Administer and monitor medications in the work environment

HLTEN507A
Version 1.0
Community Services, Health, Tourism and Recreation Curriculum Centre

Learner Resource Package
Statement of Attainment
(Medication Administration)
17591
Administer and monitor medications in the work environment
HLTEN507A
Version 1.0

Learner Resource
Product Code: HLTEN507A/LLP/1
Acknowledgments

TAFE NSW – Community Services, Health, Tourism and Recreation Curriculum Centre would like to acknowledge the support and assistance of the following people in the production of this resource package

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ISBN X XXXX XXXX X
RESOURCES EVALUATION FORM

Please come back to this page when you have finished working on this resource and complete this form. Your feedback can assist us to continually improve this resource.

<table>
<thead>
<tr>
<th><strong>Course Name</strong></th>
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<tr>
<th><strong>Campus</strong></th>
<th><strong>Date of finish of unit</strong></th>
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Was your learning totally external, with occasional phone contact with a designated teacher?  Yes  No

Was your learning externally supported by a study group of other learners studying the same unit?  Yes  No

How many workshops were given to support your learning? _____
(Please give a number – none, 1, 2, 3)

Did your learning involve class support material at the TAFE College?  Yes  No

Did you find this resource easy to use?  Yes  No

Any comments:

__________________________________________________________________________________
__________________________________________________________________________________

Was the content useful/clear/relevant?  Yes  No

Any comments:

__________________________________________________________________________________
__________________________________________________________________________________

Please comment on any ways this resource could be improved for future learners.

__________________________________________________________________________________
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What other resources did you find that helped you with your studies?

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Thank you for taking the time to give us your valuable feedback. Please give this to your teacher who will send it to:

    TAFE NSW – Community Services, Health, Tourism and Recreation Curriculum Centre
    Locked Bag No. 6
    MEADOWBANK NSW 2114
    Fax: 02 9942 3257
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INTRODUCTION

This learner resource package HLTEN507A Administer and monitor medications in the work environment has been designed to be used for flexible delivery, but may be used as a classroom resource.

An introductory session will be programmed where it will be explained to you as to how to complete this package. The introductory session will enable the teacher to discuss their role and to explain and explore your role and responsibility as an independent learner.

You should review the program and identify when each topic area for the unit is to be delivered in order to complete the work within the timeframe set out in the timetable. The work designated for self directed learning is important as it provides underpinning knowledge of topics and links to other units in the course. It is your responsibility to ensure that you complete the work in the appropriate time.

Teachers will reinforce the elements and performance criteria as listed below:

- minimise potential risk to safe administration of medications
- prepare for medication administration within scope of enrolled nurse
- administer medications within legal parameters
- monitor and evaluate client response to administered medication
- monitor peripheral intravenous therapy
- develop strategies for pain management

You are reminded that the:

- unit will require 17 hours of self directed learning
- the resource package activities will be reviewed in class or answer sheets, where applicable, will be made available for review.
LEARNER INFORMATION

STUDY SKILLS AND LEARNING

Definition of self directed:
The learner accepts responsibility for learning and makes decisions about goals, effort, time, place and pace. The learner may choose to study by themselves or with someone else. It is expected that the activities and responses in the learner resource will be completed by the learner within the designated time frame.

Self-directed learning:
This is the part of the unit the learner will complete. Your teacher will indicate whether the unit is to be completed entirely as self directed or if components of the unit will be delivered in the classroom.

Study Skills

Did you know?

- Effective study and learning are largely dependant on your desire to learn.
- Rates of learning differ between individuals as well as between tasks or areas.
- Frequent, short periods of study are more effective than long study sessions.
- Concentration and efficiency tend to decrease over a period of time, you should take a break after about an hour.
- The learning of one skill may either help or interfere with the learning of another – make use of related knowledge, compare and unify your knowledge.
- Memory, or retention of knowledge should be tested by frequent recall of important points – when studying, use frequent tests of recall then check your notes and fill in the gaps.

Getting organised:

- set yourself a timetable and allocate time to each subject according to your needs
- prepare your desk so that you are comfortable, lighting is good and there are no distractions
- have study periods for a subject as close as possible to lectures and tutorials in that subject
- allow time at the end of the day for review of the day’s learning in each subject
- allocate your study of difficult subjects to times when you are most alert.

Networking with other learners

To facilitate networking, you will meet other learners during the course. This will enable you to discuss the course generally, share assignment ideas or just have a chat about your learning.

Reading effectively

While you are studying you will probably need to read quite a lot of material. As part of your planning for study it is worth thinking about how to read effectively. The following information outlines some different approaches to reading.

Skimming
This is a useful activity for gaining an overview of an article or book chapter or locating a specific fact. It can help you decide whether the article is what you want or contains information you are familiar with.
Start by scanning the abstract or introduction if there is one, or the first and last paragraphs, looking for relevant words. Reading the main headings, tables, diagrams, and summaries is also very helpful.

**Key reading**
This is used to gain a clearer understanding of the main ideas or arguments in a passage, pick up significant points and for revision. Read the first and last sentences of each paragraph looking for the topic sentence that encapsulates the idea being discussed. This will give you an understanding of the development of the author’s views and ideas.

**Critical/active reading**
You need to evaluate what you are reading. If you just read, you will only retain a small percentage of the information. Therefore as you read ask questions, highlight or underline key words and make brief notes or summaries. This helps to promote and reinforce learning. You can even make an audio tape as you read, summarising the main points and discussing the ideas out loud, and then replay the tape later for revision.

You are encouraged to challenge the ideas presented by the authors. Develop an ongoing ‘internal discussion’ with yourself, between what you read and your own views on the topic. Bring in the opinions of others for example, what have other authors said in the set readings? Think about how you or others agree or disagree with the author and in what respects.

This is called active reading and is particularly valuable for learners learning at a distance who don’t have immediate access to other learners for discussion. The process allows you to focus on the material, clarify what you are learning and why, develop your ideas, and reflect on the main issues. This is a great help when it comes to writing your assignments, because you have already gained a detailed understanding of the topic and the issues impinging on it. Also, if the course asks you to keep a journal any of this ‘dialogue’ can be reproduced there or discussed with the course teacher.

**To be an active reader:**
- know the purpose of your reading and what you hope to learn
- ask yourself questions and then read to find the answer
- use what you know to anticipate and predict the arguments in the material that you are reading
- review your understanding and whether you have found answers to your questions
- evaluate arguments of the author(s)
- summarise your findings and discuss with others in order to reinforce what you have read.

**To read more quickly:**
- increase eye span from single words to phrases, to lines, to paragraphs, to pages to increase reading speed.
- practise reading and pace yourself to increase your speed.
- increasing speed of reading helps concentration and comprehension.

All this will have you reading thinking, discussing the material and learning. Next you need to consider ways of applying what you are learning. Think about how you could use this new information and learning at work or elsewhere, or how to apply ideas in a clinical situation.

**REMEMBER** to keep detailed notes on all bibliographic details author(s), year, title of journal article, journal title, volume number, issue number and page numbers, or book title, city of publication and publisher name of all your reading material for referencing in your assignments.
Learning by flexible delivery

This section will provide you with some insights into some of the advantages and challenges of flexible learning. Course materials replace some lectures, tutorials and other classroom strategies.

Within the overall timeframe of the course you can study at your own pace, spending more time on some topics and less time on others. You may want to spend more time on topics in which you are particularly interested, or find a little more difficult to understand. Other topics may be of little interest to you, or may be familiar to you from previous study or experience. However all topic areas are very important for achievement of this unit.

Planning to study, and keeping to the plan, is one of the most common sources of difficulty for learners studying. You must give considerable thought to how and where you are going to study. Do you have adequate facilities at home or at work? Can you obtain quality study time – free from interruptions, noise and other distractions – at home or at work? How are you going to motivate yourself to keep to your study timetable, especially at times when you are very busy, or when you are working on a topic which does not interest you greatly?

Planning

To begin self-directed learning review the course materials when you receive them and clearly identify timelines, submission dates and study plan. It is also useful if you can set up a defined study area where you can leave your materials set up so you don’t have to reassemble them every time you have study time.

While considerable emphasis is placed on the notion of collaboration between you the learner and your teacher, you are responsible for following up any aspect of the course content with which you are having difficulty.

You will have access to the TAFE NSW college library; however, think about the other libraries available to you including local community and hospital libraries, the NSW Nurses’ Association library and particular book collections at organisations and government departments. If you live in the vicinity of a university you may also be able to use their facilities. Usually a telephone call will provide you with borrowing details and accessibility. Librarians are helpful in pointing learners in the right direction to find the resources they need.

Talking to others

If the subject calls for expert knowledge, think about whom in your workplace or in other departments you can call on for help. Arrange a time to visit the department or talk with the person involved.

Talking to someone who has a working knowledge of the topic is invaluable. They can often explain the subject in a different way by using examples, which help to develop understanding. They may even demonstrate a particular technique or skill that you have read about. Talk to any of your colleagues and also clients about the topic and issues you are dealing with. Find out other people’s perspective. You might like to leave articles in the tearoom and, if people read them, ask them for their opinions.

If you have difficulties

Please talk to your teachers regularly. As you work through this material you may experience some difficulties or notice errors in the material, or as questions arise, write them down and plan ahead to e-mail, phone or visit your teachers as outlined on your program of study. They can help you with most problems you may encounter and let you know if you are progressing.
In order to be successful in this unit, you must show that you:

- are self disciplined and motivated
- are a good time manager
- can organise your study schedule to meet the deadlines
- are responsible for your learning.

Remember, if you are having any difficulty, ask your teacher for help.

Unit overview

This unit of competency describes the skills and knowledge required of enrolled nurses to administer and monitor medications and evaluate their effectiveness for clients within a health environment.

About this unit

On completion of this unit of competency the learner should have developed the knowledge and skills required of enrolled nurses to administer and monitor medications and evaluate their effectiveness for clients within a health environment.

The learner will:

- minimise potential risk to safe administration of medications
- prepare for medication administration within scope of enrolled nurse
- administer medications within legal parameters
- monitor and evaluate client response to administered medication
- monitor peripheral intravenous therapy
- develop strategies for pain management

Assessment Events

The assessment events for this unit are:

- calculations test
- Category C exam
- competency skills assessments - checking of S8 medication with a RN, administration of oral/enteral, IMI/SCI and IV medication in a simulated environment

These events must be explained to the learner on the day the unit is begun.

Relationship to competency standards

On successful completion of this unit, learners will have achieved the following Unit of Competency from the nationally endorsed Health Training Package (HLT07) HLTEN507A Administer and monitor medications in the work environment.

Prerequisites and co-requisites

<table>
<thead>
<tr>
<th>Prerequisite</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLTAP501A</td>
<td>Analyse health information</td>
</tr>
</tbody>
</table>
Significant knowledge has been gained by the learner throughout the course in other units, which are expanded upon in this unit.

Some units in a course need to be done before (pre-requisites) or at the same time (co-requisites) as others. They are the building blocks of the learner's knowledge.

Learners may need to complete pre-requisite units from within this qualification before completing other units as outlined by the Health Training Package (HLT07)

**Time allocation**

A minimum of 62 hours has been allocated to the completion of this unit. This includes hours for assessment and learning on the job. You will need to allow further study time in addition to this. Some learners take less time because they have prior learning recognised or are doing similar things in their work. If you find yourself taking longer than the time recommended for each topic, ask your teacher for help.

**Relationship to Professional Standards**

This unit relates to the following Australian Nursing and Midwifery Council National Competency Standards for the Enrolled Nurse (2002):

The elements and performance criteria as detailed in the unit of competency HLTEN507A *Administer and monitor medications in the work environment* set the parameters for the learner in combination with the essential skills, essential knowledge and the range statements found in the topic tables.

**ELEMENT 1**

Minimise potential risk to safe administration of medications

**Performance Criteria**

1.1 Check client medication chart in relation to timing and route of medication to be administered
1.2 Raise issues related to drug and poison administration with appropriate personnel
1.3 Check for and identify common contra-indications and adverse reactions of prescribed medications and refer to registered nurse
1.4 Confirm client identity and check for any known allergies
1.5 Refer to drugs and poisons schedules and classifications as determined by law
1.6 Ensure infection control methods are applied correctly
1.7 Identify pharmacology and substance incompatibilities in relation to specific situations involving medication administration
1.8 Check expiry dates of medication prior to administration
ELEMENT 2
Prepare for medication administration within scope of enrolled nurse

Performance Criteria
2.1 Explain the process of medication administration to the client and ensure their readiness
2.2 Position the client appropriately prior to administration of medication
2.3 Correctly identify administration route for each medication to be administered, using appropriate terminology
2.4 Consider the effect of commonly used medications on the body prior to medication administration
2.5 Accurately calculate dosages for administration of drugs
2.6 Prepare medications in accordance with legislative requirements and organisation guidelines
2.7 Apply medication administration techniques and precautions specific to each client situation and as per medication orders
2.8 Ensure medication is stored and disposed of in accordance with medical instructions and organisation policy and procedures

ELEMENT 3
Administer medications within legal parameters

Performance Criteria
3.1 Administer medications within scope of own role in line with the jurisdictional legislative requirements and organisation policy
3.2 Store medications in a safe manner according to legislative requirements and organisation policy
3.3 Administer PRN medications within legislative requirements and organisation policy
3.4 Apply quality management and risk assessment practices relating to administration of medication
3.5 Provide client information and education relating to medication requirements

ELEMENT 4
Monitor and evaluate client response to administered medication

Performance Criteria
4.1 Record administration of medications in accordance with relevant policy and procedures
4.2 Contribute to information provided to clients and carers on medication administration (including possible side effects) in consultation/collaboration with the registered nurse
4.3 Evaluate client understanding of information provided
4.4 Recognise acute and delayed adverse reactions to medications and act upon within role responsibility
4.5 Implement emergency actions to address acute and delayed adverse reactions within role responsibility
4.6 Record and report response to emergency strategies where appropriate
4.7 Assess and manage a client experiencing pain using appropriate medication and non-medication therapies
4.8 Record and report effectiveness of pain relieving medication
ELEMENT 5
Monitor peripheral intravenous therapy

Performance Criteria
5.1 Identify the purpose and function of intravenous therapy being administered to a client
5.2 Check for common fluid and electrolyte imbalances and record and report
5.3 Calculate intravenous therapy rates
5.4 Recognise and report the risks and complications associated with intravenous therapy
5.5 Document observations and monitor peripheral intravenous therapy
5.6 Provide nursing care for client with fluid and/or electrolyte imbalance
5.7 Monitor action of drugs commonly used in fluid and/or electrolyte imbalance through client responses and record and report
5.8 Remove intravenous cannula according to organisation policy and procedure

ELEMENT 6
Develop strategies for pain management

Performance Criteria
6.1 Observe and question client to identify signs of pain and/or discomfort
6.2 Clarify the location and nature of pain, taking into account factors which may influence a client’s perception of pain
6.3 Use the pain assessment scale to ensure consistency of interpretation
6.4 Undertake comprehensive observations as required to assess pain experienced by client
6.5 Identify and apply a range of medication and complementary strategies which may assist in alleviation of pain and discomfort in consultation/collaboration with registered nurse
6.6 Monitor and evaluate the effectiveness of using these strategies in consultation/collaboration with registered nurse
6.7 Record observations and evaluation of pain management strategies in consultation/collaboration with registered nurse
The following topic table lists the topics, suggested delivery hours and mapping to elements/performance criteria/essential skills and knowledge/range statement

<table>
<thead>
<tr>
<th>Topics</th>
<th>Suggested hours</th>
<th>Mapping</th>
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<tbody>
<tr>
<td>1. Legalities of medication administration</td>
<td>1-CD</td>
<td>1.1,1.4,1.5,1.8</td>
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<tr>
<td>• examples:</td>
<td></td>
<td>3.1-3.5</td>
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<tr>
<td>- drug schedules</td>
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<td>- client ID check</td>
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<tr>
<td>- documentation</td>
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<tr>
<td>- checking S8/S4 drugs</td>
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<tr>
<td>2. Medical terminology</td>
<td>4-FD</td>
<td>2.3</td>
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<td>• abbreviations/terminology</td>
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<td>• pharmacodynamics</td>
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<td>• pharmacokinetics</td>
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<td>• Pharmacotherapeutics</td>
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<tr>
<td>• interpreting use of abbreviations</td>
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<tr>
<td>3. Basic maths/drug calculations</td>
<td>8-CD</td>
<td>2.5</td>
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<tr>
<td>• mathematical concepts/application</td>
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<td>• medication formulae</td>
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<td>• apply medication formulae – (include paediatric, frail elderly, intravenous therapy)</td>
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<td>4. Factors affecting pharmaco-therapeutics/ routes of administration</td>
<td>3-CD</td>
<td>1.3,1.7</td>
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<td>• rate of absorption</td>
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<td>• distribution</td>
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<td>• metabolism</td>
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<td>• elimination</td>
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<td>• interaction effects on drug actions</td>
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<td>• various routes for administration of medications</td>
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<td>5. Basic equipment used in the delivery of medications</td>
<td>1-CD</td>
<td>2.8</td>
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<tr>
<td>• types of equipment used/how/why</td>
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<td>• methods of storage</td>
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<tr>
<td>6. Potential for risk</td>
<td>2-CD</td>
<td>1.1,1.2,1.3,1.6,1.7</td>
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<td>• potential risk/risk management</td>
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<td>• infection control</td>
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<td>• substance incompatibilities</td>
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<td>• care of sharps</td>
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<tr>
<td>Topics</td>
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<tr>
<td><strong>7. Major medication groups related to all body systems</strong></td>
<td>2-CD 13-FD</td>
<td>1.3, 4.1–4.8</td>
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<td>• examples:</td>
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<td>- antihypertensives</td>
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<td>- antacids</td>
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<td>- antiviral</td>
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<td>- bronchodilators</td>
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<td>- hormonal</td>
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<tr>
<td>- otic, ophthalmic and nasal</td>
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<tr>
<td><strong>8. Skills related to medication administration via oral, topical, IMI/SCI and IVI routes</strong></td>
<td>20-CD</td>
<td>1.3 –1.8</td>
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<tr>
<td>• checking S8/S4 drugs with RN</td>
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<td>2.1– 2.8</td>
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<tr>
<td>• oral</td>
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<td>4.1</td>
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<tr>
<td>• intranasal (including nebulised medications)</td>
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<td>• naso-gastric/PEG</td>
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<td>• topical(including transdermal)</td>
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<td>• aural</td>
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<td>• intramuscular</td>
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<td>• intravenous</td>
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<tr>
<td><strong>9. Skills related to IV therapy</strong></td>
<td>4-CD</td>
<td>2.1–2.4</td>
</tr>
<tr>
<td>• IV therapy</td>
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<td>5.1–5.8</td>
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<tr>
<td>• fluid infusion devices including electrolyte and fluid volume imbalance</td>
<td></td>
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<tr>
<td>• charting of IV fluids on fluid charts</td>
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<tr>
<td><strong>10. Complementary therapies</strong></td>
<td>2</td>
<td>6.1–6.7</td>
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<tr>
<td>The content of this topic, when delivered as part of an Enrolled Nurse qualification, will be covered in Unit HLTEN405A</td>
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<tr>
<td><strong>11. Pain management</strong></td>
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<td>6.1–6.7</td>
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<tr>
<td>The content of this topic, when delivered as part of an Enrolled Nurse qualification, will be covered in Unit HLTEN405A</td>
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</table>
TOPIC 1  Legalities of medication administration

Administering medications is just one of the many complex tasks a nurse needs to accomplish during the course of a shift. It requires knowledge of the actions, uses, therapeutic and adverse reactions that occur with drug use. It is an integral part of many client’s treatment and offers the nurse an opportunity to increase knowledge and skill and to observe the effects of various medications on disease processes as well as to educate clients in the effective use of their medications.

To ensure the safety of clients, the nurse needs to be aware of the legal aspects of drug administration. This includes the laws governing possession, use and dispensing of drugs. The role of the Australian government in regulation of the pharmaceutical industry is to protect the health of the public by ensuring that medications are safe and effective.

Use your medication textbook or Potter and Perry’s fundamentals of Nursing to complete the following activities and answer the subsequent questions.

**ACTIVITY 1**

The following questions relate to medication legislation and standards.

1. What does the NSW Poisons and Therapeutic Goods Act 1966 regulate?

________________________________________________________________________
________________________________________________________________________

2. What is the purpose of the NSW Poisons and Therapeutic Goods Regulations 2002?

________________________________________________________________________
________________________________________________________________________

3. What is the role of the poisons list?

________________________________________________________________________
________________________________________________________________________

4. Identify the schedules of drugs relevant to nursing practice.

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________________________________________________________________________
5. List examples of drugs in each of the schedules that may be administered by an enrolled nurse.

_________________________________________________________________________

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6. Differentiate between the role of the endorsed enrolled nurse and registered nurse in administering medications.

Registered nurse competencies:

_________________________________________________________________________

_________________________________________________________________________

Enrolled nurse competencies:

_________________________________________________________________________

Medications that have been ordered for a specific client must be administered to that client only. The nurse has an ethical responsibility to ensure that this occurs. One means of making certain of this is to check a client’s identification.

**ACTIVITY 2**

List what you would check when performing a client identification check

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________
Documentation
Accurate and timely documentation is an important part of complying with the legalities of medication administration. It acts as a safeguard when administering medications and could prevent a medication from being administered more than once. An evaluation of the effect of a medication on a client may become a useful tool when prescribing medication. The medication chart should be signed as soon as the medication has been administered, to avoid duplication and to identify who has administered the medication.

ACTIVITY 3

1. Why should a medication always be charted after it has been given?

________________________________________________________________________
________________________________________________________________________

2. What procedure should be followed when a client refuses a medication ordered for them?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. List the components of a medication order that should be filled out to make it complete.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. When should a medication incident be recorded and sent to the risk management coordinator?

________________________________________________________________________
________________________________________________________________________

5. Define a medication incident.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
6. What should be involved in a medication incident protocol?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

7. Define a near miss.
________________________________________________________________________
________________________________________________________________________

8. How would you define a sentinel event?
________________________________________________________________________
________________________________________________________________________

Part of medication administration is checking that the medication that is ordered is the medication that is administered. When schedule 4 and schedule 8 drugs are administered, more stringent checking is required as these may be drugs of restriction and addiction (refer to the poisons list).

**ACTIVITY 4**

1. What should you remember when checking an S4D or S8 medication with a registered nurse?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. List the five (5) rights of medication administration
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
TOPIC 2  Medical terminology

The role of a nurse in the administration of medications is a complex one. An understanding of client needs, medication action and interactions is important to holistic nursing. A basic knowledge of medical terminology relating to medications is integral to correct delivery of medications.

Use abbreviations with care as even frequently used abbreviations may have additional meanings that you may be unaware of. When you do use abbreviations, use them in context to help determine the meaning that is intended.

Example:
The client has been taking note of his intake to ensure the FBC is correct.
FBC – full blood count OR
FBC – fluid balance chart
When written in context it is easy to tell that FBC in the sentence above, means fluid balance chart. Only use abbreviations that are accepted by the health care facility.

ACTIVITY 1

1. Complete the table below by matching the abbreviations to their meanings

<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>Meanings</th>
<th>Write the number next to the correct explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ac</td>
<td>elixir</td>
<td></td>
</tr>
<tr>
<td>2 agit</td>
<td>litre</td>
<td></td>
</tr>
<tr>
<td>3 bid / bd</td>
<td>drops (guttae)</td>
<td></td>
</tr>
<tr>
<td>4 cap</td>
<td>milliequivalent</td>
<td></td>
</tr>
<tr>
<td>5 elix</td>
<td>milligram</td>
<td></td>
</tr>
<tr>
<td>6 g/gm</td>
<td>ointment</td>
<td></td>
</tr>
<tr>
<td>7 gtt</td>
<td>capsule</td>
<td></td>
</tr>
<tr>
<td>8 l/L</td>
<td>topically</td>
<td></td>
</tr>
<tr>
<td>9 mEq</td>
<td>twice daily</td>
<td></td>
</tr>
<tr>
<td>10 NPO/NBM</td>
<td>afternoon</td>
<td></td>
</tr>
<tr>
<td>11 oint/ung</td>
<td>gram</td>
<td></td>
</tr>
<tr>
<td>12 mg</td>
<td>immediately</td>
<td></td>
</tr>
<tr>
<td>13 pc</td>
<td>four hourly</td>
<td></td>
</tr>
<tr>
<td>14 nocte</td>
<td>tincture</td>
<td></td>
</tr>
<tr>
<td>15 pm</td>
<td>nothing by mouth</td>
<td></td>
</tr>
<tr>
<td>16 qid</td>
<td>tablet</td>
<td></td>
</tr>
<tr>
<td>17 stat</td>
<td>three times a day</td>
<td></td>
</tr>
<tr>
<td>18 supp</td>
<td>four times a day</td>
<td></td>
</tr>
<tr>
<td>19 tab</td>
<td>night</td>
<td></td>
</tr>
<tr>
<td>20 tid / tds</td>
<td>suppository</td>
<td></td>
</tr>
</tbody>
</table>
Terms used in medication administration should be understood by the nurse, so that misunderstandings can be averted. After you have looked up these terms, read and understood what they mean, write the definitions in language you understand.

2. Using your medication textbook and/or medical dictionary, define the following:

(i) Pharmacotherapeutics

________________________________________________________________________
________________________________________________________________________

(ii) Pharmacokinetics

________________________________________________________________________
________________________________________________________________________

(iii) Pharmacodynamics

________________________________________________________________________
________________________________________________________________________

(iv) Medication

________________________________________________________________________
________________________________________________________________________

(v) Administer

________________________________________________________________________
________________________________________________________________________

(vi) Therapeutic affect

________________________________________________________________________
________________________________________________________________________
(vii) Side effect

________________________________________________________________________
________________________________________________________________________

(viii) Adverse effects
- allergic reaction
________________________________________________________________________

- toxic reaction
________________________________________________________________________

- idiosyncratic reaction
________________________________________________________________________

(ix) Idiosyncratic action

________________________________________________________________________
________________________________________________________________________

(x) Toxic reaction

________________________________________________________________________
________________________________________________________________________

(xi) Suspension

________________________________________________________________________
________________________________________________________________________

(xii) Mixture

________________________________________________________________________
________________________________________________________________________

(xiii) Linctus

________________________________________________________________________
________________________________________________________________________

(xiv) Lozenge

________________________________________________________________________
________________________________________________________________________
<table>
<thead>
<tr>
<th>(xv)</th>
<th>Ointment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(xvi)</th>
<th>Cream</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(xvii)</th>
<th>Lotion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(xviii)</th>
<th>Tincture</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(xix)</th>
<th>Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(xx)</th>
<th>Tablet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(xxi)</th>
<th>Caplet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(xxii)</th>
<th>Capsule</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The following terms are related to medication interactions and actions and dose responses. An understanding of these terms will assist you to document accurately the evaluated response the client has to the medication administered to them.

**ACTIVITY 2**

Using the medication textbook or Potter and Perry’s *fundamentals of Nursing* define the following.

(i) Medication interaction
(ii) Synergistic effect

_________________________________________________________________________
_________________________________________________________________________

(iii) Plasma concentration

_________________________________________________________________________
_________________________________________________________________________

(iv) Peak concentration

_________________________________________________________________________
_________________________________________________________________________

(v) Serum half life

_________________________________________________________________________
_________________________________________________________________________

(vi) Onset

_________________________________________________________________________
_________________________________________________________________________

(vii) Trough

_________________________________________________________________________
_________________________________________________________________________

(viii) Duration

_________________________________________________________________________
_________________________________________________________________________

(ix) Plateau

_________________________________________________________________________
_________________________________________________________________________
The following terminology relates to allergic reactions. Part of evaluating the effectiveness of medication administered would be the observation of any allergic reactions which may occur as a result of the administration of medications. A knowledge of what these may be is important.

**ACTIVITY 3**

Using the medication textbook or *Potter and Perry’s fundaments of Nursing* define the following.

(i) **Anaphylaxis**

(ii) **Allergy**

(iii) **Urticaria**

(iv) **Rash**

(v) **Pruritus**

(vi) **Rhinitis**
When reading a report that has been written using abbreviations it is important that you are able to understand what has been written. The activities that follow will test your understanding of terminology and abbreviations used when administering medications.

**ACTIVITY 4**

Decipher the following sentences and ensure that the meaning is clear.

1. The client has taken an OTC medication and he feels unwell.

2. Mr Jones has been ordered paracetamol 500mg 2 q4h, but he is NBM.

3. The client will have to take a dose stat and then bd.

4. Instill 2 guttae q6h and then apply the ung tid.
TOPIC 3    Basic maths/medication calculations

Medications don’t always come in the correct amounts to dispense easily. An understanding of basic mathematics is essential if you are to have the ability to calculate the correct amount of medication to dispense. It is also essential to know the formula for calculating medication dosages and to have the ability to apply these in your work. Most people do not consider that division and multiplication come from knowing the “times tables”. Nurses need to be able to calculate medication dosages without the use of a calculator and knowledge of the “times tables” will be beneficial. This topic will also revise the metric system and mathematical concepts such as fractions, decimals and percentages.

ACTIVITY 1

Use your medication text book to write the formulae for:

1. Volume

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. Paediatric doses
   - Clarke’s Body Weight Rule

________________________________________________________________________
________________________________________________________________________

   • Clarke’s Body Surface Area

________________________________________________________________________
________________________________________________________________________

   • Fried’s Rule (used for infants under 1 year old)

________________________________________________________________________
________________________________________________________________________

   • Young’s Rule (used for children aged 2-12)

________________________________________________________________________
ACTIVITY 2

Apply the previous formulae to the drug calculations examples in the chapter “Calculating drug doses” in your medication text book. If you require extra examples for practise speak to your teacher or access various web sites on drug calculations.

ACTIVITY 3

Use your medication text book to complete the formulae for intravenous therapy.

1. Rate (drops/minute)  
   ____________________________  
   ____________________________  
   ____________________________

2. Volume per hour  
   ____________________________  
   ____________________________  
   ____________________________

3. Time (in minutes)  
   ____________________________  
   ____________________________  
   ____________________________

ACTIVITY 4

Apply the formulae above to work out the examples found in your medication textbook. There are many maths sites on the web that you could access as well, if you feel you need to revise your skills International System of Units (SI)

Remember that if you are finding the formulae or mathematics difficult to understand you must ask the teacher for assistance.
TOPIC 4  Factors affecting pharmaco-therapeutics/ routes of administration

Medications may be defined by the effect they have on various body systems and organs and are often grouped this way. It is important to understand how drugs work on the various body systems as it will provide an understanding of the effects that are desired when used.

ACTIVITY 1

1. Define absorption.

__________________________________________

__________________________________________

2. How is distribution of a drug from the bloodstream achieved?

__________________________________________

__________________________________________

3. What is the most important factor in the absorption of a medication?

__________________________________________

__________________________________________

4. Why would you say that this is the most important factor?

__________________________________________

__________________________________________

5. Define distribution.

__________________________________________

__________________________________________

6. What three (3) factors is distribution of a medication dependent on?

__________________________________________

__________________________________________

7. Define metabolism.

__________________________________________

__________________________________________
8. List the sites for medication metabolism. Which is the main site?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

9. List the various ways medication can be eliminated from the body.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

10. What is meant by a therapeutic dose?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

11. List the factors that influence the action of a medication.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

12. Define the term drug interaction.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
To be completed during classroom discussion.

**ACTIVITY 2**

List individual factors that influence medication actions.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

To be completed during classroom discussion.

**ACTIVITY 3**

Describe how the following factors affect medication actions.

(i) Age

Children

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Elderly

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

(ii) Weight

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

(iii) Sex

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
(iv) Hereditary

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

(v) Psychological state

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

(vi) Cognitive state

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

(vii) Illness and disease

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

(viii) Time of administration

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

(ix) Environment

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

(x) Concurrent medication therapy

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

(xi) Polypharmacy

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
(xii) Smoking

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

(xiii) Alcohol

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

(xiv) Illicit drugs

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

(xv) Caffeine

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

(xvi) Past drug history

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

(xvii) Diet

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

(xviii) Allergies

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

(xix) Current and past medical history

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
It is important to note that medication administration may occur via a number of routes. A route may be chosen because it is safe, convenient, easy (example - oral medications) or because there is need for rapid onset of action (example – intramuscular injections.) For a medication to work effectively it must be administered via the correct route.

**ACTIVITY 4**

Access the information in your medication text that identifies the routes of medication administration and list them below.

- **Oral:**
  
  ____________________________________________________
  
  ____________________________________________________
  
  ____________________________________________________
  
  ____________________________________________________

- **Enteral:**
  
  ____________________________________________________
  
  ____________________________________________________
  
  ____________________________________________________
  
  ____________________________________________________

- **Topical:**
  
  ____________________________________________________
  
  ____________________________________________________
  
  ____________________________________________________
  
  ____________________________________________________

- **Parenteral:**
  
  ____________________________________________________
  
  ____________________________________________________
  
  ____________________________________________________
  
  ____________________________________________________
ACTIVITY 5

Outline why the following routes may be preferred:

i) Oral:

________________________________________________________________________
________________________________________________________________________

(ii) Enteral

________________________________________________________________________
________________________________________________________________________

(iii) Topical

________________________________________________________________________
________________________________________________________________________

(iv) Parenteral

________________________________________________________________________
________________________________________________________________________

There are standard protocols for medication administration and should be adhered to. The following activities revise these protocols.

ACTIVITY 6

1. List three (3) reasons for washing your hands before a procedure.
   To reduce the:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. How could you confirm a client’s identification?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
3. In relation to medication administration what should the nurse assess to determine?
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

4. List the three (3) checks that should be completed before the client receives their medication.
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

5. When administering oral medications, there are protocols that should be observed to ensure correct administration of all oral medications. These are:
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

ACTIVITY 7

Oral medications include those given sublingually and buccally. List the protocols for these, below.

Sublingual medications:
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

Buccal medications:
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

There are considerations when using various other forms of oral medications that should be observed.
**ACTIVITY 8**

Complete the following mix and match exercise related to the oral route, by placing the letter that matches the statement in the third column.

<table>
<thead>
<tr>
<th>A. Lozenge</th>
<th>1. small oblong container encloses the medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Enteric coated tablets</td>
<td>2. loose moulded drug substance in a dry form</td>
</tr>
<tr>
<td>C. Capsules</td>
<td>3. small disc like preparation impregnated with medication</td>
</tr>
<tr>
<td>D. Tablet</td>
<td>4. wax like layer to prevent disintegration in the stomach</td>
</tr>
<tr>
<td>E. Granules</td>
<td>5. solid doses of medication that slowly disintegrate</td>
</tr>
<tr>
<td>F. Wafer</td>
<td>6. may be scored, so it can be broken in half</td>
</tr>
</tbody>
</table>
TOPIC 5   Basic equipment used in the delivery of medications

When working with clients and administering medications the nurse soon becomes familiar with the necessary equipment. This topic will help you to familiarise yourself with what is needed to administer medications appropriately.

Access information in the medication textbook and from classroom discussion to answer the following questions.

**ACTIVITY 1**

**Oral medications**

Oral medication can be solid e.g. tablets or liquid and can be taken through the mouth, via a PEG tube into the stomach or a nasogastric tube. They are often enteric coated to slow the rate of absorption within the GIT system.

1. When administering oral medications, what equipment would you need?

2. If an oral medication is prescribed for a client with a nasogastric tube, what would the most appropriate form be?

3. What would you do if the medication does not come in liquid form?

4. What equipment would you need for administering medication via a nasogastric tube?
ACTIVITY 2

Patches

Medications take many different forms. Patches are a convenient non invasive way to administer a medication. Transdermal patches are widely used for treating a variety of conditions, hormone replacement therapy and nicotine patches are amongst the more well known ones.

1. What are patches?

_________________________________________________________________________
_________________________________________________________________________

2. How are patches made?

_________________________________________________________________________
_________________________________________________________________________

3. What type of skin preparation is required before applying a patch?

_________________________________________________________________________
_________________________________________________________________________

4. Describe the most suitable site for a patch

_________________________________________________________________________
_________________________________________________________________________

5. Where would small patches used for travel sickness be applied?

_________________________________________________________________________
_________________________________________________________________________

ACTIVITY 3

Rectal medication

Rectal medications are administered for a localised effect on the rectum or for a systemic effect when a client is vomiting, unable to swallow, or unconscious.
1. List the types of rectal medication that can be found and state how they would be administered.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. What equipment would you need to administer rectal medications?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

ACTIVITY 4

Vaginal medication

Vaginal medications are less likely to cause systemic side effects such as nausea and vomiting, than are the oral forms. Vaginal medications include creams, gels, pessaries (suppositories) and ointments.

1. Why are vaginal medications prescribed?

________________________________________________________________________
________________________________________________________________________

2. When are vaginal medications most effective?

________________________________________________________________________
________________________________________________________________________

3. Where are vaginal pessaries usually kept?

________________________________________________________________________
________________________________________________________________________

4. What equipment would you need to administer vaginal medications?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
ACTIVITY 5

Eye medication
Eye medications are used to diagnose, treat and prevent eye diseases. Most eye medicines need a prescription. However, artificial tears (to lubricate the eye) and ocular decongestants (to decrease redness) are available as over-the-counter eye drops. Eye drops and ointments are the most common ways to medicate the eye.

1. Why are eye medications prescribed?
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

2. Where should eye drops be instilled?
_________________________________________________________________________
_________________________________________________________________________

3. Why should eye drops not be dropped onto the cornea?
_________________________________________________________________________
_________________________________________________________________________

4. Why should eye drops not be placed in the inner canthus?
_________________________________________________________________________
_________________________________________________________________________

5. How should ointment be applied?
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

6. What equipment will you need to administer eye medications?
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
ACTIVITY 6

Ear medication

Otic medications are used to reduce infection and inflammation, to soften cerumen, to produce a local anaesthetic effect, or to immobilise a trapped insect. Otic medications are in the form of ear drops and should be at room temperature as the inner ear is sensitive to temperature extremes.

What equipment will you need to administer ear drops?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

ACTIVITY 7

Nasal medication

Nasal medications are used to reduce nasal congestion and inflammation or to clear up infection in the nasal sinuses. Nasal medications come in the form of sprays or drops.

What equipment will you need to administer nose drops or sprays?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Inhaled medications

Many medications may be inhaled to provide either a local or systemic effect. The advantage of inhaled medications is that the medication is absorbed rapidly by the mucous membranes. Inhaled medications can be administered by the following means:

- metered dose inhalers
- dry powder inhalers
- nasal sprays
- nebulisers
- steam inhalations.
ACTIVITY 8

1. Which clients would most often use medicated inhalers?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

2. What equipment would you need to administer a steam inhalation?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

3. Why are spacers commonly used to administer inhalation medication to children?

_________________________________________________________________________
_________________________________________________________________________

Some lung diseases, such as emphysema and sarcoidosis, reduce lung function to the extent that supplemental oxygen is needed to continue normal bodily function. For many people with end stage lung disease, supplemental oxygen allows their bodies to get the oxygen that they need and may also help them be more active. For people who do not get enough oxygen naturally, supplements of oxygen can have several benefits such as improving sleep patterns, mental alertness and everyday functions. It can prevent heart failure in people with severe lung disease.

ACTIVITY 9

1. Why should oxygen be prescribed by a doctor?

_________________________________________________________________________
_________________________________________________________________________

2. How would you monitor that a client is receiving the appropriate dose of oxygen?

_________________________________________________________________________
_________________________________________________________________________
3. What precautions should be taken when delivering oxygen?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. Complete the following table using your medication textbook.

<table>
<thead>
<tr>
<th>Delivery device</th>
<th>Oxygen concentration</th>
<th>Flow rates</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasal cannula</td>
<td>20-40%</td>
<td>2-6L/min</td>
<td></td>
</tr>
<tr>
<td>Oxygen masks</td>
<td>30-60%</td>
<td>8-12L</td>
<td></td>
</tr>
<tr>
<td>Venturi masks</td>
<td>24-49%</td>
<td>4-8L</td>
<td></td>
</tr>
<tr>
<td>Non-rebreather mask</td>
<td>90%</td>
<td>10-12L</td>
<td></td>
</tr>
<tr>
<td>Partial rebreather</td>
<td>40-60%</td>
<td>10-12L</td>
<td></td>
</tr>
</tbody>
</table>

5. What equipment will you need to deliver oxygen?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

ACTIVITY 10

Injectable medications

1. What equipment is needed to give an intramuscular or subcutaneous injection?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
ACTIVITY 11

IV Medications

The primary purpose for giving IV medications is to effect a rapid systemic response to medication. It is one of the fastest ways to deliver medication. The medication is immediately available to the body and it is easier to control the actual amount of medication delivered. It is also easier to maintain medication levels in the blood for the therapeutic response. The IV route for medication administration may be used if the medication to be delivered would be destroyed by digestive enzymes, is poorly absorbed by the tissue or is painful or irritating when given by intra-muscular or subcutaneous injection.

1. What equipment would you need for an IV bolus into an existing IV line?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

2. What else would you need if the IV bolus was via an intravenous catheter?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

Systems for storing and distributing medications vary. Most hospitals have pharmacies that dispense the medications and keep their wards stocked with medications that are used on that ward or unit routinely. Facilities have areas for stocking and dispensing medications, including dedicated medication rooms, portable locked medication trolleys, and individual lockers next to the client’s bed. The nurse has the responsibility of ensuring that these areas are kept locked when not in use.

ACTIVITY 12

Using Potter and Perry’s fundamentals of Nursing, describe the following types of storage for medication.

1. Stock supply system

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
2. Unit-dose system

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

3. Client bedside storage system

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
TOPIC 6 Potential for risk

The goal of nursing practice in relation to medication administration is the prevention of injury or harm while maintaining safety. The ability of the nurse to assess and manage risk is important as a medication error could lead to death. The following activities relate to safety in the area of medication administration, so keep that in mind when completing the activities.

Potential risk

The potential risks associated with medication administration underlines the importance of the nurse being aware of these, so that client safety can be maintained at all times.

Use your medication textbook or Potter and Perry’s fundamentals of Nursing to answer the following questions.

ACTIVITY 1

Discuss risk management in relation to medication administration, using the following headings.

(i) Risk factors.

(ii) Goal of risk identification.

(iii) Identify the four (4) steps in the process of risk management.

The principles of asepsis are employed during the preparation and administration of all medications for the protection of clients and colleagues.

ACTIVITY 2

1. Define the term clinical waste.
2. List waste that could be called clinical waste:

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

3. What is the correct procedure for waste disposal as a worker?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

ACTIVITY 3

State the potential risks associated with the following:

(i) substance incompatibilities
_________________________________________________________________________
_________________________________________________________________________

(ii) reactions
_________________________________________________________________________
_________________________________________________________________________

(iii) contraindications
_________________________________________________________________________
_________________________________________________________________________

(iv) toxicity
_________________________________________________________________________

.
All health care workers are at potential risk of becoming infected with diseases transmitted through fluid or blood during the course of duty. Special care must be taken when handling, cleaning and disposing of sharp instruments and needles used during procedures.

Use your medication textbook to answer the following questions.

**ACTIVITY 4**

1. List the general management of sharps.

2. Who is responsible for correct disposal of sharps?

3. What is the correct procedure for the transfer or transport of sharps?

4. Outline the correct procedure for resheathing needles.

5. Complete the following statement. For a sharps container to comply with Australian/New Zealand standards it should:

The occurrence of medication incidents has risen recently, there is an interesting article in the International Journal for Quality in Health Care 15:i49-i59 (2003) International Society for Quality in Health Care that shows that 2–4% of all hospital admissions, and up to 30% for clients > 75 years of age, are medication-related; up to three-quarters are potentially preventable.

http://intqhc.oxfordjournals.org/cgi/content/full/15/suppl_1/i49
ACTIVITY 5

List ways to minimise medication incidents.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
TOPIC 7  Major medication groups related to all body systems

An understanding of the effect that various medications have on the body is important when administering medications, as an adequate explanation may assist the client to comply with taking the medications correctly. It will also assist the nurse when observing the effects of the medication on the client, to differentiate between the expected effect and an adverse reaction.

The following activities relate to the various medication groups. Use your medication textbook and a pharmacology text and/or Mims to answer the questions relating to each group. This topic should be completed in conjunction with any activities in the relevant chapter of your medication textbook as not all drug groups have been discussed in this resource.

ACTIVITY 1

Medications affecting the central nervous system

Anaesthetic agents
These can have a general body effect with associated loss of consciousness or a localised effect on a body part. They enable a client to experience loss of the sensations of pain, temperature, pressure and touch, so that surgical procedures can be performed.

1. General anaesthetics can be given via different routes. List the routes.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. When giving a general anaesthetic, multiple medications are used to achieve the various stages of anaesthesia. What are these stages?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. List five (5) adverse effects of that could occur with a general anaesthetic.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
4. What are the nursing implications for someone receiving a general anaesthetic?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

5. Define local anaesthetic and state where these are used.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

6. What precautions should be taken with local anaesthetic use?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

7. List the nursing implications after spinal anaesthesia.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

Analgesics

Used to treat acute pain or manage chronic pain. The type of analgesia used would depend on the type of pain, the age, condition and drug history of the client.

8. Why are opioid based analgesics used, and what are they commonly called?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

9. List the adverse effects of narcotic use.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
10. What are the nursing implications, when administering opioid analgesics?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

11. Why would non-opioid based analgesics be used?

________________________________________________________________________

________________________________________________________________________

12. Why should aspirin be avoided when a client is on anticoagulants?

________________________________________________________________________

________________________________________________________________________

13. List the nursing implications for the use of non opioid based analgesia.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

14. Give three (3) examples of opioid and non-opioid analgesics.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Anti-anxiety, sedative and hypnotic medication

Used to treat a range of conditions from anxiety or worry to panic and even insomnia. The therapeutic effect should be reduction of anxiety, muscle relaxation and reduction of insomnia. Sedatives may also be used as premedication or anaesthesia.

15. List the precautions that you should be aware of when using these medications.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

16. List the nursing implications.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
17. Outline a major issue that the client should be made aware of when using sedatives/hypnotic medication.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

18. Give three (3) examples of anti-anxiety medication, sedative and hypnotics medications.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Antiepileptic medication
This group of drugs is used to control and prevent seizures.

19. Why should care be taken when a client who is on antiepileptic medication, becomes pregnant?
________________________________________________________________________
________________________________________________________________________

20. Outline the nursing implications for the use of antiepileptic medications.
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

21. Give three (3) examples of antiepileptic medications
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Psychotropic medications
This group of drugs is used to treat major psychoses and can be divided into two subclasses. Antipsychotic agents are used to treat schizophrenia and antidepressants are used to treat clinical depression. Antipsychotic medications may have no noticeable initial effect as they often take time to work.

22. Polypharmacy is a major problem with these medications as these medications react with many other medication. When should the client take a double dose of this medication?
________________________________________________________________________
23. When clients are being administered antidepressants, what nursing actions should be considered?

________________________________________________________________________
________________________________________________________________________

24. When a client has been administered monoamine oxidase (MAO) inhibitors, they should restrict certain foods. Give examples of foods that should be restricted.

________________________________________________________________________
________________________________________________________________________

25. Why are these foods restricted?

________________________________________________________________________
________________________________________________________________________

26. Give three (3) examples of psychotropic medications.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Stimulants
These drugs are used mainly for narcolepsy and hyperactivity in children.

27. Use your dictionary to define the following terms:

(i) narcolepsy

________________________________________________________________________
________________________________________________________________________

(ii) attention deficit hyperactivity disorder (ADHD)

________________________________________________________________________
________________________________________________________________________

28. Why should children be weighed regularly?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

29. Give three examples of stimulant medications used to treat clients.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
ACTIVITY 2

Medications affecting the peripheral nervous system

- Medication for neurodegenerative disorders and migraine
- Medication affecting neuromuscular transmission.

Medications affecting cholinergic transmission

These drugs are also known as antimuscarinic agents and are used to block the action of the neurotransmitter acetylcholine and inhibit parasympathetic function.

1. Match their effect on the organ, system or gland.

<table>
<thead>
<tr>
<th>1. gastrointestinal system</th>
<th>A. decrease sweat production</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. salivary glands</td>
<td>B. increase heart rate</td>
</tr>
<tr>
<td>3. eyes</td>
<td>C. decrease motility and gastric acid production</td>
</tr>
<tr>
<td>4. cardiovascular system</td>
<td>D. produce urinary retention</td>
</tr>
<tr>
<td>5. sweat glands</td>
<td>E. produce mydriasis, raise intraocular pressure, decrease lacrimation</td>
</tr>
<tr>
<td>6. urinary system</td>
<td>F. decrease saliva production</td>
</tr>
</tbody>
</table>

2. This group of medication are contraindicated for use in clients who have what medical conditions?

_________________________________________________________________________
_________________________________________________________________________

3. Use your medical dictionary to define the following terms related to the eye.

(i) mydriasis

_________________________________________________________________________
_________________________________________________________________________

(ii) cyclopegia

_________________________________________________________________________
_________________________________________________________________________

4. When educating clients who have been prescribed anticholinergics, what should be emphasised?

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
5. Give three (3) examples of anticholinergics

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Medications affecting noradrenergic transmission
These medications affect the sympathetic nervous system. These medications are either stimulators (adrenergic agonists) or inhibitors (adrenergic antagonists). The main transmitter substance of this system is noradrenaline.

6. What effect does noradrenaline have on the following systems, organs or glands?

<table>
<thead>
<tr>
<th>System</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular system</td>
<td></td>
</tr>
<tr>
<td>Respiratory system</td>
<td></td>
</tr>
<tr>
<td>Endocrine system</td>
<td></td>
</tr>
<tr>
<td>Integumentary system</td>
<td></td>
</tr>
<tr>
<td>Gastrointestinal system</td>
<td></td>
</tr>
</tbody>
</table>

Adrenergic agonists (sympathomimetic agents) are mainly used for hypotension resulting from heart failure, shock, or decreased cardiac function bronchospasm and sinus congestion.

ACTIVITY 3

Medications affecting the endocrine system
Dysfunction of the thyroid gland can produce hyperthyroidism or hypothyroidism.

1. List the signs of hypothyroidism
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. What medication used to treat thyroid disease causes bone marrow depression?
________________________________________________________________________
________________________________________________________________________
3. What is agranulocytosis and what causes it?
_________________________________________________________________________
_________________________________________________________________________

4. How should oral iodine solutions be taken?
_________________________________________________________________________
_________________________________________________________________________

5. What care should be taken when a client is taking radioactive iodide?
_________________________________________________________________________
_________________________________________________________________________

6. Why are thyroid agents used?
_________________________________________________________________________
_________________________________________________________________________

7. List contraindications for lyothyronine (Tertroxin).
_________________________________________________________________________
_________________________________________________________________________

8. What important point should client education include?
_________________________________________________________________________
_________________________________________________________________________

9. List three examples of medication used for hyperthyroidism and hypothyroidism.
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

10. List the three (3) naturally occurring groups of hormones secreted by the adrenal cortex.
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

11. Glucocorticoids affect the metabolism of:
_________________________________________________________________________
_________________________________________________________________________
12. List the nursing implications for someone on corticosteroids.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

13. What is the function of a mineralocorticoid?

________________________________________________________________________
________________________________________________________________________

14. Where is insulin made?

________________________________________________________________________
________________________________________________________________________

15. Can insulin be given orally? Why?

________________________________________________________________________
________________________________________________________________________

16. When drawing up short and long acting insulin, which should be drawn up first?

________________________________________________________________________
________________________________________________________________________

17. Which areas are used for insulin injections and which is the preferred site?

________________________________________________________________________
________________________________________________________________________

18. Why should the sites be rotated?

________________________________________________________________________
________________________________________________________________________

19. What is the temperature that insulin should be stored at?

________________________________________________________________________
________________________________________________________________________

20. What precautions should be taken when using oral hypoglycaemic agents and name the two common groups?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
21. Name and state the function of the two hormones that control blood calcium levels.
_________________________________________________________________________
_________________________________________________________________________

22. How is hypocalcaemia treated?
_________________________________________________________________________
_________________________________________________________________________

23. Why should these medications be taken with water, before food?
_________________________________________________________________________
_________________________________________________________________________

24. Why should clients stay upright for 30 minutes after taking these drugs?
_________________________________________________________________________
_________________________________________________________________________

25. Define hypercalcemia.
_________________________________________________________________________
_________________________________________________________________________

ACTIVITY 4

Medications affecting the blood

Anticoagulants

1. What is an anticoagulant?
_________________________________________________________________________
_________________________________________________________________________

2. Name the medications that are used to counteract an overdose of an a) oral anticoagulant
   b) parenteral anticoagulant.
_________________________________________________________________________
_________________________________________________________________________
3. List three (3) ways anticoagulants can be administered.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. Name a medication that is commonly used that enhances the effects of an anticoagulant.

________________________________________________________________________

5. What are the nursing interventions when you have a client on anticoagulant therapy?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

**Antiplatelet medication**

6. How do antiplatelet medications work? Why are they used?

________________________________________________________________________
________________________________________________________________________

7. List two (2) common antiplatelet medications.

________________________________________________________________________
________________________________________________________________________

**ACTIVITY 5**

**Medications affecting the heart and vascular system**

1. What are cardiac glycosides used to treat?

________________________________________________________________________
________________________________________________________________________

2. List the main actions of digoxin?

________________________________________________________________________
________________________________________________________________________
3. What are the symptoms of digitalis toxicity?

_________________________________________________________________________

_________________________________________________________________________

4. When should digitalis not be used?

_________________________________________________________________________

_________________________________________________________________________

5. List five (5) important nursing implications when using digitalis.

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

Antiarrhythmic/antianginal medications
These medications are used to treat abnormalities in cardiac rhythm and chest pain.

6. What precautions should be taken when using antiarrhythmic medications?

_________________________________________________________________________

_________________________________________________________________________

7. What is the function of an antianginal agent?

_________________________________________________________________________

_________________________________________________________________________

8. List the adverse effects of an antianginal agent.

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

9. When are these medications not used?

_________________________________________________________________________

_________________________________________________________________________
10. Where should glyceryl trinitrate patches be applied?

________________________________________________________________________

________________________________________________________________________

11. List the nursing implications for using an antianginal agent.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Antihypertensives

12. How should hypertension ideally be managed?

________________________________________________________________________

________________________________________________________________________

13. What does the acronym ACE represent and how do they treat hypertension?

________________________________________________________________________

________________________________________________________________________

14. When are ACE inhibitors contraindicated?

________________________________________________________________________

________________________________________________________________________

15. List the factors that exacerbate postural hypertension.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Lipid regulating medications


________________________________________________________________________

________________________________________________________________________
17. How is it managed?

_________________________________________________________________________
_________________________________________________________________________

18. List five (5) adverse effects of lipid regulating medications.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

19. What advice would you give a client using powder or granule forms?

_________________________________________________________________________
_________________________________________________________________________

20. What advice would you give regarding diet?

_________________________________________________________________________
_________________________________________________________________________

21. What observations should be monitored?

_________________________________________________________________________
_________________________________________________________________________

22. What should you tell the client to report?

_________________________________________________________________________
_________________________________________________________________________

ACTIVITY 6

Medications used in respiratory disorders

These groups of medication are used to treat the symptoms of acute asthma and the long term management of asthma as well as other respiratory disorders/infections.
Anti-asthma agents

1. Which medications are used in the management of asthma?

________________________________________________________________________
________________________________________________________________________

2. Why are bronchodilators used with care during pregnancy?

________________________________________________________________________
________________________________________________________________________

3. List nursing actions

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Cough suppressants/expectorants/mucolytics

These drugs are used to treat upper respiratory tract infections such as coughs, colds and viral infections.

4. List and describe the three (3) types of medication that is used predominantly for respiratory problems.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

5. What are the nursing implications when using these types of medications.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
ACTIVITY 7

Medications affecting the gastrointestinal system
These medications can be used for diseases/disorders which affect the gastrointestinal system from the mouth to the rectum as well as accessory organs such as the liver and gall bladder.

Antacids
1. Why are antacids used?

2. What is the main side effect with the following substances?
   a) aluminium and calcium salts
   b) magnesium salts
   c) sodium

3. What general effect do antacids have on other medication?

4. List the nursing interventions when administering antacids.

Antiemetics
These medications are used to treat nausea and vomiting.
5. List three (3) causes for nausea and vomiting.

6. List three (3) nursing interventions when administering antiemetics.
Aperients

When constipation cannot be managed, aperients may need to be used to ensure defaecation to remove waste products from the bowel.

7. Define the term aperient (laxative).

________________________________________________________________________
________________________________________________________________________

8. List four (4) factors that contribute to constipation.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

9. How should constipation be managed?

________________________________________________________________________
________________________________________________________________________

10. List the types of aperients.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

11. Why should care be taken when administering aperients to the elderly and children?

________________________________________________________________________

12. What advice would you give to a client who is taking a ‘bulk’ forming agent?

________________________________________________________________________

13. Which clients should never be given an aperient?

________________________________________________________________________

________________________________________________________________________
Antidiarrhoeal agents

These medications are needed when there is a sudden onset of diarrhoea.

14. List some causes of diarrhoea

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

15. Which medication are antidiarrhoeal agents often used with?

_________________________________________________________________________
_________________________________________________________________________

16. Why should precautions be taken when using antidiarrhoeal agents, when the cause of the diarrhoea is bacterial?

_________________________________________________________________________
_________________________________________________________________________

17. List the adverse effects of using antidiarrhoeals

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

ACTIVITY 8

Medications affecting the urinary system

1. Why are diuretics used?

_________________________________________________________________________
_________________________________________________________________________

2. Which diseases are diuretics used to treat?

_________________________________________________________________________
_________________________________________________________________________
3. List the nursing implications for using diuretics.
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. List foods that are high in potassium?
________________________________________________________________________
________________________________________________________________________

5. Identify the main groups of medications used for incontinence.
________________________________________________________________________
________________________________________________________________________

6. How do anticholinergics work?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

7. Which clients' should not use these medications?
________________________________________________________________________
________________________________________________________________________

ACTIVITY 9

Drugs affecting the reproductive system

Sex hormones in both males and females affect the development and maintenance of the sex organs as well as development of the ovum and sperm.

Oral contraceptives

1. What medications are the usual components of oral contraceptives?
________________________________________________________________________

2. What is the primary use of contraceptives?
________________________________________________________________________
3. What is the secondary use of contraceptives?

4. List five (5) common adverse effects of oral contraceptive use.

5. Which clients would be advised against oral contraceptive use?

6. How soon should a missed pill be taken?

7. What advice would you give a client who has missed taking the pill completely?

8. How often should a breast examination (by a health professional) and Pap smear be done for a woman using oral contraceptives?

9. Where are implantable contraceptives usually placed?

10. What advice should be given to a client undergoing elective surgery?
Female hormones

11. What conditions are treated using female hormones?
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

12. List six (6) common adverse reactions.
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

13. List two (2) observations that should be monitored.
   ____________________________________________________________
   ____________________________________________________________

14. Why should transdermal patches be rotated?
   ____________________________________________________________
   ____________________________________________________________

15. What three (3) tests should the client have performed before starting therapy?
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

Male hormones

16. Why are androgens used?
   ____________________________________________________________
   ____________________________________________________________
17. When should these medications not be used?
_________________________________________________________________________
_________________________________________________________________________

18. What should be checked before starting this therapy?
_________________________________________________________________________

19. What examination should be done regularly while having this therapy?
_________________________________________________________________________

20. List two (2) observations that should be monitored.
_________________________________________________________________________
_________________________________________________________________________

ACTIVITY 10

Medications affecting the eye, ear and special senses

Diseases/disorders of the eyes can involve treatment with many drugs both ophthalmic versions or systemic medication. Most ophthalmic medications have little effect systemically as they are used in small doses and over short periods. Most ear diseases/disorders are treated with topical preparations.

Ophthalmic medications

1. Describe the function of the following medications:

(i) Mydriatics
_________________________________________________________________________
_________________________________________________________________________

(ii) Cycloplegics
_________________________________________________________________________
_________________________________________________________________________

(iii) Miotics
_________________________________________________________________________
_________________________________________________________________________
(iv) ocular lubricants

________________________________________________________________________
________________________________________________________________________

2. List five (5) adverse effects of using ophthalmic medication

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. What precautions should be taken when using the following medication?

(i) Mydriatics

________________________________________________________________________
________________________________________________________________________

(ii) Miotics

________________________________________________________________________
________________________________________________________________________

(iii) Steroids

________________________________________________________________________
________________________________________________________________________

(iv) Atropine

________________________________________________________________________
________________________________________________________________________

4. Where are eye drops instilled?

________________________________________________________________________
________________________________________________________________________

5. Where is ointment placed?

________________________________________________________________________
________________________________________________________________________
6. Should you wear gloves when instilling eye drops?

_________________________________________________________________________

_________________________________________________________________________

7. How long are you able to keep eye drops?
   - in hospital _______________
   - at home _______________

8. What should be used to clean the eye before instilling drops or applying ointment?

_________________________________________________________________________

9. What advice should be given to a client who has a local anaesthetic drop instilled?

_________________________________________________________________________

_________________________________________________________________________

10. Where should eye drops be kept?

_________________________________________________________________________

_________________________________________________________________________

**Otic medications**

11. List some medication that are used in the ear.

_________________________________________________________________________

_________________________________________________________________________

12. How should the ear canal be held when administering ear drops?
   - child _____________
   - adult _____________

13. To which side would the client tilt their head and for how long should they remain in this position after instilling ear preparations?

_________________________________________________________________________

_________________________________________________________________________
14. When should corticosteroid eardrops not be used?
________________________________________________________________________
________________________________________________________________________

Medications affecting the nose

15. List the types of medication used commonly to treat the nose.
________________________________________________________________________
________________________________________________________________________

16. How may these be administered?
________________________________________________________________________
________________________________________________________________________

17. List six (6) adverse effects.
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

18. What are the nursing implications?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

19. For how long should nasal decongestants be used?
________________________________________________________________________

Medications affecting the mouth and throat

20. What form do these medications take?
________________________________________________________________________
________________________________________________________________________
21. List the nursing implications.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

ACTIVITY 11

Medications affecting micro-organisms

The medications used to treat infections are known as antimicrobials or antibiotics. As a result of over prescription and use of these medications, many forms of bacteria have become resistant to these medications. It is now common to have to use stronger forms of these medications to obtain the desired therapeutic effect.

Antibacterial agents

1. What are antibacterial agents used to treat?
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

2. List the various groups of antibiotics available.
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

3. What are some of the adverse effects of these medications?
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

4. List precautions and contraindications for tetracycline use.
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
5. List five (5) the nursing implications when administering antibiotics.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Antifungal agents

Fungal growth occurs when normal body flora has been compromised as a result of antibiotic use or other diseases e.g. diabetes mellitus. Fungal infections include candidiasis and tinea.

6. Why are antifungal agents used?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

7. List six (6) adverse effects
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

8. When should antifungals be used with caution?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

9. List the nursing implications when administering these agents.
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Antiviral agents

An antiviral is an agent that kills viruses or suppresses their replication and, hence, inhibits their capability to multiply and reproduce. Viral infections can range from cold sores to HIV and include herpes simplex virus, varicella zoster virus and cytomegalo virus.

10. What are antiviral agents used to treat?

_________________________________________________________________________

_________________________________________________________________________

11. How do antiviral agents work?

_________________________________________________________________________

_________________________________________________________________________

12. List some of the more important nursing implications when administering these agents

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

Antiprotozoal agents, antihelmintic agents and antimalarials

Protozoa rival worms are the world’s leading cause of disease and although there has been vast improvement in the world’s sanitation, developing countries have a high incidence of parasitic infestation. An antiprotozoal agent is an agent that destroys protozoa or inhibits their growth and ability to reproduce.

13. What are these medications used to treat?

_________________________________________________________________________

_________________________________________________________________________


_________________________________________________________________________

_________________________________________________________________________

15. List the severe adverse reactions that may occur when administering these agents.

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________
16. What education would you give to a client receiving antimalarials agents?

________________________________________________________________________
________________________________________________________________________

Antimycobacterial agents

Active tuberculosis (TB) will kill about two of every three people affected if left untreated. Treated tuberculosis has a mortality rate of less than 5%. Tuberculosis is an airborne infectious disease that is preventable and curable. People ill with TB bacteria in their lungs can infect others when they cough. According to the world health organisation in 2005, 8.8 million people fell ill with TB and 1.6 million died (http://www.who.int/tb/en/)

17. What are the two common diseases caused by mycobacterium?

________________________________________________________________________
________________________________________________________________________

18. What does the term teratogenic mean?

________________________________________________________________________
________________________________________________________________________

19. List at least six (6) adverse effects of these medications.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

20. List the nursing implications for this group of medication.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Activity 12

Medications Affecting the Skin

Various groups of medication are used to treat skin conditions often as a combination regime.

1. List the various groups of medication used to treat skin conditions.

________________________________________________________________________
________________________________________________________________________

2. Are they only applied locally?

________________________________________________________________________
________________________________________________________________________

3. What do clients need to be aware of when treating skin disorders?

________________________________________________________________________
________________________________________________________________________

4. When should ointment NOT be used?

________________________________________________________________________
________________________________________________________________________

5. What should you ensure before applying topical medication?

________________________________________________________________________
________________________________________________________________________

6. What is the correct way to remove a dressing adhered to a wound?

________________________________________________________________________
________________________________________________________________________

7. When using retinoids, what should be avoided?

________________________________________________________________________
________________________________________________________________________
8. What is a keratolytic agent and what precautions should be taken when using these agents?

________________________________________________________________________
________________________________________________________________________

ACTIVITY 13

Medications affecting body defences

The skin is the largest organ of the body and thus is part of the main body defence. The body defends itself by developing immunity by exposure to disease or by means of a barrier such as the skin, mucosa etc.

Antiinflammatory agents

1. What is the main goal of antiinflammatory agents?

________________________________________________________________________
________________________________________________________________________

2. What forms can this medication come in?

________________________________________________________________________
________________________________________________________________________

3. List five (5) adverse effects of this type of medication.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. When should these medications be used with caution?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
5. What would you tell the client about taking this form of medication?
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

Immunomodulating agents

6. What are these medications used for?
_________________________________________________________________________
_________________________________________________________________________

7. What is a major problem when using this type of medication?
_________________________________________________________________________
_________________________________________________________________________

8. What should clients be reminded of in relation to using these medications?
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

9. What would you do if a client experienced a hypersensitivity reaction to this medication?
_________________________________________________________________________
_________________________________________________________________________

ACTIVITY 14

Medications Used in Neoplastic Disease

Antineoplastic medication derive their name from the fact that they interfere with or prevent the growth and development of malignant cells and neoplasms. They may also be called cytotoxic or cytostatic because they have the ability to prevent the growth and proliferation of cells.
1. What is the common name for these medications?

________________________________________________________________________

2. Why are they used?

________________________________________________________________________

3. List the most common adverse effects that can happen while or shortly after administration of these medications.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

4. List later reactions which may occur.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

5. List the contraindications for using these medications.

________________________________________________________________________

________________________________________________________________________

6. How are adverse reactions treated?

________________________________________________________________________

________________________________________________________________________

7. What do clients need to be fully informed about when receiving these medications?

________________________________________________________________________

________________________________________________________________________

8. Describe the care that must be taken by nursing staff when administering cytotoxic agents.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
9. What type of nursing is recommended for the client who is taking these agents?

_________________________________________________________________________

_________________________________________________________________________

10. What education should a client receive?

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________
TOPIC 8  
Skills related to medication administration via oral, topical, IMI/SCI & IVI routes.

This topic will incorporate all of the medication skills you will need to develop to function as an endorsed enrolled nurse. Earlier information will underpin your safe practice in the simulated environment and later in the clinical workplace.

**ACTIVITY 1**

Complete the following table on types of injections and state how they are given, how the medication is absorbed, the common sites used and the amount that should be given.

<table>
<thead>
<tr>
<th>Types of injections</th>
<th>Common sites</th>
<th>Amount given</th>
<th>Where given</th>
<th>Absorption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subcutaneous (SCI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intramuscular (IMI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intravenous (IVI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intradermal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrathecal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epidural</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ACTIVITY 2

As part of this topic you will learn how to give medications by means of various routes. Using your clinical record book, read the required skills assessment sheets and identify commonalities in each procedure.

(i) How are the various skills similar?

_________________________________________________________________________

_________________________________________________________________________

(ii) How are the various skills different?

_________________________________________________________________________

_________________________________________________________________________

ACTIVITY 3

Observe the demonstration of checking S8 medication with a registered nurse, and giving of oral, IMI/SCI and IVI medications in a simulated environment. Ensure you have adequate practise prior to attempting your assessments.
TOPIC 9  
Skills related to intravenous therapy

There are many reasons why a client may be ordered intravenous fluids as part of their treatment. These include dehydration, hyperemesis and as fluid replacement following surgery and major trauma resulting in blood loss.

ACTIVITY 1

1. Define the following terms related to intravenous fluid administration.

(i) Isotonic

________________________________________________________________________

________________________________________________________________________

(ii) Hypotonic

________________________________________________________________________

________________________________________________________________________

(iii) Hypertonic

________________________________________________________________________

________________________________________________________________________

(iv) Crystalloid

________________________________________________________________________

________________________________________________________________________

(v) Colloid

________________________________________________________________________

________________________________________________________________________
2. Listed below are some fluids that are used for delivery of parenteral medication. Use a relevant text to assist you decide which category they fall into.

- Haemaccel
- Saline 0.9%
- Dextrose 5%
- Dextrose 4%/saline 0.18%
- Bicarbonate 8.4%
- Hartmann’s solution
- Gelofusine
- Pentastarch
- Albumin 4.5%
- Hetastarch

<table>
<thead>
<tr>
<th>Crystalloids</th>
<th>Colloids</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Why are colloids used?

_________________________________________________________________________
_________________________________________________________________________

4. Why are crystalloids used?

_________________________________________________________________________
_________________________________________________________________________

5. List three (3) functions of electrolytes:

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

6. List the main cations.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

7. List the main anions.

_________________________________________________________________________
_________________________________________________________________________
8. Sodium is the main cation in extracellular fluid. What is its function?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

9. Potassium is the main cation in intracellular fluid. What is its importance?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

10. Chloride is main anion of extracellular fluid. What is its importance?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

ACTIVITY 2

1. Using your medication textbook discuss the following catheters use for central access to provide intravenous therapy.
   (i) Peripherally inserted central catheters (PICC lines):
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

   (ii) Central venous catheters:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

   (iii) Hickman Catheter:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
2. When administering total parenteral nutrition, which vein is commonly used?

ACTIVITY 3

Obtain a 24-hour fluid balance chart and chart the following fluids. Once you have accurately charted the fluid, balance the chart as at midnight.

IV therapy 1000 mL normal saline over 8/24 hours started at 06:30
Oral intake 350mL fruit juice 0700
Tea 1 cup 250mL 07:30
300mL urine 08:00
1 cup tea 240mL 10:00
350mL fruit juice 13:00
Soup 250mL 13:00
Jelly 200mL 13:30
14:30 1000 mL Hartmans
15:30 water 500mL
16:00 urine 750mL
17:00 water 100mL
18:00 Coffee 250mL
18:30 bowels open firm
21:30 urine 400mL
23:00 1000mL N/saline 10/24

Did you find the chart adequate or could you design a better chart? Consider the checklist for designing fluid balance/input-output charts, below and design a fluid balance chart.

Consider these indicators when formulating a fluid balance/input-output record

<table>
<thead>
<tr>
<th></th>
<th>Yes needed</th>
<th>No not needed</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client’s name</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Client’s unit number</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the Client’s age relevant?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is a fluid balance record required?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is an input and output record required?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason for commencing/maintaining record</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date and time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason for discontinuing/maintaining record</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date and time</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Daily weight

Daily urinalysis

Expected input/output for the specified 24 hours

Aspirate from drains/NG

Amount of exudates from wounds:
None – Minimal – Moderate – Heavy

Has there been a significant pyrexia over the last 24 hours?

Is there any renal impairment?

Is there any significant medications to affect hydration?

Continence status

Total IV fluids vs. combined IV fluids and oral vs. total oral fluids in a 24 hour period


**ACTIVITY 4**

Infusion devices are commonly used to manage intravenous (IV) fluid/medication administration. Sophisticated procedures, techniques and risk management requirements have led to the technological advancement of such devices. They have moved from being tools to support clinical practice to being an integral requirement in treatment delivery. They ensure accuracy and safety for the client.

1. What is an infusion device?
   
   ________________________________
   ________________________________
   ________________________________

2. Why is it necessary to use an infusion device?
   
   ________________________________
   ________________________________
   ________________________________
ACTIVITY 5

Learners to observe demonstration of infusion devices and then practise using the equipment.

ACTIVITY 6

Learners to observe demonstration of the removal of a peripheral IV cannula and then practise using the equipment.
**COMPLETE RESOURCE LIST**

**Books/articles**


Farrell, M 2005, *Smeltzer and Bare’s Textbook of Medical-Surgical Nursing*, Lippincott Williams and Wilkins, Sydney.


**Journals**

Australian Nursing Journal (ANJ)


Evidence-based Nursing (EBN)
International Journal of Nursing Practice


**Other**

Aged Care Act 1997


Australian Nurse Council Competency Standards, October 2002.


Guidelines for the Handling of Medication in Community Based Health Services and Residential Facilities in NSW (NSW Health Department circular No 97/10)

Guidelines for the Handling of Medication in NSW Public Hospitals (NSW Health Department Circular. These are the standards that regulate enrolled nurse practice)

“Integrated Best Practice Model for Medication Management in Residential Care Facilities” (2nd edition) 2000 Australian Pharmaceutical Advisory Council, Department of Health and Aged Care, Commonwealth of Australia, Canberra

Quality of Care Principles 1997

NSW Nurses Registration Board’s document entitled Course Requirements for Enrolled Nurse Education November 2001

NSW Poisons and Therapeutic Goods Act 1966

Nursing Home Act 1993

Poisons and Therapeutic Goods Regulation 2002

Private Hospitals and Day Procedure Centre and Nursing Homes Regulations TG115/10

**CDROM/DVD/Video**

Websites

www.aaamath.com/

Australian Nursing and Midwifery Council: www.anmc.org.au

Cochrane Collaboration Database: www.Cochrane.org.au

Cumulative Index to Nursing and Allied Health Literature (CINAHL): www.cinahl.com

Department of Health and Ageing: www.health.gov.au

NSW Department of Ageing, Disability and Home Care (DADHC): www.dadhc.nsw.gov.au

NSW Department of Health: www.health.nsw.gov.au

Nurses and Midwives Board of New South Wales: www.nmb.nsw.gov.au

Royal College of Nursing, Australia: www.rcna.org.au

The College of Nursing (incorporating the NSW College of Nursing): www.nursing.aust.edu.au

The Joanna Briggs Institute of Evidence-based Practice: www.joannabriggs.edu.au

National Prescribing Service: www.nps.org.au

The Australian Institute of Health and Welfare: www.aihw.gov.au

http://lamar.colostate.edu/~hillger/brownridge.html

www.staff.vu.edu.au/mcaonline/units/index.html

http://mathforum.org/dr.math/

http://classes.kumc.edu/son/nurs420/clinical/basic_practice.htm