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Pharmacists are always willing to help all medical staff!!

<table>
<thead>
<tr>
<th>Ward pharmacist</th>
<th>Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency</td>
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</tr>
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<td>Unit B</td>
<td>52474</td>
</tr>
<tr>
<td>Unit D – Cardiology</td>
<td>58447</td>
</tr>
<tr>
<td>Unit G – Observation Unit</td>
<td>52473</td>
</tr>
<tr>
<td>Unit H</td>
<td>52884</td>
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<td>Unit I</td>
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<td>NPU 1</td>
<td>58994</td>
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<tr>
<td>Discharges</td>
<td>52204</td>
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<tr>
<td>Director of Pharmacy</td>
<td>58560</td>
</tr>
<tr>
<td>Deputy Director of Pharmacy</td>
<td>58561</td>
</tr>
<tr>
<td>Associate Director of Pharmacy</td>
<td>52663</td>
</tr>
<tr>
<td>Pharmacy Team Leader - Medicine</td>
<td>52664</td>
</tr>
<tr>
<td>Pharmacy Team Leader - Surgical</td>
<td>52662</td>
</tr>
<tr>
<td>Pharmacy Team Leader – Oncology + Women’s and Children’s</td>
<td>52094</td>
</tr>
<tr>
<td>Pharmacy Team Leader – Education</td>
<td>52661</td>
</tr>
<tr>
<td>Pharmacy Team Leader - QUM</td>
<td>52665</td>
</tr>
</tbody>
</table>
MEDICATION MANAGEMENT PLAN

Background

The Medication Management Plan (MMP) is where pharmacists document a patient's medication history and reconcile it against the drug chart. It also includes how the patient manages their medications and any issues identified with their medications and the medication chart. It is usually filed with the medication charts in the patient’s folder.

- Identified issues for review. Action outcome once reviewed.
- Medication list including reconciliation
- Admission medication risk assessment
- Discharge Planning
Background Rationale

- Drug therapy errors occur in 5-20% of drug administration in Australian hospitals\(^1\)
- 43% of adverse drug events are preventable\(^2\)
- Medication interventions save lives, reduce length of stay, reduce admissions and reduce costs\(^3\)

\(^3\) Dooley MJ, Allen KM, Doecke CJ et al. BJCP 2004; 57: 513-21

Overview

Front

```
“Regular medications” section
```

```
VTE prophylaxis section
```

Back

```
PRN section
```

```
STAT doses
```

```
Phone orders
```

```
Good prescribing principles
```

Page 6
Patient Identification

ALL medication charts must have correct patient identification details i.e. bradma. Significant medication errors can occur when patient identification is incorrect or incomplete.

- Affix patient ID label (i.e. large bradma) on both allocated pages
- Check labels are correct, initial

- Print patient name and check label is correct for the patient on both allocated pages.

Allergies & Adverse drug reactions (ADR)

- Re-exposure is a preventable cause of significant harm
- Not all ADRs are clinically significant

ADR box on ALL medication charts needs to be completed.

- If patient has nil known allergies or unknown allergy status, TICK appropriate box, sign, print name and date entry.
- If known ADR note drug name and reaction details, sign, print name and date entry. Attach ADR sticker to pages 3 and 4.
- If any amendments or additions are made to the ADR box, initials and date of entry required.

No known allergies:

Known allergies – complete all sections:
National Inpatient Medication Chart (continued)

Numbering of medication charts

- All medication charts should be numbered e.g. 1 of 1, 2 of 3, etc.

![Medication Chart Image]

Venous Thromboembolism (VTE) prevention

- Patients ≥16yrs must have VTE Risk Assessment completed (form on the front of medication chart)
- Day patients without regular medication chart may be exempt
- MUST be completed by medical staff:
  - i. Identify risk by completing the VTE Risk Assessment Tool (front page of medication chart)
  - ii. Determine appropriate prophylaxis
  - iii. Order ALL prophylaxis (chemical and/or mechanical) on Medication Chart

![VTE Risk Assessment Tool Image]

NOTE: This section only for VTE PROPHYLAXIS. VTE treatment (i.e. therapeutic doses) needs to be charted as a regular medication.

For Best Practice Guidelines / Policy / Risk Assessment Form, refer to: Venous Thromboembolism (VTE) Prevention Guidelines on Prompt or use the following link:
REGULAR MEDICATION ORDERS

ALL orders must include:

- date started not date written
  - when rewriting an order, write the date of first prescribing, not the re-write date
- generic prescribing unless a combination product (refer to Combinations stocked at Northern Health list)
- dose, frequency and route – only use acceptable abbreviations as per the “Good prescribing principles” on the NIMC
- doctor to enter dosing times – not including times frequently leads to missed doses
- slow release box must be ticked where appropriate. Also include show release abbreviation in order.
- document indication; SIGN all orders. Unsigned orders are not legal and therefor...
Frequency (Guidance Only)
Write the frequencies and administration times for all medications charted.
Omitted medication times lead to medications being missed affecting patient’s treatment.

If a medication is to be given with food, chart meal times: 08:00, 12:00, 18:00

Intravenous antibiotics – should be prescribed by hours (i.e. q6h) and times should reflect this dosing

**Warfarin dosing: 16:00 hours** This is to ensure orders are completed before home team leave the hospital

Approved Abbreviations

<table>
<thead>
<tr>
<th>Route of administration</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO</td>
<td>Oral</td>
</tr>
<tr>
<td>NG</td>
<td>Nasogastric</td>
</tr>
<tr>
<td>subling</td>
<td>Sublingual</td>
</tr>
<tr>
<td>subcut</td>
<td>Subcutaneous</td>
</tr>
<tr>
<td>IV</td>
<td>Intravenous</td>
</tr>
<tr>
<td>IM</td>
<td>Intramuscular</td>
</tr>
<tr>
<td>PR</td>
<td>Per rectum</td>
</tr>
<tr>
<td>PV</td>
<td>Per vagina</td>
</tr>
<tr>
<td>top</td>
<td>Topical</td>
</tr>
<tr>
<td>neb</td>
<td>Nebulised</td>
</tr>
<tr>
<td>Inh</td>
<td>Inhaled</td>
</tr>
</tbody>
</table>

Units of measure and concentration

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>g</td>
<td>gram(s)</td>
</tr>
<tr>
<td>International unit(s)</td>
<td>International unit(s)</td>
</tr>
<tr>
<td>unit(s)</td>
<td>unit(s)</td>
</tr>
<tr>
<td>L</td>
<td>litre</td>
</tr>
<tr>
<td>mg</td>
<td>milligram(s)</td>
</tr>
<tr>
<td>mL</td>
<td>millilitre(s)</td>
</tr>
<tr>
<td>microg / microgram(s)</td>
<td>microgram(s)</td>
</tr>
<tr>
<td>%</td>
<td>percentage</td>
</tr>
<tr>
<td>mmol</td>
<td>millimole</td>
</tr>
</tbody>
</table>

Please see the ‘Good prescribing principles’ section on the back of the Northern Health ‘National inpatient medication chart’ for more details.
Prescriber identification:

You know who you are but it’s sometimes very difficult to match a signature to an individual’s identity and pagers and roles change frequently.

Health professionals (Pharmacists, Nurses and other prescribers) need to be able to easily identify who has prescribed what.

Please sign; print your name and your pager number at least once on each NIMC that you prescribe on (see below).

All medication orders need to be signed to be made legal. Nursing staff cannot administer an order that has not been signed. This can lead to treatment delays.
Variable Dose Medications

This section allows ordering of medications requiring variable dosing based on lab results or as a reducing protocol e.g. prednisolone.
Each dose needs to be individually prescribed and signed for by the prescriber.

Warfarin dosing

This section is for warfarin dosing only.

✓ Each dose needs to be individually prescribed and signed for by the prescriber.
WHEN REQUIRED (PRN) MEDICATION ORDERS

<table>
<thead>
<tr>
<th>Date</th>
<th>Medication (Print Generic Name)</th>
<th>Dose/Kg</th>
<th>Dose, Hourly Frequency</th>
<th>Max dose/24hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>21/06</td>
<td>LORAZEPAM</td>
<td>1mg</td>
<td>2 hourly</td>
<td>12mg</td>
</tr>
<tr>
<td>21/06</td>
<td>OLanzapine</td>
<td>5mg</td>
<td>2 hourly</td>
<td>30mg</td>
</tr>
</tbody>
</table>

PRN Orders must also include:

- **Hourly frequency**
- **Maximum dose in 24 hours**
- **Indication**

To give clear administration and maximum daily dose

Check all sections of the medication chart to ensure over-dosing does not occur e.g. paracetamol 1g QID regular plus PRN dosing.

STAT DOSE ORDERS

This is section is for doses that are to be given immediately - “STAT”.

If the medication is to be continued regularly, e.g. IV antibiotics, ensure that a regular order is also charted.

When charting STAT order, checks all sections of the medication chart to prevent administration of excess doses.

Communicate all STAT orders with the nursing staff to ensure medications ordered are given in a timely manner, preventing delays.

PHONE ORDERS

Nursing staff may contact you for a phone order. These orders need to be repeated to a second nurse and signed by the authorising doctor within 24 hours.
CEASING MEDICATION ORDERS

- Orders must NOT be obscured
- Doctor to put single line through order and two lines after the last dose in the administration record section
- Write CEASE, the reason, date and sign

CORRECT WAY TO CEASE AN ORDER:

INCORRECT WAY TO CEASE AN ORDER:
### LIMITED DURATION MEDICATION ORDERS

- Ordered only for certain days
- Block out day/times when NOT to be given
- Indicate using (X)

### REWRITING MEDICATION CHARTS

- Care should be taken when rewriting medication charts. Fatal errors have occurred due to lapses in concentration. Where possible, all efforts should be taken to prevent disruption.
- When complete it is best practice to inform the nursing and/or pharmacy staff that the medication chart has been rewritten to allow double checking.

**Remember** DRS

**DATE**

**REASON**

**SIGNATURE**
Unintentional prescribing of high dose opiates is to be avoided by the application of a "high dose sticker". Doses greater than soluble insulin 50 units or oral Morphine 30mg (equivalent dose in table below) require the following procedure to be followed:

- Prescribers are to affix the high dose sticker in the NIMC left margin next to the medicine, and sign and date. This acknowledges the prescriber has checked and verified the dose prescribed is intended.
- A table of high doses for medicines will be provided in the Medicines Prescribing Policy, Pharmacy Operating Procedure and Medicines Administration Policy.
- If prescriber has not attached a sticker, the nurse contacts the prescriber/unit doctor and requests prompt action. No administration of the medicine by nurses are permitted unless sticker has been applied.
- Stickers will be ordered and made available on wards from pharmacy.
- Medication chart re-writes are to have a new sticker applied by the doctor at the time of re-writing the chart.
- Clinical areas/scenarios excluded: syringe drivers; patient controlled analgesia; intensive care patients; “stat” doses in Emergency Department; anaesthetics department.
- This is for all formulations (not just oral) for inpatient prescriptions only.

### Equivalent doses of oral morphine 30mg

<table>
<thead>
<tr>
<th>Drug</th>
<th>Oral dose</th>
<th>Parenteral dose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>IV/SC</td>
</tr>
<tr>
<td>Buprenorphine</td>
<td>800micrograms Sublingual</td>
<td>400micrograms</td>
</tr>
<tr>
<td>Codeine</td>
<td>200 to 240mg</td>
<td>n/a</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>n/a</td>
<td>100 to 150micrograms</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>6 to 7.5mg</td>
<td>1.5 to 2mg</td>
</tr>
<tr>
<td>Methadone</td>
<td>10mg</td>
<td>5mg</td>
</tr>
<tr>
<td>Morphine</td>
<td>30mg</td>
<td>10mg</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>15 to 20mg</td>
<td>10mg</td>
</tr>
<tr>
<td>Pethiine</td>
<td>n/a</td>
<td>75 to 100mg IM</td>
</tr>
<tr>
<td>Sufentanil</td>
<td>10micrograms SC</td>
<td>n/a</td>
</tr>
<tr>
<td>Tapentadol SR</td>
<td>75 to 100mg</td>
<td>n/a</td>
</tr>
<tr>
<td>Tramadol</td>
<td>150mg</td>
<td>100 to 120mg</td>
</tr>
</tbody>
</table>
INTRAVENOUS THERAPY ORDER CHART

- This chart used to prescribe and administer intravenous (IV) therapy such as:
  - Fluids
    - e.g. 0.9% NaCl, 5% Glucose, 0.45% NaCl +5% Glucose, Hartmans
  - Electrolyte infusions
    - E.g. Potassium, magnesium, phosphate
  - Medications requiring continuous infusions
    - E.g. pantoprazole, octreotide

Affix patient bradma here

The date of the infusion

The time of the infusion

The fluid to be given

OR the fluid the medication is to be diluted in

The medication added to the fluid.

If the order is for fluid only, put a dash in this box

The volume of the fluid to be administered. Needs to be ordered in millilitres (mL)

The rate of the infusion i.e. the duration

Write minutes as: x/60
Write hours as: x/24
If the rate is to change according to a protocol, write APP (as per protocol)

All IV charts need to be numbered

All orders need to be signed to be a legal order. Nursing staff cannot administer without a signature
Other medication charts

MEDICATION CHARTS

- Long-stay medication chart
  - Used for long stay patients at BH and BECC and for GEM@Home patients
- Residential Care Interim Medication Chart
  - Must be completed for ALL patients returning to a residential aged care facility with any changes to their regular medications (Additions or cessations). Original is sent to the ACF, a copy is kept for the medical record
- Bolton-Clarke Drug Chart
  - Must be completed for ALL patients being discharged with RDNS for medication support. Chart must include ALL medications, not just medications the nurses will be administering
- TCP Medication Chart
  - Standardised medication chart for in-patient TCP. Supplied by the ward clerk
- ESA Dialysis Medication Chart

PAEDIATRICS and NEONATES

- Paediatric medication charts
  - Charts are colour coded for specific age groups – check carefully
  - Patient weight should always be documented on the chart
- Asthma Pulse therapy sticker (attached to paediatric chart when needed)
- Paediatric IV orders and Fluid Balance Chart
- Neonatal Unit Fluid Order and Fluid Balance Chart

ANALGESIA

- Syringe Driver Orders for Subcutaneous Infusions
  - Includes syringe driver documentation for nursing staff, for palliative care patients
- Intravenous Analgesic Infusion Order form
  - Used for PCA orders
- Non-Intravenous analgesic infusion order
  - Used for non-IV analgesic infusions (i.e. subcutaneous lignocaine)
- Local Analgesia Order

Use for local analgesia (i.e. epidural administration)

ANTI-COAGULATION

- Heparin Infusion Chart
  - Northern Health standard prescription is 50,000 units in 500mL.
- Warfarin Discharge Plan
  - To be completed for ALL patients being discharged on warfarin. Must be faxed to the pathology company/G.P. managing the warfarin
- HITH – warfarin dosing chart
  - Used by HITH for dosing warfarin patients

OTHER

- TPN Parenteral Nutrition Order Chart
  - To be completed by ICU consultant ONLY
- CHARM medication chart
  - Chemotherapy is prescribed on the CHARM electronic medication system
**Discharge Prescriptions**

- **ALL** patients require a discharge prescription written on discharge if they are to be commenced on new medications or if there are any changes to their regular medications.
- Discharge prescriptions are PBS prescriptions. To be able to prescribe on the PBS, you need to have a PBS prescriber number. This is different to your provider number.
- You must write a separate prescription if another prescriber has already prescribed an item for the patient's treatment on the same prescription form. i.e. you cannot write on a prescription signed by another prescriber.
- You must include your name, prescriber number and contact number - this can be your phone number or pager number on the prescription form. Authorised nurse practitioners and authorised midwives must also include a prescriber type.
- Hospital prescriptions include 3 copies:
  - Patient or pharmacist copy (top, green carbon copy)
  - Medicare/DVA copy (middle, blue carbon copy)
  - Medical records copy (bottom, red carbon copy)
- For a pharmacy to be able to dispense a prescription, they need the top 2 copies (green and blue).
- The red copy is to be detached and filed in patient's medical record.

---

![Hospital prescription form](https://example.com/hospital_prescription.png)

**Discharge delivery location:**
- **Ward:** 3
- **Date:** 02/04/2013

**Ur number:** 25456
**Ward:** 3
**Wizer:**

**Name:** Mrs Mary Citizen
**Address:** Cityside Qld 4353
**DoB:** 11/06/1930

**Drug name and form**

<table>
<thead>
<tr>
<th>Drug name and form</th>
<th>Strength</th>
<th>Dose, route, frequency, duration</th>
<th>Quantity</th>
<th>Supply on 12</th>
<th>Approval if required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atenolol tabs</td>
<td>50mg</td>
<td>2 daily</td>
<td>60</td>
<td>Y</td>
<td>Z123456</td>
</tr>
<tr>
<td>Paracetamol tabs</td>
<td>500mg</td>
<td>2 tabs every 4 hrs pm</td>
<td>100</td>
<td>Y</td>
<td>1234</td>
</tr>
<tr>
<td>Alendronate tabs</td>
<td>40mg</td>
<td>1 daily</td>
<td>30</td>
<td>Y</td>
<td>1234</td>
</tr>
<tr>
<td>Lactulose mixture</td>
<td>3.3g</td>
<td>20ml once daily</td>
<td>500ml</td>
<td>Y</td>
<td>Non-PBS</td>
</tr>
</tbody>
</table>

**Prescriber’s name:** Dr A Practitioner
**Prescriber number:** 123456
**Prescriber type:** Geriatrics
**Clinical unit:** Geriatrics
**Date:** 02/04/2013

---

**Note:**
- Ensure that you have read these medications and the information relating to any entitlement to concessional pharmaceutical benefits is noted or withdrawn.
Discharge Prescriptions

What needs to be included:

1. Hospital name, address, telephone number and hospital provider number - this is printed on every hospital prescription form
2. Authority prescription identification number is required when requesting a PBS authority approval
3. Patient's name, address, date of birth, hospital number and location (attach bradma on all 3 copies)
   a. Patient's Medicare number - have this available when seeking a PBS Authority approval for Authority required medicine. It is included on the hospital bradma.
   b. Patient's entitlement details
   c. Handwrite the patient's name under the bradma. This is allows you to check the correct bradma has been attached to the script.
4. Select the appropriate box - PBS or RPBS (repat patients)
5. Patient's weight if applicable
6. Medicine name and form, for example, tablets, capsules or injections
7. Medicine strength
8. Dose instructions for use
9. Quantity to be dispensed – refer to PBS website for quantities. You can NOT write PBS as the quantity.
10. Number of repeats if permitted and required. Usually we don’t write repeats on discharge as we want to encourage to the patient to see their GP for follow up.
   o Drugs of addictions (DAs) – the quantity to be supplied needs to be written in words and figures.
     E.g. To order Targin 14 tablets, quantity to be written as: 14, fourteen
11. Pharmacist to indicate whether the medicine is to be supplied
12. Approval number and additional notes on the prescription:
   o if the medicine requires prior Authority approval, and you have obtained an Authority approval number, write the approval number in this column
   o if the medicine is listed in the Schedule as Authority required (STREAMLINED), write the specific streamlined authority code in this column
   o if your patient is not eligible for a PBS subsidy for a medicine, and you want to have a medicine supplied as non-PBS, write non-PBS in this column
   o any other notes you feel may be relevant to the pharmacist
13. Your name, prescriber number and contact number
   o If the prescriber number is not included, or illegible, the prescription cannot be dispensed.
   o Your prescriber number is different to your provider number
   o Include a contact number in case the pharmacist needs to verify the prescription. If you cannot be contacted, and thereby the prescription cannot be dispensed, this causes delays in treatment and possibly the need for the patient to return to hospital for a new prescription.
14. Prescriber type if you are an authorised nurse practitioner (NP) or authorised midwife (MW)
15. Your signature and the date form is written
   o if the prescription is not signed, it is not a legal prescription and cannot be dispensed.

Write in clear, legible handwriting

Illegible writing can lead to significant medication errors and patient harm

Illegible writing/missing information may make a prescription not valid for dispensing resulting in delays to treatment or the patient needing to return to hospital for a new prescription to be written
Discharge Prescriptions

Drugs of Addiction (DA)

- When prescribing DAs on discharge, the quantity to be supplied should be enough to cover 3 to 5 days of analgesia requirements. Be mindful not to overprescribe DAs as this can lead to addiction.
- You can prescribe less that the PBS quantity or pack size. Pharmacists can easily break packs.
- The quantity to be supplied needs be written in both words and figures.

Pharmaceutical benefits Schedule (PBS)

Authority PBS prescriptions

- Authority required benefits fall into two categories
  - Authority required (via phone call) and
  - Authority required (STREAMLINED) (via PBS website)

Authority required

- This type of approval is required if you want to prescribe a quantity in excess of the PBS quantity (e.g. long term antibiotics or Clexane®) or if the medication has specific criteria as per the PBS website (e.g. ciprofloxacin).

Approval of authority PBS prescriptions by Chief Executive may be sought by calling the Department of Human Services Telephone Authority Applications Free call service (1800 888 333). (phone number is located on the bottom of the red copy of the hospital prescription)
- To obtain approval, you need to supply the patient’s Medicare number and name, prescription number, your name and PBS prescriber number.
- If approval is granted, the operator will give you an authority number that needs to be written on the prescription e.g. Z1234AB

Authority required (STREAMLINED)

- This type of approval is required if you want to prescribe a medication that is only subsidised by the PBS for certain indications (e.g. clopidogrel, pregabalin, olanzapine).
- Some of these medications have multiple indications with different authority numbers. Ensure you choose the correct indication and authority number (e.g. 1234) is written on the prescription.

Click the Authority required tab to see the criteria.
Click the Authority required (STREAMLINED) tab to see the criteria.

Choose the appropriate indication and write the Streamline code on the prescription. If the patient doesn’t meet one of these criteria, close this tab and open up another tab (some medications have multiple tabs).
Pharmaceutical benefits Schedule (PBS)

PBS website
- The website can be found via the Shortcuts menu (Pharmaceutical Benefits Schedule)
- Include information about:
  - If the medication is covered by the PBS, and for what indication
  - Maximum quantity (and repeats) that can be prescribed
  - If an authority is required

PBS Homepage

- This shows the maximum packs/units and repeats that can be prescribed on the PBS
Pharmaceutical benefits Schedule (PBS)

- Note: you can prescribe less than maximum quantity – packs can be broken
- If you want to prescribe more than the maximum quantity and repeats, you need to obtain an Authority (see Authority required in this booklet)
- Examples:
  a. Cephalexin 500mg BD for 5 days (=10 capsules)
  b. Cephalexin 500mg QID for 10 days (=40 capsules i.e. 1 pack + 1 repeat)
  c. Cephalexin 500mg QID for 1 month (=120 capsules – above maximum quantity, needs authority)

<table>
<thead>
<tr>
<th>Drug name and form</th>
<th>Strength</th>
<th>Dose, route and frequency</th>
<th>Quantity</th>
<th>Rpts</th>
<th>Supply Y/N</th>
<th>Approval number if required</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Cephalexin</td>
<td>500mg</td>
<td>po 80 9/1 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Cephalexin</td>
<td>500mg</td>
<td>po Q10 9/1 20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Cephalexin</td>
<td>500mg</td>
<td>po Q10 9/12 120</td>
<td></td>
<td></td>
<td></td>
<td>Z123AB</td>
</tr>
</tbody>
</table>
PRESCRIBING UNFAMILIAR MEDICATIONS

It is the responsibility of all prescribers to check the indication and dosage and precautions of unfamiliar medications. Northern Health encourages the use of evidence based guidelines. These are available on every computer/desktop. In particular, Therapeutic Guidelines® (eTG), up-to-date®, Australian Medicines Handbook® (AMH), eMims®, hospital policies on PROMPT. Speciality areas (e.g. palliative care, paediatrics, oncology, psychiatric medicine) have reference tools available for staff online through the library section of the intranet.

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>Treatment Guidelines</th>
<th>Indication</th>
<th>Dose</th>
<th>Administration guidelines</th>
<th>Adverse effects</th>
<th>Precautions/Contraindications</th>
<th>Drug interactions</th>
<th>TDM</th>
<th>Brands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Medicines Handbook (AMH)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Therapeutic Guidelines (eTG)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MIMs online</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Australian Injectable Drug Handbook</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Compatability information</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Northern Health policies (PROMPT) **not all drugs have a NH policy</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Antibiotic Guidance</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>PBS website</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Other documents/forms you may be asked to complete:
- Individual patient usage (IPU) form
  - to obtain approval to prescribe a medication not on the hospital’s formulary
- Special Access Scheme (SAS) form
  - To obtain approval via the TGA to prescribe and use a medication not marketed in Australia
- Notification of Drug Dependant person
  - To notify DHHS of patients who are on opioid replacement therapy (e.g. methadone, Suboxone®)
ANTIMICROBIAL STEWARDSHIP PROGRAM

ANTIBIOTIC GUIDANCE (iGuidance)

GuidanceMS is an online approval system for restricted antimicrobials that forms part of Northern Health’s Antimicrobial Stewardship program. It guides prescribers through the appropriate indication and dose of restricted antimicrobials and generates electronic approvals. The indications and durations are based on the current Therapeutic Guidelines: Antibiotic. For indications outside of current guidelines – limited duration electronic approval can be obtained, prior to consultation with Infectious Diseases. An approval number for a restricted antimicrobial must be obtained within 24 hours of initiation and written on the chart (to ensure adherence to hospital policy and obtain supply from Pharmacy).

The following antimicrobials are restricted at Northern Health:

- aciclovir IV
- famciclovir
- oseltamivir (Tamiflu®)
- azithromycin
- fluconazole
- rifampicin (ID only)
- cefepime
- fusidic acid (ID only)
- piperacillin-tazobactam (Tazocin®)
- cefotaxime
- gentamicin
- valaciclovir
- ceftriaxone
- Meropenem
- vancomycin
- ceftazadime
- moxifloxacin
- voriconazole (ID only)
- ciprofloxacin
- norfloxacin

Those listed above are the more commonly used restricted antimicrobials; see the GuidanceMS homepage for a complete list.

Please note that GuidanceMS is also used to obtain approvals for the use of the NOACs (apixaban, dabigatran and rivaroxaban). See “Anticoagulants” section of handbook for more information.

Antibiotic approvals can be obtained via the “Antibiotic guidance” link in the Clinical Shortcuts folder (on any PC in the hospital).
ANTIMICROBIAL STEWARDSHIP PROGRAM

Your username & password are the same as the one you use to access other hospital systems eg. CPF.

Once an approval number is obtained, please write it on the chart, in the indication section or on the yellow “Guidance approval no.________” sticker placed on the chart by a pharmacist (if there is one):

Approvals generated by Guidance MS have the format of XXX-0000-0. The first for numbers (XXX-0000-0) are the day and month the approval was obtained, and the last number (XXX-0000-0) indicates the number of days the antimicrobial is approved for. For example, an approval number of XXX-2502-3 indicates that the approval was obtained on 25 February and is valid for 3 days. **ID will need to be contacted if antibiotic is to continue once approval is expired** (pager 071 or 471 or 073).

If you have any problems accessing Guidance MS or obtaining approvals, please contact the Antimicrobial Stewardship Pharmacist, on pager 564 or ex 58452.

The Direct Oral Anticoagulants (DOACs)

The prescribing of DOACs at Northern Health is currently highly restricted. Approval for their use needs to be obtained via the GuidanceMS system, which we also use to regulate use of restricted antimicrobials (see above Antimicrobial Stewardship program section on how to access GuidanceMS and explanatory notes). Pharmacy cannot supply any doses until an approval is obtained.

Information on all the anticoagulants, including guidelines on dosing, reversal and switching from warfarin to a NOAC or vice versa, can be found on the Haematology department page on the intranet. From the intranet homepage select “Department and Services” then “Haematology” and then “Anticoagulant Drug Management” or use the following link: http://intranet.nh.org.au/departments-and-services/haematology/anticoagulant-drug-management
## INTER MEDICATION GUIDE

## ANTIBIOTIC PRESCRIBING GUIDELINES BY CONDITION

### Acute Cystitis

<table>
<thead>
<tr>
<th>Condition</th>
<th>Empiric Choice</th>
<th>Penicillin Allergy</th>
<th>Immediate Penicillin Hypersensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Cystitis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-pregnant women</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trimethoprim 300mg po daily for 3d (7d in men)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Cephalexin 500mg po BD for 5d (7d in men)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Augmentin Duo (500/125mg) one po BD for 5d (7d in men)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Nitrofurantoin 100mg po BD for 5d (7d in men)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Men</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cephalexin 500mg po BD for 5d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Augmentin Duo (500/125mg) one po BD for 5d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Nitrofurantoin 100mg po BD for 5d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pregnant women</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cephalexin 500mg po BD for 5d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Augmentin Duo (500/125mg) one po BD for 5d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Nitrofurantoin 100mg po BD for 5d</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Always base final antibiotic choice on urine culture results if possible
- Asymptomatic bacteriuria does not require treatment
- Consider risk of multi-resistant gram negative infection (i.e. past urine sample results, recent overseas travel) – discuss with ID for advice.

### Catheter-associated UTI

- Diagnosis is based on signs of systemic infection with no alternative diagnosis in a patient with an IDC
- Bacteruria and pyuria occurs in most patients with a catheter in-situ within a few days & bacterial growth from a catheter specimen may not reflect bacterial growth within the bladder
- If concerned re: infection – take a sample from a newly inserted IDC prior to starting antibiotic Rx but empiric antibiotics should be based on recent urine sample results

<table>
<thead>
<tr>
<th>Condition</th>
<th>Empiric Choice</th>
<th>Penicillin Allergy</th>
<th>Immediate Penicillin Hypersensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catheter-associated UTI</td>
<td>Ceftriaxone ✪ 1g iv daily</td>
<td></td>
<td>Ciprofloxacin ✪ 500mg po BD OR 400mg iv 12/24</td>
</tr>
<tr>
<td>OR Anti-pseudomonal agent (e.g. Piperclillin-tazobactam ✪ or Ceftazidime ✪) if recent growth of Pseudomonas or severely unwell / septic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rx duration 7 days minimum, but if there was a delayed response to Rx, then Rx for 10-14 days</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Require Guidance approval

### Pyelonephritis

- Always base antibiotic choice on formal urine culture
- Empiric antibiotics may need to be modified based on recent urine results
- Consider risk of multi-resistant gram negative infection (i.e. past urine sample results, recent overseas travel) – discuss with ID for advice.
- If urine culture necessitates fluoroquinolone Rx then only require 7 days total Rx
- In severe pyelonephritis can change to oral antis based on urine culture results once patient is clinically improving (tolerating oral intake, afebrile, pain improving)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Empiric Choice</th>
<th>Penicillin Allergy</th>
<th>Immediate Penicillin Hypersensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pyelonephritis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>Augmentin DF (875/125mg) one po BD for 14d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Cephalexin 1g po QID for 14d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR Trimethoprim 300mg po daily for 14d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe</td>
<td>Ceftriaxone ✪ 1g iv daily</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most patients req. admission should be treated as severe infection initially</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ciprofloxacin ✪ 500mg po BD OR 400mg iv 12/24</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Require Guidance approval
**Prostatitis**

- Many antibiotics lack penetrance into the prostate, esp. in the absence of active inflammation therefore preference for ciprofloxacin, trimethoprim and Bactrim
- If using bactrim, need to monitor bloods for toxicity (discuss with ID)

**Acute / Chronic (Duration 4-6 weeks)**

Discuss all cases with Infectious Diseases

**Cellulitis**

- Usually due to *Strep.* species and occasionally *S.aureus*
- Do not need to cover MRSA (with vancomycin) unless pustular component (purulent exudate, underlying abscess/collection) or severely unwell (i.e. septic)
- Oral antibiotics are sufficient for patients who are may have systemic signs of infection but are haemodynamically stable
- Erythema will spread and fever can continue within the first 48-72 hours and this does not mean treatment failure in a stable patient
- **Exceptions:**
  - Hand cellulitis: use iv treatment first
  - Facial cellulitis / Bites / Fresh Water or Salt Water injuries – see Therapeutic Guidelines
  - Paediatric cellulitis
  - Severe infection or any concern of necrotising infection (e.g. severe pain)

<table>
<thead>
<tr>
<th>Empiric</th>
<th>Penicillin Allergy (excl. immediate hypersensitivity)</th>
<th>Immediate Penicillin Hypersensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dicloxacillin OR Cephalexin 1g po QID</td>
<td>Cephalexin 1g po QID</td>
<td>Clindamycin 450mg po TDS</td>
</tr>
<tr>
<td>Flucloxacillin 2g iv 6/24 +/- Vancomycin</td>
<td>Cephazolin 2g iv 8/24 +/- Vancomycin</td>
<td>Vancomycin ✪ (see Vancomycin Dosing / Monitoring guideline)</td>
</tr>
</tbody>
</table>

**Severe (immunocompromise / bullae or sloughing / septic)**

(10-14 days Rx)

**Exacerbation of Chronic Obstructive Pulmonary Disease (COPD)**

- The majority of exacerbations are non-infective
- If there is no associated consolidation of CXR then iv abx are not required.
- Sputum culture results may not necessarily equate to true

<table>
<thead>
<tr>
<th>COPD exacerbation – likely viral or environmental stimulus</th>
<th>Antibiotics are not required if no evidence of infection (e.g. raised inflmm markers, increased sputum purulence/volume, fever, consolidation on CXR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxycillin 500mg po TDS OR Doxycycline 100mg po BD</td>
<td><strong>COPD and likely bronchitis (5-7 days Rx)</strong></td>
</tr>
</tbody>
</table>
## Community Acquired Pneumonia

**require Guidance approval**

### Empiric

<table>
<thead>
<tr>
<th></th>
<th>Penicillin Allergy (excl. immediate hypersensitivity)</th>
<th>Immediate Penicillin Hypersensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild/Moderate (Rx duration 5-7 days)</td>
<td>Amoxicillin** 1g po TDS AND Doxycycline 100mg po BD</td>
<td>Cefuroxime 500mg po BD AND Doxycycline 100mg po BD</td>
</tr>
<tr>
<td>Severe (Rx duration 7-14 days)</td>
<td>Ceftriaxone ✪ 1g iv daily AND Azithromycin ✪ 500mg po/iv daily (max of 3-5 days of azithromycin unless severe Legionella pneumonia)</td>
<td>Moxifloxacin ✪ 400mg po/iv daily</td>
</tr>
</tbody>
</table>

**Amoxicillin-clavulanic acid (875/125mg BD)** should be used in those with underlying chronic lung disease (not incl. asthma) for possible Moraxella infection; those who required ICU admission and nursing home patients

**De-escalate early to oral** antis (as per "Mild") once patient is showing signs of clinical improvement and is tolerating an oral diet (usually in 1-2 days). Pts do not need to be afebrile or have normal O2 sats to change to orals

- Azithromycin and Moxifloxacin should be given orally in clinically stable patients
- If doxycycline is contraindicated use Clarithromycin 500mg po BD

**Community Acquired Pneumonia - De-escalate early to oral** antis (as per "Mild") once patient is showing signs of clinical improvement and is tolerating an oral diet (usually in 1-2 days). Pts do not need to be afebrile or have normal O2 sats to change to orals

### Aspiration Pneumonia

**require Guidance approval**

### Empiric

<table>
<thead>
<tr>
<th></th>
<th>Penicillin Allergy (excl. immediate hypersensitivity)</th>
<th>Immediate Penicillin Hypersensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild (7-10 days Rx)</td>
<td>Amoxicillin ** 1g po TDS</td>
<td>Clindamycin 450mg po TDS</td>
</tr>
<tr>
<td>Moderate (7-10 days Rx)</td>
<td>Benzylpenicillin 1.8g iv 4-6/24 +/- Metronidazole *</td>
<td>Ceftriaxone ✪ 1g iv daily +/- Metronidazole *</td>
</tr>
<tr>
<td>Severe (7-10 days Rx)</td>
<td>Ceftriaxone ✪ 1g iv daily AND Metronidazole 500mg iv 12/24</td>
<td>Moxifloxacin ✪ 400mg po/iv daily</td>
</tr>
</tbody>
</table>

### Aspiration Pneumonia - Important to differentiate from aspiration pneumonitis** which is a chemical pneumonitis that does not require antis.

- Consider piperacillin-tazobactam for severe aspiration pneumonia if at high risk of MDR pathogens (see HAP above)
- Metronidazole is not routinely required for anaerobic coverage as most oropharyngeal anaerobes are penicillin sensitive. Consider adding MNZ if purulent sputum, severe periodontal disease, chronic aspiration (e.g. nursing home patient), chronic alcohol consumption, lung abscess or failure to respond to initial Rx. **The oral option in this group is Amoxicillin-clavulanic acid** **

**Amoxicillin-clavulanic acid (875/125mg BD)** is not required for anaerobic coverage as most oropharyngeal anaerobes are penicillin sensitive.
Hospital Acquired Pneumonia

**Empiric**

<table>
<thead>
<tr>
<th>Low risk of MDR pathogens</th>
<th>High risk of MDR pathogens</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mild</strong> (8 days Rx duration)</td>
<td><strong>Severe</strong> (8 days Rx duration)</td>
</tr>
<tr>
<td>Amoxicillin-clavulanic acid 875/125mg po BD</td>
<td>Pipercillin-tazobactam 4.5g iv 8/24 +/- Vancomycin</td>
</tr>
<tr>
<td>Cefalexin 1g po BD +/- Metronidazole *</td>
<td>Cefepime 2g iv 8/24 +/- Metronidazole * +/- Vancomycin</td>
</tr>
<tr>
<td>Moxifloxacin ✪ 400mg po daily</td>
<td>Moxifloxacin ✪ 400mg po/iv daily +/- Vancomycin</td>
</tr>
</tbody>
</table>

**Penicillin Allergy** (excl. immediate hypersensitivity)

<table>
<thead>
<tr>
<th>Pre-op</th>
<th>Post-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone ✪ 1g iv daily <strong>AND</strong> Metronidazole 500mg iv 12/24 <strong>OR</strong> Pipercillin-tazobactam ✪ 4.5g iv 8/24</td>
<td>Use operative cultures results to guide antibiotic therapy. Consider de-escalation to oral antibiotics once clinically improving and able to tolerate oral intake. e.g. Amoxicillin-clavulanic acid 875/125mg po BD</td>
</tr>
</tbody>
</table>

**Immediate Penicillin Hypersensitivity** (i.e. anaphylaxis)

<table>
<thead>
<tr>
<th>Pre-op</th>
<th>Post-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vancomycin ✪</td>
<td>Cefalexin 500mg-1g po QID <strong>AND</strong> Metronidazole 400mg po BD</td>
</tr>
</tbody>
</table>

**Peritonitis due to perforated viscus**

**Empiric**

<table>
<thead>
<tr>
<th>Pre-op</th>
<th>Post-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone ✪ 1g iv daily <strong>AND</strong> Metronidazole 500mg iv 12/24 <strong>OR</strong> Pipercillin-tazobactam ✪ 4.5g iv 8/24</td>
<td>Use operative cultures results to guide antibiotic therapy. Consider de-escalation to oral antibiotics once clinically improving and able to tolerate oral intake. e.g. Amoxicillin-clavulanic acid 875/125mg po BD</td>
</tr>
</tbody>
</table>

**Penicillin Allergy** (excl. immediate hypersensitivity e.g. rash)

<table>
<thead>
<tr>
<th>Pre-op</th>
<th>Post-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone ✪ 1g iv daily <strong>AND</strong> Metronidazole 500mg iv 12/24</td>
<td>Cefalexin 500mg-1g po QID <strong>AND</strong> Metronidazole 400mg po BD</td>
</tr>
</tbody>
</table>

**Immediate Penicillin Hypersensitivity**

<table>
<thead>
<tr>
<th>Pre-op</th>
<th>Post-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vancomycin ✪</td>
<td>Cefalexin 500mg-1g po QID <strong>AND</strong> Metronidazole 400mg po BD</td>
</tr>
</tbody>
</table>

Peritonitis due to perforated viscus - Peritonitis is usually a polymicrobial infection (inc. aerobic and anaerobic bowel flora) - In a patient that improves rapidly post surgery, a total of 7 days of antibiotics (iv/oral) is sufficient

*require Guidance approval*
# Antibiotic Prescribing Guidelines by Condition

## Acute Cholecystitis

<table>
<thead>
<tr>
<th></th>
<th>Pre-op</th>
<th>Post-op</th>
</tr>
</thead>
</table>
| **Acute Cholecystitis** | - Initially acute cholecystitis is an inflammatory condition, secondary bacterial infection can occur. Clinically differentiating these can be difficult so antibiotics are usually prescribed  
- Usually caused by enteric gram negative bacilli (e.g. E.coli, Klebs. species)  
- Anaerobic infection is uncommon | **As per “Peritonitis due to perforated viscus”**  
**Non-perforated gall bladder:**  
No antis required post-op  
Perforated / gangrenous gall bladder / leaking bile duct:  
Cont. antis and consider de-escalation to oral antis if patient improves (as per perforated viscus) |

## Ascending Cholangitis

<table>
<thead>
<tr>
<th></th>
<th>Pre-op</th>
<th>Post-op = after obstruction is relieved i.e. post successful ERCP</th>
</tr>
</thead>
</table>
| **Ascending Cholangitis** | - Ideally take blood cultures prior to antibiotics  
- Is a medical emergency, antibiotics are required in all cases but relief of the biliary obstruction is also necessary for clinical improvement to occur  
- Usually caused by gram negatives  
- Anaerobic infection is uncommon in acute infection and is perhaps more important in chronic biliary obstruction | **As per “Peritonitis due to perforated viscus”**  
Organism isolated on blood culture:  
Change to oral antis based on culture results (total duration of 14 days iv/oral antis)  
No organism isolated on blood culture  
De-escalate to orals (as per perforated viscus) (Total duration of 7 days iv/oral antis) |

## Acute Appendicitis

<table>
<thead>
<tr>
<th></th>
<th>Pre-op</th>
<th>Post-op</th>
</tr>
</thead>
</table>
| **Acute Appendicitis** | - Surgical drainage and appendicectomy is the mainstay of treatment  
- Antibiotics provide a bridge to surgery  
- Antibiotic therapy alone (without surgery) has an unacceptably high relapse rate | **As per “Peritonitis due to perforated viscus”**  
**Non-perforated appendix:**  
No antis required post-op  
Perforated / gangrenous appendix or abscess:  
Cont. antis and consider de-escalation to oral antis if patient improves quickly (as per perforated viscus) |

## Acute Diverticulitis

<table>
<thead>
<tr>
<th></th>
<th>Pre-op</th>
<th>Post-op</th>
</tr>
</thead>
</table>
| **Acute Diverticulitis** | - Occurs when a colonic diverticulum becomes inflammed  
- Generally managed conservatively (bowel rest, IV fluids and antibiotics); surgery is generally only required if there is perforation, bowel obstruction or a diverticular abscess not amenable to percutaneous drainage  
- Diverticular bleeding is a non-infective condition and does not require antibiotics | **As per “Peritonitis due to perforated viscus”**  
Once there is clinical improvement (afebrile 24-48 hours, tolerating oral intake, less tender) can de-escalate to orals (approx. 7-14 days total antibiotic Rx) (as per Peritonitis due to perforated viscus) |
ACUTE PANCREATITIS

- Pancreatitis is primarily an inflammatory condition but can present with a strong SIRS response and appear septic, without actually having any infection
- **Routine use of antibiotics is not required.** Routine antibiotics do not reduce the incidence of infection or reduce mortality

INFECTED PANCREATIC NECROSIS / PANCREATIC ABSCESS

- ✪ require Guidance approval
- Ideally perform percutaneous aspiration and drainage of collections, utilise cultures to guide antibiotic therapy

**General Surgical Unit Antibiotic Prophylaxis Guide**

- ✪ require Guidance approval

### Upper GI Surgery (Biliary, gastric and oesophageal)
- Anaerobic surgical prophylaxis is not required
- Add vancomycin if known MRSA colonization

### Lower GI Surgery (Small and large intestine)
- Add vancomycin if known MRSA colonization

### Hernia Repair
- In complicated hernia repairs, where entry into the bowel lumen is expected: see “Abdominal Surgery” surgical prophylaxis recommendations
- Add vancomycin if known MRSA colonization

### Breast Surgery
- Incl. breast cancer surgery & lymph node exploration, procedures using prosthetic material

**Intra-op Re-dosing** - If procedure is > 3 hours: Redose Cephazolin 2g at the 3 hour time point

**Post-op Antibiotics** - No antibiotics required: a single dose pre-op is sufficient ** unless established infection is present

**Intravenous Antibiotics**

- **Antibiotics not indicated**
## HANDY MEDICATION GUIDELINES

### ENDOCRINOLOGY

**DRUG** | **DOSE/UNIT** | **ROUTE** | **FREQUENCY**
--- | --- | --- | ---
Insulin Top Up Scale<br>Novorapid/Acrrapid/ Humalog<br>T1DM<br>BSL 10-14 | 2 units | subcut | With-meals TDS PRN<br>BSL 14.1- 18 | 4 units | | <br>BSL >18 | 6 units | |
T2DM:<br>BSL 10-14 | 4 units | | <br>BSL 14.1- 18 | 6 units | | <br>BSL >18 | 8 units | |
Novorapid Infusion<br>(50 units Novorapid in 50mL 0.9% NaCl = 1 unit/ml)<br>1/24 BSL’s (mmol /L) | Novorapid Infusion<br>See Diabetes – Insulin/Gluocse Lowering Medicines policy | IV | Consult Endocrine Registrar before commencing

**FASTING GUIDELINES for INSULIN:**

- If on Long-Acting Insulin (Lantus or Levemir) ➔ Continue these at full/reduced dose
- If on Short-Acting Insulin ➔ Withhold
- If on Pre-mixed Insulin (humulog/ novomix/ mixtard)_ ➔ Give 50% of the Insulin dose as Protophane

### END OF LIFE CARE

**DRUG** | **DOSE/UNIT** | **ROUTE** | **FREQUENCY**
--- | --- | --- | ---
Morphine | 2.5 – 5 mg (depending on tolerance) | subcut | PRN (no frequency)
Fentanyl (if renal impairment) | 25 – 50 microg | subcut | PRN (no frequency)
Midazolam | 2.5 - 5 mg | subcut | every 1 hour PRN
Metoclopramide | 10 – 20 mg | subcut | QID PRN
Glycopyrrolate | 0.2 - 0.4 mg | subcut | 4 hourly (max1.2 mg)
# Vascular Device Protocols

**PICC**  
*Bard Groshong brand* (closed end catheter with 3 way valve):  
Does not require heparin flush/lock  
Pulsating flush with 20mL normal saline post access and weekly if not in use

**Implanted port device (intravenous)**  
Heparin locked using 500 units of heparin in 5mL of saline (ie 100 units per mL) post access or monthly if not in use.

**CVCs**  
Do not require heparin locking (they have a positive pressure device [CLC 2000] attached to each lumen).

For further information refer to clinical services manual on management of each central venous access device.

### “Length of stay for vascular devices”:

- **Peripheral Cannulas**, changed 72 hourly (unless medical emergency where asepsis is not used, must be changed within 12 hours)
- **CVC**: yellow (7 days) CVC: Blue (2 weeks)
- **Implanted Port device**: around 2,000 needle sticks (can stay indefinitely/must be surgically removed in most cases)

### FOR ACCES TO SIMULATOR MODELS CONTACT THE EDUCTION CENTRE EXT. 58732.

---

## Rule of 1’s – oversimplified but memorable

<table>
<thead>
<tr>
<th>Water losses</th>
<th>0.5 – 1 ml/kg/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine output</td>
<td>0.5 ml/kg/day</td>
</tr>
<tr>
<td>Insensible losses</td>
<td>0.5 ml/kg/day</td>
</tr>
<tr>
<td><strong>Water requirements</strong></td>
<td>1.5 – 2 ml/kg/hr</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Salt requirements</th>
<th>0.5 – 1 mmol/kg/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium</td>
<td>0.5 – 1 mmol/kg/day</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.7 – 1 mmol/kg/day</td>
</tr>
</tbody>
</table>

### The Real Rules: Correct but easy to forget!

<table>
<thead>
<tr>
<th>Fluid requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1st 10 kg</td>
<td>4 ml/kg/hr</td>
</tr>
<tr>
<td>2nd 10 kg</td>
<td>2 ml/kg/hr</td>
</tr>
<tr>
<td>Thereafter</td>
<td>1 ml/kg/hr</td>
</tr>
</tbody>
</table>

eg.  
50 kg person: 40 + 20 + 30 ml/hr = 90 ml/hr  
90 kg person: 40 + 20 + 70 ml/hr = 130 ml/hr

### Precautions

- CCF/renal failure/very elderly  
  Reduce rate and monitor UO / fluid balance  
- Febrile / septic / post-op  
  Increase Na and H2O
### Solutions
All 1L solutions come +/- 30 mmol KCl

<table>
<thead>
<tr>
<th>Solution</th>
<th>Sodium (mmol/L)</th>
<th>Chloride (mmol/L)</th>
<th>Glucose (mmol/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.9% saline</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5% Dextrose</td>
<td>278</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>4% Dextrose + 1/5 saline</td>
<td>30</td>
<td>216</td>
<td></td>
</tr>
<tr>
<td>Hartmanns or CSL</td>
<td>129</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Gelofusine</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Recipe 1
1-1.5ml/kg/hr 4% Dextrose & 1/5 saline +30 mmol/L KCl

### Recipe 2
1-1.5ml/kg/hr
1L Normal Saline + 30 mmol KCl
1L 5% dextrose + 30 mmol KCl
1L 5% dextrose +/- 30 mmol KCl

### Other ‘Rules’
1. All clinicians get the fluid balance assessment wrong sometimes. This can be a difficult area, so:
   - When in doubt – ASK EARLY
   - If your first intervention does not work – ASK AGAIN
   - If you are doing something for the 1st time – GET ADVICE

2. Monitoring volume status and renal function: Urine output is an early and useful sign
   - BP, HR & urea are late signs (too late!)

3. Responding to oliguria
   - Oliguria = hypovolaemia until proven otherwise
   - Treatment of oliguria = IV volume challenge (2.5-10ml/kg for 1-2 hrs. Use colloid if concerned re APO/CCF)
   - Complex patients usually need urinary catheter and strict fluid balance.
   - Diuretics DO NOT ‘kick-start’ the kidneys
   - Diuretics indicated for fluid overload NOT oliguria.

Change to NSaline or Hartmanns
Increase rate
Monitor urine output / fluid balance

NB: fluid balance should be +ve because of ‘third space’ losses
Online modules are available from the National Prescribing Service.

http://learn.nps.org.au/

The following online module is compulsory to complete:

<table>
<thead>
<tr>
<th>Antimicrobial prescribing courses</th>
<th>CPD and course details</th>
<th>Start now</th>
</tr>
</thead>
</table>

The Antimicrobial stewardship pharmacist will be following up evidence of completion. If you have completed these courses during university, you do not need to redo them.

We recommend completing the following modules:

<table>
<thead>
<tr>
<th>National inpatient medication chart 2016</th>
<th>CPD and course details</th>
<th>Start now</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Medication safety 2016</th>
<th>CPD and course details</th>
<th>Start now</th>
</tr>
</thead>
</table>
The pharmacist is not the purple pen drug police.

The pharmacists are here to support you, improve medication safety and to promote patient-centred care.