NURSPT 020
PHARMACOLOGY I

WEEK #1

Module 1: Fundamentals of Pharmacology

1. Describe the role and responsibilities of the Psychiatric Technician in medication administration.
2. Identify and discuss the six rights of medication administration.
3. Explain the terms commonly used to describe the basic principles of drug actions.
4. Identify routes of medication administration.
5. Define common terminology associated with medication administration.
6. Identify and utilize a variety of sources of drug information.
7. State the purpose of federal regulations and standards related to medications and medical products.
8. Discuss cultural and life span considerations related to medication administration.
9. Identify important concepts related to medication administration and patient education.

WEEK #2

Module 2: Drug Classification

1. Explain how drugs are classified.
2. Identify the major therapeutic drug classifications.
3. Describe the teaching responsibilities related to the administration of medications.

WEEK #3

Module 3: Calculation of Medication Dosages

1. Define common abbreviation symbols used to communicate medication orders.
2. Review basic math skills
3. Review the metric system
4. Review the apothecary system
5. Review household system
6. Demonstrate conversion between systems,
7. Calculate medication dosages using Dimensional Analysis.

WEEK #4

Module 4: Analgesics, Anti-inflammatory and Anti-Rheumatoid Agent Medications

1. Describe the physiology of pain and different types of pain.
2. Describe the use of opioid analgesics.
3. Identify opioid analgesics according to dosages and strengths.
4. Describe the most common opioid antagonists and how they are used.
5. Describe indications, uses and precautions for non-steroidal anti-inflammatory agents (NSAIDs).
6. Identify various chemical classes of non-opioid, non-steroidal anti-inflammatory agents (NSAIDs).
7. Identify and discuss selected medications included in the classification of NSAIDs and how they are used.

WEEK #5

Module 5: Individualizing Drug Therapy and Over-the-Counter Medications-Part I

1. Identify factors contributing to variability in drug response, including biological factors, cultural factors, environmental factors and polypharmacy.
2. Review physiological changes that occur during the aging process that impact pharmacokinetic and pharmacodynamics processes in the elderly.
3. Discuss the variability in drug response and the implications for drug therapy.

WEEK #6

Module 5: Individualizing Drug Therapy and Over-the-Counter Medications-Part II

1. Review common OTC drugs and discuss important concepts related to medication administration for patient/family education.
2. Review alternative medication therapies, including herbal medications.

NURSPT 020 / PHARMACOLOGY I
Curriculum Content Week 1

Fundamentals of Pharmacology

Goal Statement

The goal of this module is to provide the learner with basic information regarding pharmacology.

Module Description

Fundamental of Pharmacology module provides an overview of basic pharmacological principles, terminology associated with medication administration, drug terminology, sources of drug information, federal legislation, cultural, ethical, and lifespan considerations.

Objectives

At the completion of this module, the learner will be able to:

1. Describe the role and responsibilities of the Psychiatric Technician in medication administration.
2. Identify and discuss the six rights of medication administration.
3. Explain terms commonly used to describe the basic principles of drug actions.
4. Identify routes of medication administration.
5. Define common terminology associated with medication administration.
6. Identify and utilize a variety of sources of drug information.
7. State the purpose of federal legislation and standards related to medications and medical products.
8. Discuss cultural and lifespan considerations related to medication therapy.
9. Identify important concepts related to medication administration and patient education.

Psychiatric Technician Program
Curriculum Content
Instructional Plan: Term 1 Week 1

Unit Title: Nurspt 020 Pharmacology 1

Theory Hours this week: 3 **Skills Lab / Clinical Hours this week: 0**

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
Fundamentals of Pharmacology **PHARM/0.5**	**Objective 1** **Describe the role and responsibilities of the Psychiatric Technician in medication administration.**	A. Psychiatric Technician's scope of practice as it relates to medication administration (as described by the Psychiatric Technician Licensure Examination Test Plan [2007] Operational Definitions of Content Area). 1. The psychiatric technician administers medications and documents their administration as ordered by the physician or designee. a. All routes of administration utilized except IV. b. All classifications of medications are included. 2. The psychiatric technician is expected to have a good understanding of: a. Commonly used drugs including indications for use, dosage, expected actions, contraindications, precautions, adverse reactions and warnings. b. Medication allergies. c. Preparation of	Lecture Discussion Reading Transparencies Study guide Audiovisual aids **Lecture/Discussion** • http://www.bvnpt.ca.gov/pdf/ptregs.pdf Psychiatric Technicians California Code of Regulations • http://www.bvnpt.ca.gov/enforcement/psychiatric_technicians_law.shtml Psychiatric Technician's Law Methods of Evaluation: Testing Discussion Questions Case Studies Observation	The following learning activities apply for Content Outline Objectives 1-9. **Required Reading** • BVNPT Scope of Practice for the Psychiatric Technician • BVNPT Rights and Responsibilities of the Psychiatric Technician • In required pharmacology textbook, read chapters and information on topics listed in Column I. 1. Terminology 2. Drug nomenclature 3. Drug information 4. Federal legislation and standards regarding medication	N/A	N/A

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
		prescribed medications. d. Calculations of medication dosages. e. Principles of medication administration. f. Controlled drugs. 3. The psychiatric technician performs associated tasks that include (but are not limited to): a. Assessment of client history. b. Calculation of drug dosages. c. Preparation and administration of oral medications d. Preparation/administration of parenteral medications. e. Preparation/administration of topical medications f. Preparation/administration of inhalant medications g. Preparation/administration of controlled medications h. Evaluation of client response to administered medications.		testing 5. Cultural and lifespan considerations 6. Patient education		
Fundamentals of Pharmacology **PHARM/0.25**	**Objective 2 Identify and discuss the six rights of medication administration.**	A. Medication B. Route C. Time D. Client E. Dosage F. Documentation				NA

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
Fundamentals of Pharmacology **PHARM/0.25**	**Objective 3** **Explain terms commonly used to describe the basic principles of drug actions.**	A Pharmacokinetics 1. Absorption 2. Distribution 3. Metabolism 4. Excretion B Pharmacodynamics C Pharmacotherapeutics				NA
Fundamentals of Pharmacology **PHARM/0.25**	**Objective 4** **Identify routes of medication administration.**	A. Enteral (administration into GI tract by oral, rectal or nasogastric means). 1. Oral a. Tablets i. Enteric coated tablets ii. Sustained release tablets b. Sublingual or buccal c. Capsules i. immediate release (IR) ii. sustained release (SR) d. Syrups e. Elixirs 2. Rectal a. suppository b. gel 3. Nasogastric (for patients who cannot swallow or have had oral surgery). B. Parenteral (any route other than enteral) 1. Injections a. Intramuscular b. Subcutaneous c. Intradermal d. Z-track 2. Percutaneous (application of medication to the skin or				NA

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
		mucous membranes for absorption). a. Optic (application to the mucous membrane of the eye) b. Otic (application to the mucous membrane of the ear) c. Intranasal (application to the mucous membrane of the nose) i. spray ii. drops d. Inhalant (application to the bronchial muscle of the lung) i. metered dose inhaler (MDI) ii. dry powder inhaler (DPI) e. Topical (application to the skin) i. creams ii. lotions iii. ointments iv. powders				
Fundamentals of Pharmacology **PHARM/0.5**	**Objective 5 Define common terminology associated with medication administration.**	A. Action B. Adverse Drug Reaction C. Allergy D. Agonist E. Antagonist F. Bioavailability G. Chemical Name H. Contraindications I. Interactions J. Indication K. Drug solubility L. Generic Name M. Half-Life N. Hypersensitivity	**Internet Resource** - practice • http://www.wisc-online.com/Objects/ViewObject.aspx?ID=NUR7407 Basic Pharmacology Terms Matching Game • http://www.studystack.com/flashcard-14552	**Assignment** • Write definitions for each item. • Utilize internet resources for practice. •		NA

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
		O. Iatrogenic Response P. Idiosyncratic response Q. Incompatibility R. Peak S. Placebo T. Precautions U. Side effects V. Steady state W. Synergistic effect X. Therapeutic effect Y. Therapeutic margin Z. Titrate AA. Therapeutic margin BB. Titrate CC. Toxicity DD. Trough	Studying flashcards about pharmacology terms.			
Fundamentals of Pharmacology **PHARM/0.25**	**Objective 6** **Identify and utilize a variety of sources of drug information.**	A. Internet Resources B. Journals C. The United States Pharmacopeia–National Formulary (USP–NF) 1. a book of public pharmacopeial standards. 2. contains standards for medicines, dosage forms, drug substances, excipients, medical devices, and dietary supplements. D. Textbooks/Drug Reference Books E. Physicians Desk Reference 1. Contains full label information 2,400 prescription drugs with warnings and drug interactions. 2. Hundreds of full-size, color photographs.	**Internet Resources** • http://www.webmd.com/drugs/index-drugs.aspx WEB MD • http://www.usp.org/USPNF/ The United States Pharmacopeia–National Formulary	**Group Activity** • Divide students into group and assign each to a different source for drug information. • Have each group identify various examples or resources from each source and demonstrate for the class how it is best utilized.		

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
Fundamentals of Pharmacology **PHARM/0.5**	**Objective 7** **State the purpose of federal legislation and standards related to medications and medical products.**	A. Pure Food and Drug Act of 1906 B. Federal Food, Drug and Cosmetics Act 1938 1. Amended 1952 2. Amended 1962 C. Controlled Substances Act 1970 1. Schedule I 2. Schedule II 3. Schedule III 4. Schedule IV 5. Schedule V D. Pregnancy categories	**Internet Resource**: http://www.fda.gov/regulatoryinformation/legislation/federalfooddrugandcosmeticactfdcact/default.htm FDA Website			NA
Fundamentals of Pharmacology **PHARM/0.25**	**Objective 8** **Discuss cultural and lifespan considerations related to medication therapy.**	A. Cultural issues B. Lifespan considerations				NA
Fundamentals of Pharmacology **PHARM/0.25**	**Objective 9** **Identify important concepts related to medication administration and patient education.**	A. Responsibility for patient teaching B. Cultural Considerations C. Barriers to learning				NA

Key:

For All Programs:							
A/P	Anatomy and Physiology	NP	Nursing Process	CCC	Culturally Congruent Care	M/S	Medical/Surgical Nursing
CDIS	Communicable Diseases	PE	Patient Education	EOL	End-of-Life Care	REH	Rehabilitation Nursing
COM	Communication	PHARM	Pharmacology	**For VN Programs only:**		**For PT Programs only:**	
NUT	Nutrition	LDR	Leadership	FUN	Nursing Fundamentals	NS	Nursing Science Fundamentals
PSY	Psychology	SUP	Supervision	MAT	Maternity Nursing	MD	Mental Disorders
G/D	Normal Growth and Development	ETH	Ethics and Unethical Conduct	PED	Pediatric Nursing	DD	Dev. Disabilities
		CT	Critical Thinking	GER	Gerontological Nursing		

NURSPT 020 / PHARMACOLOGY I
Curriculum Content Week 2

Calculating Medication Dosages

Goal Statement

The goal of this module is to review basic mathematical systems necessary in medication administration and to introduce the psychiatric technician student to those systems conversions necessary for medication administration.

Module Description

Calculating Medication Dosages module introduces the beginning nursing student to concepts necessary to prepare to be successful in the Pharmacology Course. These concepts include a math review, conversions from household measurements, to metric measurements, and to the apothecary system. Students will also be taught to calculate drug dosages by use of ratio and proportion, and dimensional analysis. Abbreviations and symbols used in pharmacology will also be emphasized.

Objectives

At the completion of this module, the learner will be able to:

1. Define common abbreviations and symbols used to communicate medication orders.
2. Review basic math skills.
3. Review the metric system.
4. Review the apothecary system.
5. Review the household system.
6. Demonstrate conversion between systems.
7. Calculate medication dosages.

Psychiatric Technician Program
Curriculum Content
Instructional Plan: Term 1 Week 2

Unit Title: Nurspt 020 Pharmacology 1
Theory Hours this week: 3 **Skills Lab / Clinical Hours this week:**

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
Calculating medication dosages PHARM/.5	**Objective 1** **Define common abbreviation symbols used to communicate medication orders.**	A. Abbreviations 1. Utilize Study Guide 2.1 and demonstrate understanding of abbreviations used in medicine and nursing. B. Symbols 1. Utilize Study Guide 2.1 and demonstrate understanding of symbols used in medicine and nursing.	Lecture Discussion Reading Transparencies Study guide Audiovisual aids Methods of Evaluation: Testing Discussion Questions Case Studies Observation	**Required Reading** • In required Pharmacology Textbook, read chapters and information as listed in Column I. **Study Guide 2.1** Abbreviations & Symbols **Study Guide 2.2** Pharmacology Vocabulary	N/A	N/A
Calculating medication dosages PHARM/.5	**Objective 2** **Review basic math skills.**	A. Perform basic arithmetic operations on the following types of problems: 1. Addition 2. Subtraction 3. Multiplication 4. Division 5. Decimal fractions 6. Common fractions 7. Percent 8. Round dosage problems B. Match Roman numeral with the equivalent Arabic notations. C. Identify the numbers located to the right of the decimal point as tenths, hundredths, and thousandths. 1. Multiply number by 10, 100,		**Required Reading** • In required Pharmacology Textbook, read chapters and information as listed in Column I. **Study Guide 2.3** Rounding Policy **Study Guide 2.4** Military Time **Study Guide 2.5** Review of Essential Mathematics **Study Guide 2.6** Roman Numerals		N/A

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
		1000 2. Divide numbers by 10, 100, 1000 D. Rank a given list of decimal or common fractions from the highest values to the lowest values. E. Perform conversion between Standard Time and Military Time.				
Calculating medication dosages PHARM/ 0.25	**Objective 3 Review the metric system.**	A. Differentiate types of metric measures commonly used in health care settings by weight, volume, and length. B. Match the metric measures with the appropriate usage. C. Match the metric measures with the appropriate abbreviations or symbols. D. Select from a given list the correct metric conversation equivalents. E. Match the given metric units of measurements with the equivalent converted units of measurements.		**Required Reading** • In required Pharmacology Textbook, read chapters and information as listed in Column I. **Study Guide 2.7** Table of Approximate Equivalents **Study Guide2.8** Introduction to Dimensional Analysis **Study Guide 2.9** Equivalents		
Calculating medication dosages PHARM/ 0.25	**Objective 4 Review the apothecary system.**	A. Grains and Minums 1. Match the apothecary measures with the appropriate usage. 2. Calculate dosages using apothecary system.		**Required Reading** • In required Pharmacology Textbook, read chapters and information as listed in Column I. **Study Guide 2.10** Calculating Medication Dosages **Required Reading**		NA

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
Calculating medication dosages PHARM/.5	**Objective 5 Review the household system.**	A. Differentiate types of household measures commonly used in health care settings. B. Match the household measures with the appropriate abbreviations or symbols. C. Select from a given list the correct household conversion equivalents. D. Match the given household units of measurement with the equivalent converted units of measurements.		• In required Pharmacology Textbook, read chapters and information as listed in Column I.		NA
Calculating medication dosages PHARM/.5	**Objective 6 Demonstrate conversion between systems.**	A. Differentiate given metric, apothecary or house measurements from equivalent measurements in another system. B. Match given metric, apothecary or household measurements with equivalent converted measurements in another system.		**Required Reading** • In required Pharmacology Textbook, read chapters and information as listed in Column I. **Study Guide 2.1** Abbreviations & Symbols **Study Guide 2.10** Calculating Medication Dosages		NA
Calculating medication dosages PHARM/.5	**Objective 7 Calculate medication dosages.**	A. Discuss definition of Dimensional Analysis. B. Identify the steps in Dimensional Analysis. C. Calculate the correct answer of medication dosages problems using dimensional analysis.		**Required Reading** • In required Pharmacology Textbook, read chapters and information as listed in Column I. **Study Guide 2.10** • Calculating Medication Dosages		NA

Key:

For All Programs:							
A/P	Anatomy and Physiology	NP	Nursing Process	CCC	Culturally Congruent Care	M/S	Medical/Surgical Nursing
CDIS	Communicable Diseases	PE	Patient Education	EOL	End-of-Life Care	REH	Rehabilitation Nursing
COM	Communication	PHARM	Pharmacology	**For VN Programs only:**		**For PT Programs only:**	
NUT	Nutrition	LDR	Leadership	FUN	Nursing Fundamentals	NS	Nursing Science Fundamentals
PSY	Psychology	SUP	Supervision	MAT	Maternity Nursing	MD	Mental Disorders
G/D	Normal Growth and Development	ETH	Ethics and Unethical Conduct	PED	Pediatric Nursing	DD	Dev. Disabilities
		CT	Critical Thinking	GER	Gerontological Nursing		

Week 2 – Calculating Medication Dosages
Study Guide 2.1
Abbreviations & Symbols
(Common to medical orders and prescriptions)

a	before	**OD, o.d.**	**right eye**
A,AP	apical pulse	ophth.	Ophthalmic
a.c.	before meals	**o.s.**	**left eye**
a.d.	**right ear**	**os**	**mouth**
ad lib	freely as desired	**OU**	**both eyes**
	as much as needed	oz	ounce
amp	ampule	P.	pulse
a.s.	**left ear**	p.c.	after meals
AU	**both ears**	p.o.	by mouth
b.i.d.	two times a day	p.r.n.	when required;
B.M. or BM	bowel movement		as needed
B.P. or BP	blood pressure	q.	every
c, c	with	**q.d.**	**every day**
cc	cubic centimeter	q.h.	every hour
cap.	Capsule	q2h	every 2 hours
comp.	compound; compounded of	q3h	every 3 hours
D.C.	discontinue	q4h	every 4 hours
dr	dram	**q.o.d.**	**every other day**
elix.	elixer	q.i.d.	four times a day
gr.	Grain	R, ®	rectal
Gm,gm.,g	gram	Rx	take
Gtt	drop	s,s	without
h.	an hour	sol.	A solution
(H)	hypodermic, also subQ	ss, ss.	A half
h.s.	hour of sleep; bedtime	stat	immediately; at once
I.M.	intramuscular	subl., S.L., sl	sublingual
Inj.	Injection	subQ, **sc, s.c.**	subcutaneous
I.V.	intravenous	suppose.	Suppository
L.	liter	syr.	Syrup
m.	minim	T.	temperature
med.	A medicine	tab.	A tablet
mcg.	microgram	tbsp, T	tablespoon
mEq.	Milliequivalent	tsp, t	teaspoon
mg.	milligram	t.i.d.	three times a day
ml.	milliliter	tinc.,tr.	A tincture
noc	night	ung.,ungt.	An ointment
NKA	no known allergy	Vag.	Vaginal
NPO	nothing by mouth	W.A.	while awake

* **bold items** (see JACHO 'do not use' list next page)

Abbreviations and Symbols

(Found on client charts, not on computer programs)

CO^2	carbon dioxide
↓	decrease
>	greater than
/	per
↑	increase
K	potassium
Na	sodium
Cl	chloride
Ca	calcium
<	less than
O^2	oxygen
® or PR	rectal
H^2O	water
c	with
s	without
p pc	after after meals
a ac	before before meals
Ψ	Psych or psychiatric
Δ	change

National Patient Safety Goals

The NPSG's are based on national statistics related to high risk issues in healthcare settings. All facilities accredited by the JACHO must fully meet these goals.

DO NOT USE	USE THIS INSTEAD
'u' or 'U'	Write the word "Unit"
q.d. or Q.D.	Write the words "daily" or "every day"
q.o.d. or Q.O.D.	Write the words "every other day"
S.C. or S.Q	Write "Sub Q" or "Subcutaneous"
c.c. or cc	Use "ml" for milliliter instead
A.S., A.D., A.U.	Write the words "right, left, or both ears"
O.S., O.D., O.U.	Write the words "right, left, or both eyes"
µg	Use "mcg" or write the word "microgram"
IU	Write the words "International Unit"

Practice Application of Abbreviations 1

Write abbreviations for terms:

1. under the tongue _____or_____
2. without _____
3. every three hours _____
4. both ears _____
5. hour of sleep _____
6. suppository _____
7. ounce _____ or _____
8. after meals _____
9. nothing by mouth _____
10. milliequivalent
11. intravenous _____
12. with _____
13. left eye _____

Briefly define the abbreviations

14. p.r.n. _____
15. q.o.d. _____
16. ml. _____
17. DC _____
18. q.d. _____
19. p.o. _____
20. t.i.d. _____
21. s.s. _____
22. a.c. _____
23. O.D. _____
24. ungt. _____
25. gr. _____

See answer key at the end of the exercises

Practice Application of Abbreviations 2

Briefly define abbreviations:

1. N.P.O. _____
2. q4h _____
3. p.c. _____
4. mEq _____
5. c _____
6. S.L. _____
7. s _____
8. I.V. _____
9. os. _____
10. h.s. _____
11. mcg. _____
12. suppos. _____

Write abbreviations for terms:

13. one-half _____
14. less than _____
15. four times a day _____
16. right eye _____
17. kilogram _____
18. discontinue _____
19. as needed _____
20. every day _____
21. before meals _____
22. ointment _____
23. every other day _____
24. drop _____
25. by mouth _____

See answer key at the end of the exercises

Application of Abbreviations 3

Directions: Circle the correct answer

1. The abbreviation gm. is accepted for:
   a. grain
   b. gram
   c. dram
   d. drop

2. The abbreviation p.c. is accepted for:
   a. as desired
   b. after meals
   c. before meals
   d. of each

3. The abbreviation O.U. is accepted for:
   a. left eye
   b. right eye
   c. both eyes
   d. no eyes

4. The abbreviation p.o. is accepted for:
   a. by mouth
   b. after meals
   c. before meals
   d. intramuscular injection

5. The abbreviation dr. is accepted for:
   a. grain
   b. gram
   c. dram
   d. drop

6. The abbreviation bid is accepted for:
   a. once a day
   b. twice a day
   c. three times a day
   d. four times a day

7. The abbreviation PRN. is accepted for:
   a. at bedtime
   b. every morning
   c. immediately
   d. when needed

8. The abbreviation gr. is accepted for:
   a. grain
   b. gram
   c. dram
   d. drop

9 The abbreviation a.c. is accepted for:
   a. as desired
   b. after meals
   c. before meals
   d. of each

10. The abbreviation O.D. is accepted for:
   a. left eye
   b. right eye
   c. both eyes
   d. no eyes.

11. The abbreviation I.M. is accepted for:
   a. by mouth
   b. sublingual
   c. intramuscularly
   d. subcutaneously

12. The abbreviation oz. is accepted for:
   a. grain
   b. gram
   c. dram
   d. ounce

13. The abbreviation qid is accepted for:
   a. once a day
   b. twice a day
   c. three times a day
   d. four times a day

14. The abbreviation H.S. is accepted for:
   a. at bedtime
   b. every morning
   c. immediately
   d. when needed

15. The abbreviation mg. is accepted for:
   a. milligram
   b. microgram
   c. dram
   d. drop

22. The doctor's order reads paraldehyde 4 ml. tid prn. The drug should be given:
   a. three times a day if necessary
   b. four times a day
   c. twice a day
   d. immediately and four times a day

16. The abbreviation ad lib is accepted for:
    a. as desired
    b. after meals
    c. before meals
    d. of each

17. The abbreviation O.S. is accepted for:
    a. left eye
    b. right eye
    c. both eyes
    d. no eyes

18. The abbreviation S.L. is accepted for:
    a. by mouth
    b. sublingual
    c. slowly
    d. subcutaneously

19. The abbreviation gtt. is accepted for:
    a. grain
    b. gram
    c. dram
    d. drop

20. The abbreviation tid is accepted for:
    a. once a day
    b. twice a day
    c. three times a day
    d. four times a day

21. The abbreviation stat is accepted for:
    a. at bedtime
    b. every morning
    c. immediately
    d. when needed

23. Aspirin 0.3 Gm. stat and tid prn. was ordered The aspirin should be given:
    a. once, if necessary
    b. every three hours if necessary
    c. immediately and three times a day if necessary
    d. every two hours and at once

24. Chlortetracycline 250 mg. I.M., q. 4h. was ordered. Chlortetracycline should be given:
    a. intramuscularly every four hours
    b. by hypodermic injection at once and repeated in 4 hours
    c. by mouth every 4 hours
    d. intravenously in 4 doses

25. Meperidine hydrochloride (Demerol) 50 mg. stat and q. 4 hrs prn. for 24 hrs was ordered. The drug should be given:
    a. immediately and every 4 hours if necessary for the next 24 hours
    b. twenty-four times
    c. four times
    d. intravenously in 4 doses

26. Procaine penicillin 400,000 units I.M., bid was ordered. The nurse should give the procaine penicillin:
    a. once a day – by injection
    b. four times a day – intramusclary
    c. every 12 hours – intramusclary
    d. four times in 24 hours – intramusclary

Application of Abbreviations – Answer Key

Application of Abbreviations I

1. subl. or s.l. or sl
2. s
3. q3h
4. au or AU
5. H.S.
6. supp. or suppose.
7. 3 or oz
8. p.c.
9. N.P.O.
10. MEq
11. I.V.
12. c
13. O.S.
14. as needed, when required
15. every other day
16. milliliter
17. discontinue
18. every day
19. by mouth
20. 3 times a day
21. one-half
22. before meals
23. right eye
24. ointment
25. grain

Applications of Abbreviations 2

1. nothing by mouth
2. every four hours
3. after meals
4. millequivalent
5. with
6. sublingual
7. without
8. intravenous
9. mouth
10. bedtime, hour of sleep
11. microgram
12. suppository
13. ss
14. <
15. qid
16. OD
17. Kg
18. D.C.
19. prn
20. q.d.
21. a.c.
22. ung. or ungt.
23. q.o.d.
24. gtt
25. p.o.

Applications of Abbreviations 3

1. b
2. b
3. c
4. a
5. c
6. b
7. d
8. a
9. c
10. b
11. c
12. d
13. d
14. a
15. a
16. a
17. a
18. b
19. d
20. c
21. c
22. a
23. c
24. a
25. a
26. c

Week 2 – Calculating Medication Dosages
Study Guide 2.2
Pharmacology Vocabulary

Absorption
Allergic reaction
Ampule
Anaphylactic reaction
Anti-
Anticoagulant
Antidote
Apothecaries System
Aspiration
Auricle
Bioavailability
Biotransformation (detoxification)
Buccal
Calibration
Canthus
Common fraction
Contraindications
Controlled substances
Cumulative effect
Decimal fraction
Denominator
Distribution
Dorsal recumbent position
Drug abuse
Drug allergy
Drug dependence
Drug interaction
Drug tolerance
Embolus
Emetic
Excretion
"Five (5) Rights"
Fowler's position
Fraction
Gastrointestinal (G.I.)
Generic name
Glucometer
Half-life
Idiosyncratic effect (of drug)
Inhalation
Instillation
Insulin
Intramuscular
Inunction
Kardex
Lacrimal duct
Lateral Sims' position
Local action
Medical asepsis
Medical record
Meniscus
Metric system
Minum
Mucous membrane
Narcotics
Numerator
Official name
Opiate
OTC (over the counter)
Ophtalmic
Opiate
Optic
Oral
Oropharyngeal
Optic
Parenteral
Patrial Thromboplasm Time (PTT)
Pharmacokinet
Prophylactic
Prothrombin Time (PT)
Rectal
Serum concentration
Serum half-life
Side effects
"Sliding Scale"
Sphincter muscle
Subcutaneous
Sublingual
Suppository
Synergistic effect (of drugs)
Systemic action
Therapeutic effect (of drugs)
Thrombosis
Topical
Toxicity (toxic effect)
Trade name
Unit-dose system
Unit of insulin
Untoward
Vaginal
Vial

Week 2 – Calculating Medication Dosages
Study Guide 2.3
Rounding Policy

General Rule- 5 or more round up.
Less then 5 round down.

Tablets- If scored, the tablet may be broken in half or fourths, depending on how it is scored, to give the correct dose. In practice, we sometimes divide unscored tablets. In Nursing 100, round all tablets in test questions to the nearest half (1/2 or 0.5) tablet whether or not it says it is scored.

Capsules to nearest whole- Great care must be taken in rounding these forms of drugs. Whether you will round or not depends on the amount of medication you need, the amount of drug in the tablet or capsule, and the type of medication. The pharmacy may be able to send you a tablet or capsule of the correct dosage. Know the medications.

Drops- to the nearest whole.

Parenteral drugs for intramuscular and subcutaneous injections- These are usually rounded to the nearest tenth. (Work the problem out to at least two decimal places before rounding.) The syringes used for administration of intramuscular drugs are commonly calibrated in tenths. Certain very potent medications are given in syringes marked in hundredths. (To make the calculations work the problem to 3 decimal places before rounding.) Know the medications.

This policy for rounding applies to first and second semester dosage problems. Later, when you calculate pediatric doses and medications used in intensive care units, you will need to work the problems to 3 decimal places before rounding.

In Nursing 100, round everything to the nearest tenth except tablets, capsules, and drops for all exams. Note: this includes tsp., cc, ml, pounds, kg., etc. In the hospital you change 0.7 tsp to cc and use a syringe to measure.

Note: The exceptions:

1. When changing 1/6 to a decimal, use 0.17 for your calculations.

2. When changing 1/150 to a decimal, use 0.007 for your calculations

3. When changing 1/200 to a decimal, use 0.005 for your calculations

This gives you a more accurate answer.

Rounding Policy Application

Following the rounding policy, correctly round each of the following.

1. 0.72 tabs = _____ tabs
2. 0.83 cc = _____ cc
3. 0.9 caps = _____caps
4. 0.75 ml = _____ ml
5. 0.43 tabs = _____ tabs
6. 1.23 tabs = _____ tabs
7. 1.15 caps = _____ caps
8. 2.05 tabs = _____ tabs
9. 0.98 cc = _____ cc
10. 0.33 ml = _____ ml

Answer Key

1. 0.5 tabs
2. 0.8 cc
3. 1 cap
4. 0.8 ml
5. 0.5 tabs
6. 1 tab
7. 1 cap
8. 2 tabs
9. 1 cc
10. 0.3 ml

Week 2 – Calculating Medication Dosages
Study Guide 2.4
Military Time

Known also as the 24-hour clock. Used in almost all hospitals at this time. Four digits are used to write military time: 0000. The first 2 digits represent hours, the last 2 represent minutes. Starts at 1 minute after midnight: 0001. Hours that are not 2 digits are preceded by "0": 0400 is 4 A.M., 0830 is 8:30 A.M.

Calculate the hours after 12 noon (1200) by adding 12 to the actual time:

1:30 P.M. = 1:30 + 12 = 1330

9:15 P.M. = 9:15 + 12 = 2115

Reverse the rules to change military time to standard time.

Change to standard time		Change to military time	
A.	005	E.	11:45 P.M.
B.	0930	F.	4:30 A.M.
C.	1415	G.	8:30 P.M.
D.	2200	H.	12 Noon

I. The military time notation 1015 is written as _____ in standard time.
   a. 10:15 A.M.
   b. 10:15 P.M.
   c. Could be used for either
   d. None of the above are correct

J. The time notation 12:30 A.M. is written as _____ in military time.
   a. 2430
   b. 0030
   c. Neither of the above is correct

K. The time notation 4 P.M. is written as _____ in military time.
   a. 0400
   b. 1400
   c. 1600
   d. 1800

L. The physician orders the lab to draw blood for a blood sugar test at 0630, 1130, 1700, and 2230. This means blood will be drawn at:
   a. 6:30 A.M., 11:30 A.M., 5:30 P.M., 9:00 P.M.
   b. 6:00 A.M., 11:30 A.M., 5:30 P.M., 10:30 P.M.
   c. 6:30 A.M., 11:30 A.M., 5:30 P.M., 10:00 P.M.
   d. 6:30 A.M., 11:30 A.M., 5:00 P.M., 10:30 P.M.

Answers

A. 12:05 A.M.

B. 9:30 A.M.

C. 2:15 P.M.

D. 10:00 P.M.

E. 2345

F. 0430

G. 2030

H. 1200

I. a

J. b

K. c

L. d

Week 2 – Calculating Medication Dosages
Study Guide 2.5
Review of Essential Mathematics

A. Introduction

Knowledge of certain mathematical skills is necessary for health care workers, especially in situations where the worker is expected to calculate accurate medication dosages for individual clients.

This study guide is designed to help you identify the areas of mathematical operations in which you need improvement.

In order to evaluate your mathematical skills, work the following problems and check your answers with the answer key at the end of the exercise.

If you have difficulty in any of the areas included in this review, please see your instructor. If you feel confident in these review skill areas, continue your studies in this module.

B. Skills self-examination

Skill areas		Your answers
1.	Express in Roman numerals a. 4 _____ b. 47 _____	a. _____ b. _____
2.	Express in Arabic numerals a. XVI ____ b. LIX ____	a. _____ b. _____
3.	a. Add: 2.5, 0.18, 3.725 b. Subtract: 12.352 from 19.5	a. _____ b. _____
4.	Multiply: a. 0.13 by 1000 b. 1.25 by 0.5 c. 0.12 by 0.003	 a. _____ b. _____ c. _____
5.	Divide: a. 0.12 by 0.4 b. 15 by 1.5 c. 0.6 by 0.15	 a. _____ b. _____ c. _____
6.	Rank the following numbers from the highest value to the lowest value: 0.13, 1.28, 0.1, 0.239 _____ _____ _____ _____	
7.	Perform the indicated operations: a. 1/5 + 1/2 + 7/8 b. 2/9 – 1/6 c. 3/8 x 2/7 x 5/6 d. 4 x 3/5 x 2 ½ e. 2/7 ÷ 2/14 f. 3 ÷ 9.10	 a. _____ b. _____ c. _____ d. _____ e. _____ f. _____
8.	Rank the following fractions from highest value to the lowest value: ½, ¾, 5/6, 2/3 _____ _____ _____ _____	

C. Answer key

1. a. IV
   b. XLVII

2. a. 16
   b. 59

3. a. 6.405
   b. 7.148

4. a. 130
   b. 0.625
   c. 0.00036

5. a. 0.3
   b. 10
   c. 4.0

6. 1.28; 0.239; 0.13; 0.1

7. a. 1 23/40
   b. 1/18
   c. 5/56
   d. 6
   e. 2
   f. 3 1/3

8. 5/6; 3/4; 2/3; 1/2

Week 2 – Calculating Medication Dosages
Study Guide 2.6
Roman Numerals

1. Letters are used to indicate numbers.
2. Repeating a number 2 times doubles its value.
3. Repeating a number 3 times triples its value.
4. Roman numerals are never repeated more than 3 times.
5. When a Roman numeral is followed by a smaller one, add.
6. When a Roman numeral is preceded by a smaller one, subtract.
7. When a smaller Roman numeral comes between two larger ones, subtract, then add.

Roman numerals

ss = ½	IX = 9
I = 1	X = 10
II = 2	L = 50
III = 3	C = 100
IV = 4	CL = 150
V = 5	D = 500
VI = 6	M = 1000

May be written either in lower or upper case letters.

VI = 6
CL = 150

Change to Arabic numbers	Change to Roman numerals
A. VIII	E. 1000
B. XIX	F. 24
C. XIISS	G. 35
D. CXLVI	H. 174

Answers

A. 8
B. 19
C. 12 ½
D. 146
E. M
F. XXIV
G. XXXV
H. CLXXIV

Week 2 – Calculating Medication Dosages
Study Guide 2.7
Table of Approximate Equivalents

1 Kg. = 2.2 lb.
1 Gm. = gr. xv (15) or xvi (16)
1000 Gm. = 1 Kg
60-65 mg. = gr. i
1000 cc. = 1 qt. = 1 L.
30 cc. = 1 ounce
1 cc. = 1 ml.

1000 mcg = 1 mg
1000 mg = 1 gm
1000 mg = 15 gr
15 cc. = 1 tablespoon
5 cc. = 1 tsp.
1 cc = 60 microdrop (for I.V. problems)

These are the approximate equivalents you are to memorize.

Quiz 1

1. _____cc = 1 tsp.
2. 1 Gm. = gr. _____or_____
3. _____mg. = 1 Gm.
4. 60-65 mg. = gr. _____
5. _____cc. = 1 tbsp.
6. _____cc. = 1 tsp.
7. _____kg. = 2.2 lb.
8. 30 cc. = _____ oz.
9. 1000 mcg. = 1 qt. = 1 L.
10. _____cc. = 1 qt. = 1 L.

Quiz 2

1. _____kg. = 2.2 lb.
2. gr. xv-xvi = _____ Gm.
3. 60-65 mg. = gr. _____
4. 1000 cc. = _____qt. = _____L.
5. 30 cc. = _____ oz.
6. 1000 mg. = _____Gm.
7. 1000 mcg. = _____mg.
8. _____cc. = 1 tbsp.
9. 5 cc. = _____tsp.
10. 1 tbsp. = _____tsp.

Application of Approximate Equivalents. ANSWER KEY

QUIZ 1

1. 5 cc. = 1 tsp.
2. 1 Gm. = gr. 15 or 16
3. 1000 mg. = 1 Gm.
4. 60-65 mg. = gr. 1
5. 15 cc. = 1 tbsp.
6. 5 cc. = 1 tsp.
7. 1 kg. = 2.2 lb.
8. 30 cc. = 1 oz.
9. 1000 mcg. = 1 mg.
10. 1000 cc. = 1 qt. = 1 L.

QUIZ 2

1. 1 kg. = 2.2 lb.
2. gr. xv-xvi = 1 Gm.
3. 60-65 mg. = gr. 1
4. 1000 cc. = 1 qt. = 1 L.
5. 30 cc. = 1 oz.
6. 1000 mg. = 1 Gm.
7. 1000 mcg. = 1 mg.
8. 15 cc. = 1 tbsp. (3 household tsp.)
9. 5 cc. = 1 tsp.
10. 1 tbsp. = 3 tsp.

Week 2 – Calculating Medication Dosages
Study Guide 2.8
Introduction to Dimensional Analysis

Calculating medication dosage problems by Dimensional Analysis is the easiest and most accurate way for nursing students to learn medication dosage calculation. Once you learn this method of dosage calculation, you will do all dosage problems this way. You will not need to memorize formula to calculate dosage problems. This study guide was written to help you learn the steps and to be successful in calculation dosage problems.

Definition of Dimensional Analysis

The calculation of problems by changing a given quantity from one unit of measurement to another unit of measurement based on known relationships between units.

OR

*Dimensional Analysis is defined as a problem-solving method that changes units of measurement to another by multiplying a particular unit of measurement by a conversion factor.

Steps in using Dimensional Analysis

A. Determine what units have been ORDERED (Starting Factor).
B. Determine what units you SEEK to solve the problem (Answer Label).
C. Multiply by appropriate CONVERSION FACTORS.

Examples: $\frac{3 \text{ ft.}}{1 \text{ yd.}}$ or $\frac{1 \text{ yd.}}{3 \text{ ft.}}$ $\frac{12 \text{ in.}}{1 \text{ ft.}}$ or $\frac{1 \text{ ft.}}{12 \text{ in.}}$

Note*: A conversion factor produces a change in the form of a quantity or expression without changing its value.

$\frac{8 \text{ ounces}}{1 \text{ cup}}$ $\frac{3 \text{ tsb.}}{1 \text{ tbsp.}}$

D. Use computation to do ARITHMETIC

A ORDER or BEGINNING *times* **C** CONVERSION FACTORS *equals* **B** SEEK or the ANSWER

The amount that **A** (ORDERED) is multiplied by **C** (a known CONVERSION FACTOR or FACTORS) to equal **B** *the* answer (what you SEEK)

*Wilson, p. 35
Another way of stating this is:

Starting Factor *times* Conversion factor(s) *equal* Answer label.

E. Calculations. Use the tips and methods identified for you during your basic math review. Often, after reducing large numbers by canceling, the answer is obvious without much more mathematical work. Remember, if the labels are in their correct positions, the numbers will 'fall' into their proper place.

Example:
How many yards are there in 54 inches?

A *times* **C** *equals* **B**

54 inches *times* $\frac{1 \text{ ft.}}{12 \text{ in.}}$ *times* $\frac{1 \text{ yd.}}{3 \text{ ft.}}$ *equals* $\frac{3}{}$ *equals* 1 ½ yards or 1.5 yds.

Defining and Practicing the Steps

A. DETERMINE WHAT UNITS HAVE BEEN ORDERED.

The following are some of the forms that your order may take in different problems:
CHANGE
THE GIVEN QUANTITY
THIS IS WHAT YOU ARE GOING TO CHANGE
"...ARE IN..."
"YOU ARE REQUIRED TO GIVE..."
"THE PHYSICIAN ORDERS..."
"THE GIVEN QUANTITY..."

Listed below are some examples of dosage problems. Do not attempt to solve the problems. First, we are going to identify **A**, the order, or what you are going to change.
In the answer column on your right, enter what you determine to be **A** (order). Be sure to label your answer.

1. How many inches are in 4 feet? — 1. 4 feet

2. _____ Minutes = 3 ¼ Hours — 2. _____

3. The client is to be given 1 gm. of medication stat. You have on hand 5 grain tablets. How many tablet(s) will you give? — 3. _____

4. You have a bottle labeled 'Elixer of Phenobarbital' gr. xv/cc. You are to administer 0.5 gm. orally. How many cc do you prepare? — 4. _____

5. A 1 ml. ampule of caffine with sodium benzoate contains gr. viiss. How many cc would be necessary to give gr. xxx? — 5. _____

B. DETERMINE WHAT UNITS YOU SEEK.

This may also be asked in many different ways.
AN UNKNOWN ANSWER
WHAT THE GIVEN QUANTITY NEEDS TO BE CHANGED TO
"HOW MANY…?"
"HOW MUCH…?"
"WHAT NUMBER OF TABLETS (CC's, CAPS, etc.)…?"

Listed below are some more examples of dosage problems. Do not attempt to solve the problems. We are now going to determine **B** (the answer label we seek).

Identify **B**, the answer label you are looking for (tablets, cc., gr., tsp., etc.) in each of the following problems. In the answer column on the right, enter what you determine to be **B** (the answer label you are seeking).

1. 1 ½ cups = _____ tbsp.?	1. Tbsp.
2. The physician ordered aspirin Grains 7 ½. You have on hand 2 ½ grain tablets. How Many tablets will you give?	2. _____
3. There are 2 grains of medication in 10 cc. How many cc's are needed to give 240 mg.?	3. _____
4. You are to give Codeine 45 mg. SC (subcutaneous) from a vial of codeine labeled gr. I = 2 ml. How much should you administer?	4. _____
5. The bottle of "Elixer of Donnatol" is labeled tsp. 1 = gr. x. The physician ordered 600 mg. How many tsp. will you administer?	5. _____

C. DETERMINE THE CONVERSION FACTORS YOU WILL USE.

These are determined by a relationship between the given quantity and the units in the answer. A Conversion Factor is "the statement of a known relationship between two entities."

Examples: $\frac{12 \text{ inches}}{1 \text{ foot}}$ $\frac{2 \text{ pints}}{1 \text{ quart}}$

Where you will find Conversion Factors:

1. Equivalents are listed in Study Guide 2.7. These are the ones you are to memorize.
2. Some Conversion Factors are in the dosage problem indicating how labels on bottles and vials are prepared and labeled by the manufacturer.

THERE ARE GR. V. IN ONE TABLET
1 CC. OF MEDICATION = 100 MG.
1 CAP/1 GRAM
5 ML = GR. 10

3. Others are known (common knowledge) relationships, such as:

12 Inches	2 pints	60 minutes	24 hours	4 cups
1 foot	1 quart	1 hour	1 day	1 quart

Examples:

1. The physician ordered 10 cc. of cough medication. How many teaspoons will you give?

A Order *times* **C** Conversion Factor(s) *equals* **B** Answer Label

$$\frac{10\text{ cc}}{1} \times \frac{1\text{ tsp.}}{5\text{ cc.}} = \underline{\qquad}\text{ tsp.}$$

Note the relationship. Any label (for example: cc., gm., gr., etc.) in the top position (the numerator) will cancel with its counterpart found in a bottom position (the denominator). The 5 cc. is on the bottom, so we can cancel the cc. The tsp. must be on the top so that after all the labels are cancelled we will have a tsp. on each side of the equal sign. The conversion factor came from the Table of Equivalents.

Rule 1: One side of an equation can be multiplied by a conversion factor without changing the value of the equation.

Rule 2: The problem is correctly set up when all labels cancel, from both the numerator and the denominator, except the label that is desired in the answer.

2. The client is to be given 2 gm. of medication stat. You have on hand 10 grain tablets. How many tablets will you give? Apply Rules 1 & 2 from previous example.

A Order *times* **C** Conversion Factor(s) *equals* **B** Answer Label

$$\frac{2\text{ gm.}}{1} \times \frac{\text{gr.15}}{1\text{ gm.}} \times \frac{1\text{ tab}}{\text{gr.10}} = \underline{\qquad}\text{ tab}$$

Note the relationship. The 1 gm. is on the bottom, so we can cancel gm. on top. The tab must be on top so that after all the labels are cancelled we will have a tab on each side of the equal sign. The first conversion factor came from the Table of Equivalents. The second was found in the problem.

When we multiply by appropriate Conversion Factors, we solve the problem.

In the following dosage problems, identify the conversion factors you would use to set up the dimensional analysis statement. Check off where you found the C.F. (Conversion Factor).

Here are some household equivalents to help you with these problems.

- 3 teaspoons (tsp.) = 1 tablespoon (tbsp.)
- 2 tablespoons = 1 ounce (oz.)
- 8 ounces = 1 cup (c.)
- 2 cups = 1 pint (pt.)
- 2 pints = 1 quart (qt.)
- 4 quarts = 1 gallon (gal.)

In the answer column on the right, enter what you determine to be C, the conversion factor(s).

1. Jim is to drink 2 quarts of water in 24 hours. How many cups is this?
   If you know that 4 cups = 1 qt., only one conversion factor is needed.
   Factor came from Table of Equivalent _____
   The Problem _____
   Known Relationship _____X_____

   1. $\frac{2\text{ pt.}}{1\text{ qt.}}$ $\frac{2\text{ cups}}{1\text{ pt.}}$ Conversion

If you use more than one Conversion Factor that does not come from the same source, write *first, second, third, etc.*

Example:
Conversion Factor came from
Table of Equivalent first
The Problem third
Known Relationship second

2. How many tsp. in one oz.
   Conversion Factor came from
   2. _____
   Table of Equivalent _____
   The Problem _____
   Known Relationship _____

3. ____ Minutes = 3-1/4 Hours
   Conversion Factor came from
   3. _____
   Table of Equivalent _____
   The Problem _____
   Known Relationship _____

4. 1-1/2 cups = ____ tbsp.
   Conversion Factor came from
   4. _____
   Table of Equivalent _____
   The Problem _____
   Known Relationship _____

5. A 1 ml. ampule of caffeine with sodium benzoate contains gr.viiss. How many cc. would be necessary to give gr. xxx?
   5. _____

   Conversion Factor came from
   Table of Equivalent _____
   The Problem _____
   Known Relationship _____

D. CALCULATE THE ANSWER.

1. **Cancel wherever possible.**
2. **Reduce to lowest terms.**
3. **Multiply the numerators together.**
4. **Multiply the denominators together.**
5. **Divide the numerator by the denominator.**

Set up each of the following problems and solve them by dimensional analysis. To be correct you must have the set-up correct and the correct answer labeled. Remember, **A** x **C** = **B.**
D is your calculation.

1. 6 oz. = _____ tbsp.

2. The physician ordered aspirin Grains 7-1/2. You have on hand 1000 mg. tablets. How many tablet(s) will you give?

3. There are 10 grains of medication in 5 cc. How many tsp(s) will you need to give 25 grains?

4. You are to give Codeine 45 mg. SC (subcutaneous) from a vial of codeine labeled 30 mg. – 1 ml. How many cc(s) should you administer?

5. The bottle of "Elixir of Donnatol" is labeled 5 cc. = gr. x. You are to give gr. v. How many tsp(s) will you administer?

6. How many grains are in 90 mg?

7. _____ hours = ¼ of a day.

8. The client is to be given 0.5 gm. of medication stat. You have on hand 15 grain tablets. How many tablet(s) will you give?

9. You have a bottle labeled "Elixir of Phenobarbital" 120 mg./10cc. You are to administer gr. ii orally. How many cc(s) do you prepare?

10. A 1 ml. ampule of caffeine with sodium benzoate contains gr. viiss. How many cc(s) would be necessary to give gr. xxiiss?

ANSWER KEY

A. Determine what units have been ordered.

1. 4 feet
2. 3-1/4 hours
3. 1 Gm
4. 0.5 Gm
5. gr xxx (30)

B. Determine what units you seek.

1. Tbsp
2. tabs
3. cc's
4. ml
5. tsp

C. Determine the conversion factors you will use.

1. Known Relationships
   2 pts = 1 qt or 4 cups = 1 qt.
   2 cups = 1 pt

2. Table of Equivalents
   1 oz = 30 cc
   1 tsp = 5 cc

3. Known Relationships
   60 min = 1 hr

4. Known Relationships
   8 oz = 1 cup
   2 tbsp – 1 oz

5. Table of Equivalents
   1 ml – 1 cc

D. Calculate the answer

1. 12 tbsp
2. 0.5 or ½ tab
3. 2.5 tsp or 2 ½ tsp
4. 1.5 cc
5. 0.5 tsp or ½ tsp
6. gr 1.5 or gr ½ or gr iss
7. 6 hours
8. 0.5 tab or ½ tab
9. 10 cc
10. 3 cc

Week 2 – Calculating Medication Dosages
Study Guide 2.9
Equivalents

Practice Problems 1 - Directions: Label answers!

	ANSWERS
1. 15 cc = _____ oz.	1. _____
2. 0.5 l. = _____ cc	2. _____
3. 225 cc = _____ L	3. _____
4. 2000 ml = _____ L	4. _____
5. 0.25 L. = _____ cc	5. _____
6. 600 mg = _____ Gm.	6. _____
7. 0.75 Gm = _____ mg.	7. _____
8. 3 t. (household) = _____ T	8. _____
9. 2 tbsp. = _____ oz.	9. _____
10. 5 tsp. = _____ cc	10. _____
11. 2 gr. - _____ mg.	11. _____
12. 1 T. = _____ cc	12. _____
13. 1500 cc = _____ qts.	13. _____
14. gr. xv = _____ Gm	14. _____
15. 1 mg = gr. _____	15. _____
16. 10 cc = _____ ml	16. _____

Practice Problems 2 – Directions: Label your answers and show your calculations!

	ANSWERS
1. 75 CC = _____L (round to nearest hundredths)	1. _____
2. 2 qts. = _____ oz.	2. _____
3. oz. xxiv = _____pts.	3. _____
4. 600 mg. = gr. _____	4. _____
5. gr. xxxviiss = _____Gm	5. _____
6. 9 tsp. (household) = _____Tbsp.	6. _____
7. 45 mg = gr. _____	7. _____
8. 50 mg = gr. _____	8. _____
9. 75 cc = _____oz	9. _____
10. tsp. = _____ cc	10. _____
11. 3000 ml = _____ qts	11. _____
12. 0.3 mg = gr. _____	12. _____
13. gr.ss = _____ mg	13. _____
14. 450 mg = gr. _____	14. _____

Practice Problems 3 - Directions: Label your answers and show your calculations!

ANSWERS

1.	3 tsp =_____oz.	1._____
2.	7500 cc =_____L	2._____
3.	1.5 qts. =_____oz.	3._____
4.	oz. LVI =_____pts.	4._____
5.	720 mg = gr_____	5._____
6.	1.5 gm = gr_____	6._____
7.	2 tbsp. =_____tsp. (household)	7._____
8.	12 tsp. =_____oz.	8._____
9.	200 mg = gr._____	9._____
10.	gr 3/4 =_____mg	10._____
11.	3½ oz. =_____cc	11._____
12.	60 cc =_____tsp	12._____
13.	$2^1/2$ qts. =_____ml	13._____
14.	gr 1/150 =_____mg	14._____
15.	7½ gr =_____mg	15._____
16.	0.75 mg = gr._____	16._____

Equivalents – ANSWER KEY
Practice Problems 1, 2, 3

Practice Problems 1

1. ½ oz or 0.5 oz.
2. 500 cc
3. 0.2 L
4. 2 L
5. 250 cc
6. 0.6 Gm
7. 750 mg
8. 1 Tbsp
9. I or 1 oz
10. 25 cc
11. 120 mg.
12. 15 cc
13. 1.5 qts
14. 1 Gm
15. gr. 0.017 or gr. 1/60
16. 10 ml

Practice Problems 2

1 0.08 L (rounded)
2. 64 oz or 66.7 oz.
3. 1.5 pts
4. gr X
5. 2.5 Gm
6. 3 T or Tbsp
7. ¾ gr or 0.75 gr
8. 5/6 gr or 0.83 gr
9. 2.5 oz or $2^1/2$ oz.
10. 5 cc
11. 3 qts
12. gr 1/200 or 0.005 gr
13. 90-100 mg
14. 7.5 gr

Practice Problems 3

1 ½ or 0.5
2. 7.5oz.
3. 48 oz. or 50 oz.
4. $3^1/2$ pts
5 12 gr
6. 22.5 gr or 25 gr
7. 6 tsp
8. 2 oz
9. gr iii or gr 3
10. 45 mg
11. 105 cc
12. 12 tsp
13. 2500 ml
14. 0.4 mg
15. 450 to 500 mg.
16. 0.01 gr

Week 2 – Calculating Medication Dosages
Study Guide 2.10
Calculating Medication Dosages

Practice Problems 1

DIRECTIONS: Place the correct answer in the space provided. Label answers cc, tabs, etc. Calculate all problems using dimensional analysis.

_____ 1. The medicine bottle stated the strength of each tablet in the bottle was 0.25 Gm. The doctor ordered the client receive 500 mg. You will give ? tablets.

_____ 2. The medicine bottle label read "Elixir of Phenobarbital." The doctor ordered the client to receive 5 cc. How many tsp. will you give?

_____ 3 The medicine bottle stated the strength of each tablet was 1000 mg. The doctor ordered the client receive 1 Gm. How many tablets will you give?

_____ 4. A 1 ml. ampule of caffeine with sodium benzoate contains gr. $7^1/2$. How many cc. would be necessary to give gr. $7^1/2$?

5. If drop X of a solution contained gr. 1/2 of a drug, how many drops would you use to give gr. 1/4?

6. The doctor orders gr. $7^1/2$ of aspirin. You have gr. 5 tablets on hand. How many tablets will you give? The tablets are scored.

7. The label read gr. 1/6 and the doctor's order read gr. 1/3 to be given stat. How many tablets should be used?

8. The chloral hydrate solution on hand contains 15 grains in each teaspoonful. How many teaspoons are needed to give $7^1/2$ grains?

9. A 2 ml. ampule of caffeine with sodium benzoate contains gr. 15. How many cc. would be necessary to give gr. $7^1/2$?

_____ 10. The medicine bottle stated the strength of each tablet was 500 mg. The doctor ordered the client receive 2.0 Gm. How many tablets will you give?

_____ 11. The medicine bottle stated the strength of each tablet in the bottle was 0.25 Gm. The doctor ordered the client to receive 750 mg. You will give ? tablets.

_____ 12. The medicine bottle stated the strength of each tablet in the bottle was 0.5 Gm. The doctor ordered the client to receive 1 Gm. You will give ? tablets.

_____ 13. Morphine sulfate 10 mg. has been ordered; how many tablets labeled 0.01 Gm should be used?

_____ 14. From a vial of penicillin labeled 1,000,000 units in 5 ml., how many ml. would you use to give 250,000 units of penicillin?

_____ 15. The label on the bottle reads 100 mg., and the doctor's order reads gr. 3. How many tablets should be used?

_____ 16. The label on the bottle reads 300 mg., and the doctor's order reads give gr. X. How many 300 mg. tablets should be given?

_____ 17. The label on the bottle reads 60 mg. and doctor's order reads give gr. 1. How many tablets should be used?

_____ 18. How many gr. X tablets should be used to give a dose of 2 gm.?

Practice Problems 2

DIRECTIONS: Place the correct answer in the space provided. Label answers cc, tabs, etc. Calculate all problems using dimensional analysis.

_____ 1. The label on the bottle reads 30 mg. and the doctor's order reads give gr. iss. How many tablets should be used? The tablets are scored.

_____ 2. How many gr. v. tablets should be used to give a dose of 3 gm.?

_____ 3. The doctor's order reads give gr. viiss and the label on the bottle reads 0.5 gm. How many tablets should be used?

_____ 4. Morphine sulfate 15 mg. has been ordered. How many tablets labeled 0.01 Gm. should be used?

_____ 5. From a vial of penicillin labeled 1,000,000 units in 5 ml., how many ml. would you use to give 250,000 units of penicillin?

_____ 6. The label on the bottle reads 15 mg., and the doctor's order reads gr. 1/4. How many tablets should be used?

_____ 7. The label on the bottle reads 600 mg., and the doctor's order reads give gr. XX. How many 600 mg. tablets should be given?

_____ 8. The label reads gr. 1/8, and the doctor's order reads 15 mg. to be given stat. How many tablets should be used?

_____ 9. The chloral hydrate solution on hand contains 5 grains in each teaspoonful. How many teaspoons are needed to give 300 mg?

_____ 10. A 2 ml. ampule of caffeine with sodium benzoate contains gr. $7^1/2$. How many cc. would be necessary to give gr. 15?

_____ 11. You are to administer morphine sulfate 10 mg. by injection. Your narcotic ampule is labeled gr. 1/4 in 1 cc. solution. You will give how many cc's?

_____ 12. The doctor orders digoxin 0.125 mg. I.M. You have on hand a 10 cc. vial. The label states that each cc. contains 0.25 mg. of drug. How much medication will you give in cc's?

_____ 13. You are to give gr. iss of a drug. You have tablets labeled 60 mg. How many tablet(s) will you give?

_____ 14. The order reads ampicillin 500 mg. The solution you have on hand reads 250 mg. per 15 cc. You will give how many tsp?

_____ 15. The label on the bottle reads gr. X in 5cc. You are to give the client grains xxv. How many tsp. will you give?

_____ 16. You have a bottle labeled gr. xv/cc. You are to administer 0.5 Gm. orally. How many cc. do you prepare?

_____ 17. The doctor orders aminophylline 1 Gm. You find that there are only aminophylline tablets gr. viiss on hand. How many tablet(s) will you give?

_____ 18. The physician orders Seconal gr. iss. The drug on hand is labeled 0.1 Gm per capsule. The client should receive:

Practice Problems 3

DIRECTIONS: Place correct answers in spaces provided. Label your answers cc's, tabs, cap, ml., etc. Calculate all problems using dimensional analysis.

_____ 1. The label on the bottle reads 60 mg and the doctor's order reads give gr iss. How many tablets should be used? The tablets are scored.

_____ 2. How many gr x tablets should be used to give a dose of 2 gm?

_____ 3. The doctor's order reads give gr xxiiss and the label on the bottle reads 0.5 gm. How many tablets should be used?

_____ 4. From a vial of penicillin labeled 1,000,000 units in 10 ml, how many ml would you use to give 100,000 units of penicillin?

_____ 5. The label on the bottle reads 7.5 mg, and the doctor's order reads gr. ss. How many tablets should be used?

6. The label on the bottle reads 600 mg, and the doctor's order reads give gr. xxv. How many 600 mg tablets should be given? The tablets are scored.

7. The label reads gr. 1/6, and the doctor's order reads 20 mg to be given stat. How many tablets should be used?

8. The chloral hydrate solution on hand contains 10 grains in each teaspoonful. How many teaspoons are needed to give 600 mg?

9. A 1 ml ampule of caffeine with sodium benzoate contains gr. $7^{1}/2$. How many cc would be necessary to give gr. 15?

10. You are to administer morphine sulfate 5 mg by injection. Your narcotic ampule is labeled gr. 1/6 in 1 cc solution. How many cc's would you give?

_____ 11. The doctor orders digoxin 0.125 mg I.M. The label states that each 2 cc contains 0.5 mg of drug. How much medication will you give in cc's?

_____ 12. You are to give gr. iss of a drug. You have tablets labeled 30 mg. How many tablet(s) will you give?

_____ 13. The order reads ampicillin 500 mg. The solution you have on hand reads 250 mg per 10 cc. You will give how many tsp?

_____ 14. The label on the bottle reads gr. v per 1 tsp. You are to give the client 10 grains. How many tsp. will you give?

_____ 15. You have a bottle labeled gr. viiss/cc. You are to administer 0.5 gm orally. How many cc do you prepare?

_____ 16. The doctor orders 1000 mg of a drug. You find that there are only tablets gr. xv on hand. How many tablet(s) will you give?

_____ 17. The physician orders Seconal gr. iii. The drug on hand is labeled 0.1 gm per capsule. The client should receive:

Practice Problems 4

DIRECTIONS: Calculate using dimensional analysis. Label your answers.

_____ 1. The Dr. orders aminophylline 1 Gm. You find that there are only aminophylline tablets gr. xxx on hand. How many tablet(s) will you give?

_____ 2. You are to give Phenobarbital 15 mg. There is on hand Phenobarbital gr. 1/4. How many tablet(s) will you give?

_____ 3. The medication order reads "nembutal 0.3 Gm." You check the controlled drug drawer and find only nembutal gr. iss capsules. How many capsules will you give?

_____ 4. On hand is Gantrisin 500 mg. tablets. You are to give Gantrisin 0.5 Gm. How many tablets will you give?

_____ 5. The Dr.'s order reads, "Elixir of Terpin Hydrate gr. i." The label reads, "30 mg/tsp." How many teaspoon(s) would you give? How many cc. would you give?

_____ 6. A seven-up bottle contains $7^1/2$ oz. How many cc. is this?

_____ 7. The Dr.'s order reads, "Digoxin 0.15 mg." There is on hand Digoxin 0.05 mg. How many tablets would you give?

_____ 8. You are to give Quinidine gr. xv. There is on hand Quinidine 0.5 Gm. Tablets. What will you give to the patient?

_____ 9. The Dr. has ordered milk of magnesia oz. ss. How many cc. would you give? How many tablespoon(s)?

_____ 10. You are to give digitalis leaf gr. iss. The scored tablets you have are labeled 60 mg. How many tablets will you give?

_____ 11. The doctor wants the client to have 75 mg. of drug. The bottle label states there are 100 mg. to each cc. How many cubic centimeters will you give?

_____ 12. The doctor wants the client to have 25 mg. of a drug. The label on the bottle states there are 100 mg. to each cc. How many cc's will you give?

Practice Problems 5

DIRECTIONS: Calculate problem using dimensional analysis. Label your answers.

_____ 1. Calculate the number of milliliters needed to give 250,000 units of penicillin. Your med. is labeled 500,000 units per cc.

_____ 2. Morphine sulfate gr. 1/4 ordered. Label on med reads "1 ml = gr. 1/8." You would need ? ml.

_____ 3. Atropine sulfate gr. 1/150 ordered. Label reads "15 ml = 1/100 gr." Give ? ml.

_____ 4. Give Terramycin Suspension 0.75 Gm. The label reads "5 ml/250 mg." Give__ ml; Give _____tsp.

_____ 5. Give Chloral hydrate gr. X. Label reads "5 ml = 0.3 Gm." Give_____ml.

_____ 6. Give Elixir of phenobarbital gr. ss. Label reads "1 ml = 4 mg." Give _____ ml.

_____ 7. Give ferrous sulfate 200 mg. Label reads "40 mg/ml." Give _____ ml; Give__tsp.

_____ 8. Ordered 2 Grams. On hand med. labeled "0.5 Gm/ml." Give__ ml.

_____ 9. Ordered gr. ii. Medication labeled "0.5 Gm/2 ml." Give_____ml.

_____ 10. 180 mg. cortisone ordered. Labeled "25 mg/ml." Give_____ml.

_____ 11. Penicillin 50,000 units ordered. Med. is labeled ____"20,000 U/ml." Give _____ ml.

_____ 12. Ordered Gr x ASA. Bottle of ASA reads "0.3 Gm/tab." Give_____tabs.

Practice Problems 6

DIRECTIONS: Calculate using dimensional analysis. Label your answers.

_____ 1. You have gr. 1¼ tablets of children's aspirin on hand. The doctor orders the child to be given gr. v aspirin. How many tablets will you give the child?

_____ 2. The label on the bottle reads "15 mg. per tsp." You are to give the client 45 mg. How many teaspoons will you give?

_____ 3. You are to give sulfasuxidine 4.0 gm. You have tablets labeled sulfasuxidine gr. xv. How many tablets would you administer?

_____ 4. You are to give Atropine gr. 1/150. The bottle is labeled "0.4 mg. per cc." How much will you give?

_____ 5. The label reads "gr. 1/6 per tab." The doctor's order reads "30 mg. stat." How many scored tablets should be given?

_____ 6. You are to give digitalis leaf gr. iss. You have tablets labeled 30 mg. How many tablets will you administer?

_____ 7. The label on the bottle reads "60 mg. per tablet." The physician's order reads "gr. iiss." How many scored tablets should be given?

_____ 8. Oral medication to be taken at home is labeled "Elixir of Donnatol 1 tsp. = gr. xv." The doctor has ordered you to take gr. xxx. How many teaspoonful(s) will you take?

_____ 9. Jimmy Day is to drink 2,000 cc. of water in 8 hours. How many quart(s) should he take?

_____ 10. You are to give Milk of Magnesia oz. iss. How many ml. (cc.) should you give?

_____ 11. Digoxin tablets are labeled 0.25 mg. and they are scored. The physician's order reads, "Digoxin 0.125 mg. p.o." How many tablets will you administer?

_____ 12. The physician has ordered "Aspirin gr. xv q 4 h if temp increases over 102 degrees E" Your bottle of aspirin tablets is labeled "A.S.A. gr. v." How many tablets will you administer?

Practice Problems 7

DIRECTIONS: Calculate using dimensional analysis. Label your answers.

_____ 1. A certain drug is to be administered. The physician's order is for 50 mg., but the available vial is marked "10 mg. per cc." How many cc. are required?

_____ 2. The doctor orders 8 mg. of a drug to be given IM. On hand is 1/6 gr. in a 1 cc. Tubex. How many cc. will you administer?

_____ 3. A drug is available in gr. iss capsules. How many capsules are equivalent to 200 mg.?

_____ 4. The physician orders Atropine sulfate gr. 1/150. On hand you have a vial of Atropine 0.6 mg. /cc. How many ml. do you give?

5. If 0.15 mg. of a drug is ordered to be given IM and you prepare the injection from an ampule labeled "0.2 mg. /cc", how many milliliters will you administer?

6. Aspirin 240 mg. has been ordered. How many tablets labeled gr. ii should be used?

7. You are at home with an oral medication bottle labeled "Elixir of Donnatol 1 tsp = gr. xv." Your doctor ordered you to take gr. viiss. How many teaspoons will you take?

Calculating Medication Dosages-ANSWER KEY

Practice Problems 1

1. 2 tabs
2. 1 tsp
3. 1 tab
4. 1 cc
5. 5 gtts
6. 1.5 tabs
7. 2 tabs
8. 0.5 tsp
9. 1 cc
10. 4 tabs
11. 3 tabs
12. 2 tabs
13. 1 tab
14. 1.3 ml
15. 2 tabs
16. 2 tabs
17. *1 tab*
18. *3* tabs

ractice Problems 2

1. 3 tabs
2. 9 tabs
3. 1 tab
4. 1 1/2 tabs
5. 1.25 ml (1.3 ml)
6. 1 tab
7. 2 tabs
8. 2 tabs
9. 1 *tsp*
10. 4 cc
11. 0.7 cc
12. 0.5 cc
13. 1.5 tabs
14. 6 tsp
15. 2.5 or 2 1/2 tsp.
16. 0.5 cc
17. 2 tabs
18. 1 cap

Practice Problems 3

1. 1.5 tabs
2. 3 tabs
3. 3 tabs
4. 1 ml
5. 4 tabs
6. 2.5 tabs
7. 2 tabs
8. 1 tsp
9. 2 cc
10. 0.5 cc
11. 0.5 cc
12. 3 tabs
13. 4 tsp
14. 3 tsp
15. 1 cc
16. 1 tab
17. *2 caps*

Practice Problems 4

1. 1/2 *tab*
2. 1 tab
3. 3 caps
4. 1 tab
5. 2 tsp - 10 cc
6. 225 cc
7. 3 tabs
8. 2 tabs
9. 15 cc
   1 tbsp
10. 1.5 tabs
11. 0.8 cc
12. 0.3 cc

Practice Problems 5

1. 0.5 ml
2. 2 ml
3. 10 ml
4. 15 ml - 3 tsp.
5. 11.1 ml
6. 7.5 ml
7. 5 ml. - 1 tsp
8. 4ml
9. 0.5 ml
10. 3.2 ml
11. 2.5 ml
12. 2 tabs

Practice Problems 6

1. 4 tabs
2. 3 tsp
3. 4 *tabs*
4. *1 cc*
5. 3 tabs
6. 3 tabs
7. 2.5 tabs
8. 2 tsp
9. 2 quarts
10. 45 ml (cc)
11. 1/2 tab
12. 3 tabs

Practice Problems 7

1. 5 cc
2. 0.8 cc
3. 2 caps
4. 0.7 ml
5. 0.8 ml
6. 2 tabs
7. 1/2 *tsp*

NURSPT 020 / PHARMACOLOGY I
Curriculum Content Week 3

Drug Classification

Goal Statement

The goal of this module is to provide an overview of the drug classification system.

Module Description

Drug Classification module provides an overview of how drugs are classified and the implications and responsibilities of administering medications within those classifications.

Objectives

At the completion of this module, the learner will be able to:

1. Explain how drugs are classified.
2. Identify the major therapeutic drug classifications.
3. Apply the nursing process in discussing the implications and responsibilities of administering medications which are common to all medications within a classification.
4. Describe patient teaching responsibilities related to the administration of medication.

Psychiatric Technician Program
Curriculum Content
Instructional Plan: Term 1 Week 3

Unit Title: Nurspt 020 Pharmacology 1

Theory Hours this week: 3 **Skills Lab / Clinical Hours this week: 0**

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
Drug Classification **DD/0.5**	**Objective 1** **Explain how drugs are classified.**	A. General use 1. Indication 2. Therapeutic effect 3. Body system B. General action 1. Pharmaceutical class 2. Effect on specific neurotransmitters C. Routes of administration	Lecture Discussion Reading Transparencies Study guide Audiovisual aids	**Required Reading** • In required Pharmacology Textbook, read chapters and information as listed in Column I. • In required Drug Handbook, read information on classification of drugs. **Learning Activity** • **Study Guide 3.1** Drug concept mapping (version 1) • **Study Guide 3.2** Drug concept mapping (version 2)	N/A	N/A
Drug Classification **DD/0.5**	**Objective 2** **Identify the major therapeutic drug classifications.**	A. Antiarrhythmics B. Anticoagulants C. Antihypertensives D. Antiinfectives E. Corticosteroids F. Diuretics G. Nsaids H. Opioid analgesics				
Drug Classification **DD/1.0**	**Objective 3** **Apply the nursing process in explaining the implications and responsibilities of administering medications common to all medications within a classification.**	A. Describe the nursing process B. Assessments prior to administration C. Contraindications 1. Black Box Warnings D. Precautions E. Interactions 1. Drug-Drug 2. Drug-Food 3. Drug-Herb 4. Drug-Lifestyle F. Adverse reactions and side				

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
		effects 1. Common 2. Serious 3. Potentially fatal G. Evaluation of desired outcomes of medication administration				
Drug Classification **DD/1.0**	**Objective 4** **Describe patient teaching responsibilities related to the administration of medication.**	A. Purpose of the medication B. Dosage and how to take the medication C. Minor side effects and what to do if they occur D. Serious side effects and what to do if they occur E. Potential interactions F. Follow up care				

Key:

For All Programs:		NP	Nursing Process	CCC	Culturally Congruent Care	M/S	Medical/Surgical Nursing
A/P	Anatomy and Physiology	PE	Patient Education	EOL	End-of-Life Care	REH	Rehabilitation Nursing
CDIS	Communicable Diseases	PHARM	Pharmacology	**For VN Programs only:**		**For PT Programs only:**	
COM	Communication	LDR	Leadership	FUN	Nursing Fundamentals	NS	Nursing Science Fundamentals
NUT	Nutrition	SUP	Supervision	MAT	Maternity Nursing	MD	Mental Disorders
PSY	Psychology	ETH	Ethics and Unethical Conduct	PED	Pediatric Nursing	DD	Dev. Disabilities
G/D	Normal Growth and Development	CT	Critical Thinking	GER	Gerontological Nursing		

Study Guide 3.1
DRUG CONCEPT MAP

Name: _____ **Date**: _____

Choose a drug to research from one of the following classifications:

Antianxiety Agents	Antiparkinson agents	**Diuretics**
Antiarrhythmics	Antipsychotics	Nonopioid Analgesics
Antiasthmatics	Antipyretics	Nonsteroidal anti-inflammatory agents
Anticoagulants	Anti-rheumatics	Opioid Analgesics
Anticonvulsants	Anti-tuberculars	Sedatives/hypnotics
Antidepressants	Beta Blockers	Skeletal Muscle Relaxants
Antihistamines	**Bronchodilators**	Thrombolytic agents
Antihypertensives	Calcium Channel Blockers	Other:
Antiinfectives	**Corticosteroids**	

Classification: _____

Indications: _____

_____

Action: _____

_____

Contraindications: _____

_____

Precautions: _____

_____

Interactions: _____

_____

Black Box Warnings: _____

NURSING IMPLICATIONS

Assessment:

_____

_____

_____

_____

Potential Nursing Diagnoses:

Patient/Family Teaching:

Evaluation:

Drug types (sub-classifications)	Drugs	Actions

Student Name:_____ Date:_____

STUDY GUIDE 3.2 DRUG CONCEPT MAP

Used For
(indications)

Side Effects

Adverse Reactions
(life threatening)

Route/ dose/ frequency

Drug Class

Generic Name

Trade Name

Pregnancy category

DEA Schedule

Interactions
(drug-to-drug)

Precautions

— (contraindications)

Interventions
(nursing implications)

Patient Education

NURSPT 020 / PHARMACOLOGY I
Curriculum Content Week 4

Cardiovascular and Renal Drugs

Goal Statement

The goal of this module is to provide the learner with key information on medications affecting the client with specific cardiac and renal problems.

Module Description

Cardiovascular and Renal Drugs module provides an overview of the various classes of medications used to treat cardiovascular and renal disorders. The actions, side effects, contraindications, nursing implications and importance of patient education with cardiovascular and renal drugs are emphasized.

Objectives

At the completion of this module, the learner will be able to:

1. Identify and describe the actions, side effects, contraindications, nursing implications, and patient education for drugs used to treat congestive heart failure.
2. Identify and describe the actions, side effects, contraindications, nursing implications, and patient education for drugs used to treat to treat angina.
3. Identify and describe the actions, uses, contraindications, side effects, nursing implications, and patient education for drugs used to treat a client with hypertension.
4. Identify and describe the actions, uses, contraindications, side effects, nursing implications, and patient education for drugs used to treat a client receiving anticoagulation therapy.
5. Identify and describe the actions, uses, contraindications, side effects, nursing implications, and patient education for drugs used to treat a client receiving diuretic therapy.

Psychiatric Technician Program
Curriculum Content
Instructional Plan: Term 1 Week 4

Unit Title: Nurspt 020 Pharmacology 1

Theory Hours this week: 3 **Skills Lab / Clinical Hours this week: 0**

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
Cardio-vascular & Renal Drugs PHARM 1.0	**Objective 1** **Identify and describe the actions, side effects, contraindications, nursing implications, and patient education of drugs used to treat congestive heart failure.**	A. Identify the classifications of medications used to treat congestive heart failure and discuss actions, side effects, contraindications and symptoms of toxicity. 1. Cardiac glycosides 2. Phosphodiesterase Inhibitors 3. Angiotensin Converting Enzyme (ACE) Inhibitors 4. Beta-blockers 5. Natriuretic Peptides (new) B. Nursing responsibilities/implications 1. Assessment 2. Chart review 3. Documentation C. Describe teaching required for patients receiving medications for the treatment of congestive heart failure	Lecture Discussion Reading Transparencies Study guide Audiovisual aids Methods of Evaluation: Testing Discussion Questions Case Studies Observation	**Required Reading** • In required pharmacology Textbook, read chapters and information on topics listed in Column I.	N/A	NA
Cardio-vascular & Renal Drugs PHARM/ 0.5	**Objective 2** **Describe the action, side effects, contraindications, nursing implications, and patient education of drugs used to treat a client with angina pectoris.**	A. Identify the classifications of medications used to treat angina pectoris and discuss actions, side effects, contraindications and symptoms of toxicity. 1. Nitrates 2. Beta-blockers 3. Calcium Channel Blockers 4. Angiotensin Converting Enzyme (ACE) Inhibitors 5. Platelet Inhibitors 6. Statins			N/A	N/A

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
		B. Nursing responsibilities/implications 1. Assessment 2. Chart review 3. Documentation C. Describe teaching required for patients receiving medications for the treatment of angina pectoris				
Cardio-vascular & Renal Drugs PHARM/ 1.0	**Objective 3 Identify and describe the actions, uses, contraindications, side effects, nursing implications, and patient education used to treat a client with hypertension.**	A. Identify the classifications of medications used to treat hypertension and discuss actions, side effects, contraindications and symptoms of toxicity. 1. Diuretics 2. Beta-blockers 3. Angiotensin Converting Enzyme (ACE) Inhibitors 4. Angiotensin II Receptor Blockers 5. Aldosterone Receptor Antagonist 6. Calcium Ion Antagonist 7. Alpha-1 Adrenergic Blocking Agents 8. Direct Vasodilators B. Nursing responsibilities/implications 1. Assessment 2. Chart review 3. Documentation C. Describe teaching required for patients receiving medications for the treatment of hypertension			N/A	N/A

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
Cardio-vascular & Renal Drugs PHARM/ 0.5	**Objective 4** **Identify and describe the actions, uses, contraindications, side effects, nursing implications, and patient education used to treat a client receiving anticoagulation therapy.**	A. Identify the classifications of medications used for anticoagulation therapy and discuss actions, side effects, contraindications and symptoms of toxicity. 1. Platelet Inhibitors 2. Anticoagulants 3. Thrombolytic Agents B. Nursing responsibilities/implications 1. Assessment 2. Chart review 3. Documentation C. Describe teaching required for patients receiving medications for anticoagulation therapy.				NA
Cardio-vascular & Renal Drugs PHARM/ 1.0	**Objective 5** **Identify and describe the actions, uses, contraindications, side effects, nursing implications, and patient education used to treat a client receiving diuretic therapy.**	A. Identify the classifications of medications used for diuretic therapy and discuss actions, side effects, contraindications and symptoms of toxicity. 1. Loop Diuretics 2. Thiazide Diuretics 3. Potassium Sparing Diuretics 4. Carbonic Anhydrase Inhibitor 5. Combination Diuretic Products B. Nursing responsibilities/implications 1. Assessment 2. Chart review 3. Documentation C. Describe teaching required for patients receiving medications for anticoagulation therapy.			N/A	N/A

Key:

For All Programs:	NP Nursing Process	CCC Culturally Congruent Care	M/S Medical/Surgical Nursing
A/P Anatomy and Physiology	PE Patient Education	EOL End-of-Life Care	REH Rehabilitation Nursing
CDIS Communicable Diseases	PHARM Pharmacology	**For VN Programs only:**	**For PT Programs only:**
COM Communication	LDR Leadership	FUN Nursing Fundamentals	NS Nursing Science Fundamentals
NUT Nutrition	SUP Supervision	MAT Maternity Nursing	MD Mental Disorders
PSY Psychology	ETH Ethics and Unethical Conduct	PED Pediatric Nursing	DD Dev. Disabilities
G/D Normal Growth and Development	CT Critical Thinking	GER Gerontological Nursing	

NURSPT 020 / PHARMACOLOGY I
Curriculum Content Week 5

Endocrine System Medications Part 1

Goal Statement

The goal of this module is to provide the learner with key information on drugs affecting the Endocrine System.

Module Description

Endocrine System Medications module provides an overview of medications used to treat endocrine disorders. Diabetic medications are emphasized.

Objectives

At the completion of this module, the learner will be able to:

1. Identify and describe medications used for individuals receiving treatment for pituitary disorders including indications, methods of action, side effects, contraindications and patient education.
2. Identify and describe medications used for individuals receiving treatment for thyroid disorders including indications, methods of action, side effects, contraindications and patient education.

Psychiatric Technician Program
Curriculum Content
Instructional Plan: Term 1 Week 5

Unit Title: Nurspt 020 Pharmacology 1

Theory Hours this week: 3 **Skills Lab / Clinical Hours this week: 0**

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
Endocrine system medications – pituitary and thyroid medications PHARM/2	**Objective 1 Identify and describe medications used for individuals receiving treatment for pituitary disorders including indications, methods of action, side effects, contraindications and patient education.**	A. Mechanism of action (for each specific pituitary drug) B. Indications C. Contraindications D. Therapeutic effects E. Side effects and adverse effects F. Nursing implications G. Describe teaching required for patients receiving treatment for pituitary disorders.	Lecture Discussion Reading Transparencies Study guide Audiovisual aids Methods of Evaluation: Testing Discussion Questions Case Studies Observation	**Required Reading** In Pharmacology textbook, read chapters and information on topics listed in Column 1.	N/A	N/A
Endocrine system medications – pituitary and thyroid medications PHARM/1	**Objective 2 Identify and describe medications used for individuals receiving treatment for thyroid disorders including indications, methods of action, side effects, contraindications and patient education.**	A. Mechanism of action of thyroid medications B. Indications C. Contraindications D. Therapeutic effects E. Side effects and adverse effects F. Nursing implications G. Describe teaching required for patients receiving treatment for thyroid disorders.				

Key:

For All Programs:							
A/P	Anatomy and Physiology	NP	Nursing Process	CCC	Culturally Congruent Care	M/S	Medical/Surgical Nursing
CDIS	Communicable Diseases	PE	Patient Education	EOL	End-of-Life Care	REH	Rehabilitation Nursing
COM	Communication	PHARM	Pharmacology	**For VN Programs only:**		**For PT Programs only:**	
NUT	Nutrition	LDR	Leadership	FUN	Nursing Fundamentals	NS	Nursing Science Fundamentals
PSY	Psychology	SUP	Supervision	MAT	Maternity Nursing	MD	Mental Disorders
G/D	Normal Growth and Development	ETH	Ethics and Unethical Conduct	PED	Pediatric Nursing	DD	Dev. Disabilities
		CT	Critical Thinking	GER	Gerontological Nursing		

NURSPT 020 / PHARMACOLOGY I
Curriculum Content Week 6

Endocrine System Medications Part 2

Goal Statement

The goal of this module is to provide the learner with key information on drugs affecting the Endocrine System.

Module Description

Endocrine System Medications module provides an overview of medications used to treat endocrine disorders. Pituitary, thyroid, and anti-diabetic medications are emphasized

Objectives

At the completion of this module, the learner will be able to:

1. Identify the different types of insulin and describe the indications, methods of action, side effects, contraindications, and patient education related to insulin administration.
2. Identify the different types of oral anti-diabetic agents, indications, methods of action, side effects, contraindications and patient education for patients receiving oral anti-diabetic agents.

Psychiatric Technician Program
Curriculum Content
Instructional Plan: Term 1 Week 6

Unit Title: Nurspt 020 Pharmacology 1

Theory Hours this week: 3 **Skills Lab / Clinical Hours this week: 0**

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
Endocrine system medications – Diabetic medications PHARM/1	**Objective 1** **Identify the different types of insulin and describe the indications, methods of action, side effects, contraindications, and patient education related to insulin administration.**	A. Sources 1. Animals a. Bovine b. Porcine 2. Synthesized recombinant DNA B. Preparations (time-oriented) 1. Rapid-acting 2. Intermediate-action 3. Long-acting 4. Fixed combination 5. Sliding scale C. Mechanism of action D. Indications E. Contraindications F. Therapeutic effects G. Side effects and adverse effects H. Nursing implications I. Describe teaching required for patients receiving insulin	Lecture Discussion Reading Transparencies Study guide Audiovisual aids <u>Methods of Evaluation:</u> Testing Discussion Questions Case Studies Observation	**<u>Required Reading</u>** In Pharmacology textbook, read chapters and information on topics listed in Column 1. **<u>Activity</u>** • Develop a Patient Drug Teaching guide for insulin administration 1. Identify and describe the actions, side effects, contraindications, nursing implications, and patient education of drugs used to treat diabetes	N/A	N/A
Endocrine system medications – Diabetic medications PHARM/2	**Objective 4** **Identify the different types of oral anti-diabetic agents, indications, methods of action, side effects, contraindications and patient education for patients receiving oral anti-diabetic agents.**	A. Indications for the use of oral agents 1. Recommended dietary changes 2. Recommended lifestyle changes B. Mechanism of action 1. Sulfonylureas 2. Meglitinides 3. Biguanide 4. Thiazolidinediones 5. Alpha-glucosidase inhibitors				

Curriculum Content/Hrs	Theory Objectives	Content Outline	Methods of Instruction	Assignments	Clinical Hours	Skills Lab/Clinical Objectives
		C. Contraindications D. Therapeutic effects E. Side effects and adverse effects F. Nursing implications G. Describe teaching required for patients receiving oral anti-diabetic agents.				

Key:

For All Programs:		NP	Nursing Process	CCC	Culturally Congruent Care	M/S	Medical/Surgical Nursing
A/P	Anatomy and Physiology	PE	Patient Education	EOL	End-of-Life Care	REH	Rehabilitation Nursing
CDIS	Communicable Diseases	PHARM	Pharmacology	**For VN Programs only:**		**For PT Programs only:**	
COM	Communication	LDR	Leadership	FUN	Nursing Fundamentals	NS	Nursing Science Fundamentals
NUT	Nutrition	SUP	Supervision	MAT	Maternity Nursing	MD	Mental Disorders
PSY	Psychology	ETH	Ethics and Unethical Conduct	PED	Pediatric Nursing	DD	Dev. Disabilities
G/D	Normal Growth and Development	CT	Critical Thinking	GER	Gerontological Nursing		