Clinical Pharmacy Practice Manual

For Fiji's Hospital Pharmacy Departments
Clinical Pharmacy Practice Manual


First edition 2010
Second edition 2013

Printed in Suva, Fiji

Acknowledgements

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Alexander Bongers, Australian Volunteer, Pharmacist, 2012
Amele Lalibuli, Acting Principal Pharmacy Officer, 2012
Kobi Haworth & Meg Donaldson, Australian Volunteers, Pharmacists, 2010

The Ministry of Health acknowledges the reference to published documents and guidelines from the Society of Hospital Pharmacist's Australia, utilised to assist in the development of this publication.

Graphic design by Australian Volunteer Jess Golding.
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Pharmacy Overview</td>
<td>2</td>
</tr>
<tr>
<td>Getting Started</td>
<td>3</td>
</tr>
<tr>
<td>Arriving on the ward</td>
<td>4</td>
</tr>
<tr>
<td>Clinical Pharmacy Review</td>
<td>5</td>
</tr>
<tr>
<td>The Pharmacy Patient Profile</td>
<td>6</td>
</tr>
<tr>
<td>Sample Pharmacy Patient Profile</td>
<td>12</td>
</tr>
<tr>
<td>The Neonatal/Paediatric Pharmacy Patient Profile</td>
<td>13</td>
</tr>
<tr>
<td>Sample Neonatal/Paediatric Pharmacy Patient Profile</td>
<td>15</td>
</tr>
<tr>
<td>Annotation of Drug Charts</td>
<td>16</td>
</tr>
<tr>
<td>Sample Drug Chart</td>
<td>18</td>
</tr>
<tr>
<td>Documentation</td>
<td>19</td>
</tr>
<tr>
<td>Accurate medication history</td>
<td>26</td>
</tr>
<tr>
<td>Assessment of medication management</td>
<td>28</td>
</tr>
<tr>
<td>Clinical Review</td>
<td>30</td>
</tr>
<tr>
<td>Providing guidance in prescribing</td>
<td>31</td>
</tr>
<tr>
<td>Provision of medicine information to patients</td>
<td>32</td>
</tr>
<tr>
<td>Discharge Medication Information</td>
<td>33</td>
</tr>
<tr>
<td>Paediatric Clinical Pharmacy Practice</td>
<td>35</td>
</tr>
<tr>
<td>Peer review and self assessment</td>
<td>37</td>
</tr>
<tr>
<td>References</td>
<td>39</td>
</tr>
</tbody>
</table>
Pharmacists should move from behind the counter and start serving the public by providing care instead of pills only. There is no future in the mere act of dispensing. That activity can and will be taken over by the internet, machines, and/or hardly trained technicians. The fact that pharmacists have an academic training and act as health care professionals puts a burden upon them to better serve the community than they currently do.”

(From: Pharmaceutical care, European developments in concepts, implementation, and research: a review) 

Clinical pharmacy services aim to enhance patient pharmaceutical care. The International Pharmaceutical Federation (FIP) provides the following definition:

“Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve or maintain a patient’s quality of life”.

Pharmaceutical care is a “prospective patient-centered practice with a focus on identifying, resolving and preventing drug therapy problems”. This is achieved through the process of clinical review. The steps involved in clinical pharmacy review are outlined in Diagram 1 below:

Diagram 1: Overview of the medicines management pathway cycle

This document provides guidance on the practical aspects of delivering ward-based clinical pharmacy services.
Clinical pharmacy services involve the practice of pharmacy as part of the healthcare team aimed at achieving the Quality Use of Medicines. Ward services not only improve patient safety and medication management, but they show other health professionals (e.g. doctors and nurses) what services pharmacists can provide.

Starting a ward-based pharmacy service may seem overwhelming at first, but it really is very achievable. If you have the following resources, you have the potential to start a ward pharmacy service at your hospital:

**The pharmacist**

- You don't need to "know all of the answers" to provide a clinical pharmacy service, you simply need to be willing to ask questions and know how to find the information you need.
- Good verbal communication is an essential skill. This is important when interacting both with patients and other health professionals.
- You must be committed to your ongoing continuing professional development (CPD) to improve pharmaceutical knowledge and skills relevant to the ward.

**A daily time slot**

- Consistency is essential when providing ward based pharmacy service. The ward should ideally be visited on a daily basis by the pharmacist.
- A regular pharmacy service has many benefits:
  - Helps build relationships with ward staff as they become used to your presence on the ward
  - Pharmacist confidence on the ward increases with familiarity
  - Ward inpatients receive regular medication reviews
  - New patients are seen by a pharmacist and any medication issues are resolved early in the admission.

**Support**

- Support from senior pharmacy staff, doctors and nurses are essential to starting a ward pharmacy service.
- Obtain a letter of support from the Drugs and Therapeutic Committee of the hospital/division to notify the heads of department ahead of time.
- Arrange a meeting with the nurse(s)-in-charge to explain the benefits of clinical pharmacy and what a ward service will involve.
- Agree on a time for clinical pharmacy ward rounds that suits all key staff.

**Prioritisation**

Human resource limitations often mean that clinical pharmacists will need to prioritise the range of services they provide. Three activities are essential for the provision of basic clinical pharmacy service, applying to all areas of clinical practice.

1. Accurate medication history
2. Assessment of current medication management
3. Provision of medicines information to patients.
Arriving on the ward

The Ward Folder:

Each ward-based pharmacy service should have a pharmacy “ward folder”. This folder should accompany the pharmacist each time they go to the ward. The ward folder contains ward-specific information to assist in the delivery of ward-based clinical pharmacy services. Contents of a ward folder should include:
- Ward information sheet
- Ward imprest medication list
- Current inpatient profiles
- Useful drug information / ward protocols
- Blank patient profiles
- Blank medication incident report forms

Resources:

The clinical pharmacist should have access to up-to-date medicines information to base their clinical pharmacy services on. This may include written or electronic resources. Access to a computer and secure internet connection may be necessary to access this information. Some of those resources include, but is not limited to:
- Laboratory results
- Information on PATIS
- Australian Medicines Handbook
- Fiji Treatment Guidelines
- Australian Therapeutic Guidelines (where local guidelines are not available yet)
- Royal Children's Hospital Paediatric Pharmacopoeia
- Frank Shann's Drug Doses
- Medical literature accessed online
- Shared resources with the Drug Information Service

Prioritisation:

As there is only a limited time period on the ward, good time management is essential. Ideally every patient on the ward should be reviewed on a daily basis; however time restrictions often mean that this is not possible and patients must be prioritised to be seen by a pharmacist.

Patients that should receive highest priority for clinical pharmacy review include:
- New admissions
- Paediatrics and geriatrics
- Patients on multiple drugs (polypharmacy)
- Patients with a drug-related admission
- Patients on “high risk” medications

Prioritisation should be your very first step when arriving on the ward. Use the ward bed list to assist you, this is usually located close to the central nursing station on most wards.
Clinical pharmacy review describes the clinical activities performed by the ward-pharmacist to provide pharmaceutical care. This process is shown in Diagram 2 below:

<table>
<thead>
<tr>
<th>Step</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>• Gather and interpret information e.g. medication history taking, reconciliation, lab results</td>
</tr>
<tr>
<td>2</td>
<td>• Assess current medication management and goals of therapy - clinical review</td>
</tr>
<tr>
<td>3</td>
<td>• Identify and prioritise any potential or actual medication related problems</td>
</tr>
<tr>
<td>4</td>
<td>• Make appropriate individualised recommendations for each problem identified</td>
</tr>
<tr>
<td>5</td>
<td>• Identify and provide counselling / education</td>
</tr>
<tr>
<td>6</td>
<td>• Document and communicate problems and recommendations effectively</td>
</tr>
<tr>
<td>7</td>
<td>• Arrange follow-up and monitor outcomes</td>
</tr>
</tbody>
</table>

**Diagram 2: Overview of the Clinical Pharmacy Review Process**

As shown in the above diagram, provision of medicines information should not be seen as a “single step”. Rather, this should be included in all aspects of clinical pharmacy review.

The patient profile (Medication Reconciliation Form) is a tool to assist you in gathering relevant patient data and structure your thoughts to perform clinical pharmacy reviews for your patients.
The emphasis of the patient profile is to record key data relevant to clinical pharmacy. It also acts as a communication tool for ward pharmacists involved in the patient’s care.

The Pharmacy Patient Profile is not intended to simply replicate information that is readily available in the patient’s medical record.

**Allergies and Adverse Drug Reactions (ADR’s)**

**Rationale:**
Pharmacists act as a “safety check”, therefore the patient should be asked directly for details of allergies and ADR’s at every new admission. This information should not be copied directly from the medical notes or the chart without first attempting to confirm the information with the patient.

**Procedures:**
- Ask the patient if they have ever experienced a drug allergy. Also check for any history of adverse drug reactions. Document the drug, reaction details and date that the reaction occurred. (Give an approximate timeframe if appropriate. E.g. 20 years ago). Sign and date the entry.
- If the patient is unaware of any previous allergies or ADR’s, attempt to confirm this information with a second source, a carer or family member. If the answer is still unknown, check with a third source such as the patient folder or Patis profile. If there is no record of any allergies or ADR’s tick the Nil Known box.
- Sign and date the entry, indicating source if prompted.

<table>
<thead>
<tr>
<th>Allergies and adverse drug reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil known:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DRUG</th>
<th>REACTION</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Check if the allergy box has been completed on the patient's yellow drug chart. If blank, complete the details of the patient's allergies or write “nil known drug allergies” or “NKDA” if appropriate. Initial under the box.
**Patient Details**

- **Rationale:** Enables quick identification of the patient, their location in the hospital and the medical team responsible for their care.

- **Procedures:**
  - Complete the sections beside National health number (NHN), Name, Date of birth (DOB), Gender, Admission date, Team, Ward and Bed, Treating team and Admission pharmacist

<table>
<thead>
<tr>
<th>PATIENT DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHN:</td>
</tr>
<tr>
<td>Name:</td>
</tr>
<tr>
<td>DOB: / /</td>
</tr>
<tr>
<td>Admission Date: / /</td>
</tr>
<tr>
<td>Treating team:</td>
</tr>
<tr>
<td>Admission pharmacist:</td>
</tr>
</tbody>
</table>

**NOTE:** Ensure that this information has been completed on the patient's yellow drug chart.

**Reason for Admission**

- **Rationale:** The diagnosis and history of presenting complaint (where relevant) help orientate the pharmacist to the patient's main complaint. This information can direct clinical interventions and patient counselling.

- **Procedures:**
  - Document the main reason/s for admission (*i.e. the diagnosis*). This information is usually found in the Medical admission notes under “Assessment”.
  - If appropriate, a brief history of the presenting complaint may also be documented. *(E.g. for a COPD exacerbation, “patient's inhalers ran out 1/52 ago” would be relevant to the pharmacist)*.

**Past Medical History**

- **Rationale:** The medical history enables reconciliation of the patient's past and current medical and surgical problems with their current medications.

- **Procedures:**
  - Document the patient's past medical history in the box. This information is usually found in the medical admission notes under “PMH” or “PMHx”.
  - Only use medical abbreviations which are widely accepted and understood by other members of staff at the hospital, e.g. HTN for hypertension and T2DM for type 2 diabetes
Medications

Medications taken prior to admission

• **Rationale:**

By confirming the medication history with the patient or carer and reconciling this history with the inpatient medication chart soon after admission some medication errors and omissions can be detected. Although a patient interview should be the primary source of data, a combination of information sources can be used to obtain and validate the medication history. If the patient is not responsible for medication administration, or if a reliable medication history cannot be obtained from the patient/carer, then alternative sources must be accessed. These information sources include:

- Patis dispensing history and/or administration records
- Other health professionals
- Patient's own medicines or list of medicines

• **Procedures:**

- Complete the details of medications taken prior to admission which the patient was taking before admission into hospital, including Generic Name, Dose, Route, Form, including brand names where it may be deemed important, e.g. Cartia® as it is aspirin 100mg enteric coated

<table>
<thead>
<tr>
<th>Generic Name/Dose/Route/Form</th>
<th>On admission</th>
<th>On D/C</th>
</tr>
</thead>
<tbody>
<tr>
<td>(all drug names to be written in full – no abbreviations acceptable)</td>
<td>Data source code (see below)</td>
<td>Reconciled on admission (v/X)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Indicate the data source(s) according to the codes:

  Data Source Codes:
  - P (patient)
  - OM (own medications)
  - TF (transfer from other hospital)
  - C (carer)
  - Pat (Patis)
  - H (history)
  - Name:
  - NEW (new)

Medication management as an inpatient

• **Rationale:**

This section is designed to help you monitor and review the patient's drug therapy while in hospital. For pharmacists new to clinical pharmacy, it may be useful to record all of the patient's current inpatient medications on the profile. As clinical experience develops you may choose to be more selective about the details you record (for the sake of saving time and prioritising patient needs). Reconciliation on discharge performed with the discharge prescription, drug chart and list of medications on admission prevents potential errors, duplication of therapies and miscommunication to the patient. It provides a list of medications the patient will be prescribed on discharge and assists you in counselling the patient in medications which may have been stopped, started or changed as an inpatient.

• **Procedures:**

- Complete the details of medications being prescribed whilst in hospital below the medications taken prior to admission, including Generic Name, Dose, Route, Form, including brand names where it may be deemed important
- Reconciling medications taken prior to admission with medication management as an inpatient:
  - Where the medication taken prior to admission correlates with medication prescribed as an inpatient, indicate with a “√” next to the medication.
  - Where the medication taken prior to admission has not been prescribed as an inpatient and you are in agreement with the reason for this (taking into account safety, efficacy, accessibility issues), indicated with a “X” next to the medication
- Where the medication dose has been altered as an inpatient, indicate with “↑/↓” and then with the new dose
- Where the medication taken prior to admission has not been prescribed and in your clinical opinion is required during the patient's stay in hospital, indicate with □ “ to prompt you to follow up with the treating team
- Where the medication taken prior to admission has been prescribed but is being withheld due to the patient's clinical state, indicate with “W/H” next to the medication
- Update this information on a daily basis on your clinical review and chart check of the patient.
- Use the Comments section to make further notes on the progress of medications, examples include:
  - Indication where it may be ambiguous or outside of usual scope
  - Date to be discontinued for medications, specifically antibiotics
  - Date when review of medication is to be made
  - Reason why medication may be temporarily withheld
- At the time of discharge, complete Reconciled on Discharge with the same annotations as above, i.e. √/X/↑/↓

**Medication Management:**

- **Rationale:**
  Details within this section enables pharmacists to quickly assess the patient's compliance, knowledge, ability of medications, health literacy level, ability to communicate and any medication related issues/difficulties picked up during the interview. Details of the patient's clinic/health centre and retail pharmacy may also be important if they need to be contacted for further information or verification.

- **Procedures:**
  - Tick/cross and annotate the most relevant answer/s
  - Complete any additional information in the comments/clinics/retail pharmacy.
  - This section may also contain more detailed information regarding the medication information and counselling provided to the patient by the pharmacist.
  - Record details of the patient's regular clinic and retail pharmacy.

<table>
<thead>
<tr>
<th>Medication Management:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication administered by:</td>
</tr>
<tr>
<td>☐ Self</td>
</tr>
<tr>
<td>☐ Other, please specify:</td>
</tr>
<tr>
<td>Compliance assessment:</td>
</tr>
<tr>
<td>☐ Adequate</td>
</tr>
<tr>
<td>☐ Inadequate, comment:</td>
</tr>
<tr>
<td>Social:</td>
</tr>
<tr>
<td>☐ Lives alone</td>
</tr>
<tr>
<td>☐ With family, comment:</td>
</tr>
<tr>
<td>Language(s) spoken:</td>
</tr>
<tr>
<td>☐ English</td>
</tr>
<tr>
<td>☐ Hindi</td>
</tr>
<tr>
<td>☐ Fijian</td>
</tr>
<tr>
<td>☐ Other:</td>
</tr>
<tr>
<td>Education:</td>
</tr>
<tr>
<td>☐ Medication administration assessment complete (e.g. inhalers, eye drops)</td>
</tr>
<tr>
<td>☐ Education provided</td>
</tr>
<tr>
<td>Discharge Plan:</td>
</tr>
<tr>
<td>☐ Medication chart required for discharge, if not required, state reason:</td>
</tr>
<tr>
<td>☐ New dose administration aid required for discharge</td>
</tr>
<tr>
<td>☐ Discharge counselling required</td>
</tr>
<tr>
<td><strong>Comments/clinics/retail pharmacy:</strong></td>
</tr>
</tbody>
</table>
Clinical progress during admission

• **Rationale:**
Age, weight, height and creatinine clearance information may be relevant to drug choice and dosing. Calculate the creatinine clearance using the Cockcroft-Gault equation.

**FORMULAE**

\[
CrCl(\text{mL/min}) = \frac{(140 - \text{age}) \times (\text{weight in kg})}{0.815 \times (\text{Cr in micromol/L})} \times 0.85 \text{ if female}
\]

Weight is either the ideal body weight (IBW) or actual weight, whichever is lower:
IBW Female: 45.5kg + 0.9kg/cm for each cm >152cm
IBW Males: 50kg + 0.9kg/cm for each cm >152cm
Add 10% for a heavy frame; subtract 10% for a light frame.

• **Procedures:**
Complete the sections beside Weight, Height, serum creatinine (SeCr) and creatinine clearance (CrCl).

<table>
<thead>
<tr>
<th>Clinical progress during admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>On admission:</td>
</tr>
<tr>
<td>Weight</td>
</tr>
</tbody>
</table>

**NOTE:** Ensure that the age and weight has also been completed on the front of the patient’s yellow drug chart.

Laboratory Results

• **Rationale:**
Enables recording of laboratory results to inform clinical pharmacy recommendations.

• **Procedures:**
  - Lab reports are generally found stapled in the patient’s medical notes towards the back of the current admission.
  - Document laboratory results related to the current admission.

<table>
<thead>
<tr>
<th>Date/Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na (135-145)</td>
</tr>
<tr>
<td>K (3.2-4.5)</td>
</tr>
<tr>
<td>Urea</td>
</tr>
<tr>
<td>Cr</td>
</tr>
<tr>
<td>LFTs</td>
</tr>
<tr>
<td>INR</td>
</tr>
<tr>
<td>Troponin</td>
</tr>
<tr>
<td>TDM</td>
</tr>
</tbody>
</table>

**NOTE:** Some boxes have been left blank to allow recording of other lab values applicable to the patient.
Medication Action Plan

- **Rationale:**
Medication issues identified using the checklist should be recorded for action and follow up.

- **Procedures:**
- Document medication issues by completing the following:
  - **DATE:** The date the issue was identified
  - **PROBLEM:** A description of the issue
  - **ACTION:** The action that is required/recommended
  - **OUTCOME:** The result/outcome of the intervention (this may be completed at a different time to the identification of the issue)

### Medication action plan

<table>
<thead>
<tr>
<th>Date</th>
<th>Problem</th>
<th>Action</th>
<th>Outcome</th>
<th>Date complete</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PHARMACY PATIENT PROFILE: ADMISSION & DISCHARGE "MEDICATION RECONCILIATION FORM"

This form is to be completed by a pharmacist when reconciling/discovering medications at admission and discharge. This is NOT a Drug Chart. All unresolved discrepancies will be referred to a doctor for clarification and alterations. This form is for utilisation by all clinical staff and to assist with medication counselling at discharge. This form is accurate for the current admission of the patient to hospital. Medications may change during the admission and patient notes or primary care providers should be referred to.

<table>
<thead>
<tr>
<th>Allergies and adverse drug reactions</th>
<th>PATIENT DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DRUG</strong></td>
<td><strong>REACTION</strong></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

**Presentation/Diagnosis**

68 y.o. C pmw rapid AF

**Past Medical History**

AF | HT | OA | depression | ICH | glaucoma

<table>
<thead>
<tr>
<th>Generic Name/Dose/Route/Form</th>
<th>On admission</th>
<th>On D/C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data source code (see below)</strong></td>
<td><strong>Reconciled on admission (W/W)</strong></td>
<td><strong>Required on D/C (W/W)</strong></td>
</tr>
<tr>
<td>Digoxin 0.25mg t.venue</td>
<td>P/MH</td>
<td>↑125mg</td>
</tr>
<tr>
<td>Paracetamol 500mg t. gid</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Melatonine 0.37 t. bed</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Fluconazole 200mg t.venue</td>
<td>P/PM</td>
<td>✔</td>
</tr>
<tr>
<td>Amiodarone 20mg t.venue</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Metoprolol 25mg t. ven</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Prednisolone 5mg t.ven</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Pharmacist name and signature**

Date: 14/2/13

Data Source Codes:

- P (patient)
- CM (community pharmacist)
- OM (own medications)
- TF (transfer from other hospital)
- Pat (Pats)
- H (history)
- NEW (new)

This form is to remain with the medical notes during the admission for easy referral by all clinicians and should be filed in the history at discharge.
**Medication Management:**
- Medication administered by: [ ] Self, [ ] Other, please specify: help from wife
- Compliance assessment: [ ] Adequate, [ ] Inadequate, comment:
- Social: [ ] Lives alone, [ ] With family, comment:
- Language(s) spoken: [ ] English, [ ] Hindi, [ ] Fijian, [ ] Other:
- Education: [ ] Medication administration assessment complete (e.g. inhalers, eye drops), [ ] Education provided: warfarin counselling
- Discharge Plan:
  - [ ] Medication chart required for discharge, if not required, state reason:
  - [ ] New dose administration aid required for discharge
  - [ ] Discharge counselling required

**Comments/clinics/retail pharmacy:**
- Valumene HC parent.
- Fluoxetine + warfarin - long term.
- Warfarin + amiodarone - new.

**Clinical progress during admission**

<table>
<thead>
<tr>
<th>Date/Result</th>
<th>Weight</th>
<th>Height</th>
<th>SeCr</th>
<th>CrCl</th>
</tr>
</thead>
<tbody>
<tr>
<td>14/12</td>
<td>60kg</td>
<td>15/2</td>
<td>57</td>
<td>&gt;30mL/min</td>
</tr>
</tbody>
</table>

**Medication action plan**

Assess problems/potential problems/actions/follow up:

<table>
<thead>
<tr>
<th>Date</th>
<th>Problem</th>
<th>Action</th>
<th>Outcome</th>
<th>Date complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>14/12</td>
<td>digoxin level subtherapeutic</td>
<td>medical hx, spoke to intern</td>
<td>dose ↑ 125mcg</td>
<td>15/2</td>
</tr>
<tr>
<td>14/12</td>
<td>amiodarone + effect of warfarin</td>
<td>medical hx, spoke to registrar</td>
<td>monitor INR, frequency</td>
<td>14/2</td>
</tr>
</tbody>
</table>

Last updated: 30/1/2013
Description:
The neonatal/paediatric patient profile differs slightly from the patient profile as it places less emphasis on the medication the patient was taking prior to hospital admissions. However, it still allows thorough exploration and documentation of medication issues (previous and current) and pharmaceutical care related to the individual patient. Like the patient profile, the paediatric version is a tool to facilitate clinical pharmacy review.

The Neonatal/Paediatric Pharmacy Patient Profile shares many similarities with the Pharmacy Patient Profile. The significant variations from the Pharmacy Patient Profile will be discussed here.

Patient Details

- **Rationale:** Enables quick identification of the patient, their location in the hospital and the medical team responsible for their care.

- **Procedures:**
  - Complete the additional sections of Mother, Gestational Age, Birth Weight

Weight chart

- **Rationale:** Neonatal/paediatric patients' weight can change rapidly and dramatically during their inpatient stay, as paediatric doses should be calculated accurately based on patient weight or body surface area, this data should be regularly monitored.

- **Procedures:**
  - Collect weight information of patient on a regular basis and record on the patient profile, making dose adjustment recommendations where necessary.

Medications

- **Rationale:** In neonatal and paediatric patients, this refers to medication management as an inpatient, as many patients take few, if any, medications prior to admission. This section is designed to help you monitor and review the patient's drug therapy while in hospital.

- **Procedures:**
  - Document details of inpatient drug therapy including: Date (started), Drug, Dose (mg), Dose (calculated) (mg/kg), Frequency, Route and Indication
  - Dose calculated (mg/kg) allows easy referencing to sources such as Frank Shann and the Royal Children's Hospital Paediatric Pharmacopoeia, ensuring the prescribed dose is safe and within therapeutic range.
  - Indication of drugs in paediatric patients may sometimes vary outside of commonly seen indications, writing down anomalies will assist in the transfer of information to other pharmacy colleagues.

NOTE: - *The latest instructions of resources available should always be used.*
# CWM Hospital Pharmacy Patient Profile for Neonates

**NHN:** 99000000x

**Name:** Blo Jane x  
**DOB:** 03/11/10  
**Gestational Age:** 38 weeks

**Mother:**  
**Gender:** m  
**Birth Weight:** 1.6 kg

**Admission Date:** 03/11/10  
**Ward:** NICU 1A  
**Bed:**

**Admission Notes:**
- Gastroesophageal reflux disease
- Preterm, VLBW, IUGR
- Rho D congenital abnormalities
- Surgery - post-reduction
- Clinically significant NEC, Bile duct leakage, sepsis, candida infection

## Medications

<table>
<thead>
<tr>
<th>Date</th>
<th>Drug</th>
<th>Dose (mg)</th>
<th>Dose (mg/kg)</th>
<th>Frequency</th>
<th>Route</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/11/10</td>
<td>Gentamicin</td>
<td>8 mg</td>
<td>0.5 mg/kg</td>
<td>Q8H</td>
<td>IV</td>
<td>Gram-negative coverage</td>
</tr>
<tr>
<td>03/11/10</td>
<td>Ampicillin</td>
<td>800 mg</td>
<td>3.3 mg/kg</td>
<td>Q4H</td>
<td>IV</td>
<td>Gram-negative coverage</td>
</tr>
<tr>
<td>03/11/10</td>
<td>Methionamide</td>
<td>12 mg</td>
<td>0.7 mg/kg</td>
<td>Q12H</td>
<td>IV</td>
<td>Anaplastic lymphoma</td>
</tr>
<tr>
<td>03/11/10</td>
<td>M + M</td>
<td>TPN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04/11/10</td>
<td>Ceftriaxone</td>
<td>IV</td>
<td>160 mg</td>
<td>Q4H</td>
<td>IV</td>
<td>Sepsis</td>
</tr>
<tr>
<td>05/11/10</td>
<td>Cefazolin</td>
<td>80 mg</td>
<td>5 mg/kg</td>
<td>Q12H</td>
<td>IV</td>
<td>Sepsis</td>
</tr>
<tr>
<td>06/11/10</td>
<td>Metronidazole</td>
<td>12 mg</td>
<td>0.7 mg/kg</td>
<td>Q12H</td>
<td>IV</td>
<td>Sepsis</td>
</tr>
<tr>
<td>06/11/10</td>
<td>Metronidazole</td>
<td>12 mg</td>
<td>0.7 mg/kg</td>
<td>Q12H</td>
<td>IV</td>
<td>Sepsis</td>
</tr>
<tr>
<td>07/11/10</td>
<td>Cefazolin</td>
<td>80 mg</td>
<td>5 mg/kg</td>
<td>Q24H</td>
<td>IV</td>
<td>Sepsis</td>
</tr>
</tbody>
</table>

## Medication Issue Checklist
- Untreated indication
- Improper drug selection
- Subtherapeutic dose
- Overdosage
- Drug use without indication
- Adverse drug reaction / Side effects
- Clinically significant drug interactions
- Failure to receive medicines
## MEDICATION ACTION PLAN

ASSSESS PROBLEMS/POTENTIAL PROBLEMS FOR ALL PATIENTS IDENTIFIED AS ‘AT-RISK’

**AT RISK CRITERIA:**
- multiple medications
- multiple changes to drug therapy
- medication requiring monitoring
- high level risk management

<table>
<thead>
<tr>
<th>Date</th>
<th>Problem</th>
<th>Action</th>
<th>Outcome</th>
<th>Date Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>26/11</td>
<td>Patient on Ceftriaxone + TPN</td>
<td>Spoke to Dr. K and noted in folder. Dr. K assured she will discuss with consult.</td>
<td>Dr. K later informed Dr. D (consultant). Seemed to continue.</td>
<td></td>
</tr>
<tr>
<td>26/11</td>
<td>Metronidazole Rxed as 7.5mg/kg q8h</td>
<td>Noted in the folder</td>
<td>Changed by Dr. R to q12h</td>
<td>✓</td>
</tr>
<tr>
<td>26/11</td>
<td>Cefazolin Rxed as q8h, Pt &gt;2weeks</td>
<td>Frank smh 25-50mg/kg IV q8h</td>
<td>Noted in the folder</td>
<td>Changed by Dr. R to q8h</td>
</tr>
<tr>
<td>26/11</td>
<td>Doctor noted for Fluconazole best given IV to be given as ‘push’</td>
<td>Fluconazole best given over 60 mins. Noted on drug chart + folder</td>
<td>Nurses and doctors informed</td>
<td></td>
</tr>
</tbody>
</table>

### Lab Results

<table>
<thead>
<tr>
<th>Date/Result</th>
<th>26/11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na (135 - 145)</td>
<td></td>
</tr>
<tr>
<td>K (3.2 - 4.5)</td>
<td></td>
</tr>
<tr>
<td>INR (Target Range)</td>
<td></td>
</tr>
<tr>
<td>Cr (0.05 - 0.1)</td>
<td></td>
</tr>
<tr>
<td>B/L</td>
<td>Yeast</td>
</tr>
<tr>
<td></td>
<td>Yeast</td>
</tr>
<tr>
<td>Drug</td>
<td></td>
</tr>
<tr>
<td>Dose</td>
<td></td>
</tr>
<tr>
<td>Infusion Complete</td>
<td></td>
</tr>
<tr>
<td>Sample Time</td>
<td></td>
</tr>
<tr>
<td>Time interval</td>
<td></td>
</tr>
<tr>
<td>Level / Result</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Recommend</td>
<td></td>
</tr>
</tbody>
</table>

### Discharge Planning Notes

26/11 - Recommended Ceftriaxone as alternative to Ceftriaxone—not available in EMF. Doctors still wanted to continue on Ceftriaxone + TPN

---

16
Annotation of Drug Charts

Pharmacists are required to annotate and endorse drug charts as part of the pharmaceutical review process.

Goals

The purpose of annotating the drug chart is to indicate the prescription has been reviewed by a pharmacist, clarify the prescription to enable nurses to safely administer medication and provide information to doctors and nurses about the prescribed medication.

Procedures

All annotations should be made in purple pen to distinguish from doctors’ writing prescription orders and nurses’ signing administration of drugs. Professional judgement is required to reach a balance between providing useful information and overloading the chart with too much information. Some pharmaceutical comments are more appropriate written in the patient’s medical notes. At a minimum, the following must be annotated on the chart:

- Each drug order must be signed in the “Pharmacy Use Only” box to indicate a pharmacist has screened the drug order as both safe and appropriate to the patient, as well as matching the intentions of the treating team as indicated during ward rounds and in the patient’s medical history. This check should include generic name of drug, dose (µg should be written as mcg or micrograms), dosing frequency and administration times written correctly.
- Drug orders which are for non-formulary medications or formulary medications which are out of stock, should be annotated with “OWN SUPPLY” to prompt doctors to issue prescriptions and nurses to ensure family members or carers fill the prescription as soon as possible.
- Drugs with unusual storage conditions should be annotated accordingly:
  - Drugs of addition must be annotated with “DD”
  - Refrigerated items must be annotated with “FRIDGE”
  - Cytotoxic items must be annotated with “CYTOTOXIC”
- Other administration instruction should be annotated clearly in the “Pharmacy Use Only” box or neatly within the dosing area so as not to disrupt administration.
- Drugs to be administered at unusual intervals should have times boxed and crossed as a forcing function to prevent doses from being given at incorrect times.
- For short course medications or dose titrations, the starting date should be documented or the number of days numbered on the chart to clearly indicate when the drug was started or the dose changed. If the duration of therapy is determined at the time of prescribing “R/V” must be annotated in the administration column on the appropriate date.
- For intravenous medications which are given via infusion, the diluent, volume and maximum rate of infusion should be documented in the “Pharmacy Use Only” box or neatly within the dosing area.
- Drug administration must be reviewed each day and the pharmacist should initial at the bottom of the chart after review. This check includes confirming the prescribed frequency correlates with the administration times and that all doses have been administered since the previous check.
- All patients on high dose steroids require blood glucose level monitoring, annotate this on the drug chart.

Since human resource limitations can restrict the number of drug charts reviewed by pharmacists on the ward, pharmacists in the inpatient pharmacy are encouraged to also partake in the annotation of drug charts where appropriate.
**MEDICATION CHART**

<table>
<thead>
<tr>
<th>DRUG PRESCRIPTION AND ADMINISTRATION RECORD</th>
<th>NAME: Patient Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTHER DRUG CHARTS IN USE (please tick)</td>
<td></td>
</tr>
<tr>
<td>IV Fluids + Additives</td>
<td>Diabetic Management</td>
</tr>
<tr>
<td>Anaesthetic</td>
<td>Anticoagulant</td>
</tr>
</tbody>
</table>

KNOW ALLERGY OR DRUG SENSITIVITY

<table>
<thead>
<tr>
<th>Year</th>
<th>Drug</th>
<th>Details of ADR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>penicillin - rash</td>
<td></td>
</tr>
</tbody>
</table>

AGE 54 | HEIGHT cm | WEIGHT 68 kg

WARD  

HOSPITAL

---

**VARIABLE DOSE DRUGS**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>DRUG (Approved Name)</th>
<th>Dose</th>
<th>Route</th>
<th>Prescriber's Signature</th>
<th>Given by</th>
<th>Time Given</th>
<th>Pharmacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>19/12/13</td>
<td>4am</td>
<td>Vancomycin</td>
<td>2g</td>
<td>IV</td>
<td>N</td>
<td>N</td>
<td>4.30</td>
<td>ICU</td>
</tr>
</tbody>
</table>

---

**PRE-ADMISSION MEDICATION HISTORY**
### REGULAR MEDICATION

<table>
<thead>
<tr>
<th>Pharmacy Use Only</th>
<th>Date</th>
<th>Drug Name &amp; Form (Block Letters)</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
<th>Signature</th>
<th>Admin Times am</th>
<th>Admin Times pm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td><em>All</em></td>
<td></td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Digoxin</em> 62.5 mg po alt days</td>
<td></td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td><em>Amiodarone</em> 400 mg po 4x100 mg</td>
<td></td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>IV BD</em></td>
<td></td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td><em>Vancomycin</em> 1g iv q6h</td>
<td></td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td><em>Nifedipine</em> SR 20mg po bd</td>
<td></td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td><em>Methotrexate</em> MTX 10mg po weekly</td>
<td></td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td><em>Warfarin</em> 5mg po acc (x2 acc)</td>
<td></td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td><em>Prednisolone</em> (2x5mg) 10mg po daily</td>
<td></td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### RECORD OF ADMINISTRATION - REGULAR

**DATE**  
<table>
<thead>
<tr>
<th>TIME</th>
<th>13/1/2</th>
<th>20/1/2</th>
<th>21/1/2</th>
<th>22/1/2</th>
<th>23/1/2</th>
<th>24/1/2</th>
<th>25/1/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>7am</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10am</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6pm</td>
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<td></td>
</tr>
<tr>
<td>7pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/5</td>
<td></td>
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</tr>
<tr>
<td>7/6</td>
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<td></td>
</tr>
<tr>
<td>7/9</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>7/10</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8/1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9/1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NAME:** Patient Example  
**Ward:** CCU  
**OTHER NAMES:**

**REGISTRATION DETAILS HOSPITAL NO.:** 300000001  
**DATE:** 20/1/2  
**TIME:** 7am  
**REASON:**  

- 2 = Patient could not receive drug  
- e.g. fasting or severe vomiting  
- 4 = Drug not Available  
- C. Use 24hr clock for administration times.
### AS REQUIRED PRESCRIPTION

**Patients Name:** Parent Example

<table>
<thead>
<tr>
<th>DRUG</th>
<th>Morphine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose</td>
<td></td>
</tr>
<tr>
<td>Route</td>
<td>IV</td>
</tr>
<tr>
<td>Signature</td>
<td>N</td>
</tr>
<tr>
<td>Maximum Frequency</td>
<td></td>
</tr>
<tr>
<td>Start Date</td>
<td>Pharmacy</td>
</tr>
<tr>
<td>Date</td>
<td>Time</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DRUG</th>
<th>PCT racetamol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose</td>
<td></td>
</tr>
<tr>
<td>Route</td>
<td></td>
</tr>
<tr>
<td>Signature</td>
<td></td>
</tr>
<tr>
<td>Maximum Frequency</td>
<td></td>
</tr>
<tr>
<td>Start Date</td>
<td>Pharmacy</td>
</tr>
<tr>
<td>Date</td>
<td>Time</td>
</tr>
</tbody>
</table>

**DISCHARGE PRESCRIPTION**

Maximum of one month supply is standard. Approval must be obtained for exceptions. Full details must be provided before dispensing.

<table>
<thead>
<tr>
<th>DRUG NAME &amp; FORM (BLOCK LETTERS)</th>
<th>STRENGTH</th>
<th>DOSE</th>
<th>ROUTE &amp; FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WARD ARM CHART</th>
<th>DIAETIC CHART</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Name of Medical Officer (Block Letters):**

**Date:**

**Medical Officer's Signature:**

**Checked by Ward Pharmacist:**

**Counselling Required:**

**My Drug List Required:**

---

---
Documentation is as important as the clinical activities performed by a pharmacist. Documentation demonstrates contributions and promotes the value of pharmacists in participation to patient care and the healthcare team.

**Goals**

Documenting in the patient medical record and in other specific locations should occur as pharmacists contribute to patient management. It is a written means of communicating with other members of the healthcare team, forms a permanent record to supplement verbal communication and provides written evidence of the contributions made by pharmacists to patients’ pharmaceutical care.

**Procedures**

Document the following activities in the following places:

<table>
<thead>
<tr>
<th>What to document</th>
<th>Where to document</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication history, medication reconciliation and medication action plan</td>
<td>Pharmacy Patient Profile, Drug chart, Medical record</td>
</tr>
<tr>
<td>Assessment of current medication management, pharmaceutical review</td>
<td>Drug chart, Pharmacy Patient Profile, Medical record</td>
</tr>
<tr>
<td>Adverse medicine event/ADR</td>
<td>Drug chart, Adverse Drug Reaction Form, PATIS</td>
</tr>
<tr>
<td>Pharmacist Intervention</td>
<td>PATIS</td>
</tr>
<tr>
<td>Provision of medicines information to patients</td>
<td>Medical record, Pharmacy Patient Profile</td>
</tr>
<tr>
<td>Provision of patient-specific information to other health care professionals</td>
<td>Medical record</td>
</tr>
</tbody>
</table>

Keep personal documentation of the following activities:

- Attendance and participation at multidisciplinary ward rounds and meetings
- Attendance and participation at pharmacy departmental meetings
- Contributions to training of students, pharmacist, other health professionals and the public
- Membership on hospital committees
- Participation in research activities
- Drug usage evaluation projects
Documentation in the patient medical records

Consideration should be given to documenting in the patient medical record details of specific activities or issues such as:

- Information obtained from an accurate medication history including an assessment of patient compliance with the prescribed medication regimen
- Identification of serious clinical problems with discussion of the pharmacists’ assessment
- Details of patient education and provision of concordance aids
- Response to patient-specific questions from other staff
- Recommendations for therapeutic drug monitoring and evaluation of drug monitoring data
- Adverse drug reaction assessment and management recommendations
- Serious concerns about medicine therapy that cannot be verbally communicated to a medical officer (or which have not been addressed by medical staff, or which would potentially imply negligence by the pharmacist if not documented)

When making an entry in the medical record, clearly identify name, discipline, date and time. Follow a logical sequence, e.g. SOAP method – subjective relevant patient details, objective clinical findings, assessment of situation or clinical problem and proposed management plan.

- Keep information factual and succinct
- There is no official “format” for writing pharmacy entries. When writing entries, keep them brief and include details of:
  - What you did
    e.g. medication history confirmed with patient, clinical pharmacy review of medication chart, indications and use of diabetes medications discussed with the patient etc...
  - What issues you detected
    e.g. “Patient has a history of asthma and is now prescribed atenolol. Beta-blockers are contraindicated in reversible airways disease”
  - What you recommend
    e.g. “consideration may be given to an alternative drug such as digoxin – 250mcg daily”
  - What action you’ve taken
    e.g. “Dr X. notified. He has advised to withhold potassium until tomorrow morning’s ward round. Nursing staff informed and chart annotated with W/H”
- Limit comments to “recommendations” to allow scope for discussion
- Document relevant discussion of the issue with medical or nursing staff
- Use only well-recognised abbreviations
- Document the action plan and strategy for clinical review and monitoring
- Sign the entry, print name and designation alongside the situation and provide contact details
Patient medication interview completed with patient and patient’s wife who assists him with his medications. Patient’s regular medications are:

- Metformin tabs 1g TDS
- Glibenclamide tabs 5mg BD
- Enalapril tabs 5mg mane
- Atenolol tabs 50mg BD
- GTN tabs 600mcg 1 tab s/lingual prn which he uses 1-2 times a week

Patient is assessed to be compliant with medications with a good understanding of their indications and importance.

Patient and wife were counselled on appropriate use and storage of GTN tablets.

Clinical issues

1. Ciprofloxacin and calcium have been prescribed for the patient. An interaction exists between the two drugs- calcium binds to ciprofloxacin in the GIT, reducing absorption of ciprofloxacin.

   Recommend separate them by >2 hours. Nurse on duty informed.

Rashika
R. Gounder
Clinical Pharmacist
(ext. 341372)
Clinical Interventions in PATIS

All pharmacy interventions should be documented in PATIS.

- Select relevant “Facility” (i.e. CWM hospital, Lautoka hospital or Labasa hospital)
- Select “Pharmacy” as “Clinical Pharmacy”
- Enter details in “Pharmacy Interventions”

A report giving details of pharmacy interventions can be run at the end of each month to provide evidence of the activities and value of clinical pharmacy services. An intervention is any query, recommendation or non-routine action made in relation to the patient’s pharmaceutical care. Interventions include actions where the outcome is ‘no change’.

Entries should be brief, state the facts and should include:

- Ward/clinic of the patient
- A description of the problem, the action and the outcome
- Pharmacist’s name or initials

Medication Incident Reports and Unusual Occurrence Reports

Medication incident reports are one of the most important and effective ways of identifying issues and system flaws that impair medication safety. Hospital staff are human, and it is inevitable that mistakes will occur. However it is important to blame the system that resulted in the error, not the individual. If one person managed to make the mistake, it means that others could potentially make the same mistake in the future. It is important to document these incidents so that we are aware of the system flaws and can design safer medication systems to prevent them from recurring. The Medication Incident Report Form should be used to document actual incidents.

Complete all areas of the form and submit to the Drug Information Service.
Accurate medication history

A medication history interview should be conducted with the patient/carer as soon as possible following admission to assist in patient care. An accurate medication history should not only be a source of medicine information but also relevant medical history, clinical problems and therapeutic goals.

“\textit{A structured interview conducted at admission with the consumer/carer by an appropriately trained health professional to obtain and document the consumer’s medication history, including previous ADR’s and allergies, and any recently ceased or changed medicines. Assessment of the consumer’s medication taking behaviour including self-management and adherence to therapy is also included.}”

Goals

To obtain data on medicine use that will assist in the overall care of the patient. Information gathered can be used to identify clinical problems, develop goals for therapy and identify monitoring parameters. Specific aspects could include:

- Comparison of medication history with drug administration record and investigation of discrepancies
- Verifying medication histories taken by other staff and providing additional information where appropriate
- Documenting allergies and adverse reactions
- Assessing patient medication concordance
- Assessing the rationale for drugs prescribed
- Assessing the patient’s understanding of their medicines
- Appraising medicine administration techniques
- Examining need for medicine and concordance aids
- Documenting patient-initiated medication administration
- Assessing patient acceptance of treatment
- Identifying other therapies the patient may be using

Procedures

1. Review sources of patient information

Examination of patient-specific data should be undertaken prior to an interview, allowing patients to be prioritized and issues identified on which to focus on during the interview. Sources can include:

- Patient (ability to communication, cognition, alertness, mental acuity, age, frailty, psychological state, social circumstances)
- Responsibility for obtaining, administering and managing medicines
- Current medicine charts, prescriptions and medicines
- Current admission details as contained in the patient’s medical history
- Referral letter from doctor or transfer information from other health centre
- Information as documented by other health professionals and relevant laboratory parameters
2. Patient/carer medication history interview

Interviews provide an opportunity to pharmacists to establish rapport with the patient/carer and to explain their role in the patient's care, commence preliminary education regarding medicines and changes to medicines and collect information to inform clinical decision making.

- Establish the identity of the patient
- Introduce yourself
- Explain the purpose of the interview, respecting the patient's right to decline an interview
- Determine who is responsible for administration and management of medicines
- Establish rapport with patient/carer by employing an appropriate interview manner
- Employ appropriate history-taking techniques, begin with open-ended questions and move to close-ended questions to minimise omissions

Assess the patient's understanding and attitude to their therapy and seek specific information on the following:

- Perception of purpose and effectiveness of medicines
- Dose and dosage schedule used
- Duration of the therapies used
- Recent changes to medicine regimen
- Reason(s) for discontinuation or alteration of medicines
- Storage of medicines
- Any problems with medicines
- Perceived adverse effects of medicines
- Compliance
- Medicine supply requirements and limitations

At the end of the interview, summarise any important information for the patient, describe any changes or expected changes in their medication management, ask the patient if they have any questions concerning their medicines and explain when the next opportunity for discussion with a pharmacist will arise.

3. Organisation of patient data

Data obtained should be accurately documented (in a Pharmacy Patient Profile) and readily available to other pharmacists likely to be involved in the care of the patient (in the Pharmacy ward folder). Documentation in the patient's medical history will enhance accessibility of this data by other health professionals.

4. Assessment of patient’s medication management

Apply the information collected to identify and resolve any medicine-related problems. Compare the medication history with the drug chart and intended therapeutic plan, investigating and resolving any discrepancies with the prescribing doctor and documenting them in the medical history notes.

Initial information to collect:
- Prescription medicine use
- Non-prescription medicine use
- Allergies, ADR and description of reaction
- Weight and height
- Pregnancy status in women of childbearing age
- Regular health centre/clinic/private doctor/retail pharmacy
Assessment of medication management

Assessment of a patient’s medication management is an integral part of the pharmacist’s activities; however a single medication order should never be viewed in isolation. It includes review of the drug chart, review of daily notes on progress and therapeutic intentions and preparing the patient for discharge from a medication perspective. All medicine orders therefore include drug chart administration records, variable dose drugs, intravenous therapy, single dose drugs, anaesthetic and operative records, outpatient prescriptions and discharge prescriptions. A full medication review can be carried out following the collection of an accurate medication history and reviewing their medical history.

Goals

To optimise the patient’s medicines by ensuring the patient receives the most appropriate medicine for their medical condition/disease state, the most appropriate dose and dosage form, that the timing of dosage and the duration of therapy is appropriate and that medicine-related problems are minimised.

Procedures

Review of medication management is most effective when it follows a systematic process:

1. Gather information
   Gather all available information about the patient, their medicines and their medical history using the procedures and sources outlined above in obtaining an accurate medication history.

2. Identify potential problems
   When reviewing medication orders and medication management, consider the following issues:
   - Legalities of the drug order/prescription and in-house protocols
     - All medication charts/order must have patient’s name and NHN
     - Be signed and dated by the prescribing doctor
     - Include the drug name, dose, route, frequency
     - Be legible and unambiguous
     - Follow Fiji Standard Treatment Guidelines and where it doesn’t the reasons should be documented
     - Follow necessary procedures where a non-formulary medicine has been prescribed
     - Follow necessary procedures where a restricted-medicine has been prescribed
   - Allergies and sensitivities
     - Detect medicine orders to which the patient may be sensitive,
     - Recommend an alternative if appropriate and document discussions with prescribing doctor in the medical records
   - Indication
     - Ensure medicine order is appropriate with respect to the patient: patient's medicines, previous medicines, disease state or condition, pregnancy, age, renal and liver function
     - Ensure each indication is treated with appropriate and evidence based medicine
     - Checking antibiotics prescribed are in line with treatment guidelines and is supported by laboratory parameters and sensitivities
- Other components
  - Check for duplications or contraindications
  - Detect and manage actual or potential medicine interactions
  - Ensure administration times are appropriate with respect to food, medicines and procedures
  - Check drug chart to ensure that all doses have been administered
  - Ensure the duration of administration of medicine is safe, particularly for short course medicines
  - Ensure order is cancelled in all sections of medication administration
  - Ensure appropriate therapy monitoring is implemented
  - Review medicines for cost effectiveness
  - Ensure all medicine is available via inpatient pharmacy or prescription

3. Contact prescribing doctor when necessary

Consultation with relevant health professionals may be required regarding suggested and necessary changes as soon as possible. Consultation and interventions should be documented in the patient's history and pharmacy records where appropriate. As a pharmacist it is your role to investigate any unusual or ambiguous orders according to your trained clinical judgement. If in doubt about any drug order, double check with the prescribing doctor.

When contacting a prescribing doctor to query an order always have recommendations or alternatives ready to provide to the doctor. These should be based on reliable references or hospital protocols. If the recommendation is not accepted by doctor and you still feel strongly that it could cause harm or you are not confident with their source of information, check with another member of the medical team (e.g. the registrar or consultant).

Some problems will require action straight away. In this instance page/find the doctor and inform the nurse to withhold the order until you have resolved the issues. Other issues may not require immediate attention, but may become problems later on. In this case, written recommendations in the medical notes and following up with the doctor later may suffice.

4. Annotate medication charts/orders

Following guidelines set out above in Annotation of Drug Charts, endorse or annotate medicine orders comprehensively with information such as generic names, brand names where necessary, allergies and adverse drug reactions, times of administration including with respect to food and dilution/flow rates for intravenous medicines.

5. Document activities in medical history

Document any instructions or recommendations given to other health care professionals in the medical notes.

Medication management is an ongoing process during the patient's entire stay in hospital. On admission this will encompass obtaining an accurate medication history through an interview with the patient/carer, then a lengthier process of assessing the medication management using the medication history, drug chart and medical record. On a daily basis, new information will become available and the process will not require as much time, as all the background information has been collected. The drug chart should be reviewed on an ongoing basis and medicine management reassessed with new information regarding the patient's clinical status. On discharge, medication management will involve reconciliation of medicines prescribed as an inpatient and those medicines prescribed and to be continued on discharge.
Clinical review is the assessment of the patient and other parameters for the purpose of evaluating the response in medicine therapy and detecting and managing potential or actual clinical problems. It may include interpretation of biochemical and other investigative tests, evaluation of patient signs and/or symptoms from discussion with the patient or through review of clinical progress notes.

Clinical review should be performed routinely and is essential in assisting the understanding of a patient’s clinical progress and treatment strategies employed by the healthcare team.

**Goals**

Collation of data gathered from combined clinical activities (accurate medication history, assessment of medication management and clinical review) serve to enable you to identify and prioritise patient-specific clinical problems, formulate a management plan and develop and monitor outcome goals. They also serve to enable appropriate patient-specific decision to prescribe a medicine as well as better preparing you for greater participation and contribution to the multidisciplinary team. Ongoing clinical review is essential to enable you to continually re-evaluate and modify therapeutic goals with changing patient conditions and response to therapy.

**Procedures**

The review and interpretation of patient-specific data should be undertaken routinely. The data collected should be clinically relevant. Data that is not routinely available and retrievable should be documented in the Pharmacy Patient Profile. Information obtained must be interpreted and evaluated with reference to:

- Clinical features and pathophysiology of conditions treated
- Indication for an investigation, and its sensitivity and specificity
- Timeframe of drug-related effects
- Patient's medication history
- Planned outcome(s) of treatment

Examples of clinical monitoring data:

- Routine observations e.g. blood pressure, pulse rate, temperature, BGLs
- Patient weight
- Fluid balance
- Biochemistry results
- Haematology results
- Microbiology results
- Radiological investigations
- Pain scores

Information relating to the patient’s signs, symptoms and progress may be obtained from the medication history, review of the clinical progress notes, and discussion with the healthcare team or the patient, and laboratory investigations.

Pharmacists require a solid understanding of clinical laboratory and bedside monitoring data, including an appreciation of normal and abnormal physiology, relationship of monitoring parameters to medicine induced effects and the ability to interpret and properly apply these results to patient management. This knowledge is also of value in enabling you to intervene and recommend additional investigations that might otherwise be omitted.
Although the decision to prescribe a medicine and its selection is carried out by medical staff, pharmacists can be an invaluable resource to provide guidance and recommendations. This can be in the form of information and expertise as pharmacists are often in a position to influence prescribing.

**Goals**

Input into medicine selection aims to optimise quality of patient care and improve clinical outcomes, promoting the quality use of medicines. Providing guidance in prescribing ensures medicines selected follow guidelines, formulary and availability limitations, alongside promoting the cost-effective use of medicines.

**Procedures**

Contributing to medicine selection is most effective when you are present at the time of decision-making, such as on ward rounds, but can occur at any time during the patient's stay in hospital. Pharmacists must be well prepared and have a current knowledge of the patient's history and of the latest evidence regarding disease state management.

<table>
<thead>
<tr>
<th>Patient specific factors to consider include:</th>
<th>Medicines information to consider includes the latest evidence regarding:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Medical history</td>
<td>• Efficacy of the medicine in the management of the disease or symptoms</td>
</tr>
<tr>
<td>• Current clinical status</td>
<td>• Comparative efficacy and safety of therapeutic alternatives</td>
</tr>
<tr>
<td>• Therapeutic goals of treatment</td>
<td>• Likelihood of adverse effects, comparison with alternative treatments and ability to minimize adverse effects</td>
</tr>
<tr>
<td>• Pathophysiological characteristics, e.g. renal function, age</td>
<td>• Cost of the medicine</td>
</tr>
<tr>
<td>• Past and current medicine use and outcomes of these therapies</td>
<td>• Cost/benefit consideration, costs of therapeutic alternatives</td>
</tr>
<tr>
<td>• Actual or potential medicine-related problems and clinical problems and their management</td>
<td>• Pharmacokinetic and pharmacodynamic properties of drug</td>
</tr>
<tr>
<td>• History of allergy or adverse reactions</td>
<td>• Route and method of administration of drug</td>
</tr>
<tr>
<td>• Patient acceptability, likelihood of achieving good adherence and cooperation, convenience for the patient</td>
<td>• Dosage form, comparative efficacy and adverse effects of different dose forms, site of action required, dose required, kinetics of different dose forms</td>
</tr>
<tr>
<td>• Special considerations, e.g. dysphagia</td>
<td>• Availability</td>
</tr>
<tr>
<td>• Socioeconomic and demographic considerations</td>
<td>• Methods of monitoring for therapeutic and adverse effects</td>
</tr>
<tr>
<td></td>
<td>• Interactions with concurrent medicine therapy and with recent medicine therapy, diet, laboratory tests, environmental factors</td>
</tr>
</tbody>
</table>

When providing guidance in prescribing, both patient and medicine specific factors must be considered. Local guidelines should be considered when making recommendations and pharmacists must keep abreast of new developments in therapeutics.
Provision of information and education to patient/carers encourage safe and appropriate use of medicines. It may include provision of written information or concordance aids and may occur at any time during admission. Pharmacists have a responsibility to provide sufficient information to enable patients to achieve informed and judicious use of their medicines.

**Goals**

To provide information and education to encourage safe and appropriate use of medicines, thereby enhancing therapeutic outcomes

**Procedures**

Information and education should be provided to all patients. If constraints preclude face-to-face education of all patients, clinical and professional judgement should be used to establish which patients will receive the greatest benefit.

It may be necessary to schedule medication education at different times, such as; on admission, during the medication history interview, throughout an inpatient stay and immediately prior to discharge or at discharge.

Patient understanding of medicines and retention of information is optimised if education occurs on an ongoing basis during their admission and at the time of discharge. You should plan for medication education by reviewing other information sources and ensure that education occurs with the individual responsibly for administration and management of medicines. It is important that the key medicine-related issues are communicated.

Use effective communication methods to counsel the patient/carer on their medicine regimen, regularly assessing the patient's ability to understand the information imparted. Information which should be discussed during an education session includes:

- Generic name of drugs, physical description and strength
- Intended purpose and expected action of treatment
- Information on how and when to take the medicine
- Any special directions or precautions when taking the drug
- Common adverse effects that may be encountered and ways in which to minimise them, as well as the action that is required if they occur
- Details of medicines stopped and its relationship to new medicine
- Details of new medicines or medicines with changed dose or dose forms
- Appropriate storage requirements
- Techniques for self-monitoring of therapy
- Relevant drug-drug, drug-food interactions
- Number of days treatment that is supplied and duration of treatment that will be required
- Mechanisms for obtaining further supplies of medicines
- Action to be taken in the event of a missed dose

Medicine information should be offered to these patients in particular:

- When a medicine is new
- Referred patients
- When a significant change has occurred in the patient's medicine or dosing
- When it is to treat a chronic disease state
- Drugs with a narrow therapeutic index
- Drugs with a high incidence of serious adverse reactions
- Drugs with special administration requirements
- Patients on multiple medications or on complex regimens
- Elderly
- Paediatric.
Discharge Medication Information

Providing patients with an accurate discharge medication list helps ensure that patients are informed about medication changes made during their hospital admission and are aware of how to take their medications when they are discharged home.

Ideally the medication list should be accompanied by discharge medication counselling from a pharmacist. This should involve:

- Asking the patient to describe how they are going to take the medication
- Using the medicine list as a guide as the patient to show which meds will be taken with breakfast etc
- Asking the patient to demonstrate use of any devices (e.g. inhaler) or repeat back any complicated directions (e.g. GTN sublingual tablets)

If a medication list and/or discharge medication counselling are provided to a patient, this information should be documented in the patient’s folder.

**Discharge Medication List**

Where possible, pharmacists should provide discharge medication counselling and a medication list to patients in the approved format. Discharge counselling and the provision of a discharge medication list encourages the safe and appropriate use of medicines, facilitates compliance and thereby enhances therapeutic outcomes.

- Complete patient details in full (name, NHN, allergies (and reactions), discharge date)
- Complete the details of all regular medications
  - Name, form an strength, indicating brand where necessary, e.g. Cartia or Marevan
  - Indication in simple layman terms in the *Used For* section
  - Directions on how the medicine is to be taken
  - Either numerical figures or draw symbols to depict when the medications are to be taken
  - Note any changes compared to when they were admitted, i.e. new, ↑/↓ in dose

<table>
<thead>
<tr>
<th>MEDICINE NAME &amp; STRENGTH</th>
<th>USED FOR</th>
<th>DIRECTIONS</th>
<th>MORNING</th>
<th>MIDDAY</th>
<th>EVENING</th>
<th>NIGHT</th>
<th>CHANGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>aspirin 100mg tabs</td>
<td>Prevent heart attacks and stroke</td>
<td>Take HALF (1/2) a tablet every morning with food</td>
<td>1/2</td>
<td></td>
<td></td>
<td></td>
<td>New</td>
</tr>
<tr>
<td>enalapril 5mg tabs</td>
<td>Treat high blood pressure / protect kidney function</td>
<td>Take TWO (2) tablets every morning</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>New</td>
</tr>
<tr>
<td>metformin 500mg tabs</td>
<td>Treat diabetes</td>
<td>Take ONE (1) tablet TWICE a day with food</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>Decreased dose</td>
</tr>
</tbody>
</table>
Complete the details of all as required medications
- Name, form an strength, indicating brand where necessary
- Indication in simple layman terms in the Used For section
- Directions on how the medicine is to be taken
- Note any changes compared to when they were admitted, i.e. new, ↑/↓ in dose

<table>
<thead>
<tr>
<th>AS REQUIRED MEDICINES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEDICINE NAME &amp; STRENGTH</strong></td>
</tr>
<tr>
<td>Salbutamol (ventolin) 200mcg inhaler</td>
</tr>
</tbody>
</table>

Complete the details of all stopped medications
- Name, form an strength, indicating brand where necessary
- Briefly describe the reason why the medicine was ceased

<table>
<thead>
<tr>
<th>STOPPED MEDICINES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEDICINE NAME &amp; STRENGTH</strong></td>
</tr>
<tr>
<td>Glibenclamide Smg Tablets</td>
</tr>
</tbody>
</table>

Complete the details of the pharmacist creating the discharge medication list as well as providing the medication counselling.
Paediatric practice is a specialty area within clinical pharmacy practice. It requires expertise to be developed in paediatric pharmacotherapy and practice skills and adapted into paediatric clinical pharmacy services.

Principles and practice

The principles of paediatric clinical pharmacy practice revolve around the factors which place paediatric patients at increased risk of adverse drug reactions:

- Paediatric patients have different and changing pharmacokinetic parameters between patients at various ages and stages of maturational development
- Need for calculation of individualised doses based on the patient's age, weight, body surface area and clinical condition
- Lack of available dosage forms and concentrations appropriate for administration to neonates, infants and children. Frequently, dosage formulations are extemporaneously compounded and lack stability, compatibility or bioavailability data
- Need for precise dose measurement and appropriate drug delivery systems
- Lack of published information regarding dosing, pharmacokinetics, safety, efficacy and clinical use of drugs in paediatric population

Clinical activities which are paediatric population-specific\(^5\)\(^6\) include:

- Confirming patient’s weight is correct for weight-based dosages, ensuring that weight-based doses do not exceed the recommended adult dose and are within accepted paediatric weight-based dose ranges. Ensure calculations are correct and consider writing the weight on each order written
- Include dose and volume when appropriate, specify exact dosage strength to be used
- Intravenous fluid orders must be written clearly, ensuring additives are quantified per litre and rates are noted per hour
- Identify patient drug allergies and inquire about any changes at each encounter, noting any old and new allergies in the medical record
- All instructions should be written out in full except for widely accepted abbreviations
- Avoid vague instructions
- Avoid use of a terminal zero to the right of the decimal point (e.g. use 5 rather than 5.0) to minimise 10-fold dosing errors
- Use a zero to the left of a dose less than 1 (e.g. use 0.1 rather than .1) to avoid 10-fold dosing errors
- Avoid abbreviations of drug names, using generic medication names rather than trade names where possible
- Spell out dosage units rather than using abbreviations
- Ensure that prescriptions and signatures are legible and include prescriber’s name printed next to the signature, along with a contact number

<table>
<thead>
<tr>
<th>Definition of age groups:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonate</td>
</tr>
<tr>
<td>Preterm</td>
</tr>
<tr>
<td>Infants</td>
</tr>
<tr>
<td>Children</td>
</tr>
<tr>
<td>Adults</td>
</tr>
</tbody>
</table>
In addition to these, pharmacists should undertake the following activities:\(^5\,^6\):

- Remain available to prescribers and nurses to participate in drug therapy development and monitoring
- Reconfirm confusing medication orders
- Check drug compatibility with existing medication list and check for current allergy history
- Provide education to patients or caregivers about their medications. During discharge counseling, patients or caregivers should be asked to demonstrate the measurement of a dose if medications are dispensed in liquid form, and demonstrate any manipulation of a commercially available dosage form and the administration of a dose if special techniques are required (e.g. nebuliser or inhaler).
- Provide or recommend appropriate measuring devices, discouraging the use of household teaspoons and tablespoons because of their variability and resulting inaccuracies.
- Encourage blame-free error reporting
A formalised peer review and mentoring program should be implemented for all clinical pharmacists where departmental structures and human resource allocations allow. Otherwise self-assessments can be undertaken for the same purpose and clinical pharmacists between hospitals are encouraged to share their experiences and challenges with each other via email or telephone calls.

Peer and self-assessment of clinical pharmacy services can be best performed through a structured evaluation. The Society of Hospital Pharmacists Australia clinical competency assessment tool (shpaclinCAT)\(^7\) defines appropriate competencies and performance criteria specific to clinical pharmacy services and provides a platform for identifying profession development requirements. Implementation in the workplace will contribute to practitioner development and quality improvement in clinical pharmacy services, leading to better patient outcomes.

The shpaclinCAT tool is set out in the following competencies with supporting performance criteria:

**Part One: Delivery of Patient Care**

**Competency Unit 1.1: Medication History**
- 1.1.1 Relevant patient background
- 1.1.2 Introduction to consultation
- 1.1.3 Questioning technique
- 1.1.4 Patient consent
- 1.1.5 Allergy and ADR review
- 1.1.6 Accurate medication details
- 1.1.7 Patient's understanding of illness
- 1.1.8 Patient's experience of medicine use
- 1.1.9 Documentation of medication history
- 1.1.10 Confirmation of medication history
- 1.1.11 Adherence assessment
- 1.1.12 Medication reconciliation

**Competency Unit 1.2: Assessment of Current Medication Management and Clinical Review**
- 1.2.1 Drug-drug interactions
- 1.2.2 Drug-patient interactions
- 1.2.3 Drug-disease interactions
- 1.2.4 Drug-nutrient interactions
- 1.2.5 Appropriate choice of medicine
- 1.2.6 Medicine order/prescription clarity
- 1.2.7 Medicine order/prescription legality
- 1.2.8 Dose review
- 1.2.9 Route and timing of dose
- 1.2.10 Selection of formulation, concentration or rate
- 1.2.11 Review and interpretation of patient-specific data
- 1.2.12 Therapeutic drug concentration monitoring

**Competency Unit 1.3: Identification, Prioritisation and Resolution of Medicine-Related Problems**
- 1.3.1 Identification of medicine-related problems
- 1.3.2 Prioritisation of medicine-related problems
- 1.3.3 Resolution of medicine-related problems
- 1.3.4 Documentation of medicine-related problems
1.3.5 Assessment of outcomes of contributions
1.3.6 Documentation of clinical pharmacy activities

Competency Unit 1.4: Provision of Medicine
1.4.1 Availability of medicine
1.4.2 Supply of medicine
1.4.3 Review of administration of prescribed medicines

Competency Unit 1.5: Discharge/Transfer Facilitation
1.5.1 Reconciliation of medicine on discharge/transfer
1.5.2 Provision of information for ongoing care
1.5.3 Continuity of supply
1.5.4 Liaison with community healthcare providers

Competency Unit 1.6: Patient Education and Liaison
1.6.1 Need for information
1.6.2 Cultural and social background
1.6.3 Provision of information to the patient and or carer
1.6.4 Provision of information regarding non-pharmacological therapies

Part Two: Personal and Professional Qualities

Competency Unit 2.1: Problem Solving
2.1.1 Recognition of limits of personal knowledge
2.1.2 Access information
2.1.3 Abstract information
2.1.4 Evaluation and application of information
2.1.5 Appraisal of therapeutic options
2.1.6 Formulation of a clear decision

Competency Unit 2.2: Therapeutic Understanding
2.2.1 Justification of therapeutic choice

Competency Unit 2.3: Provision of Therapeutic Advice and Information to Healthcare Professionals
2.3.1 Provision of accurate information
2.3.2 Provision of relevant and usable information
2.3.3 Provision of timely information

Competency Unit 2.4: Communication
2.4.1 Patient and carer
2.4.2 Pharmacy staff
2.4.3 Prescribing staff
2.4.4 Nursing staff
2.4.5 Other healthcare professionals

Competency Unit 2.5: Personal effectiveness
2.5.1 Prioritisation
2.5.2 Initiative
2.5.3 Efficiency
2.5.4 Logic
2.5.5 Assertiveness
2.5.6 Negotiation
2.5.7 Confidence


