# FORMULARY AND PRESCRIBING GUIDANCE

<table>
<thead>
<tr>
<th>GUIDELINE VERSION</th>
<th>13</th>
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<tbody>
<tr>
<td>RATIFYING GROUP</td>
<td>Drugs and Therapeutics Group (DTG)</td>
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<td>August 2014</td>
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<td>Executive Medical Director</td>
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<td>FORMULARY EDITOR</td>
<td>Ray Lyon, Chief Pharmacist -Strategy</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
- Guidance on prescribing in selected areas
- Identification of high risk prescribing areas
- Rapid tranquillization algorithms for all age groups

This document supersedes:

- Formulary and Prescribing Guidance – version 12 - published in April 2014
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Formulary and Prescribing Guidance

Including:

- Rapid tranquillization algorithm (with notes) for the acutely disturbed working age adult
- Rapid tranquillization algorithm (with notes) for the acutely disturbed older person
- Rapid tranquillization algorithm (with notes) for acutely disturbed children and adolescents
- Rapid tranquillization monitoring, remedial action and flumazenil use
- Anti-infective guidelines
- Anticoagulant guidelines
- Lithium prescribing and monitoring guidelines
- Insulin prescribing guidelines
- Prescribing opiates safely

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Edition 13 – Published August 14
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* See Policy and Guidance for Short-term Management of Disturbed/Violent Behaviour in Psychiatric In-patient and Emergency Departments 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 section 5.1.1

4. **Drugs with similar names**, e.g. flupentixol and fluphenazine.

5. **Fentanyl patches** should only be initiated under the advice of a palliative care or pain specialist. Patches should be removed and replaced every 72 hours (3 days).

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 44 for more information.**

9. **Methotrexate**
   - The dosage regimen is usually weekly.
   - Block out the other six days using a X when prescribing.
   - 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.

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.

13. **Valproate** prescribing in women of childbearing potential poses a significant risk to the foetus, should they be or become pregnant. There is specific guidance on prescribing valproate for women of child bearing potential on the Trust website.

14. **Paracetamol** – do not co-prescribe with paracetamol containing combinations like co-dydramol or co-codamol, as overdosing is a significant risk.
High Risk Areas of Prescribing and Administration - continued

15. **Warfarin** (see 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 drug, 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.

### Benzodiazepine and Hypnotic Prescribing

1. Benzodiazepine hypnotics are not to be initiated were 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 hypnotics should be discussed fully with the patient, and the carer if appropriate. Patient leaflets on the subject are available.

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

4. If the GP is expected to continue the prescribing of a new 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.

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

6. An inpatient admission should be seen as an opportunity to wean a patient off benzodiazepines and hypnotics if deemed clinically appropriate. **Gradual dose reductions are likely to be necessary.**

7. Particular caution should be used when prescribing benzodiazepines or 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.

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

### ‘Report and Learn’

The Trust is fostering a culture of reporting and learning.

You can help by reporting significant medication related incidents on the Trust’s incident forms. All medication related incidents are collated by the Chief Pharmacist to identify areas where system and documentation changes could be made to minimise future errors. These reports also feed into a national database monitored by the National Patient Safety Agency 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 electronically via www.yelloweled.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 eleventh edition of the Trustwide Formulary incorporates a wide range of medicines currently used across the Trust. The Formulary is being reviewed systematically using a rolling programme. 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 that will also be prescribed in primary care 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 formulary of the acute trust providing the pharmaceutical services to that unit.
- 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 out side 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 pharmacists 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.

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. Psychototropic Drug Directory
2. The Bethlem and Maudsley NHS Trust Prescribing Guidelines
3. Trust Prescribing Guidelines and Protocols
4. The BNF or BNF for Children
5. NICE Technology Appraisals and Clinical Guidelines

Ensure where possible the patient is giving informed consent to use a medicine for an unlicensed indication. Record the decision and supporting reasons in the patient’s notes.

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. Advice can be obtained from your clinical pharmacist and from the yellow pages at the back of the BNF.
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>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zolpidem</td>
<td>TA77 First line in older people. Unlicensed if person suffering from psychotic illness. (3)</td>
</tr>
<tr>
<td>Zopiclone</td>
<td>TA77</td>
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</table>

Benzodiazepines

<table>
<thead>
<tr>
<th>Drug</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loprazolam</td>
<td>TA77</td>
</tr>
<tr>
<td>Temazepam</td>
<td>TA77</td>
</tr>
</tbody>
</table>

Other hypnotics

<table>
<thead>
<tr>
<th>Drug</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloral Betaine</td>
<td>Can only be initiated by senior medical staff (see note below).</td>
</tr>
<tr>
<td>Clormethiazole</td>
<td></td>
</tr>
<tr>
<td>Promethazine</td>
<td>Rapid tranquillization (specialist advice WAMHS/OPMH) (2)(3). Rapid tranquillization CAMHS (2)(3)</td>
</tr>
</tbody>
</table>

1.2 Anxiolytics

Benzodiazepines

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

Other Anxiolytics

<table>
<thead>
<tr>
<th>Drug</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buspirone</td>
<td></td>
</tr>
<tr>
<td>Escitalopram</td>
<td>Only when general anxiety disorder is a major feature. NOT FOR DEPRESSION in West Sussex due to local agreement with PCT.</td>
</tr>
<tr>
<td>Hydroxyzine</td>
<td>General anxiety (1)</td>
</tr>
<tr>
<td>Propanolol</td>
<td>Akathisia (1)</td>
</tr>
</tbody>
</table>

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 ongoing 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.
Suggested Antipsychotic Treatment Plan

**Already on first generation (typical) or second generation (atypical) antipsychotic**

- Ineffective or side effects unacceptable
  - If severe neurological side effects
    - Clozapine indicated – consider and discuss with patient
      - If effective and side effects acceptable, MAINTAIN
      - If two antipsychotics are ineffective
        - Consider depot medication or other long-acting antipsychotic injection
          - If two antipsychotics are ineffective
            - Consider orodispersible or liquid preparation
              - If adherence improves, consider standard formulation
              - If effective and side effects acceptable, MAINTAIN
            - If ineffective or if side effects unacceptable
              - Change to an alternative depot medication or other long-acting antipsychotic injection
                - If side effects unacceptable
          - If adherence does not improve
            - If ineffective due to poor adherence
              - For non-adherent patients who are unsupervised
                - Change to an alternative depot medication or other long-acting antipsychotic injection
                  - Ineffective or side effects unacceptable
              - For non-adherent patients who are supervised
                - Change to an alternative depot medication or other long-acting antipsychotic injection
                  - If severe side effects unacceptable
                  - If adherence improves, consider standard formulation
                  - If effective and side effects acceptable, MAINTAIN
            - Clozapine indicated – consider and discuss with patient
              - If ineffective due to poor adherence
                - For non-adherent patients who are unsupervised
                  - Change to an alternative depot medication or other long-acting antipsychotic injection
                    - Ineffective or side effects unacceptable
                - For non-adherent patients who are supervised
                  - Change to an alternative depot medication or other long-acting antipsychotic injection
                    - Ineffective or side effects unacceptable
          - If ineffective or side effects unacceptable
            - Change to alternative antipsychotic
              - Ineffective or side effects unacceptable

**If effective and side effects acceptable, MAINTAIN**

- Patient naïve to antipsychotics – in discussion with patient/carer give an appropriate second generation antipsychotic or sulpiride (see section 3). Optimise dose. Closely assess over 4 to 6 weeks.
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)*

### Atypical Antipsychotics

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Approved off-licence use and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amisulpride</td>
<td>Clozapine augmentation (2)</td>
</tr>
<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 tranquillization (specialist advice only) (3)</td>
</tr>
<tr>
<td>Clozapine TA292</td>
<td>Bipolar disorder</td>
</tr>
<tr>
<td>Clozapine</td>
<td>Bipolar and schizoaffective disorders (5th line)(2)</td>
</tr>
<tr>
<td>Olanzapine</td>
<td>Rapid tranquillization (3)</td>
</tr>
<tr>
<td>Quetiapine</td>
<td>Behavioural disturbances with dementia (1)</td>
</tr>
<tr>
<td></td>
<td>Rapid tranquillization (specialist advice only) (3)</td>
</tr>
<tr>
<td>Risperidone</td>
<td>Rapid tranquillization (specialist advice only) (3)</td>
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</table>

### Typical Antipsychotics

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</thead>
<tbody>
<tr>
<td>Benperidol</td>
<td>Can only be initiated by senior medical staff (see note below).</td>
</tr>
<tr>
<td>Chlorpromazine</td>
<td>Can only be initiated by senior medical staff (see note below).</td>
</tr>
<tr>
<td>Flupentixol</td>
<td>Delirium (severe only) (3)</td>
</tr>
<tr>
<td>Haloperidol</td>
<td>Rapid tranquillization (specialist advice only) (3)</td>
</tr>
<tr>
<td>Levomepromazine (Methotrimeprazine)</td>
<td>Rapid tranquillization (specialist advice only) (3)</td>
</tr>
<tr>
<td>Pimozide</td>
<td>Can only be initiated by senior medical staff (see note below).</td>
</tr>
<tr>
<td>Promazine</td>
<td>Can only be initiated by senior medical staff (see note below).</td>
</tr>
<tr>
<td>Sulpiride</td>
<td>Clozapine augmentation (2)</td>
</tr>
<tr>
<td>Trifluoperazine</td>
<td>Can only be initiated by senior medical staff (see note below).</td>
</tr>
<tr>
<td>Zuclopenthixol</td>
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### Other

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Approved off-licence use and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omega-3 Fish Oils (Maxepa®/Omacor®)</td>
<td>Schizophrenia (2) and refractory schizophrenia (2)</td>
</tr>
<tr>
<td></td>
<td>Clozapine augmentation (2)</td>
</tr>
</tbody>
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### 1.4 Mood Stabilisers

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Approved off-licence use and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbamazepine</td>
<td>Behavioural disturbances in dementia (1)</td>
</tr>
<tr>
<td>Lamotrigine</td>
<td>Bipolar Affective Disorder prophylaxis (2)</td>
</tr>
<tr>
<td>Lithium (full prescribing and monitoring guidance is available on page 44)</td>
<td>Adjunct to treatment of schizophrenia with mood disturbance (1)</td>
</tr>
<tr>
<td></td>
<td>Bipolar affective disorder CAMHS (2)</td>
</tr>
<tr>
<td>Sodium valproate</td>
<td>Acute and prophylactic treatment of mania (2)</td>
</tr>
<tr>
<td></td>
<td>Bipolar affective disorder CAMHS (2)</td>
</tr>
<tr>
<td></td>
<td>Behavioural disturbances with dementia (1)</td>
</tr>
</tbody>
</table>

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Mild depression – Generally, antidepressant drugs are not recommended as an initial treatment, and should only be offered when simpler methods (e.g. active monitoring, lifestyle 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 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).

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, T3

Venlafaxine at maximum dose (up to 375mg for the plain tablets and 225mg for the XL (M/R) capsules). 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.

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

When switching be aware of interactions between antidepressants and the risk of serotonin syndrome

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

# Escitalopram not approved in West Sussex locality for treatment of depression, other than by ‘named patient application’ at the discretion of the discretion.

(For special groups e.g. in pregnancy and breast-feeding, see Trust Guidance on the Use of Antidepressants, available on the Trust website)
1.5 Antidepressants

Selective Serotonin Reuptake Inhibitors (SSRIs)

Citalopram

Escitalopram – Only when general anxiety disorder is a major feature. NOT FOR DEPRESSION in West Sussex due to local agreement with the CCGs.

Fluoxetine

Fluvoxamine

Paroxetine

PTSD (general use where psychology is not appropriate) (5)

Sertraline

Tricyclic Antidepressants and Related Antidepressant Medicines

Amitriptyline

PTSD (specialist only) (5)

Clomipramine

Dosulepin (Dothiepin)

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. Dietary advice is available at the link below: http://www.sussexpartnership.nhs.uk/index.php/component/jdownloads/finish/2038/7839?Itemid=0

Tranylcypromine

Can only be initiated by senior medical staff (see note below).

Phenelzine

Can only be initiated by senior medical staff (see note below).

Isocarboxazid

Can only be initiated by senior medical staff (see note below).

Reversible Inhibitors of Monoamines (RIMAs)

Moclobemide

Other Antidepressants

Duloxetine

Flupentixol

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

- Lithium (for recurrent depression). Refractory depression (1)(2)
- Omega-3 Fish Oils (Maxepa®/Omacor®) Refractory depression (2)
- Mirtazapine PTSD (general use where psychology is not appropriate) (5)
- Tryptophan Can only be initiated by senior medical staff (see note below). Special ordering criteria applies.
- Venlafaxine

1.6 Antimuscarinic Medicines for Medicine Induced Parkinsonism

- Orphenadrine (Greater risk of fatality in overdose. Not to be used first line or where there is risk of self-harm.)
- Procyclidine
- Trihexphenidyl (Benzhexol) 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
For full NICE Technical Appraisal TA115 see link: http://guidance.nice.org.uk/TA115

- Acamprosate
- Buprenorphine TA114
- Chlordiazepoxide
- Clomethiazole
- Diazepam
- Lofexidine
- Methadone TA114
- Naltrexone TA115
  - CG115 - Adjunct therapy to prevent relapse in formerly alcohol-dependent patients.
- Suboxone® Combination of buprenorphine and naloxone – see special guidance on the Trust 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)
  - Approved off-licence use and notes

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

For full NICE Technical Appraisal TA217 see link: http://guidance.nice.org.uk/TA217

Rivastigmine   TA217
Galantamine XL   TA217
Donepezil   TA217
Memantine   TA217

1.11 Antiepileptics

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

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

For full NICE Technical Appraisal TA98 see link: http://guidance.nice.org.uk/TA98

Atomoxetine                      TA98   CAMHS - 2nd line when stimulants have proved ineffective or there are intolerable side effects. Shared care policy with GPs applies
Bupropion  3rd line when stimulants and atomoxetine are ineffective or inappropriate(1)(5)
Clonidine     Hyperactive Behaviour (2)
Dexamfetamine          TA98
Imipramine  3rd line when stimulants and atomoxetine are ineffective or inappropriate(1)(5)
Lisdexamfetamine CAMHS - 2nd line when stimulants have proved ineffective or there are intolerable side effects. Shared care policy with GPs applies
Methylphenidate          TA98   CAMHS - Shared care policy with GPs applies
  • Plain
  • Concerta®
  • Equasym® XL
  • Medikinet® XL
Melatonin (unlicensed) (Bio-Melatonin® Brand only) Sleep disturbance due to neurological development conditions, hyperactivity or stimulant medication. Shared care guidelines with GPs apply in West Sussex and Brighton & Hove. GPs may refuse to prescribe it due to it being unlicensed.
2. INJECTABLE MEDICATION

2.1 Medicines Used in Psychoses and Related disorders

Shorter Acting Typical Antipsychotics

Haloperidol    Delirium (severe only) (3)
Olanzapine    Rapid tranquillization (unlicensed if imported stock) (3)
Zuclopenthixol Acetate    See special guidance on the Trust’s website for further information on its safe use.

Other

Lorazepam
Promethazine    Rapid tranquillization (specialist advice WAMHS/OPMH) (2)(3).
Rapid tranquillization CAMHS (2)(3)

2.2 Medicines Used in Psychoses and Related disorders

Depot Typical Antipsychotics

Flupentixol Decanoate (Flupentixol)
Fluphenazine Decanoate
Haloperidol Decanoate
Pipotiazine Palmitate (Pipothiazine)
Zuclopenthixol Decanoate

Long Acting Atypical Antipsychotics

Aripiprazole    See specific guidance on the Trust's website for guidance. Each patient needs registering for future evaluation. See guidance for the registration form.
Olanzapine    Named patient only. See specific guidance on the Trust's website for guidance and an application form.
Paliperidone    See specific guidance on the Trust's website for guidance.
Risperidone    See antipsychotic guidelines on the Trust’s website for further information on use.

2.3 Antimuscarinic Medicines for Medicine Induced Parkinsonism

Procyclidine

2.4 Medicines Used in Substance Dependence

Naloxone
Rectal medicines
3. RECTALLY ADMINISTERED MEDICINES

Antiepileptics

3.1 Antiepileptics

Diazepam
Specific Prescribing Guidance

- Rapid tranquillization algorithm (with notes) for the acutely disturbed working age adult (to be reviewed October 2014)
- Rapid tranquillization algorithm (with notes) for the acutely disturbed older person (to be reviewed October 2014)
- Rapid tranquillization algorithm (with notes) for acutely disturbed children and adolescents (to be reviewed October 2014)
- Rapid tranquillization monitoring, remedial action and flumazenil use (to be reviewed October 2014)
- Anti-infective guideline (to be reviewed April 2016)
- Anticoagulant guidelines (to be reviewed January 2017)
- Lithium prescribing and monitoring guidelines (to be reviewed January 2017)
- Insulin prescribing guidelines (to be reviewed April 2015)
- Principles for the safe prescribing and administration of opioids for analgesia (to be reviewed February 2015)
Algorithm 1.
Rapid Tranquillization Algorithm (with notes) for Working Age Adults*

**Step 1**

**NON-PHARMACOLOGICAL MEASURES**
De-escalation, distraction, etc

Consult any Advance Directives

**Step 2**

**Oral Treatment**
(If oral is refused consider going to step 3)

- **[a,b]** Lorazepam 1-2mg
  (May be preferable used alone in antipsychotic naive patients, non-psychotic episodes or in patients with cardiac disease)

- **AND/OR**
  - Olanzapine 10mg
  - Haloperidol 5mg

- **[c,d]**

- **Step 3**

**I/M Treatment**

Ensure baseline measurements are recorded where possible:
TEMPERATURE, PULSE, BP, RESPIRATORY RATE before IM administration, and repeat every 5-10 minutes for 1 hour, then half-hourly until patient is ambulatory. If patient refuses, record whatever can be observed, eg. breathing, conscious level, injuries, pallor, mobility etc.

Use pulse oximetry if patient asleep or unconscious.

- **[e,f]** Olanzapine 5 –10mg I/M
  - Or
  - Haloperidol 5mg I/M

- **[g]** Lorazepam 1-2mg I/M
  - **But not to be administered within 1 hour of olanzapine I/M**

- **[h]**

- **MONITOR PATIENT CLOSELY!**

- **[a, b, c, d, e, f, g, h – see notes]**.

- **DO NOT PROCEED FURTHER WITHOUT ADVICE FROM CONSULTANT**

- **IF INEFFECTIVE, SEEK SPECIALIST ADVICE FROM CONSULTANT**
Notes:

   - If patient is established on antipsychotics, lorazepam may be used alone.
   - If the patient uses 'street drugs' or already receives regular benzodiazepines, an antipsychotic may be used alone.
   - For the majority of patients who are not antipsychotic naive, best response will be with combination therapy.

b. Ensure procyclidine injection is available. Antipsychotic may cause acute dystonic reaction.

c. As in (a), either antipsychotic or benzodiazepine may be used alone, but best results are likely with combination therapy.

d. Ensure flumazenil injection is available to reverse effects of lorazepam (or midazolam) injection.

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

e. 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>10</td>
<td>2.0</td>
</tr>
<tr>
<td>7.5</td>
<td>1.5</td>
</tr>
<tr>
<td>5</td>
<td>1.0</td>
</tr>
<tr>
<td>2.5</td>
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</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Dose (mg)</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>1</td>
<td>0.5</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.
Algorithm 2.

Rapid Tranquillization of the Acutely Disturbed/Violent Patient - Patient Aged Over 65 Years – (not for routine management of delirium)

Step 1: NON-PHARMACOLOGICAL MEASURES
De-escalation, distraction, etc
Consult any advance directives

Step 2: Oral Treatment
Lorazepam 0.5-1mg
AND/OR
Haloperidol 0.5-2.5mg (not to be used in antipsychotic naïve patients) OR Olanzapine 2.5 – 5mg*

*Olanzapine 2.5 - 5mg (oral or I/M) can be considered as an alternative to haloperidol in antipsychotic naïve patients, but should not be used in elderly patients with dementia, especially those with a history of vascular disease. [e]

Ensure baseline measurements are recorded where possible: TEMPERATURE, PULSE, BP, RESPIRATORY RATE before IM administration, and repeat every 5-10 minutes for 1 hour, then half-hourly until patient is ambulatory. If patient refuses, record whatever can be observed, eg. breathing, conscious level, injuries, pallor, mobility etc. Use pulse oximetry if patient asleep or unconscious.

Step 3: I/M Treatment
Lorazepam 1-2mg I/M
AND/OR
Haloperidol 0.5 – 2.5mg I/M* OR Olanzapine 2.5-5mg I/M**

DO NOT PROCEED FURTHER WITHOUT ADVICE FROM CONSULTANT

IF INEFFECTIVE, SEEK SPECIALIST ADVICE FROM CONSULTANT/APPROPRIATE SPECIALIST

[a, b, c, d, e, f, g, h – see notes].
Notes:

b. Choice depends on current treatment.
   - If patient is established on antipsychotics, lorazepam may be used alone.
   - If the patient uses ‘street drugs’ or already receives regular benzodiazepines, an antipsychotic may be used alone.
   - For the majority of patients who are not antipsychotic naive, best response will be with combination therapy.

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

d. As in (a), either antipsychotic or benzodiazepine may be used alone, but best results are likely with combination therapy in patients who are not antipsychotic naive.

e. Ensure flumazenil injection is available to reverse effects of lorazepam (or midazolam) injection.

f. 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. **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:

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

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</tr>
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</table>

i. The maximum daily dose of haloperidol is either 10mg orally or 6mg 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.
Algorithm 3. Rapid Tranquilization of the Acutely Disturbed / Violent Patient - Children and Adolescents Aged 6 to 17 Years

**Step 1**

**NON-PHARMACOLOGICAL MEASURES**
- De-escalation, distraction, seclusion etc
- Consult any Advance Directives
- Check Consent has been given

**Step 2**

**Oral Treatment**
(If oral is refused consider going to step 3)

- **PSYCHOTIC ILLNESS**
  - **Olanzapine**
    - <12 years: N/A
    - >12 years: 5mg (Max. 20mg/day)
  - **Promethazine**
    - <12 years: 5 -10mg (Max 25mg/day)
    - >12 years: 10 -25mg (Max 50mg/day)
  - **Lorazepam**
    - <12 years: 0.5 -1mg (Max 4mg/day)
    - >12 years: 1 -2mg (Max 4mg/day)

- **NON-PSYCHOTIC ILLNESS**

**Step 3**

**I/M Treatment**

- **Olanzapine**
  - <12 years: N/A
  - >12 years: 5mg (Max. 20mg/day)
- **Promethazine**
  - <12 years: 5 -10mg (Max 25mg/day)
  - >12 years: 10 -25mg (Max 50mg/day)
- **Lorazepam**
  - <12 years: 0.5 -1mg (Max 4mg/day)
  - >12 years: 1 -2mg (Max 4mg/day)

- Allow at least one hour for oral medication to work
- If ineffective, repeat at same doses and allow a further 30 minutes for effect
- If ineffective, seek specialist advice from consultant

**IF INEFFECTIVE, SEEK SPECIALIST ADVICE FROM CONSULTANT**

**MONITOR PATIENT CLOSELY!**

Ensure baseline measurements are recorded where possible: TEMPERATURE, PULSE, BP, RESPIRATORY RATE before IM administration, and repeat every 5 - 10 minutes for 1 hour, then half-hourly until patient is ambulatory. If patient refuses, record whatever is possible. Use pulse oximetry if patient asleep or unconscious.

**DO NOT PROCEED FURTHER WITHOUT ADVICE FROM CONSULTANT**

**NB,** Max doses stated are for oral and IM combined.

[a-g] see notes.
Notes:

   - If patient is established on antipsychotics, lorazepam may be used alone.
   - If the patient uses ‘street drugs’ or already receives regular benzodiazepines, an antipsychotic may be used alone.
   - For the majority of patients who are not antipsychotic naive, best response will be with combination therapy.
   - Promethazine may be useful for patients who develop disinhibition as a result of benzodiazepine use.

b. Ensure procyclidine injection is available. Antipsychotic may cause acute dystonic reaction.

c. As in (a), either antipsychotic, benzodiazepine or promethazine may be used alone. Promethazine may be useful for patients who develop disinhibition with benzodiazepine use.

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

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

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<td>1.0</td>
</tr>
<tr>
<td>1</td>
<td>0.5</td>
</tr>
</tbody>
</table>
Physical health monitoring and remedial measures

Rapid Tranquillization – monitoring

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

Temperature
Pulse
Blood Pressure
Respiratory Rate

Every 5 – 10 minutes, for one hour, then half-hourly until patient is ambulatory.

If the patient is asleep or unconscious, the use of pulse oximetry to continuously measure oxygen saturation is desirable. 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 tranquillization
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 (see Appendix 2). 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 Medical Administration of Intravenous Flumazenil in the Emergency Treatment of Respiratory Depression caused by Administration of a Benzodiazepine

**Guidelines for the use of intravenous flumazenil**

**Indication for use**
If respiratory rate falls below 10/minute after the administration of lorazepam, midazolam or diazepam.

**Contra-indications**
Patients with epilepsy who have been receiving long-term benzodiazepines.

**Caution**
Dose should be carefully titrated in hepatic impairment.

**Dose and route**
*Initial* 200mcg *intravenously over 15 seconds* - if required level of consciousness not achieved after 60 seconds then, *Subsequent dose*: 100mcg over 10 seconds

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

**Administration**
Only by practitioners fully trained in IV technique

**Time before dose can be repeated**
60 seconds

**Maximum dose**
1mg in 24 hours (one initial dose and eight subsequent doses).

**Side effects**
Patients may become agitated, anxious or fearful on awakening. Seizures may occur in regular benzodiazepine users.

**Management**
Side effects usually subside.

**Monitoring**
- **What to monitor?** Respiratory rate
- **How often?** Continuously until respiratory rate returns to baseline level. Flumazenil has a short half life. Respiratory function may recover then deteriorate again.

*Note: If respiratory rate does not return to normal or patient is not alert after initial doses assume sedation due to some other cause.*
## Ear nose and oropharynx infections

<table>
<thead>
<tr>
<th>Infection</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>See NICE recommendations.</td>
</tr>
<tr>
<td>Pharyngitis/sore throat/ tonsils (mainly viral)</td>
<td>Phenoxyethylpenicillin ▲ 500mg QDS or 1g BD for 10 days. Penicillin allergy: clarithromycin ● 250-500mg BD for 5 days.</td>
</tr>
<tr>
<td>Otitis externa (usually Pseudomonas)</td>
<td>Acetic acid 2% ear spray (EarCalm) ● TDS for 7 days or Otomize ● TDS for 7-14 days (if severe).</td>
</tr>
<tr>
<td>Dental abscess</td>
<td>Amoxicillin ▲ 500mg tds 5-7 days Penicillin allergy metronidazole ● 400mg tds 5-7 days</td>
</tr>
<tr>
<td>Rhinosinusitis (often viral)</td>
<td>Amoxicillin ▲ 500mg TDS (1gTDS if severe) or co-amoxiclav ▲ 625mg TDS for 7 days if persistent symptoms. Penicillin allergy: doxycycline ● 200mg on day 1, then 100mg OD for 7 days in total. (200mg OD if severe)</td>
</tr>
</tbody>
</table>

## Lower respiratory tract infections

<table>
<thead>
<tr>
<th>Infection</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute cough/bronchitis Benefits marginal in otherwise healthy patients</td>
<td>Amoxicillin ▲ 500mg TDS for 5 days. Penicillin allergy: doxycycline ● 200mg on day 1, then 100mg OD. Total course 5 days.</td>
</tr>
<tr>
<td>Acute exacerbation of COPD</td>
<td>Amoxicillin ▲ 500mg TDS for 5 days. Penicillin allergy: doxycycline ● 200mg OD OR clarithromycin ● 500mg BD for 5 days. If clinical failure to respond: co-amoxiclav ▲ 625mg TDS for 5 days. Penicillin allergy: levofloxacin ● 500mg OD for 5 days.</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>Immediate medical referral if suspected.</td>
</tr>
<tr>
<td>Community acquired pneumonia (includes Trust’s inpatients)</td>
<td>If CRB65&lt;10: Amoxicillin 500mg ▲ TDS for 5-7 Days AND/OR. Penicillin allergy: clarithromycin ● 500mg BD OR doxycycline ● 250mg on day 1, then 100mg OD for 7-5 days. If CRB65≥1 Amoxicillin ▲ 500mg TDS AND Clarithromycin ● 500mg BD for 7-10 days. Penicillin allergy: doxycycline ● 200mg on day 1, then 100mg OD for 7-10 days.</td>
</tr>
<tr>
<td>Offer Pneumovax in high risk and &gt; 65s</td>
<td>Dr J Bates, Consultant Microbiologist, WSHT J Munns, Antimicrobial Pharmacist, WSHT S Taylor, Antimicrobial Pharmacist, WSHT</td>
</tr>
</tbody>
</table>

## Urinary tract infection

<table>
<thead>
<tr>
<th>Uncomplicated UTI</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTI in pregnancy (send MSU)</td>
<td>Amoxicillin ▲ 250mg TDS for 7 days. 2nd line: cefalexin ▲ 500mg TDS for 7 days.</td>
</tr>
<tr>
<td>Acute Pyelonephritis (send MSU)</td>
<td>Co-amoxiclav ▲ 625mg TDS for 7 days. Penicillin allergy: ciprofloxacin ● 500mg BD for 7 days Admit if not improved after 24 hrs.</td>
</tr>
<tr>
<td>UTI prophylaxis</td>
<td>Nitrofurantoin ▲ 50-100mg ON (monitor bloods and lung function if long term) OR trimethoprim ● 100mg ON.</td>
</tr>
</tbody>
</table>

## Gastro-intestinal tract infections

<table>
<thead>
<tr>
<th>Infection</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. difficile diarrhoea (eg ciprofloxacin), clindamycin, co-amoxiclav and cephalosporins are powerful precipitates of C. difficile diarrhoea.</td>
<td>If you have a patient known to be a carrier of c. diff please seek advice before starting treatment.</td>
</tr>
</tbody>
</table>

### Adult UTI (uncomplicated)

<table>
<thead>
<tr>
<th>Symptomatic C. difficile</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metronidazole ● 400mg TDS for 10-14 days</td>
<td>No response or Relapse: Vancomycin ● oral 125mg QDS for 10 days</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Abdominal sepsis (eg: diverticulitis)</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-amoxiclav ▲ 375-625mg TDS for 5 days. Penicillin allergy: cefalexin ▲ 500mg BD AND Metronidazole ● 400mg TDS for 5-7 days.</td>
<td></td>
</tr>
</tbody>
</table>

| Infectious diarrhoea | Antibiotic therapy not required unless patient unwell. If Campylobacter suspected, consider clarithromycin ● 250-500mg for 5-7 days if treated early. |

### Child UTI (uncomplicated)

<table>
<thead>
<tr>
<th>Giardiasis</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metronidazole ● 2g OD for 3 days</td>
<td></td>
</tr>
</tbody>
</table>

### Eradication of H. pylori

<table>
<thead>
<tr>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin ▲ 1g BD + clarithromycin ● 500mg BD + Proton Pump Inhibitor BD. Penicillin allergy: metronidazole ● 400mg BD + clarithromycin ● 250mg BD + Proton Pump Inhibitor BD. For 7 days all options.</td>
</tr>
</tbody>
</table>

\[▲\] Contains a penicillin. Do not use with patients known to be penicillin-allergic. 
\[▼\] Do not use in patients known to have anaphylaxis to penicillins - discuss these with a Microbiologist Suitable for use if any penicillin allergy.
<table>
<thead>
<tr>
<th>Meningitis</th>
<th>Transfer all patients to hospital immediately. If time before admission give treatment below unless allergic reaction to penicillins or cephalosporins.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspected meningococcal disease</td>
<td>Adults and children 10 years and over: IV (or IM) benzylpenicillin ▲ 1200mg. Penicillin allergy: adults and children 12 years and over: cefotaxime ▼ 1g IV (or IM)</td>
</tr>
<tr>
<td>Genital tract infections</td>
<td>Consider referral to GUM clinic.</td>
</tr>
<tr>
<td>Vaginal candidiasis</td>
<td>Fluconazole ● 150mg PO STAT (unless Pregnancy/interaction ) OR clotrimazole ● 500mg pessary STAT at night.</td>
</tr>
<tr>
<td>Bacterial vaginosis</td>
<td>Metronidazole ● 400mg BD for 7 days OR 2g STAT OR metronidazole ● 0.75% vaginal Gel 5g OD at night for 5 days OR clindamycin ● 2% cream 5g OD at night for 7 days.</td>
</tr>
<tr>
<td>Parasitic infections</td>
<td></td>
</tr>
<tr>
<td>Threadworm</td>
<td>Mebendazole ● 100mg STAT</td>
</tr>
<tr>
<td>Skin/soft tissue infections</td>
<td></td>
</tr>
<tr>
<td>Impetigo Mild</td>
<td>Fusidic acid + topical TDS for 5 days OR Mupirocin+ topical TDS for 5 days if MRSA +</td>
</tr>
<tr>
<td>Impetigo Generalised</td>
<td>Fluocloxacillin ▲ 250- 500mg QDS for 7 days. Penicillin allergy: clarithromycin ● 250-500mg BD for 7 days. If MRSA positive – discuss with Microbiology</td>
</tr>
<tr>
<td>Eczema</td>
<td>Routinely adding antibiotics to steroid does not improve response. Treat as impetigo if signs of infection.</td>
</tr>
<tr>
<td>Cellulitis</td>
<td>Fluocloxacillin ▲ 500mg QDS for 7 days. Penicillin allergy: clarithromycin ● 500mg BD for 7 days. If slow response, continue for further 7 days. Refer if febrile and unwell for IV treatment.</td>
</tr>
<tr>
<td>Facial cellulitis</td>
<td>Co-amoxiclav ▲ 625mg TDS for 7 days (14 days if slow response). Penicillin allergy: discuss with Microbiology</td>
</tr>
<tr>
<td>Diabetic foot infection</td>
<td>Refer swab and discuss with Microbiology.</td>
</tr>
<tr>
<td>Burns</td>
<td>If infection suspected, take swab and start empirical treatment</td>
</tr>
<tr>
<td>Contaminated lacerations (soil, faeces, bodily fluids, Purulent exudates)</td>
<td>Co-amoxiclav ▲ 625mg TDS for 7 days. Penicillin allergy: clarithromycin ● 500mg BD AND metronidazole ● 400mg TDS for 7 days</td>
</tr>
<tr>
<td>Not contaminated lacerations</td>
<td>Fluocloxacillin ▲ 500mg QDS for 5 days. Penicillin allergy: Clarithromycin ● 500mg BD for 5 days.</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>Dr J Bates, Consultant Microbiologist, WSHT J Munns, Antimicrobial Pharmacist, WSHT S Taylor, Antimicrobial Pharmacist, WSHT</td>
</tr>
<tr>
<td>Skin /Soft tissue continued</td>
<td></td>
</tr>
<tr>
<td>Wound infection or abscess</td>
<td>Fluocloxacillin ▲ 500mg QDS for 7 days. Penicillin allergy: clarithromycin ● 500mg BD for 7 days.</td>
</tr>
<tr>
<td>Bites (see below for specific treatment)</td>
<td>Surgical debridement most important. Consider tetanus risk and risk of rabies (animals) or HIV and hepatitis B&amp;C (humans). Give prophylaxis if cat bite, puncture wound, bite to hand, foot, face, joint, tendon or ligament, or if the patient is immunocompromised, diabetic, asplenic or cirrhotic. Prophylaxis advised for human bite. Review all bites at 24 and 48 hours.</td>
</tr>
<tr>
<td>Bites (animal)</td>
<td>Co-amoxiclav ▲ 375-625mg TDS for 7 days. Penicillin allergy: metronidazole ● 400mg TDS PLUS Doxycycline ● 100mg BD for 7 days. Review at 24 and 48 hrs.</td>
</tr>
<tr>
<td>Bites (human)</td>
<td>Co-amoxiclav ▲ 375-625mg TDS for 7 days. Penicillin allergy: metronidazole ● 400mg TDS PLUS Clarithromycin ● 250-500mg BD for 7 days. Review after 24 and 48hrs.</td>
</tr>
<tr>
<td>Scabies</td>
<td>Permethrin ● 5% cream. Two applications one week apart. Treat whole body and household/close contacts.</td>
</tr>
<tr>
<td>Lice</td>
<td>Contact hospital pharmacy department for current guidance.</td>
</tr>
<tr>
<td>Leg ulcers</td>
<td>Culture swabs and antibiotics only indicated if cellulitis present.</td>
</tr>
<tr>
<td>Conjunctivitis (many viral and self-limiting)</td>
<td>Chloramphenicol ● 0.5% drops: one drop every two hours (whilst awake) for 2 days, reducing to QDS PLUS chloramphenicol ● 1% ointment QD. 2nd line fusidic acid ● 1% (Fucithalmic®) eye drops BD. Continue for 48 hrs after resolution.</td>
</tr>
<tr>
<td>Fungal nail infections</td>
<td>Refer to local guidelines before investigating or treating. Take nail clippings and only start treatment if infection confirmed by laboratory.</td>
</tr>
<tr>
<td>Dermatophyte Infections of the skin (Take skin scrapings for culture if severe)</td>
<td>Skin or foot:Terbinafine ● 1% topical OD-BD for 7-14 days. Groin or foot : Clotrimazole ● (or miconazole ●) 1% topical OD-BD for 4-6 weeks.</td>
</tr>
<tr>
<td>Viral infections</td>
<td></td>
</tr>
<tr>
<td>Varicella zoster</td>
<td>If immunocompromised, pregnant or neonate, seek urgent advice.</td>
</tr>
<tr>
<td>Chickenpox</td>
<td>If started within 24 hours of onset of rash and patient is 14+ years, or severe pain, dense or oral rash, secondary household case, smoker, or on steroids, then consider aciclovir ● 800mg five times a day for 7 days.</td>
</tr>
<tr>
<td>Shingles (Herpes zoster)</td>
<td>Treat if 50 + years old and within 72 hours of rash onset, ophthalmic shingles, Ramsey-Hunt, or eczema. Use aciclovir ● 800mg five times a day for 7 days.</td>
</tr>
</tbody>
</table>

▲ Contains a penicillin. Do not use with patients known to be penicillin-allergic.  
▼ Do not use in patients known to have anaphylaxis to penicillins - discuss these with a Microbiologist.  
● Suitable for use if any penicillin allergy.
Guidelines for the Prescribing and Monitoring of Oral Anticoagulant (e.g. Warfarin) Therapy, Low Molecular Weight Heparins (LMWH), Unfractionated Heparin and Fondaparinux Sodium on Inpatient Units

(Developed in October 2010, reviewed in January 2014, to be reviewed again in January 2017))

Part 1

Guidelines for the prescribing, monitoring and administration of oral anticoagulant (e.g. warfarin) therapy on inpatient units

Section 1

On admission, the admitting doctor must:

1. Read the patient’s notes, previous prescription and protocol, check ‘yellow’ book and identify any special instructions. Review the results of all relevant investigations (including blood test results) and identify the indication for the anticoagulant prescription and any issues on which further advice or information is needed.

2. At the earliest opportunity, contact the patient’s GP and/or anticoagulant clinic for advice, if the patient is admitted from the community without an up-to-date “yellow book”. Similarly, if the patient is admitted from an acute hospital it will be necessary to contact the discharging ward if the patient is transferred without full details of the anticoagulant use. See point 3, below.

3. Confirmation must be obtained of drug, indication, current dose, duration of treatment, and (for warfarin, acenocoumarol or phenindione) the current and target INR.

4. Ensure that the patient understands their anticoagulant treatment and monitoring requirements, if not give clear explanation.

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

6. For warfarin, phenindione and acenocoumarol patients, undertake and document measurement of the INR in accordance with the patient’s treatment plan. (Guideline INR target ranges are given in Appendix 1).

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

8. If prescribing an anticoagulant that requires INR monitoring, prescribe 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.

9. Attach a warfarin warning label on main Drug Prescription and Administration Record chart, and write “warfarin” (or phenindione or acenocoumarol) in the regular prescription section, and “see anticoagulant prescription chart” in the additional instructions section.
Section 2

Key points when prescribing and administering warfarin:

- The prescription should always express the dose of warfarin in milligrammes (mg) and not as a number of tablets.
- The prescription should describe constant daily dosing and not alternate day dosing.
- 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 (500 microgram), 1mg, 3mg and 5mg strengths. These vary in standard colour according to strength.

Section 3

During Admission

1. Where necessary, the care team must update the patient-held record of anticoagulant treatment – (the “yellow book”). Note that some hospital laboratories, but not all, also issue yellow paper reports specific to INR values.

2. 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.

3. Nurses need to monitor the patient and immediately report to the ward doctor if:
   - There is excessive or extensive bruising
   - There are cuts to the skin that bleed for longer than usual, or any other unusual bleeding
   - There is darkening of the patient’s stools or urine or other signs of possible internal bleeding

4. Nurses must also:
   - Administer the anticoagulant at the same time each day (usually 6pm for warfarin), or at the frequency prescribed.
   - Ensure that the INR (if indicated) is 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 an anticoagulant.
   - Advise the patient to avoid eating large amounts of green leafy vegetables and not to take cod liver oil supplements as these contain significant amounts of vitamin K that can thicken the blood - See Appendix 2. Patients should also be advised only to drink alcohol in moderation.
   - Advise the patient to avoid the use of ‘over the counter’ vitamin supplements and herbal medicines.
• Advise the patient to avoid over-the-counter medicines containing aspirin, ibuprofen or diclofenac.

• Report any unusual signs or symptoms to the ward doctor without delay.

5. **Doctors need to:**

• Be aware of any significant interacting drugs – **See Appendix 3.**

• Avoid prescribing “as required” aspirin or NSAIDs and be cautious regarding concomitant prescribing overall.

• Retest INR levels of patients taking warfarin, phenindione or acenocoumarol if they initiate or discontinue any interacting drugs. (Test at 2 to 3 day intervals initially).

• Ensure that the prescription is kept updated and that INR levels are monitored at appropriate intervals in patients taking warfarin, phenindione or acenocoumarol.

**Section 4**

**On Discharge**

1. **The Doctor must:**

• Ensure that the primary care team and anticoagulant clinic / monitoring laboratory, are sent information concerning any changes made to the anticoagulant therapy. If the patient is transferred to another secondary care team, ensure full information is provided regarding the clinical indication for use, target INR (if indicated), intended duration of therapy, current prescription and recent laboratory test results.

• Prescribe the discharge quantity of anticoagulant 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.

• If the patient requires further blood tests ensure that they (and their carer) are aware of when this will occur next and where they should attend.

2. **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 an anticoagulant

  ✓ The importance of the “yellow book” and that they have read its contents and understand them
The importance of telling other health professionals, such as the dentist, pharmacist, physiotherapist etc. about being on an anticoagulant, and the importance of showing them the “yellow book”.

The need to take their anticoagulant at the same time each day, (usually 6pm for warfarin).

If blood tests are needed, when and where this will next occur.

Who they should contact in an emergency

- Ensure that the anticoagulant prescription chart is faxed (in its entirety) to the patient’s G.P. within 24 hours of discharge from the ward/unit.

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

**Part 2.**

**Guidelines for the prescribing, monitoring and administering low molecule weight heparins (LMWHs) 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**

1. 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 front page of the inpatient drug prescription and administration chart (drug 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 drug charts are rewritten.

2. 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.
3. 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).

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), the prescriber must make a note on the drug chart and in the patient’s notes to draw other staff’s attention to it.

Section 2

Monitoring

1. All clinicians involved with prescribing, dispensing or administering LMWH therapy must check that the patient’s weight is recorded on their drug chart. 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.

2. 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 an explanatory note must be made in the patient’s notes.

3. 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.

4. Unless there are additional risk factors, or unless the patient is on concurrent oral anticoagulant therapy, monitoring of INR is not normally necessary during treatment with LMWH.

Section 3

Administration

1. 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 4

Patient Discharge / Transfer

1. 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, monitoring and administering 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.

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.

Bibliography

## Appendix 1

### Anticoagulation duration and target INR range when using warfarin, phenindione or acenocoumarol for common indications

<table>
<thead>
<tr>
<th>Common Indications</th>
<th>Target INR range</th>
<th>Usual Duration of Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atrial Fibrillation</td>
<td>2.0 – 3.0</td>
<td>Long term / indefinite</td>
</tr>
<tr>
<td>Deep Vein Thrombosis (DVT)</td>
<td>2.0 – 3.0</td>
<td>Dependent on cause / site</td>
</tr>
<tr>
<td>Pulmonary Embolus (PE)</td>
<td>2.0 – 3.0</td>
<td>At least 3 months</td>
</tr>
<tr>
<td>Recurrent DVT or PE</td>
<td>3.0 - 4.5</td>
<td>Long term / indefinite</td>
</tr>
<tr>
<td>Prophylaxis of postoperative deep vein thrombosis – general surgery</td>
<td>2.0 – 3.0</td>
<td>3 months</td>
</tr>
<tr>
<td>Prophylaxis of postoperative deep vein thrombosis – hip surgery and fractures</td>
<td>2.0 – 3.0</td>
<td>3 months</td>
</tr>
<tr>
<td>Myocardial infarction – Prevention of venous thromboembolism</td>
<td>2.0 – 3.0</td>
<td>3 months</td>
</tr>
<tr>
<td>Aterial disease – including myocardial infarction</td>
<td>3.0 – 4.5</td>
<td>Variable</td>
</tr>
</tbody>
</table>
Appendix 2

A summary of common medicines, supplements and foods which interact with warfarin, phenindione or 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 also, appendix 3).

<table>
<thead>
<tr>
<th>Medicines</th>
<th>Supplements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotics (e.g. azithromycin, erythromycin, tetracycline).</td>
<td>Chondroitin plus glucosamine</td>
</tr>
<tr>
<td>Non- steroidal anti-inflammatory drugs (e.g. aspirin, ibuprofen, diclofenac).</td>
<td>Coenzyme Q10</td>
</tr>
<tr>
<td>Antidepressants (e.g. fluoxetine, paroxetine, sertraline).</td>
<td>Danshen (Salvia miltiorrhiza)</td>
</tr>
<tr>
<td>Stomach ulcer medicines or acid reducing agents (e.g. cimetidine, omeprazole, ranitidine).</td>
<td>Devil’s claw (Harpagophytum procumbens)</td>
</tr>
<tr>
<td>Lipid lowering agents (fibrates and statins)</td>
<td>Dong quai (Chinese angelica; Angelica sinensis)</td>
</tr>
<tr>
<td>Antifungal agents (e.g. itraconazole)</td>
<td>Feverfew (Tanacetum parthenium)</td>
</tr>
<tr>
<td></td>
<td>Fenugreek together with boldo (Peumus boldus)</td>
</tr>
<tr>
<td></td>
<td>Fish Oil supplements containing eicosapentaenoic acid and docosahexaenoic acid</td>
</tr>
<tr>
<td></td>
<td>Ginkgo biloba</td>
</tr>
<tr>
<td></td>
<td>Ginseng</td>
</tr>
<tr>
<td></td>
<td>Green tea (Camellia sinensis)</td>
</tr>
<tr>
<td></td>
<td>Horse chestnut (Aesculus hippocastanum)</td>
</tr>
<tr>
<td></td>
<td>Lyceum barbarum (also known as Chinese Wolfberry, Di Gu Pi, Goji Berry, Gou Qi Zi)</td>
</tr>
<tr>
<td></td>
<td>St John’s wort (Hypericum perforatum)</td>
</tr>
<tr>
<td></td>
<td>Vitamin A</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>

<table>
<thead>
<tr>
<th>Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avocado</td>
</tr>
<tr>
<td>Cranberry Juice</td>
</tr>
<tr>
<td>Flaxseed</td>
</tr>
<tr>
<td>Garlic</td>
</tr>
<tr>
<td>Ginger</td>
</tr>
<tr>
<td>Mango</td>
</tr>
<tr>
<td>Onions</td>
</tr>
<tr>
<td>Papaya</td>
</tr>
<tr>
<td>Seaweed</td>
</tr>
<tr>
<td>Soy containing products (including soya milk and tofu).</td>
</tr>
</tbody>
</table>

References:


### Appendix 3

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

#### Established and clinically important interactions

(Note that this list may not be exhaustive)

<table>
<thead>
<tr>
<th>DRUG</th>
<th>INTERACTION</th>
</tr>
</thead>
<tbody>
<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</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 marked. Avoid concomitant use unless health benefits outweigh risk. (CSM advice available).</td>
</tr>
<tr>
<td>Fibrates</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>Fluconazole</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>Fluorouracil and related prodrugs (e.g. capcitabine)</td>
<td>Increased INR and anticoagulant effects. Several reports of overcoagulation. Prothrombin times and INR should be regularly monitored, with possible need to reduce dose of warfarin.</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>
</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 antiplatelet 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-fluouracil, 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>Disulfuram</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 disulfuram.</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>Drug</td>
<td>Interaction</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Itraconazole</td>
<td>Isolated reports of marked increases in anticoagulant effect accompanied by bruises 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>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>SSRIs</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</td>
<td>A very small number of reports of increased INR and bleeding.</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>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.

**N.B.** 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.
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.

<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: 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.

c. Innohep® - Summary of Product Characteristics. LEO Pharma. October 2011
Guidelines for the Prescribing and Monitoring of Inpatient Lithium Therapy

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

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  

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 (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.  
   - The blood taken for lithium levels should be taken 10-14 (ideally 12 hours) after the last dose administered. 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. 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 0.4 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:

**Patient Name** **************  
**Ward:** **********  
**Date**  
Add additional times if necessary, then ring the appropriate box(es)

<table>
<thead>
<tr>
<th><strong>Drug</strong></th>
<th><strong>LITHIUM CARBONATE</strong> (PRIADEL)</th>
<th><strong>Dose</strong></th>
<th><strong>Frequency</strong></th>
<th><strong>Additional Instructions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Route</strong></td>
<td><strong>PO</strong></td>
<td><strong>400MG</strong></td>
<td><strong>ON</strong></td>
<td><strong>Li level 0.6mmol/l</strong></td>
</tr>
<tr>
<td><strong>Start Date</strong></td>
<td><strong>Before admin</strong></td>
<td><strong>Stop Date</strong></td>
<td><strong>Pharmacy</strong></td>
<td>tea</td>
</tr>
<tr>
<td><strong>Signature</strong></td>
<td>*************</td>
<td><strong>Date</strong></td>
<td><strong>Stopped By</strong></td>
<td><strong>Stop Date</strong></td>
</tr>
</tbody>
</table>

### 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:
   - a. Severe or coarse hand shaking or tremor
   - b. Blurred vision
   - c. Stomach ache along with vomiting or severe diarrhoea
   - d. Unsteadiness of their feet
   - e. Difficulty in speaking or slurring words
   - f. Muscle twitches
   - g. Clumsiness
   - h. Confusion
   - i. 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 CKD, 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 0.4 - 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, more frequent monitoring should be carried out, e.g. monthly, instead of 3-monthly monitoring.

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

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.1

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 will require urgent transfer and treatment at an acute hospital.3, 4.

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 counseled 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.\(^2\) 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 lithium ‘record book’ 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.²

3. The information component of the ‘record book’ can be provided in a larger font (available on the website) or the Communications Team can be contacted if an audio version or translation into another community language is needed.

4. 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 stabilised regimen), and also renal function and thyroid function tests every 6 months on stabilised regimens, or more often if there is evidence of impaired renal function.¹

**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 66 Sept 2013.


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.

(Note: 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>✔️ 6 monthly (more often if evidence of rapid weight gain).</td>
</tr>
<tr>
<td>Weight/BMI</td>
<td>✔️</td>
<td>✔️</td>
<td>If urea and creatinine levels rise see below.</td>
</tr>
<tr>
<td>Urea &amp; electorate</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>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>✔️</td>
<td>✔️</td>
<td>✔️ Essential for patients with cardiovascular disease or risk factors for it.</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
Aim for the minimum dose to achieve a therapeutic response. Usually in the range: 0.6 to 0.8 mmol/litre (NICE)¹
A therapeutic response may be seen at a level of 0.4 mmol/litre. (BNF)³
Every 3 months.
Normally, 0.6–0.8 mmol/litre, according to patient response. (A therapeutic response may be seen at a level of 0.4 mmol/litre). 0.8–1.0 mmol/litre if the patient has relapsed previously on lithium or has subsyndromal symptoms. (NICE)¹
Also observe/inform patient to be aware of signs of toxicity: blurred vision, GI disturbances, muscle weakness, drowsiness, etc. These usually occur at levels >1.5 mmol/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 hyperparathyroidism. |
| 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.**

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

<table>
<thead>
<tr>
<th>DRUG INTERACTION</th>
<th>DRUG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined administration should be avoided or only undertaken with caution and appropriate monitoring.</td>
<td></td>
</tr>
<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.**

<table>
<thead>
<tr>
<th>DRUG – DISEASE INTERACTION (Other risk factors)</th>
</tr>
</thead>
<tbody>
<tr>
<td>If renal impairment exists, avoid use of lithium (if possible) or reduce dose and closely monitor serum-lithium concentration.</td>
</tr>
<tr>
<td>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).</td>
</tr>
<tr>
<td>Psoriasis: risk of exacerbation.</td>
</tr>
</tbody>
</table>

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Approved: January 2014

To be reviewed: January 2017
Guidelines for the Safe Prescribing of Insulin – version 2
(taken from the Trust’s Guidelines for the Safe Prescribing and Administration of Insulin and the Monitoring of all Antidiabetic Drugs – version 2 – April 2012)

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 common.

- 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.

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 record, which provides an accurate identification of their current insulin products. Prescribers should ask to see the patient’s ‘Insulin Passport’ or insulin 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 – eg. 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. 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 death due to this type of error is regarded as a ‘never event’ by the Department of Health.

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

5. All insulin prescribers should have undertaken training relating to the safe use of insulin. The Trust endorses an on-line training program that is accessible via the link below or via the Trust website.

www.diabetes.nhs.uk/safe_use_of_insulin/elearning_course

Version 2 - April 2012 Review no later than: April 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.

Avoid multi-route prescribing.

Buprenorphine patches:

- Buprenorphine is a strong opioid with partial agonist properties. (Note - it cannot be fully reversed by naloxone).

Prescribe BY BRAND – see below:
- BuTrans® is available as 5, 10 and 20mcg/hr patch and is applied once a week
- Transtec® is available as 35, 52.5 and 70mcg/hr patch and is applied every 4 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 generic fentanyl patches are available as 12, 25, 50, 75, and 100mcg/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 February 2012 Review no later than February 2015