Ensure that the patient understands their anticoagulant treatment and monitoring requirements (yearly renal function tests unless otherwise directed).
- Discuss with the patient / carer any verbal or written information they have received concerning their on-going anticoagulant therapy.
- Prescribe the DOAC on the normal Trust Prescription and Administration Chart ensuring legibility, accuracy and preventing ambiguities.
- The risk of haemorrhage induced by DOACs increases with:
  - Age (elderly patients are at highest risk)
  - Weight, if below 60 Kg
  - Concomitant use of SSRIs, SNRIs, NSAIDs, clopidogrel and aspirin.
- DOACs interact with P-Glycoprotein and CYP3A4 inhibitors leading to increased risk of haemorrhage (verapamil, amiodarone, clarithromycin…etc). See relevant section in BNF.
- P-Glycoprotein inducers will reduce plasma levels of DOACs (carbamazepine, St. John’s wort…etc).
- DOACs do not interact with food.
- There is currently no antidote for most DOACs:
  - **Vitamin K does not reverse the effects of DOACs**
  - Dabigatran can be cleared by haemodialysis and where rapid reversal is required the antidote idarucizumab can be used.
  - Rivaroxaban, edoxaban and apixaban effects may be reversed by prothrombin complex concentrate.
Section 2: Administration

- Administer DOACs at the prescribed time and frequency. Missed / delayed doses may result in more time without anticoagulation leading to a greater risk of thromboembolic complications.

- Do not double up for missed doses.

- Delayed doses can be administered up to six hours later if twice daily administration or up to 12 hours later if given only once daily. The dose should be omitted if a longer delay.

Section 3: Monitoring

- INR monitoring is not required for patients on DOACs.

- Patients on DOACs should have their renal function assessed using Cockcroft-Gault formula at least once a year or more frequently if suspected that renal function will decline or deteriorate. (Hypovolaemia, dehydration, concomitant medication…etc).

- An unexplained fall in haemoglobin or blood pressure should lead to a search for a bleeding site.

- All suspected adverse reactions should be reported under the Yellow Card Scheme for rivaroxaban and edoxaban as both still have a black triangle status. (as of September 2017).

- All serious adverse reactions should be reported for all DOACs.

Section 4: Discharge

- Everyone involved in the patient’s care should be advised that the patient is taking DOACs (dentists, podiatrists…etc). and showing them the DOAC alert card.

- Ensure that the primary care team is sent information concerning the clinical indication for use, intended duration of therapy, current prescription and recent laboratory test results. This also applies to when the patient is transferred to another secondary care team.

- Prescribe discharge quantity in accordance with local protocols; this may be the 'normal' discharge quantity or may be linked to one-stop dispensing procedures.

- Ensure that the following are discussed with the patient:
  - Their current dose.
  - Their increased bleeding risk due to being on DOACs
  - The importance of telling other health professionals, such as the dentist, pharmacist, physiotherapist etc. about being on DOACs.
  - The need to take DOACs regularly.
  - Who they should contact in an emergency.

Note - Multi-Dose Systems (MDS), or compliance aids (eg. Dosette), should not be used for dabigatran even if the patient’s other drugs are packed in these systems.
Part 2

Guidelines for the prescribing, administering and monitoring of low molecule weight heparins (LMWHs) for the treatment of venous thromboembolisms on inpatient units

Introduction

The National Patient Safety Agency receives many incident reports relating to dosing errors concerning LMWHs and issued a Rapid Response Report to all healthcare sectors in July 2010. Underdosing of LMWHs presents an increased risk of further thromboembolic event, while overdosing can increase the risk of bleeding. In both cases the patient is put at significant risk of harm.

Although it is unlikely that LMWH therapy will be initiated within a Trust inpatient unit it is a possibility that this may occur. In addition, and more likely, is that a patient already initiated / established on LMWH therapy may be admitted to one of our units. This guidance should be referred to whenever a LMWH patient is being cared for on a Trust inpatient unit.

Section 1: Prescribing

- The patient’s weight must always be used as the basis for calculating the required treatment dose of LMWH. Their weight in kilograms (kg) must always be accurately measured and must be accurately recorded on the NEWS chart and in the clinical notes. Their weight must always be recorded at the start of therapy and must be repeated during treatment if changes of weight are suspected or observed. The last recorded weight must always be carried forward when NEWS charts are rewritten.

- A full blood count and potassium level should be undertaken when LMWH therapy is required before treatment starts.

- Renal function tests (RFTs) must be undertaken when LMWH therapy is being considered and preferably before treatment starts. If RFTs are delayed then the initiation of LMWH therapy should not be withheld, but the prescribed dose must be rechecked as soon as RFT results become available. If renal function is found to be impaired dose reduction may be necessary in accordance with the manufacturer’s instructions.

- LMWH dosages vary between products, clinical indication and body weight. Prescribed doses must always be checked against the information contained within a current edition BNF, (or the eBNF), or the manufacturers Summary of Product Characteristics (see also appendix 4).

- If a dose is required that deliberately does not match the weight/dose chart recommendation, (e.g. a reduced dose due to renal dysfunction), a note should be made on the drug chart and in the patient’s notes to draw other staff’s attention to it.

- In the case of overdose protamine sulfate can be administered by IV injection but should be undertaken where the appropriate monitoring can be undertaken.
Section 2: Administration

- LMWHs are administered by subcutaneous injection. Administration must only be by clinicians who are competent to administer by this route and must always be in accordance with manufacturers’ instructions. (Package inserts). If any doubt or concern exists regarding the site of administration or the prescribed dose, urgent clarification must be obtained before administration takes place.

Section 3: Monitoring

- All clinicians involved with prescribing, dispensing or administering LMWH therapy must check that the patient’s weight is recorded on their NEWS chart and in the patient records. If it is not, steps must be taken to record it without undue delay. They should also correlate the patient’s weight against the dosage guide included as Appendix 4 of this guidance document.

- If there is a discrepancy between the dose and the patient’s weight and no good reason is documented in the patient’s notes (e.g. lower dose due to renal failure) then the discrepancy should be checked with the prescriber (or if not available another doctor) before a dose is administered. If confirmed as correct a note must be made in the patient’s notes to explain why.

- Pharmacists will check the prescribed dose and the duration of the prescribed course of LMWH, according to patient weight, clinical indication, product information and RFTs, whenever they visit the inpatient unit. Any concerns must be communicated to the prescriber, (or if not available to another doctor), without delay.

- Unless there are additional risk factors, or the patient is on concomitant oral anticoagulant therapy, monitoring of INR is not normally necessary during treatment with LMWHs.

Section 4: Patient Discharge / Transfer

- Information regarding LMWH product and dose, clinical indication, intended duration of treatment, patient weight, and renal function must be fully and accurately communicated at each transfer of care.

Part 3

Guidelines for the prescribing, administration and monitoring of unfractionated heparins and fondaparinux sodium on inpatient units

Unfractionated heparin:

- Unfractionated or “standard” heparin, eg. heparin sodium and heparin calcium, has a shorter duration of action than LMWH and if used sub-cutaneously is administered every 8 to 12 hours rather than once daily. Its use has now been largely superseded by the use of LMWH but because of its short action it is sometimes used in patients at high risk of bleeding as its anticoagulant effects can be stopped more quickly. It is also preferred to LMWH in patients with
renal impairment. However, it carries greater risk of heparin-induced thrombocytopenia than LMWH.

- Similar to LMWH, unfractionated heparin has a wide range of licensed indications, including the prophylaxis and treatment of VTE. (See current BNF for details of dosage, administration and cautions etc.).

- Like LMWH, unfractionated heparin is normally used without INR monitoring.

- In the case of overdose protamine sulfate can be administered by IV injection but should be undertaken where the appropriate monitoring can be undertaken.

**Fondaparinux sodium:**

- Fondaparinux sodium is a fully synthetic product but is chemically similar to heparin and LMWH. It is given once daily, usually by sub-cutaneous route and is sometimes preferred as the risk of heparin-induced thrombocytopenia is even lower with this product than with LMWH.

- Similar to LMWH and unfractionated heparin, fondaparinux sodium has a wide range of licensed indications, including the prophylaxis and treatment of VTE. (See current BNF for details of dosage, administration and cautions etc.).

- Like LMWH and unfractionated heparin, fondaparinux sodium is normally used without INR monitoring.

- There is no known antidote for fondaparinux.

**Part 4**

**Patients on anticoagulants requiring dental treatment**


**Bibliography**

1. Stockley’s Interaction Checker – accessed via Medicines Complete 18.4.19


### Appendix 1

**Anticoagulation duration and INR ranges**

<table>
<thead>
<tr>
<th>Common Indications</th>
<th>Target INR value</th>
<th>Usual Duration of Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atrial Fibrillation</td>
<td>2.5</td>
<td>Long term / indefinite</td>
</tr>
<tr>
<td>Deep Vein Thrombosis (DVT)</td>
<td>2.5</td>
<td>3 months</td>
</tr>
<tr>
<td>Pulmonary Embolus (PE)</td>
<td>2.5</td>
<td>6 months</td>
</tr>
<tr>
<td>Recurrent DVT or PE (no longer receiving VKA)</td>
<td>2.5</td>
<td>Long term / indefinite</td>
</tr>
<tr>
<td>Recurrent DVT or PE (currently receiving VKA with INR above 2)</td>
<td>3.5</td>
<td>Long term / indefinite</td>
</tr>
<tr>
<td>Cardioversion</td>
<td>2.5</td>
<td>3 weeks before cardioversion and 4 weeks after procedure</td>
</tr>
<tr>
<td>Myocardial infarction – Prevention of venous thromboembolism</td>
<td>2.5</td>
<td>3 months</td>
</tr>
<tr>
<td>Dilated cardiomyopathy</td>
<td>2.5</td>
<td>Long term / indefinite</td>
</tr>
<tr>
<td>Mitral stenosis</td>
<td>2.5</td>
<td>Long term / indefinite</td>
</tr>
<tr>
<td><strong>Less common indications</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Anticoagulant advice should be sought from the local haematology department and guidelines.

Appendix 2

A summary of common supplements and foods which interact with Vitamin K Antagonists (warfarin, phenindione and acenocoumarol)\(^1,2\).

Note that this list is intended as a guide only and is not exhaustive. Reference should be made to the BNF and/or the drug manufacturers Summary of Product Characteristics for more detailed information on drug-drug interactions and their significance. (See appendix 3 for medicines).

<table>
<thead>
<tr>
<th>Foods</th>
<th>Supplements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avocado</td>
<td>Chondroitin plus glucosamine</td>
</tr>
<tr>
<td>Cheese – mature and blue</td>
<td>Coenzyme Q10</td>
</tr>
<tr>
<td>Chickpeas</td>
<td>Danshen (\textit{Salvia miltiorrhiza})</td>
</tr>
<tr>
<td>Cranberry, grapefruit or pomegranate juice</td>
<td>Devil’s claw (\textit{Harpagophytum procumbens})</td>
</tr>
<tr>
<td>Egg Yolks</td>
<td>Dong quai (Chinese angelica; \textit{Angelica sinensis})</td>
</tr>
<tr>
<td>Flaxseed</td>
<td>Evening Primrose Oil</td>
</tr>
<tr>
<td>Garlic</td>
<td>Feverfew (\textit{Tanacetum parthenium})</td>
</tr>
<tr>
<td>Ginger</td>
<td>Fenugreek together with boldo (\textit{Peumus boldus})</td>
</tr>
<tr>
<td>Green leafy vegetables, e.g. broccoli, spinach</td>
<td>Fish Oil supplements containing eicosapentaenoic acid and docosahexaenoic acid</td>
</tr>
<tr>
<td>Liver</td>
<td>Ginkgo biloba</td>
</tr>
<tr>
<td>Mango</td>
<td>Ginseng</td>
</tr>
<tr>
<td>Onions</td>
<td>Green tea (\textit{Camellia sinensis})</td>
</tr>
<tr>
<td>Papaya</td>
<td>Horse chestnut (\textit{Aesculus hippocastanum})</td>
</tr>
<tr>
<td>Seaweed</td>
<td>\textit{Lycium barbarum} (also known as Chinese Wolfberry, Di Gu Pi, Goji Berry, Gou Qi Zi)</td>
</tr>
<tr>
<td>Soy containing products (including soya milk and tofu). Wholegrain cereals</td>
<td>Red Clover</td>
</tr>
<tr>
<td></td>
<td>St John’s wort (\textit{Hypericum perforatum})</td>
</tr>
<tr>
<td></td>
<td>Vitamin A</td>
</tr>
<tr>
<td></td>
<td>Vitamin E</td>
</tr>
<tr>
<td></td>
<td>Vitamin K</td>
</tr>
<tr>
<td></td>
<td>Wintergreen (also known as methyl salicylate and used topically)</td>
</tr>
</tbody>
</table>

References:


2. [www.nhs.uk](http://www.nhs.uk)

3. Herbal Medicines accessed 18.4.19 via Medicines Complete [https://www.medicinescomplete.com/#/content/herbals/HBL1000739746#content%2Fherbals%2FHBL1000811957](https://www.medicinescomplete.com/#/content/herbals/HBL1000739746#content%2Fherbals%2FHBL1000811957)
### Appendix 3

**Information for Clinicians on Managing Warfarin Drug Interactions**

**Established and clinically important interactions** (Note this list may not be exhaustive)

<table>
<thead>
<tr>
<th>DRUG</th>
<th>INTERACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>Excessive use potentially decreases anticoagulant effect. Manufacturer makes no recommendation. Closely monitor INR levels especially if detoxing from alcohol.</td>
</tr>
<tr>
<td>Anabolic steroids + related drugs (e.g. danazol)</td>
<td>Increased anticoagulant effect and bleeding seen. Avoid concurrent use. If this is not possible, close monitoring of INR is advisable if danazol is added to established anticoagulant regime. Dose of warfarin should be reduced accordingly.</td>
</tr>
<tr>
<td>Amiodarone</td>
<td>Anticoagulant effect may be significantly increased. Bleeding may occur if warfarin dose not reduced appropriately. The interaction begins to develop within a few days and is usually maximal by 2 to 7 weeks. Interaction may persist for several weeks after amiodarone is stopped. Monitor INR closely and consider reducing the dose of warfarin by ( \frac{1}{3} ) up to ( \frac{2}{3} ) if amiodarone is added to already established anticoagulant regime.</td>
</tr>
<tr>
<td>Barbiturates (+ Primidone)</td>
<td>Anticoagulant effect reduced. Full therapeutic anticoagulation may only be achieved by a 30-60% increase in warfarin dose. The interaction occurs within 2-4 days, with maximal effect after 3 weeks. Monitor INR and increase dose accordingly.</td>
</tr>
<tr>
<td>Carbamazepine</td>
<td>Metabolism of warfarin is increased by carbamazepine leading to reduced anticoagulant effect. Monitor INR if carbamazepine added to patient established on warfarin and consider dose increases as appropriate.</td>
</tr>
<tr>
<td>Co-trimoxazole / Trimethoprim</td>
<td>Increased anticoagulant effect and bleeding. High incidence of interaction. Warfarin dose should be reduced and INR well monitored.</td>
</tr>
<tr>
<td>Cranberry Juice</td>
<td>Increased anticoagulant effect. In some cases severe bleeding has been seen. Incidence of interaction 20-100%. Warfarin dose reductions of ( \frac{1}{3} ) to ( \frac{1}{2} ) may be needed to avoid bleeding. Monitor INR closely.</td>
</tr>
<tr>
<td>Fibrates</td>
<td>Increased INR and bleeding. Monitor levels well and gradually reduce warfarin dose appropriately. (Approx. 20% reduction required with 50mg fluconazole daily, ranging to a 70% reduction with 600mg fluconazole daily).</td>
</tr>
<tr>
<td>Fluconazole</td>
<td>Increased INR and anticoagulant effects. Several reports of over coagulation. Prothrombin times and INR should be regularly monitored, with possible need to reduce dose of warfarin.</td>
</tr>
<tr>
<td>Glucagon</td>
<td>Increased anticoagulant effect. Manufacturer makes no recommendation. Monitor INR closely.</td>
</tr>
<tr>
<td>Metronidazole</td>
<td>Anticoagulant effects of warfarin can be markedly increased. Monitor INR and adjust warfarin dose accordingly.</td>
</tr>
<tr>
<td>Miconazole</td>
<td>Anticoagulant effects markedly increased (bleeding can take 15 days to develop, raised INR can occur within 3 days). Oral miconazole should not be given unless INR closely monitored and suitable dose reductions made (usually halving). Interaction is also seen with oral gel, and has also been reported after vaginal administration. Monitoring required for all routes.</td>
</tr>
<tr>
<td>Rifampicin</td>
<td>Anticoagulant effects markedly reduced. Seen within 5-7 days and persists for 2 to 5 weeks after withdrawal. Warfarin dose may need to be doubled or trebled, and then reduced by equivalent amount following withdrawal of rifampicin.</td>
</tr>
<tr>
<td>St John’s Wort</td>
<td>Moderate reduction in anticoagulant effect Avoid concomitant use since amount of active ingredient may vary in St John’s Wort products. (CSM advice available).</td>
</tr>
<tr>
<td>Sulfinpyrazone</td>
<td>The anticoagulant effect of warfarin is markedly increased and serious bleeding has occurred. If used concurrently monitor INR well and reduce warfarin dose, possibly by half.</td>
</tr>
<tr>
<td>Sulphonamides</td>
<td>High incidence of interaction with co-trimoxazole. Warfarin dose should be reduced and prothrombin times closely monitored. Little information with other sulphonamides but advice should be as for co-trimoxazole.</td>
</tr>
<tr>
<td>Tamoxifen / Toremifene</td>
<td>Anticoagulant effect markedly increased (bleeding has occurred). Clinically important, affects some but not all patients. Monitor INR closely and reduce warfarin dose by ( \frac{1}{2} ) to ( \frac{2}{3} ).</td>
</tr>
<tr>
<td>Testosterone</td>
<td>Increased anticoagulant effect and bleeding has been seen. Bleeding may occur if warfarin dose not reduced. Interaction develops within 2-3 days. If concurrent use cannot be avoided reduce warfarin dose and monitor INR closely.</td>
</tr>
<tr>
<td>Voriconazole</td>
<td>Voriconazole increases the anticoagulant effect of warfarin. The manufacturer therefore advises close monitoring of the prothrombin time in any patient on an oral anticoagulant who is given voriconazole. Dose adjustments of the anticoagulant should be made accordingly.</td>
</tr>
</tbody>
</table>
## Moderate Interactions

<table>
<thead>
<tr>
<th>DRUG</th>
<th>INTERACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allopurinol</td>
<td>Anticoagulant effect possibly enhanced. Few case reports of important interaction. Nevertheless, monitor INR of any patient when allopurinol first added.</td>
</tr>
<tr>
<td>Aspirin</td>
<td>Aspirin has direct GI irritant effect. Increased risk of bleeding due to antplatelet effect. Avoid analgesic/anti-inflammatory doses of aspirin. Interaction with low dose aspirin (75-150mg daily) is of much lower risk but risk/benefit needs assessing in each case.</td>
</tr>
<tr>
<td>Colestyramine</td>
<td>Anticoagulant effect may be reduced. Clinical importance uncertain. Avoid concurrent use if possible. If given concurrently monitor INR closely. Warfarin should be given 1 hour before or 4 to 6 hours after colestyramine.</td>
</tr>
<tr>
<td>Ciclosporin</td>
<td>Effects of warfarin may be increased or decreased and ciclosporin levels may be reduced. As the interaction outcome is unpredictable advice is that INR and ciclosporin levels are monitored closely during concomitant use and dosage of either drug adjusted according to levels.</td>
</tr>
<tr>
<td>Cimetidine</td>
<td>Increased anticoagulant effect and bleeding in some patients seen within days. Response should be monitored in every patient when cimetidine is first added, being alert for the need to reduce the warfarin dosage.</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>Bleeding has occurred unpredictably in isolated cases therefore prudent to monitor when first added.</td>
</tr>
<tr>
<td>Clarithromycin</td>
<td>Established and unpredictable interaction. Marked increase in effects of warfarin seen in a small number of patients. Concurrent use need not be avoided but advisable to monitor, especially high-risk patient categories, (e.g. elderly).</td>
</tr>
<tr>
<td>Clopidogrel</td>
<td>Manufacturer does not recommend concurrent use as clopidogrel+ warfarin may increase the intensity of bleeding. Some limited evidence of safety.</td>
</tr>
<tr>
<td>Cytotoxics</td>
<td>Anticoagulant effect possibly enhanced by capecitabine, carboplatin, cyclophosphamide, doxorubicin; etoposide, 5-flouracil, gemcitabine, ifosfamide, methotrexate, procarbazine, vincristine and vindesine. Anticoagulant effect reduced by azathioprine and 6-mercaptopurine. Dose of anticoagulant may need adjustment.</td>
</tr>
<tr>
<td>Disulfiram</td>
<td>Anticoagulant effects of warfarin increased. Will occur in most patients. Monitor INR closely and adjust warfarin dose. Note: Use smaller warfarin loading dose in patient’s already on disulfiram.</td>
</tr>
<tr>
<td>Erlotinib</td>
<td>Increased risk of bleeding. Closely monitor INR.</td>
</tr>
<tr>
<td>Erythromycin</td>
<td>Established and unpredictable interaction. Marked increase in effects of warfarin seen in a small number of patients. Concurrent use need not be avoided but advisable to monitor, especially high-risk patient categories (e.g. elderly).</td>
</tr>
<tr>
<td>Glucosamine</td>
<td>Anticoagulant effect of warfarin enhanced. BNF advises avoid concomitant use.</td>
</tr>
<tr>
<td>Itraconazole</td>
<td>Isolated reports of marked increases in anticoagulant effect accompanied by bruising and bleeding. It is prudent to increase monitoring of the INR.</td>
</tr>
<tr>
<td>Leflunomide</td>
<td>May increase INR and bleeding. Isolated case reports. It is prudent to increase monitoring of the INR.</td>
</tr>
<tr>
<td>Nevirapine</td>
<td>Nevirapine may decrease the anticoagulant effect of warfarin. It is prudent to monitor prothrombin times and INRs in any patient if warfarin and nevirapine are used concurrently, being alert for the need to increase the warfarin dosage (possibly twofold).</td>
</tr>
<tr>
<td>Norfloxacin</td>
<td>Bleeding has occurred unpredictably. It is therefore prudent to monitor when first added.</td>
</tr>
<tr>
<td>NSAID (+COX-IIs)</td>
<td>All NSAIDS/COX-IIs cause GI irritation. NSAIDs reduce platelet aggregation that can worsen bleeding events. Some NSAIDs may enhance anticoagulant effect. Less likelihood of interaction with ibuprofen. If need to co-prescribe with warfarin then monitor for GI toxicity/bleeding and monitor INR. Use lowest dose of the safest NSAID and consider gastro-protection prophylaxis with proton pump inhibitor.</td>
</tr>
<tr>
<td>Penicillins</td>
<td>Effects of oral anticoagulants are not normally altered. However, isolated reports of increased bleeding have been reported. The BNF therefore advises that INR should be monitored to identify occasional and unpredictable cases.</td>
</tr>
<tr>
<td>Phenytoin</td>
<td>Possibility of increased or decreased anticoagulant effect. Closely monitor both drugs.</td>
</tr>
<tr>
<td>Proguanil</td>
<td>Isolated case report of bleeding and increased prothrombin time after 5 weeks of proguanil.</td>
</tr>
<tr>
<td>Propafenone</td>
<td>Anticoagulant effect may be increased. Monitor INR closely and reduce warfarin dose as appropriate.</td>
</tr>
<tr>
<td>Protease Inhibitors</td>
<td>Both increases and decreases in anticoagulation have been reported. Interaction not well established.</td>
</tr>
<tr>
<td>Drug</td>
<td>Interaction</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Quinidine</td>
<td>Anticoagulant effect may be increased or decreased or be unaltered when quinidine taken. Monitor INR closely.</td>
</tr>
<tr>
<td>Quinolone antibiotics</td>
<td>Normally no interaction. However, bleeding has occurred unpredictably in patients on ciprofloxacin and norfloxacin, therefore prudent to monitor when first added.</td>
</tr>
<tr>
<td>Sibutramine</td>
<td>Increased risk of bleeding when given with warfarin.</td>
</tr>
<tr>
<td>SSRI's</td>
<td>Very occasional and unpredictable interaction. Case reports of warfarin interaction with many of the SSRI's. Increased INR, therefore prudent to increase monitoring of the INR initially.</td>
</tr>
<tr>
<td>Sucralfate</td>
<td>Decreased anticoagulant effect possibly due to adsorption. Isolated case reports.</td>
</tr>
<tr>
<td>Thyroid Hormones</td>
<td>Increased anticoagulant effect and bleeding has been seen. Hypothyroid patients initiated on thyroid hormones will need downward adjustment of warfarin dose as treatment proceeds to avoid bleeding.</td>
</tr>
<tr>
<td>Venlafaxine / Duloxetine</td>
<td>A very small number of reports of increased INR and bleeding. Manufacturer advise use with caution or avoid</td>
</tr>
<tr>
<td>Vitamin K * (See below)</td>
<td>Antagonises anticoagulant effect of warfarin. Dose of vitamin K at which this becomes clinically important appears to depend on the vitamin K status of the individual.</td>
</tr>
<tr>
<td>Vortioxetine</td>
<td>Predicted to increase the risk of bleeding when prescribed with warfarin. Manufacturer advised use with caution or avoid.</td>
</tr>
<tr>
<td>Zafirlukast</td>
<td>Increased anticoagulant effect. Limited reports. If given to patients stabilised on Warfarin, monitor INR well and be alert to the need to reduce warfarin dose.</td>
</tr>
</tbody>
</table>

* Some health foods, food supplements, enteral feeds, large quantities of green vegetables, seaweed, green tea can contain significant quantities of Vitamin K.

**Nb. There are also numerous milder warfarin drug interactions with lower clinical significance.** Additionally, some herbal medicines, vitamins and food supplements can interact with warfarin. Please contact your local pharmacist or the local acute trust Medicines Information Department if further advice is required.

**Acknowledgement:**
This appendix was originally produced by, and is reproduced with kind permission of:

Naomi Burns – Medicines Safety Pharmacist
Western Sussex Hospitals NHS Trust.

**Reference**
Appendix 4

Summaries of Prescribing Information for the Use of Low Molecular Weight Heparins in the Treatment / Prophylaxis of Venous Thromboembolism (VTE).
(Deep vein thrombosis and/or pulmonary embolism)

1. Dalteparin (Fragmin®) -

Prophylaxis in Adults:

- Dalteparin is licensed for the prophylaxis of deep vein thrombosis (DVT) in medical patients at a dose of 5000 units (once daily) per 24 hours.
- Dalteparin is also licensed for the prophylaxis of DVT in surgical patients. In moderate risk 2500 units is given 1-2 hours before surgery, then once daily every 24 hours. In high risk patients the dose is usually increased to 5000 units.

Treatment in Adults:

- Dalteparin is licensed for the treatment of venous thromboembolism (VTE) presenting clinically as deep vein thrombosis, pulmonary embolism (PE) or both. (It is also licensed for extended treatment in patients with solid tumours and in unstable coronary artery disease).
- For the treatment of VTE, dalteparin is normally administered by once-daily, subcutaneous injection at a dose of 200 units per kg body weight, or according to the dosage table below if single dose syringes are used. The maximum licensed dose is 18,000 units once daily.

<table>
<thead>
<tr>
<th>Weight</th>
<th>Dose (Single dose syringe).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 46kg.</td>
<td>7,500 units</td>
</tr>
<tr>
<td>46kg – 56kg</td>
<td>10,000 units</td>
</tr>
<tr>
<td>57kg – 68kg</td>
<td>12,500 units</td>
</tr>
<tr>
<td>69kg – 82kg</td>
<td>15,000 units</td>
</tr>
<tr>
<td>Greater than 82kg</td>
<td>18,000 units (Maximum licensed dose).</td>
</tr>
<tr>
<td>Greater than 120kg</td>
<td>100 units / kg BD (WSHT formulary, off-licence).</td>
</tr>
</tbody>
</table>

Elderly: Dalteparin has been used safely in elderly patients without the need for dosage adjustment, unless significantly renally impaired. (See below).

Renal Impairment: In cases of significant renal impairment (creatinine clearance <30ml/min), doses need to be adjusted according to anti-Factor Xa levels. (See Summary of Product Characteristics).

Children: The safety and efficacy of the use of dalteparin in children has not been established, therefore usage in children is not recommended.
Administration: Daltaparin should be administered into the abdominal subcutaneous tissue anterolaterally or posterolaterally, or into the lateral part of the thigh. Patients should be supine and the total length of the needle should be inserted vertically, not at an angle, into the thick part of the skin fold, produced by squeezing the skin between thumb and forefinger. The skin fold should be held throughout the injection. The injection site should not be rubbed after administration.

2. Enoxaparin (Clexane®) b
(First line East Sussex Healthcare Economy Formulary)

Prophylaxis in Adults:

- Enoxaparin is licensed for the prophylaxis of VTE in those at low to moderate risk at a dose of 20mg (2000 units) once daily for 7-10 days or until the risk has diminished.
- Enoxaparin is also licensed for the prophylaxis of deep vein thrombosis (DVT) in bedridden medical patients at a dose of 40mg (4000 units) once daily. Prophylactic treatment is normally prescribed for a minimum of 6 days and continued until the return to full ambulation, up to a maximum of 14 days.
- In addition, enoxaparin is licensed for the prophylaxis of VTE in surgical patients when a dose of 20mg (2000 units) is normally given 2 hours pre-operatively. In those undergoing orthopaedic surgery the dose is normally increased to 40mg (4000) units.

Treatment in Adults:

- Enoxaparin is licensed for the treatment of venous thromboembolism presenting clinically as deep vein thrombosis, pulmonary embolism (PE) or both. (It is also licensed in some unstable cardiac conditions and during haemodialysis).
- For the treatment of VTE, enoxaparin is normally administered by once-daily, subcutaneous injection at a dose of 1.5mg/kg (150 units per kg body weight), for at least 5 days and until adequate oral anticoagulation is established.

Elderly: Enoxaparin has been used safely in elderly patients without the need for dosage adjustment, unless significantly renally impaired. (See below).

Renal Impairment: In cases of significant renal impairment (creatinine clearance <30ml/min), doses need to be adjusted. (See Summary of Product Characteristics).

Children: The safety and efficacy of the use of enoxaparin in children has not been established, therefore usage in children is not recommended.

Administration: Enoxaparin should be administered into the abdominal subcutaneous tissue anterolaterally or posterolaterally, alternating between left and right sides. Patients should be supine and the total length of the needle should be inserted vertically, not at an angle, into the thick part of the skin fold, produced by squeezing the skin between thumb and forefinger. The skin fold should be held throughout the injection. The injection site should not be rubbed after administration.
3. Tinzaparin (Innohep\textsuperscript{c})
(First line Crawley, Horsham and Mid Sussex CCG Formulary, also Brighton and Hove CCG Formulary)

Prophylaxis in Adults:

- Tinzaparin is licensed for the prophylaxis of VTE in surgical patients when a dose of 3500 units is normally given 2 hours pre-operatively then every 24 hours. In those undergoing orthopaedic surgery the dose is normally 50 units per kg, given 2 hours pre-operatively then every 24 hours.

Prophylaxis of venous thromboembolism in non-surgical adult patients immobilised due to acute medical illness including: acute heart failure, acute respiratory failure, severe infections, active cancer, as well as exacerbation of rheumatic diseases. 3500 units given SC once daily in patients at moderate risk of VTE, or 4500 units given SC once daily in patients at high risk of VTE. Administration should continue for as long as the patient is considered to be at risk of VTE.

**Elderly:** Tinzaparin has been used safely in elderly patients without the need for dosage adjustment, unless significantly renally impaired. (See below).

**Renal Impairment:** In cases of significant renal impairment, doses are not usually reduced until creatinine clearance drops to 20ml/min. However, close monitoring is recommended at creatinine clearance levels below 30ml/min. (See Summary of Product Characteristics).

**Children:** The safety and efficacy of the use of tinzaparin in children below 18 years has not been established, therefore usage in children is not recommended.

**Administration:** Tinzaparin should be administered into the abdominal subcutaneous tissue anterolaterally or posterolaterally, alternating between left and right sides. Patients should be supine and the total length of the needle should be inserted vertically, not at an angle, into the thick part of the skin fold, produced by squeezing the skin between thumb and forefinger. The skin fold should be held throughout the injection. The injection site should not be rubbed after administration.

References.

Appendix 4

Summaries of Prescribing Information for the Use of Low Molecular Weight Heparins in the Treatment / Prophylaxis of Venous Thromboembolism (VTE). (Deep vein thrombosis and/or pulmonary embolism)

1. Dalteparin (Fragmin®) - (First-line in Western Sussex Hospitals Trust formulary)

Prophylaxis in Adults:

- Dalteparin is licensed for the prophylaxis of deep vein thrombosis (DVT) in medical patients at a dose of 5000 units (once daily) per 24 hours.
- Dalteparin is also licensed for the prophylaxis of DVT in surgical patients. In moderate risk 2500 units is given 1-2 hours before surgery, then once daily every 24 hours. In high risk patients the dose is usually increased to 5000 units.

Treatment in Adults:

- Dalteparin is licensed for the treatment of venous thromboembolism (VTE) presenting clinically as deep vein thrombosis, pulmonary embolism (PE) or both. (It is also licensed for extended treatment in patients with solid tumours and in unstable coronary artery disease).
- For the treatment of VTE, dalteparin is normally administered by once-daily, subcutaneous injection at a dose of 200 units per kg body weight, or according to the dosage table below if single dose syringes are used. The maximum licensed dose is 18,000 units once daily.

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</tr>
</tbody>
</table>

Elderly: Dalteparin has been used safely in elderly patients without the need for dosage adjustment, unless significantly renally impaired. (See below).

Renal Impairment: In cases of significant renal impairment (creatinine clearance <30ml/min), doses need to be adjusted according to anti-Factor Xa levels. (See Summary of Product Characteristics).
Children: The safety and efficacy of the use of dalteparin in children has not been established, therefore usage in children is not recommended.

Administration: Dalteparin should be administered into the abdominal subcutaneous tissue anterolaterally or posterolaterally, or into the lateral part of the thigh. Patients should be supine and the total length of the needle should be inserted vertically, not at an angle, into the thick part of the skin fold, produced by squeezing the skin between thumb and forefinger. The skin fold should be held throughout the injection. The injection site should not be rubbed after administration.

2. Enoxaparin (Clexane®)

Prophylaxis in Adults:

- Enoxaparin is licensed for the prophylaxis of VTE in those at low to moderate risk at a dose of 20mg (2000 units) once daily for 7-10 days or until the risk has diminished.
- Enoxaparin is also licensed for the prophylaxis of deep vein thrombosis (DVT) in bedridden medical patients at a dose of 40mg (4000 units) once daily. Prophylactic treatment is normally prescribed for a minimum of 6 days and continued until the return to full ambulation, up to a maximum of 14 days.
- In addition, enoxaparin is licensed for the prophylaxis of VTE in surgical patients when a dose of 20mg (2000 units) is normally given 2 hours pre-operatively. In those undergoing orthopaedic surgery the dose is normally increased to 40mg (4000) units.

Treatment in Adults:

- Enoxaparin is licensed for the treatment of venous thromboembolism presenting clinically as deep vein thrombosis, pulmonary embolism (PE) or both. (It is also licensed in some unstable cardiac conditions and during haemodialysis).
- For the treatment of VTE, enoxaparin is normally administered by once-daily, subcutaneous injection at a dose of 1.5mg/kg (150 units per kg body weight), for at least 5 days and until adequate oral anticoagulation is established.

Elderly: Enoxaparin has been used safely in elderly patients without the need for dosage adjustment, unless significantly renally impaired. (See below).

Renal Impairment: In cases of significant renal impairment (creatinine clearance <30ml/min), doses need to be adjusted. (See Summary of Product Characteristics).

Children: The safety and efficacy of the use of enoxaparin in children has not been established, therefore usage in children is not recommended.

Administration: Enoxaparin should be administered into the abdominal subcutaneous tissue anterolaterally or posterolaterally, alternating between left and right sides. Patients should be supine and the total length of the needle should be inserted vertically, not at an angle, into the thick part of the skin fold,
produced by squeezing the skin between thumb and forefinger. The skin fold should be held throughout the injection. The injection site should not be rubbed after administration.

3. Tinzaparin (Innohep®)

Prophylaxis in Adults:

- Tinzaparin is licensed for the prophylaxis of VTE in surgical patients when a dose of 3500 units is normally given 2 hours pre-operatively then every 24 hours. In those undergoing orthopaedic surgery the dose is normally 50 units per kg, given 2 hours pre-operatively then every 24 hours.

Treatment in Adults:

- Tinzaparin is licensed for the treatment of DVT and the treatment of PE. The dose is usually 175 units per kg body weight, once daily, for at least 6 days and until adequate oral anticoagulation is established.

Elderly: Tinzaparin has been used safely in elderly patients without the need for dosage adjustment, unless significantly renally impaired. (See below).

Renal Impairment: In cases of significant renal impairment, doses are not usually reduced until creatinine clearance drops to 20ml/min. However, close monitoring is recommended at creatinine clearance levels below 30ml/min. (See Summary of Product Characteristics).

Children: The safety and efficacy of the use of tinzaparin in children has not been established, therefore usage in children is not recommended.

Administration: Tinzaparin should be administered into the abdominal subcutaneous tissue anterolaterally or posterolaterally, alternating between left and right sides. Patients should be supine and the total length of the needle should be inserted vertically, not at an angle, into the thick part of the skin fold, produced by squeezing the skin between thumb and forefinger. The skin fold should be held throughout the injection. The injection site should not be rubbed after administration.

References.


April 2019 Review April 2022
Guidelines for the Prescribing and Monitoring of Inpatient Lithium Therapy
Version 3 – March 2017 (review March 2020)

Section 1
On admission
Doctor's responsibilities

1. Read the clinical notes and previous prescription, check patient’s documentation (either a record book and alert card or a monitoring booklet) and identify any special instructions. Review the results of all relevant investigations (including blood test results) and identify the indication for the lithium therapy. ²

2. At the earliest opportunity contact the patient’s GP for the latest medication history, if the patient is admitted without up-to-date documentation. ²

3. Ensure that the patient fully understands their lithium treatment and monitoring requirements and if not, provide a clear explanation.

4. Ensure the following checks (or requests) are made before commencement of treatment:
   - ECG if history of cardiac disease, risk factors known to prolong the QT interval (e.g. uncorrected hypokalaemia, bradycardia) and/or on other psychotropics known to prolong the QT interval.
   - Weight and height
   - Urea and Electrolytes
   - Serum creatinine or eGFR
   - Serum calcium (corrected)
   - Thyroid Function Tests (TFT)
   - Full blood count if clinically indicated ¹

5. Ensure the correct brand and salt of lithium is prescribed as different preparations may vary in bioavailability. Priadel® is the brand most commonly prescribed and available on the wards.

6. Key points when prescribing lithium:
   - The starting dose is normally 400mg/450mg at night (200mg/250mg in the elderly). Lithium plasma concentration should be checked 5-7 days (depending on renal function) after starting or changing dose and then weekly until two similar results are obtained at the same dose.³
   - The blood taken for lithium levels should be taken 10-14 (ideally 12 hours) after the last dose administered ³. To assist sampling, lithium is usually given as a bedtime dose so that blood can be taken the following morning.
   - Care should be taken, including additional monitoring, when changing brands or formulations. Tablets contain lithium carbonate and the liquid contains lithium citrate. Lithium carbonate 200mg ≡ lithium citrate 509mg.³ Priadel® liquid comes as lithium citrate 520mg/mL.
Doses should be adjusted to achieve serum lithium concentration between 0.4 and 1.0mmol per litre. In people prescribed it for the first time a range of between 0.6 and 0.8mmol should be used. The lower end of the range is usually the target for maintenance therapy and treatment of elderly patients.

Inpatient drug chart should be written as follows:

### Section 2

#### During Admission

When tests and measurements are undertaken, the care team must update the patient-held Lithium Treatment - Monitoring Booklet ('lithium record book') with lithium levels and other relevant results.

### Nurse’s responsibilities

1. Nurses need to be aware of common side effects of lithium listed below and report to the ward doctor if they have concerns (see toxicity point 2.).

   - Dry mouth or metallic taste in the mouth
   - Thirst
   - Passing more urine
   - Dizziness
   - Mild diarrhoea or nausea (particularly on initiation and increases dose)
   - Mild shaking or fine tremor of the hand(s)
   - Weight gain
   - Oedema

2. Nurses need to monitor the patient and immediately report to the ward doctor if any symptoms of lithium toxicity appear such as:

   - Severe or coarse hand shaking or tremor
   - Blurred vision
   - Stomach ache along with vomiting or severe diarrhoea
   - Unsteadiness of their feet
   - Difficulty in speaking or slurring words
   - Muscle twitches
   - Clumsiness
   - Confusion
   - Muscle weakness
Doctor's responsibilities

1. Record lithium levels on the drug chart with the date of the test. (As well as entering the result in the clinical notes).

2. Be aware of any significant interacting drugs and other risk factors for lithium toxicity.

3. Undertake more frequent blood tests and lithium levels if there are signs of clinical deterioration, abnormal results, and symptoms suggesting abnormal renal or thyroid function such as unexplained fatigue.¹

4. Lithium use is associated with a range of glomerular and tubular disorders resulting in chronic kidney disease and more rarely established renal failure.⁷ Therefore with renal function it is important to monitor a trend, as results may be still in the normal range but have significantly increasing creatinine levels (especially in the elderly).

5. In chronic kidney disease, the level of protein in the urine can be an indicator of nephrotoxic effects as the eGFR may not alter in the same way as patients without renal impairment. Proteinuria can also indicate other diagnoses such as infection. If proteinuria is detected then referral to a renal physician would be recommended.

6. Repeat lithium levels if initiating or discontinuing any interacting drugs. (Check at 5-7 day interval until two similar results are obtained at the same dose).¹

7. Repeat lithium levels if increasing or decreasing a lithium dose. (Check at 5-7 day interval until two similar results are obtained at the same dose).

8. Be aware that toxicity occurs when blood lithium concentration is greater than 1.5mmol/L. (Usual therapeutic range is between 0.6 - 0.8mmol/L for people being prescribed it for the first time.) For people who have relapsed previously while taking lithium or who have sub-threshold symptoms with functioning impairment while on lithium, the target level is normally between 0.8 – 1.0mmol/L. ¹ If levels above 1.0mmol/L are considered clinically appropriated it should be discussed with the lead consultant/medical supervisor and this discussion should be entered into the clinical notes. In addition, monthly monitoring, instead of 3-monthly monitoring, should be carried out for levels above 0.8mmol/L.

9. The blood taken for lithium levels should be taken 10-14 (ideally 12 hours) after the last dose administered. ³ To assist sampling, lithium is usually given as a bedtime dose so that blood can be taken the following morning.

10. Monitor for symptoms of neurotoxicity, including paraesthesia, ataxia, tremor and cognitive impairment, which can occur at therapeutic levels.

11. Consider stopping lithium for up to 7 days if patients become acutely and severely ill with any metabolic or respiratory disturbance.⁷

12. STOP lithium immediately, if any of the symptoms of toxicity occur, (see Appendix 1). Plasma lithium levels should be urgently checked and the patient may require transfer to A&E or a medical unit for rehydration and sodium repletion. Levels of
2mmol/L or more will require **urgent transfer and treatment** at an acute hospital.  

13. Exclude pregnancy (and test if appropriate) in women of child bearing potential.

14. Advise women of child bearing potential starting on lithium to use suitable contraception. (If a patient becomes pregnant, refer for specialist advice).

15. Inform anyone who is involved in the patient’s care, that the patient is taking lithium.

16. Ensure that the patient has been counselled on lithium, this could be carried out by the member or the pharmacy team.

**Pharmacy team’s responsibilities**

1. Check that blood tests and lithium levels have been obtained at the appropriate times and if not inform ward staff when the blood tests are required.

2. Check that the latest lithium level (and date) is written on the drug chart. If it is not, check the clinical notes and make the appropriate drug chart entry.

3. Ask patients who have been admitted on lithium if they have a lithium monitoring booklet. Where possible, check that this is correctly completed. If left at home arrange for it to be brought in, if lost then provide a replacement.

4. Review the drug chart before any supply is made and ensure that the prescription is complete, the brand stated and that monitoring is in place. Before endorsing the chart all prescriptions must be checked for drug interactions, which must be reported back to the prescriber as necessary.

5. Ensure the importance of administering lithium in the evening is clear to the medical and nursing team.

6. **Pharmacists should avoid recommending withholding lithium therapy.** Where it is not possible to assess test results they should communicate to prescribers that lithium medication has been provided without blood test data being available. Prescribers should be asked to ensure that blood tests have been carried out at the recommended frequency and to urgently order tests if the recommended schedule has lapsed.

7. Counsel the patient on lithium if required. This should include explaining:

   - Common side effects
   - Toxic effects and if they experience any to contact A&E or GP if in hours. To also advise the patient to STOP taking their lithium until they have received medical advice.
   - What to do if unwell (e.g. stomach bug or food poisoning)
   - About avoiding dietary changes which reduce or increase sodium intake
   - That dehydration can cause lithium levels to rise so in extreme heat or if excessive exercise is carried out the patient must keep hydrated.
   - Interactions with other medication including ‘over the counter’ medicines such as ibuprofen (Nurofen®)
   - Signs or symptoms suggestive of hypothyroidism such as lethargy and feeling cold.
   - They should report any unusual signs and symptoms e.g. sore throat, bruising, mouth ulcers, nausea, vomiting, dark urine and shortness of breath.
Many of these points are covered by the Choice and Medication leaflet website leaflets or the Lithium Treatment – Monitoring Booklet. The leaflets can be found on http://www.choiceandmedication.org/sussex/

Section 3

On discharge

Doctor’s responsibilities:

1. Ensure that the primary care team is sent information concerning the clinical indication of use, intended duration of therapy, current prescription (including product brand name), and recent laboratory test results.

2. Ensure that the patient’s lithium ‘record’ or monitoring booklet is FULLY and appropriately completed (with patient’s details, service providers’ details and current lithium therapy to track lithium blood levels and relevant clinical tests) and that it is returned to patient/carer, with the next appointment date recorded.

The information component of the monitoring booklet can be provided in a larger font (available on the Trust’s website) or the Trust’s Communications Team can be contacted if an audio version or translation into another community language is needed. www.sussexpartnership.nhs.uk/node/1663/attachment

3. Work to a shared-care protocol with the patient’s GP for prescribing and monitoring lithium and also checking adverse effects. Ensure patients receive regular measurement of serum-lithium concentration (every 3 months on stabilized regimen), and also renal function and thyroid function tests every 6 months on stabilized regimens, or more often if there is evidence of impaired renal function.

Nursing Team’s responsibilities:

1. Ensure the following are discussed with the patient (can be found in the Lithium Monitoring Booklet):
   - The dose they should be taking on discharge and the frequency.
   - The date of their next appointment for a blood test.
   - The importance of their patient-held records, i.e. alert card and Lithium Monitoring Booklet.
   - The need to take lithium at the same time each day (usually in the evening)

References

3. BNF No 72 Sept 2016.
5. Dorset Healthcare NHS Foundation Trust. Ref No CP-170-08, lithium prescribing & Monitoring Guidelines
## Appendix 1 Lithium Toxicity

<table>
<thead>
<tr>
<th>Symptoms of lithium toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Severe hand shake (tremor)</td>
</tr>
<tr>
<td>2) Blurred vision</td>
</tr>
<tr>
<td>3) Stomach ache along with feeling sick and having diarrhoea.</td>
</tr>
<tr>
<td>4) Being unsteady on their feet</td>
</tr>
<tr>
<td>5) Difficulty in speaking or slurring words</td>
</tr>
<tr>
<td>6) Muscle twitches</td>
</tr>
<tr>
<td>7) Clumsiness</td>
</tr>
<tr>
<td>8) Feeling unusually sleepy</td>
</tr>
<tr>
<td>9) Confusion</td>
</tr>
<tr>
<td>10) Muscle weakness</td>
</tr>
</tbody>
</table>

When lithium blood levels are **above 2mmol/l** and severe symptoms are present, the patient will require admission to a medical unit. Osmotic diuresis or forced alkaline diuresis may be required.

(Nota: concurrent use of diuretics, particularly thiazides, should be avoided)\(^3\).
### Summary of Monitoring Requirements

<table>
<thead>
<tr>
<th></th>
<th>BASELINE</th>
<th>INITIATION</th>
<th>MONITORING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight/BMI</td>
<td>✓</td>
<td>✓</td>
<td>6 monthly (more often if evidence of rapid weight gain).</td>
</tr>
<tr>
<td>Urea &amp; electrate</td>
<td>✓</td>
<td></td>
<td>If urea and creatinine levels rise see below.</td>
</tr>
<tr>
<td>Serum creatinine/renal function</td>
<td>✓</td>
<td></td>
<td>6 monthly (more often if evidence of impaired renal function or if the patient starts taking drugs such as ACE inhibitors, diuretics or NSAIDs). If urea and creatinine levels rise, monitor lithium dose and blood levels more closely and assess the rate of deterioration of renal function. The decision on whether to continue the drug depends on clinical efficacy and the degree of renal impairment. Consider consulting a renal physician.</td>
</tr>
<tr>
<td>Thyroid function tests</td>
<td>✓</td>
<td></td>
<td>6 monthly (more often if evidence of deterioration).</td>
</tr>
<tr>
<td>ECG</td>
<td>✓ Essential for patients with cardiovascular disease or risk factors for it.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full blood count</td>
<td>✓</td>
<td></td>
<td>Annually and as clinically required.</td>
</tr>
</tbody>
</table>
| Lithium levels          | One week after starting, and one week after every dose change and until levels are stable. (NICE)¹ | ✓ Every 3 months. | Normally, 0.6–0.8 mmol/litre, according to patient response. (A therapeutic response may be seen at a level of 0.4mmol/litre). 0.8–1.0 mmol/litre if the patient has relapsed previously on lithium or has subsyndromal symptoms. (NICE)¹
A therapeutic response may be seen at a level of 0.4mmol/litre. (BNF)³
Also observe/inform patient to be aware of signs of toxicity: blurred vision, GI disturbances, muscle weakness, drowsiness, etc. These usually occur at levels >1.5mmol/litre, but can occur at lower levels.
Monitor older adults more closely, as they are at greater risk of developing toxicity. Use lower doses. They may develop symptoms of lithium toxicity at standard therapeutic levels. |
| Serum calcium           | ✓        |            | Annually as appropriate. Raised serum calcium may indicate hyperparathyrpoidism. |
| Physical health check   | ✓        |            | Annually, normally in primary care for people with bipolar disorder (NICE)¹:
– lipid levels, including cholesterol in all patients over 40 even if there is no other indication of risk
– plasma glucose levels
– weight
– smoking status and alcohol use
– blood pressure. |
| Patient’s mental state. | ✓        |            | As needed. Regular reviews of mental state and personal and social functioning, to ensure that symptoms (including sub-threshold symptoms) are treated if they significantly impair social functioning. |

✓: Routine essential monitoring.⁵

An A4 version of the lithium monitoring booklet is available in the ‘Medication information leaflet’s (Trust’s own)’ section of the website for patients with impaired vision.
Information for Clinicians on Managing Lithium Drug Interactions.\textsuperscript{3,6}

1. Potentially hazardous interactions. Combined administration should be avoided or only undertaken with caution and appropriate monitoring.

<table>
<thead>
<tr>
<th>DRUG</th>
<th>INTERACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE inhibitors e.g. enalapril, Angiotensin-II antagonists e.g. losartan</td>
<td>Excretion reduced, increased plasma concentration. May cause toxicity. Monitor closely for signs of lithium toxicity, and consider taking lithium levels. Be alert for the need to reduce the lithium dose (possibly by one-third to half).</td>
</tr>
<tr>
<td>Analgesics (NSAIDs) e.g. diclofenac, ibuprofen, aspirin</td>
<td>Excretion of lithium reduced. Increased risk of toxicity. Avoid concomitant use. Note - paracetamol is safer to use with lithium.</td>
</tr>
<tr>
<td>Anti-arrhythmics e.g. amiodarone</td>
<td>Risk of ventricular arrhythmias. Avoid concomitant use.</td>
</tr>
<tr>
<td>Diuretics (thiazides, potassium-sparing and loop diuretics)</td>
<td>Excretion reduced. Increased plasma concentration and risk of toxicity. Loop diuretics are safer than thiazides.</td>
</tr>
<tr>
<td>Methyldopa</td>
<td>Neurotoxicity may occur without increasing plasma concentration of lithium. Avoid concurrent use whenever possible.</td>
</tr>
<tr>
<td>Sertindole (also see antipsychotics below)</td>
<td>Increases risk of ventricular arrhythmias - avoid concomitant use.</td>
</tr>
</tbody>
</table>

2. Less significant interactions – usually without serious consequences.

| Acetazolamide                         | Excretion of lithium is reduced.                                           |
| Antacids e.g. Sodium bicarbonate      | Excretion increased. Reduced plasma concentration.                         |
| Antiepileptics e.g. carbamazepine, phenytoin, topiramate | Neurotoxicity may occur without increased lithium plasma concentrations. |
| Antidepressants eg. SSRIs, tricyclics, venlafaxine | Increased serotonergic effects seen and an increased risk of CNS effects as well as risk of lithium toxicity reported. All can increase lithium toxicity without affecting lithium levels. |
| Antipsychotics                        | Increased risk of extrapyramidal side effects and possible neurotoxicity. Monitor for risk of QTc prolongation. |
| Calcium channel blockers               | Neurotoxicity may occur with diltiazem or verapamil without increasing the plasma concentration of lithium. |
| Metronidazole                         | Increased risk of lithium toxicity                                          |
| Muscle Relaxants                      | Lithium enhances the effect of muscle relaxants. Hyperkinesia caused by lithium is aggravated by baclofen... |
| Parasympathomimetics                  | Lithium antagonises the effects of neostigmine and pyridostigmine.       |
| Theophylline                           | Increased excretion of lithium. Reduced plasma lithium concentration. Depressive and manic relapse may occur if the dosage of lithium is not raised when theophylline is given. Lithium levels should be monitored if theophylline (or aminophylline) is stopped, started or altered. |

**DRUG – DISEASE INTERACTION** (Other risk factors)

✓ If renal impairment exists, avoid use of lithium (if possible) or reduce dose and closely monitor serum-lithium concentration.\textsuperscript{3}

✓ Cardiac disease and conditions with sodium imbalance such as Addison’s disease will require dose reduction or discontinuation. Similarly, in severe diarrhoea and/or vomiting and in concurrent infection, (especially if sweating profusely).\textsuperscript{3}

✓ Psoriasis: risk of exacerbation.\textsuperscript{3}

Approved: March 2017  To be reviewed: March 2020
Guidelines for the Safe Prescribing and Administration of Insulin and the Monitoring of all Antidiabetic Drugs
(Version 4 – January 2019)

Insulin is a medicine that staff working in mental health, substance misuse and learning disability services may be less familiar with and therefore particular caution should be used when prescribing and administering it. The National Patient Safety Agency (NPSA) has identified errors in the use of insulin that have caused harm to patients and in some cases have caused death. Four errors in particular have been identified by the NPSA as common¹,²:

- The use of abbreviations such as ‘U’ or ‘IU’ for units. When these abbreviations are added to the intended dose, the prescribed dose may be misread, e.g. 10U may be read as 100.
- The inappropriate use of non-insulin (IV) syringes, which are marked in millilitres (mls) and not in insulin units. Use of these syringes may lead to the administration of incorrect volumes / doses of insulin.
- Patients being prescribed or dispensed the wrong insulin product.
- Doses being omitted or delayed.

If an overdose of insulin occurs due to prescriber abbreviations (of “units” or “international units”) or if an incorrect dose is administered due to an incorrect syringe device being used, this is considered a DoH/NHS “Never Event”.³

If you require this document in an alternative format, i.e. easy read, large text, audio or Braille please contact the pharmacy team on 01243 623349.
Prescribing

1. Prescribers must ensure that the type and dose of insulin is described accurately and completely. Adults should have been provided with an ‘Insulin Passport’ or an equivalent local insulin safety chart, which provides an accurate identification of their current insulin products. Prescribers should ask to see the patient’s ‘Insulin Passport’ or ‘Insulin Safety Record’ to ensure the right insulin product, the right dose and the right frequency.

2. Particular care must be taken when prescribing insulin with very similar names – e.g. Humulin-S, Humulin-I, Humulin-M3. Where any doubt exists, e.g. if there is no ‘Insulin Passport’ or record available, prescribers must check with the patient or carer (where appropriate), with the patient’s GP or with the diabetes clinic before prescribing.

3. High strength insulins are now available as prefilled pens – to avoid potential errors the strength of insulins should always be stated on the prescription e.g. Lantus solosta® 100units/ml, Tresiba® prefilled pen 200 units/ml etc.

4. Prescribers should be aware that not all brands of the same insulin are bioequivalent. Toujeo® (insulin glargine) is not bioequivalent to Lantus® (insulin glargine). Care should therefore be taken to prescribe the brands that a patient has been stabilised on and seek advice from pharmacy or the local diabetes team if switching brand is necessary, e.g. due to product shortages.

5. Prescribers must never use abbreviations instead of the word “units”, which must always be written in full. Use of abbreviations such as “U” or “IU” are a major cause of insulin dosing errors and a large overdose due to this is regarded as a ‘never event’ by NHS England 3.

6. All insulin prescribers must be aware of the signs and symptoms of hyperglycaemia and hypoglycaemia. (See appendix 1).

7. All insulin prescribers must ensure that they are competent in the safe use of insulin before prescribing.

Administration

1. If feasible and safe, patients should be allowed to self-administer insulin under the supervision of a nurse. This is to ensure the patient does not lose their skills during their inpatient admission.

2. Nurses administering or supervising subcutaneous insulin must satisfy themselves that the type and dose of insulin prescribed is correct according to the patient’s insulin chart. Adults should have been provided with an ‘Insulin Passport’ or ‘Insulin Safety Record’ from their diabetes clinic, which provides an accurate identification of their current insulin products. The ‘Insulin Passport’ or ‘Insulin Safety Record’ should be cross checked against the prescribed insulin, type, regime and dose on the individual’s drug chart. Information on the different types of insulins at the time of publication is available in appendix 2. Further information is available in the BNF or eBNF.

3. Where any doubt exists, e.g. if there is no ‘Insulin Passport’ or ‘Insulin Safety Record’ available, the prescription that is indicated on the patient’s drug chart must be checked with either; the prescriber, the ward pharmacist, the patient / carer (where appropriate), the patient’s GP, the diabetes clinic, the duty doctor or the on-call pharmacist.

4. Nurses should not administer insulin or supervise its self-administration unless the patient’s drug chart has been written fully and clearly in accordance with the Trust’s Medicines Code. In particular, the word “units” must be written in full and must never be abbreviated to “U” or “IU”. Where abbreviations have been used, the prescription must be brought to the attention of a prescriber at the earliest opportunity, where possible before any insulin is administered.
5. Where the prescription has been queried, the outcome of any discussions should be recorded in the patient’s clinical notes and the patient’s drug chart amended accordingly.

6. At each nursing shift handover, information regarding the patient’s insulin type, regime and dose should be specifically communicated to the nurse in charge of the following shift. All nurses should ensure that they are familiar with the prescribed insulin regime and the patient’s drug chart at the start of each shift.

7. Wherever possible, the administering nurse should check the insulin type and dose with; the patient (if appropriate), a second registered nurse, a member of the pharmacy team or a doctor, immediately prior to each administration. The drug chart must be signed upon or immediately after insulin administration by the nurse administering insulin or observing the patient self-administering insulin. In the event of any concerns the prescriber or duty doctor should be contacted immediately.

8. Before administering a dose of 30 units or more, the dose must always be checked with a second person, either the patient (if competent), a second registered nurse, a member of the pharmacy team or a doctor, immediately prior to each administration to ensure that the dose is correct. In the event of any concerns the prescriber or duty doctor should be contacted immediately.

9. The nurse in charge must ensure that the ward/unit maintains an adequate supply of insulin syringes and needles.

10. Non-insulin syringes, (e.g. those normally used for intramuscular or intravenous injection), must never be used for the administration of subcutaneous insulin. These will be calibrated in millilitres rather than units and will greatly increase the risk of dosing error.

11. Nurses should NEVER attempt to draw up insulin from a prefilled pen/refill cartridge into an insulin syringe. Apart from the hazards of needle stick injury, insulin syringes are designed for use with 100 unit/ml strength insulins only. Some prefilled pens preparations are at a higher concentration (e.g. Tujeo® 300 units/ml, Humalog Kwikpen® 200 units/ml) and attempting to administer via any other device or syringe can result in a fatal overdose.

12. All nurses must be aware of the signs and symptoms of hyperglycaemia and hypoglycaemia. (See appendix 2).

13. All nurses must ensure they are competent in the safe use of insulin. Online training courses are available and should be used as part of Continuing Professional Development.

Diabetes and illness/stress

Part of the body’s defence during periods of illness, infection and stress is to release glucose into the bloodstream. This raises blood glucose levels and the body’s normal response is to increase the production of insulin. In diabetes, this does not happen as the body does not produce insulin (Type 1) or it is insulin resistant (Type 2). Symptoms of hyperglycaemia (increased thirst, passing of urine and dehydration) occur and can make the individual feel much worse. Illness can affect how an individual would normally manage and monitor their condition and may omit insulin as they associate it with eating. It is important that insulin regimes and carbohydrate intake are maintained during such times to avoid hyperglycaemia and reduce the risk of diabetic ketoacidosis. Blood glucose levels should be monitored more frequently to assess a patient’s diabetic state and control.

Monitoring and managing diabetes during illness

1. For monitoring advice see appendices 1 and 3.

2. For management of diabetes and monitoring of blood glucose in illness see appendix 4.
References


2. The adult patient’s passport to safer use of insulin. NPSA/2011/PSA003.


Version 4 – January 2019

Review no later than: January 2022
Blood glucose monitoring in diabetic patients

Diabetes mellitus is a condition where the body either does not produce enough insulin or does not respond appropriately to it. Two different types of diabetes mellitus are considered here. Patients with type-I usually cannot produce their own insulin, whereas in type-II either too little insulin is secreted and/or it does not have the normal effect on the body. Management of these conditions aims to achieve blood glucose levels that are as near to normal as possible.

Why is blood glucose monitoring important?

Prolonged high blood glucose level (hyperglycaemia) is associated with disabling and life-threatening long-term complications. It can lead to retinopathy (blindness), nephropathy (kidney damage) and neuropathy (nerve damage), which arise from cumulative damage to small blood vessels. It can also lead to ischaemic heart disease and peripheral vascular disease, which are due to the cardiovascular consequences of metabolic abnormalities. More acutely, hyperglycaemia can cause diabetic ketoacidosis (DKA), which is a medical emergency.

Hyperosmolar non-ketotic syndrome (HONK) occurs in type-II diabetes and is characterised by blood glucose levels in excess of 35 mmol/l. This develops over several weeks and has a mortality of approximately 30%.

Hypoglycaemia (low blood glucose level) leads to a shortage of glucose in the brain and can cause symptoms such as confusion, irritability, seizures, and unconsciousness.

Signs and symptoms of hyperglycaemia.

Thirst, dry mouth, increased frequency of urine, tiredness, recurrent infections (such as thrush). If prolonged may also cause weight loss, and blurred vision.

- DKA: nausea or vomiting, stomach pain, fruity smell on the breath (like pear drops or nail varnish), drowsiness or confusion, hyperventilation, dehydration, unconsciousness.
- HONK: (Blood glucose>35mmol/l): marked dehydration, intense thirst, polyuria, drowsiness and eventual loss of consciousness.

Signs and symptoms of hypoglycaemia.

Hunger, trembling or shakiness, sweating, anxiety or irritability, pallor, fast pulse or palpitations, tingling of the lips. More severe cases may include difficulty concentrating, dizziness, light-headedness, confusion, disorderly or irrational behaviour.

In type 1 diabetes blood sugars must be closely monitored and not drop below 4mmol/l.

Target levels

Ideally, the blood glucose level should be kept within the following ranges:

<table>
<thead>
<tr>
<th></th>
<th>before meals</th>
<th>two hours after meals</th>
</tr>
</thead>
<tbody>
<tr>
<td>adults with type-I</td>
<td>4-7 mmol/l</td>
<td>&lt;9 mmol/l</td>
</tr>
<tr>
<td>children with type-I</td>
<td>4-8 mmol/l</td>
<td>&lt;10 mmol/l</td>
</tr>
<tr>
<td>in type-II</td>
<td>4-7 mmol/l</td>
<td>&lt;8.5 mmol/l</td>
</tr>
</tbody>
</table>
References


2. Skelton L. CPPE Hospital Pharmacy Learning program: learning@lunch Diabetes: booklet one: Type I Diabetes. Stetton (GB): Centre for Pharmacy Postgraduate Education; 2007.


Reviewed: January 2019 Review by: January 2022
Appendix 2

Summary of insulins available at time of publication

Table 1 (below) provides examples of the different types of insulin used and table 2 gives examples of the medication that may be used in diabetes type-II.

### Table 1

<table>
<thead>
<tr>
<th>Type of insulin</th>
<th>When to inject</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid-acting insulin analogue</td>
<td>During or immediately after a meal</td>
<td>NovoRapid®, Fiasp® (both insulin aspart), Apidra® (insulin glulisine), Humalog® (insulin lispro),</td>
</tr>
<tr>
<td>Short-acting insulin</td>
<td>15 to 30 minutes before meals</td>
<td>Actrapid® and Humulin® S (both soluble human insulin)</td>
</tr>
<tr>
<td>Intermediate or long-acting insulin</td>
<td>Once (or twice) daily, 15 to 30 minutes before meals</td>
<td>Insulatard®, Humulin® I and Insuman Basal® (all isophane human insulin)</td>
</tr>
<tr>
<td>Long-acting insulin analogue</td>
<td>Once (or twice) daily at the same time each day. (Time of day not important).</td>
<td>Leveimir® (insulin detemir), Abasaglar®, Lantus®, Toujeo® (all insulin glargine), Tresiba® (insulin degludec ▼), Xultophy® (insulin degludec with liraglutide – licensed for use in type 2 diabetes only)</td>
</tr>
<tr>
<td>Biphasic insulin</td>
<td>Usually twice daily; just before, with, or immediately after meals.</td>
<td>Humalog® Mix 25, Humalog® Mix 50 (insulin lispro with insulin lispro protamine), Novomix® 30, Mixtard® 30 and Humulin® M3 (both human insulin with human isophane insulin, Insuman® Combi 15, Insuman® Combi 25, Insuman® Combi 50 (all isophane human with soluble human insulin)</td>
</tr>
</tbody>
</table>

### Table 2

<table>
<thead>
<tr>
<th>Type of antidiabetic medication used in type-II</th>
<th>Examples</th>
<th>How does it work?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphonylureas</td>
<td>Glibenclamide, gliclazide, glimepiride, glipizide</td>
<td>Stimulate insulin secretion</td>
</tr>
<tr>
<td>Biguanides</td>
<td>Metformin</td>
<td>Reduction of hepatic glucose production, increase of insulin sensitivity in muscle, delay of glucose absorption from the gut</td>
</tr>
<tr>
<td>Glitazones</td>
<td>Pioglitazone</td>
<td>Reduction of insulin resistance at adipose</td>
</tr>
<tr>
<td>Post-prandial regulators</td>
<td>Repaglinide, nateglinide liraglutide, exenatide</td>
<td>Tissue, skeletal muscle and liver stimulate insulin secretion</td>
</tr>
<tr>
<td>glucagon-like-peptide-1-receptor agonists (given by SC injection)</td>
<td></td>
<td>increase secretion of insulin, suppress secretion of glucagon</td>
</tr>
<tr>
<td>Dipeptidyl peptidase (DPP-4) inhibitors</td>
<td>Sitagliptin, saxagliptin, vildagliptin</td>
<td>Increase secretion of insulin, suppress secretion of glucagon</td>
</tr>
</tbody>
</table>

Reviewed January 2019

Review January 2022
## Blood Glucose Monitoring Recommendations

<table>
<thead>
<tr>
<th>Need for blood tests?</th>
<th>Diet &amp; exercise, metformin, acarbose, pioglitazone, saxagliptin, sitagliptin, vildagliptin, exenatide, liraglutide, (alone or in combination)</th>
<th>Sulphonylureas (e.g. glibenclamide, gliclazide, glimepride, glipizide, tolbutamide), Nateglinide and repaglinide</th>
<th>Insulin</th>
<th>Pregnancy. Pre-existing diabetes (treated by diet / oral antidiabetics, or insulin). Gestational diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Assess on individual basis</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes, regardless of how diabetes is managed.</td>
</tr>
<tr>
<td>Hypoglycaemia risk?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes, regardless of how diabetes is managed.</td>
</tr>
<tr>
<td>Considerations.</td>
<td>Testing can be a useful tool to allow patients to learn the effects different foods and different activities have on their blood glucose. May also be used during medication dose titration.</td>
<td>Consider risk of hypoglycaemia. Does patient have good hypo awareness? Does patient drive? Do they have an intercurrent illness? Is the patient using the results to self monitor or titrate dose?</td>
<td>Consider risk of hypoglycaemia. Does patient have good hypo awareness? Does patient drive? Do they have an intercurrent illness? Patient on weight loss programme? Is the patient using the results to self monitor or titrate dose?</td>
<td>Close monitoring required. Advice required from diabetic clinic regarding target blood glucose levels and monitoring frequency. Advice on post delivery testing also required.</td>
</tr>
<tr>
<td>Test frequency.</td>
<td>If testing, aim for once or twice per week. Test HbA1c every 3 months if found greater than 58 mmol/l IFCC* (7.5%). Routine testing may be required during illness.</td>
<td>If testing, aim for once to twice per day. Test HbA1c every 3 months if found greater than 58 mmol/l IFCC* (7.5%).</td>
<td>Normally once daily on OD insulin and once or twice daily if on BD. Test HbA1c every 3 months if found greater than 47.5 mmol/l* (6.5%) in first trimester only.</td>
<td>Test HbA1c every 3 months if found greater than 58 mmol/l IFCC* (7.5%).</td>
</tr>
</tbody>
</table>

*Change in units of measurement from DCCT to IFCC as from October 2011 to allow easier comparisons between the UK and Europe

Based on guidance developed by the Western Sussex Hospitals NHS Trust

Reviewed October 2015 Review by: October 2018
The Management of Diabetes during illness or stress – using the ‘Sick day rules’ 

Appendix 4

Sick day rules should be provided to the individual from their diabetes team to support them during a period of illness or stress. It is very important that these are adhered to prevent further illness/complications and unnecessary hospital admission.

1) Insulin therapy **should not** be stopped.
2) The dose of insulin may need to be altered during periods of illness; advice should be sought from the patient’s diabetes team or a prescriber if the individual is unsure of how to adjust insulin doses.
3) Blood glucose levels should be monitored more frequently — at least every 3–4 hours, including through the night and sometimes every 1–2 hours. Results should be recorded by the individual or healthcare professional.
4) The insulin dose should be titrated according to the blood glucose results and the written sick day rules from their diabetes team.
5) Monitor their urine ketones (or blood ketones if appropriate) — this should ideally be checked at least every 3–4 hours (at least eight times in 24 hours), including through the night and sometimes every 1–2 hours, depending on results.
6) If the urine ketone level is greater than 2+, contact the GP or diabetes care team immediately.
7) Blood ketone monitoring is preferred for people on insulin pump therapy and may be indicated for some other groups from whom it is more difficult to obtain a urine sample (for example young children).
8) At least 3 L of fluid (5 pints) should be drunk daily by the individual to prevent dehydration.
9) If vomiting or diarrhoea is persistent, medical advice should be sought as intravenous fluids may be required.
10) Maintain the normal meal patterns if possible. However, normal meals could be replaced with carbohydrate-containing drinks (such as milk, milk shakes, fruit juices, and sugary drinks) if appetite is reduced.
11) Seek urgent medical advice if they are violently sick, drowsy, or unable to keep fluids down.
12) When feeling better, continue to monitor their blood glucose carefully until it returns to normal.
13) It may take some time for blood glucose levels to return to normal. Seek medical advice if their blood glucose remains uncontrolled.

The following applies to those individuals using oral anti-diabetic agents:

1) Tablets and normal dosage should be maintained, providing carbohydrate intake continues in solid or liquid form and blood glucose monitoring continues at least 4-hourly
2) If blood glucose level > 13mmol/l and the individual feels unwell, medical advice should be sought/consult diabetic team.
3) Metformin should be stopped if dehydration is present - hospital admission/sliding scale of insulin may be considered. Consult medical advice or individual’s diabetic team.

Reviewed October 2015
Principles for the safe prescribing and administration of opioids for analgesia

- Follow local acute trust guidelines on a stepwise approach to pain management.
- Avoid multi-opioid use e.g. regular tramadol + codeine.
- Use great caution when prescribing and / or administering strong opioids in opioid naïve patients (includes buprenorphine / fentanyl patches).
- In palliative care, each dose of Oramorph® (morphine sulphate) liquid for breakthrough pain should be 1/6th of the TOTAL daily dose of morphine sulphate modified release (MR) tablets; e.g. morphine sulphate MR tablets 30mg bd + Oramorph® liquid 10mg 4hrly prn.
- In palliative care, if more than two breakthrough doses are required, increase the regular prescription by 30-50%. Doses for breakthrough pain should also be increased.
- Frequency of Oramorph® liquid for breakthrough pain: 2 to 4 hourly prn.
- Take great care when prescribing oxycodone products are there are numerous brands, formulations and both plain and long acting tablets and capsules. Check to ensure the right brand and formulation is being used and PRESCRIBE BY BRAND.
- Avoid multi-route prescribing.
- Care should be taken when prescribing opioid patches due to the differing release profiles and period between patch changes.

Buprenorphine patches:

- Buprenorphine is a strong opioid with partial agonist properties. (Note - it cannot be fully reversed by naloxone).
- Prescribe BY BRAND – see below for three prescribed brands, but see the BNF Chapter 4 for the full list, which were 11 brands at the time of publication. Note the varying doses and application periods:
  - BuTrans® is available as 5, 10 and 20micrograms/hr patch and is applied every 7 days (once a week)
  - Transtec® is available as 35, 52.5 and 70mcg/hr patch and is applied every 96 hours (every 4 days)
  - Hepoctasin® is available as 35, 52.5 and 70mcg/hr patch and is applied every 72 hours (every 3 days).

Fentanyl patches:

- These should only be used after a patient’s dose has been titrated. If initiating fentanyl patches, discuss first with a palliative care consultant or specialist in pain control.
- Durogesic Dtrans® and other brands (prescribe BY BRAND) of fentanyl patches are available as 12, 25, 50, 75, and 100 microgram/hour and should be removed and replaced every 72 hours (every 3 days)
- Further information is available from your local Medicines Information service.
• When prescribing opioids, consider the need for laxatives and antiemetics.

• See BNF for legal requirements when prescribing Controlled Drugs for outpatients and for patients at discharge.

Reviewed June 2018  Review no later than June 2021
Mental Health Act (MHA) – an aide memoire for medical, nursing and pharmacy staff

This is only a brief guide. For more in-depth guidance see:

www.cqc.org.uk/content/mental-health-act

Glossary of terms

Community Treatment Order (CTO): Treatment of patients in the community. A patient can be become subject to a CTO if they were subject to a treatment section during admission. Patients can be recalled to hospital and the section revoked by the responsible clinician (RC).

Responsible clinician (RC)
The professional responsible for the patient’s care – this applies to patients subject to the Mental Health Act both in hospital and in the community. Usually the patient’s consultant psychiatrist, but does not have to be and occasionally may not be a doctor.

Second Opinion Approved Doctor (SOAD)
Appointed by the Care Quality Commission (CQC) a SOAD will decide whether patient consent is able to be given and whether or not the treatment should be given. They will complete a T3 form. The RC provides details of the treatment plan and the SOAD will interview the patient. They also discuss treatment with a nurse and another professional (often a pharmacist) involved with the patient’s care about the appropriateness of treatment.

Consent to Treat (CTT)
Must be completed after three months of detention. It lists all the psychiatric medication that can be given either on a form T2 (patient consents) or on form T3 (no consent), which the SOAD completes. A CTO has slightly different rules (can have 1 month extra) so double check if a CTT is required on recall. The three months after detention start from the first section i.e. from the date of the start of the section 2, if it changes to a section 3.

T3 forms don’t expire but remain valid at the discretion of the CQC although they recommend review no longer than two years. T2 forms also don’t expire but good practice is to review regularly. T2 forms become invalid if patient loses capacity or if they withdraw consent and then a second opinion should be sought.

Important sections of the MHA

Section 2 is for unknown patients or new presentation of a MH condition. It lasts for up to 28 days, for inpatient assessment and treatment. The section cannot be extended.

Section 3 is up to six months for inpatient treatment. It is used for patients well known to the mental health services or following admission under section 2. The section can be extended for a further six months, then annually if necessary.

Section 37/41 is used by the criminal court for patients to be treated in hospital instead of prison for 6 months. Section 37 can be extended by 6/12 month periods. Section 41 is the discharge restriction order, if patient is at risk to the public, and has no time limit.
**Section 136** allows the police to admit mentally disordered persons to a “place of safety” – e.g. s136 suite of a mental health unit or a police station. Duration of detention under this section should not usually exceed 24 hours, but can be extended to 36 hours in exceptional circumstances.

**Section 5(2)** is used to temporarily hold an informal or voluntary patient on a mental health unit in order to allow a Mental Health Act assessment to take place. It is applied by a doctor and lasts up to 72 hours.

**Section 5(4)** is applied by a registered mental health nurse to temporarily hold a patient on a mental health unit if they feel their mental health condition renders them too unwell to leave. It lasts for only 6 hours, which should be long enough to arrange an assessment by a doctor where necessary.

**Section 62 – urgent treatment to save life, prevent injury to the patient or others, prevent serious deterioration of psychiatric condition or to alleviate serious suffering**

The RC can write a section 62(1) form for urgent medication needing CTT (so after three months detention) where either SOAD is required to assess, patient no longer agrees to T2 or a medication not on T3 form. Also consider CTO recall, as medication often has changes from the community treatment plan (T3). This section also covers emergency ECT, (up to two sessions).

**Section 63 – capacity assessment**

Form A is completed by the admitting doctor or nurse for all patients on admission. Section 63 (for detained patients) is then completed by the RC at first ward round. Form B is completed for all informal patients when assessing capacity to consent to treatment. These forms will list all psychiatric medications. Medication can be prescribed and given if not on the section 63 form, but it must be deemed necessary and a decision to prescribe it cannot wait until the RC can review the patient. This must be documented in the patient’s care notes as to why it is necessary. The section 63 form must be changed at the earliest opportunity by the RC.

**Correct way to fill out MHA forms**

Record the class of drug and route of administration, but rather than noting particular sections, should either:

1. *State that the dose (when calculated together with frequency) is within BNF guidelines as to advisory maximum dose limits for that route, or state a maximum dose limit referenced to BNF guidelines such as, for example, 50% or 120%.*

   OR

2. *State a named drug and its route & dose maximum.*

In some circumstances it may be useful, indeed necessary, to specify a named drug and also its purpose, especially when it is being used for a non-licensed indication, e.g. clonazepam when used for agitation.

Example extracts from a Form T3 might therefore read as follows:

1) *One oral antidepressant drug within BNF advisory maximum dose limits.*

2) *Olanzapine, oral antipsychotic, maximum 15mg daily.*

3) *Clonazepam 1mg orally as required, maximum 4mg daily, for adjunct management of agitation.*

NB: the Care Quality Commission (CQC) removed the requirement to include or exclude clozapine on all forms that include antipsychotics, so there still may be some forms in circulation which are still valid until renewal. There may however be reasons to exclude a specific drug e.g. due a previous ADR and this can be stated on the form.
Responsibilities of medical, nursing and pharmacy in relation to the MHA

1. Check the front of medication chart is filled out with details of when CTT is due or NA if not applicable.

2. Check T2/3 or section 62(1) forms attached to drug chart.

3. Before prescribing or administration check T2/3 or section 62(1) forms are correct and match the prescription. If a psychiatric medication is not on these forms it CANNOT and MUST NOT be given. RC can write a section 62(1) if deemed emergency treatment. In an emergency out of hours, then the doctor in charge of the patient’s treatment may complete a section 62(1) urgent treatment form to authorise treatment.

4. If a medication is given outside the T2/3 or section 62(1) an incident form must be completed by the medic who prescribed it or the nurse who administered it.

5. Check capacity forms attached to drug chart and if incorrect inform staff so that it can be reviewed by the RC with the patient at the earliest opportunity. Medication can be given if deemed necessary.

6. Only discuss a patient’s treatment with SOAD if you have been directly involved with their care. Document all discussions with the SOAD in Carenotes.

7. The RC is required to complete a “Result of SOAD” form (provided by the MHA office), following a SOAD visit. The completed “Result of SOAD” form must be returned to the MHA office.

8. Remote prescribing for detained patients
   a. If the patient is detained under section and the prescriber remotely prescribes a new medication that is not covered on the existing section 62(1), T2 or T3 form, the on-call consultant will need to authorise this by email, or by making an entry in Carenotes. The on-call Responsible Clinician logging into Carenotes is as effective as a signature. The following day a section 62(1) form will need to be written by the ward consultant to reflect the new medication until the T2 or T3 can be updated.
   b. For patients detained for less than 3 months, the section 63 form will need to be updated at the earliest opportunity.

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