NURS 115
PHARMACOTHERAPEUTICS IN NURSING

JANUARY 9th, 2013 - APRIL 24th, 2013

Tutor: Brenda Lays
NURS 115
PHARMACOTHERAPEUTICS IN NURSING
COURSE OUTLINE

CALENDAR STATEMENT:

NURS 115 – Pharmacotherapeutics in Nursing (3-Lecture, 0-Lab, 0-Clinical) in 16 weeks.

NURS 115 focuses on the mechanisms of action of drugs, their therapeutic uses and side-effect profile. General principles related to drug absorption, distribution, metabolism, and excretion will be addressed. The nursing role in promoting optimal therapeutic regimens and in the management of side/adverse effects will be included.

COURSE DESCRIPTION:

The course begins with an introduction to drug classification and regulation – from discovery to the patient. The foundations of pharmacodynamic and pharmacokinetic principles will be introduced. Four fundamental domains of drug movement and modifications will be studied: drug absorption, distribution, metabolism, and excretion (i.e., pharmacokinetics). To illustrate how the principles involved in pharmacotherapeutics need to be incorporated into professional nursing practice; examples of prototypic drugs from each drug class will be used. Brief scenarios will be used to contextualize pharmacology within the clinical setting. Safe, evidence-based practice will be emphasized.

TUTOR INFORMATION:

Brenda Lays RN, BScN, MAEd©
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Email: Brenda.Lays@Keyano.ca
Office: 187H

Office Hours: Monday 1400 – 1600h.
COURSE OBJECTIVES:

Upon completion of Nursing 115, the nursing student will be able to:

1. Demonstrate an understanding of the basic concepts related to the pharmacodynamic principles underlying drug action in the human body.

2. Demonstrate an understanding of the basic pharmacokinetic principles related to movement of drugs within the human body.

3. Demonstrate an understanding of the classification, nature, properties and effects of drugs.

4. Demonstrate an understanding of the role of nursing and the health team in promoting client education optimal therapeutic regimens, and in the management of side/adverse effects.

5. Demonstrate an understanding of how individual differences account for differences in drug response.

6. Integrate principles of drug therapies into professional practice.

7. Demonstrate an understanding of ethical and legal principles related to the administration of pharmacological agents.

REQUIRED RESOURCES:


Drug book as required for each year of program.

Required reading(s) for each class can be found in syllabus under “Class schedule”. Pre-readings are to be done prior to each class.
NURSING PROGRAM POLICIES

Please refer to the Keyano College Nursing Program Student Handbook for specific Nursing program policies and to the Keyano College Calendar for general college policies.

SPECIALIZED SUPPORTS AND DUTY TO ACCOMMODATE

Disability Support Services: Learner Assistance Program
If you have a documented disability or you think that you would benefit from some assistance from a Disabilities Counsellor, please call or visit the Disability Supports Office 780-792-5608 to book an appointment (across from the library). Services and accommodations are intended to assist you in your program of study, while maintaining the academic standards of Keyano College. We can be of assistance to you in disclosing your disability to your instructor, providing accommodations, and supporting your overall success at Keyano College.

Specialized Supports and Duty to Accommodate

Specialized Support and Duty to Accommodate are aligned with the office of Disability Support Services: Learner Assistance Program (LAP) guided by federal and provincial human rights legislation and defined by a number of Keyano College policies. Keyano College is obligated by legislation to provide disability-related accommodations to students with identified disabilities to the point of undue hardship.

GUIDING QUESTIONS FOR NURS 115

Guiding questions are provided in this syllabus for each lecture. These questions are designed to help students focus on important points in each chapter of the textbook. In addition, for all different types of medications the mechanisms of action, drug effects, indications, interactions, contraindications, side and toxic effects, and nursing considerations need to be addressed. This information will be referred to as ‘prototype information’ in the guiding questions. This information will come from the textbooks as well as the drug guide. All information is testable.
OVERVIEW OF COURSE EVALUATION

To pass NURS 115 successfully, the student must successfully complete all course requirements and receive a passing grade (C-) in the course.

1. Midterm #1 Examination (February 6th, 2013) 30%
2. Midterm #2 Examination (March 20th, 2013) 30%
3. Final Examination (April 24th, 2013) 40%

Total 100%

COURSE EVALUATION REQUIREMENTS

1. **Midterm Examination #1**: (30%) Wednesday, February 6th (1830h-2130h).
   
   This exam will consist of multiple choice and short answer questions. Content covered will be from weeks 1-4 inclusive.

2. **Midterm Examination #2**: (30%) Wednesday, March 20th (1830h-2130h).
   
   This exam will consist of multiple choice and short answer questions. Content covered will be from weeks 6 - 10 inclusive.

3. **Final Examination**: (40%) Wednesday, April 24th (1830 – 2130h).
   
   This exam will consist of multiple choice and short answer questions. Content covered will be from weeks 12 - 16 inclusive.

Grading for the exams will be based on the Four-Point Grading Scale as per the Nursing & Allied Health Studies Department Student Handbook (see Appendix A).
## CLASS SCHEDULE

The following is the class schedule and required readings for each class. Students are expected to have all readings done prior to class. In addition, guiding questions for each class are expected to be completed prior to class. Course content will be presented using discussion and lecture.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date (2013)</th>
<th>Topic(s)</th>
<th>Pre-Readings</th>
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</table>
| Week 1 | January 9th | Course Orientation  
Chapter 1 – Introduction to Pharmacology: Drug Regulation and Approval  
Chapter 2 – Drug Classes and Schedules | Unit 1: Chapters 1, 2 |
| Week 2 | January 16th | Chapter 4: Pharmacokinetics  
Chapter 5: Pharmacodynamics | Unit 1: Chapters 4, 5 |
| Week 3 | January 23rd | Unit 2: Pharmacology and the Nurse-Patient Relationship | Unit 2: Chapters 6, 7, & 8 |
| Week 4 | January 30th | Unit 3: Professional, Personal, and Cultural Influences in Pharmacotherapy | Unit 3: Chapters 9, 10, 11, & 12 |
| Week 5 | February 6th | MIDTERM #1 EXAM (30%) |  |
| Week 6 | February 13th | Unit 4: The Nervous System | Unit 4: Chapters 13, 14, 15, 16, 17 |
| Week 7 | February 20th | Unit 4: The Nervous System | Unit 4: Chapters 18, 19 |

### READING WEEK (February 25th - March 1st)

<table>
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<tr>
<th>Week</th>
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<th>Topic(s)</th>
<th>Pre-Readings</th>
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<tr>
<td>Week 9</td>
<td>March 6th</td>
<td>Unit 5: The Cardiovascular System</td>
<td>Unit 5: Chapters 21, 22, 23, 24, &amp; 25</td>
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<td>Week 10</td>
<td>March 13th</td>
<td>Unit 5: The Cardiovascular and Respiratory Systems</td>
<td>Unit 5: Chapters 26, 27, &amp; 29</td>
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<td>Week 11</td>
<td>March 20th</td>
<td>MIDTERM #2 EXAM (30%)</td>
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<td>Week 12</td>
<td>March 27th</td>
<td>Unit 6: The Immune System</td>
<td>Unit 6: Chapters 30, 31, 32, 33, 34</td>
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<tr>
<td>Week 13</td>
<td>April 3rd</td>
<td>Unit 7: The Gastrointestinal System</td>
<td>Unit 7: Chapters 36, 37, &amp; 38</td>
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<td>Week 14</td>
<td>April 10th</td>
<td>Unit 8: The Endocrine and Genitourinary Systems</td>
<td>Unit 8: Chapters 39, 40, 41, 42, 43, 44</td>
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<td>Week 15</td>
<td>April 17th</td>
<td>Unit 9: The Musculoskeletal System, Integumentary System and Eyes/Ears</td>
<td>Unit 9: Chapters 45, 46, 47, 48</td>
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<td>Week 16</td>
<td>April 24th</td>
<td>FINAL EXAM (40%)</td>
<td>RM 195 1830 – 2130hrs</td>
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WEEK ONE

Content to be covered (Chapters 1 & 2)

- Course Orientation
- Definition of terms relevant to pharmacology
- Stages of regulation and drug approval in Canada
- Classification of drugs
- Alberta Drug Schedules
- Chemical, generic, trade names

Guiding Questions

1. History of pharmacology
2. Why is knowledge related to pharmacology important to nurses?
3. What is pharmacotherapeutics?
4. What are the stages involved in the drug approval process in Canada?
5. Define therapeutic and pharmacologic classification of drugs.
6. Identify drug schedules in Alberta/Canada
7. Describe and give examples of the concepts of chemical, generic and trade names of drugs.
8. What are the differences between brand name drugs and their generic equivalents?
WEEK TWO

Content to be covered (Chapters 4 & 5)

- Pharmacokinetics
- Pharmacodynamics

Guiding Questions

1. What are Pharmaceutics?
2. What is Pharmacokinetics?
3. What are the processes used by drugs to cross body membranes?
4. What are the components of pharmacokinetics and define each component?
5. What factors affect pharmacokinetics of drugs?
6. What is the major cause of drug interactions?
7. What is meant by the “half life” of a drug?
8. What is meant by the term “drug effects”?
9. What is meant by the term “loading dose”?
10. What is a maintenance dose?
11. What is pharmacodynamics?
12. What are the three phases of the dose response curve?
13. What is meant by the term “potency” of a drug?
14. What is meant by the term “efficacy” of a drug?
15. What is a receptor?
16. What is an agonist?
17. What is an antagonist?
18. What are teratogenic, mutagenic, and carcinogenic effects of drugs?
WEEK THREE

Content to be covered (Chapters 6, 7, 8)

- Application of Nursing Process to drug administration
- Lifespan considerations
- Factors that impact pharmacotherapeutics

Guiding Questions

1. How does the nurse use of the nursing process in drug administration?
2. With respect to pharmacokinetics what are the lifespan considerations as well as the related physiological concerns?
3. How is drug safety for three trimesters of pregnancy determined?
4. What are some of the lifespan considerations related to the administration of medications?
5. What are the spiritual and psychosocial factors that can influence pharmacotherapeutics?
6. How does ethnicity affect pharmacotherapeutic outcomes?
7. What are some examples of how cultural values and beliefs can influence pharmacotherapeutic outcomes?
8. How can genetics influence pharmacotherapy?
9. How does gender influence the actions of certain drugs?
10. How do community and environmental factors influence pharmacotherapy?
WEEK FOUR

Content to be covered Chapters 9, 10, 11, & 12)

- Medication errors
- Herbal Remedies and OTC’s
- Drugs of Addiction and Abuse

Guiding Questions

1. What are several issues that can contribute to medication errors?
2. What are the differences between prescription drugs, over-the-counter (OTC) drugs, and natural health products, including the legal implications?
3. What are the advantages and disadvantages of OTC drugs and natural health products?
4. What are some of the adverse effects that are caused by herbal preparations?
5. Develop a nursing care plan for the client who is self-administering OTC drugs or natural health products.
6. Define addiction, physical dependence, psychological dependence, withdrawal syndrome, tolerance.
7. What are the effects of misuse of CNS depressants?
8. What are the effects of misuse of hallucinogens?
9. What are the effects of misuse of CNS stimulants?
10. What are the effects of misuse of nicotine?
WEEK SIX

Content to be covered (13, 14, 15, & 16)

- Nervous system
- Effects of drugs on Autonomic Nervous System
- Antidepressant agents
- Bipolar disorder agents
- Drugs for Psychoses

Guiding Questions

1. What are the two functional divisions of the nervous system?
2. Discuss the sympathetic nervous system (SNS) as related to drug therapy, specifically the effects of adrenergic stimulation of sympathomimetic effects.
3. What are the five general mechanisms by which drugs affect synaptic transmissions?
4. What are the 4 general classifications of autonomic drugs?
5. What is the prototype information related to ANS drug classifications?
6. What is the mechanism of action for antidepressants?
7. What prototype information for the three primary classifications for antidepressants?
8. What is Bipolar disorder?
9. What is the prototype information for the primary agent used to treat Bipolar illness?
10. What are the 4 primary characteristics of psychoses?
11. What is the prototype information for the agents used to treat psychoses?
WEEK SEVEN

Content to be covered (Chapters 17, 18, & 19)

- Analgesic agents
- CNS depressants and muscle relaxants
- Drugs for seizures
- Drugs for degenerative diseases of the Nervous System
- Attention Deficit Hyperactivity Disorder agents

Guiding Questions

1. What is analgesia?
2. What are the mechanisms of pain?
3. What are opioids and what is the prototype information related to opioids.
4. What are opioids antagonists, and what is the prototype information related to opioids antagonists?
5. What are non-opioids analgesics and what is the prototype information related to non-opioids antagonists?
6. What is the difference between a sedative and a hypnotic agent?
7. What causes muscle spasms?
8. What is the prototype information for skeletal muscle relaxants?
9. What are the most common degenerative diseases of the CNS?
10. What are the nursing responsibilities for the primary agents used to treat Alzheimer’s disease, Parkinson’s disease, and Multiple Sclerosis?
11. What are the general concepts related to seizure pharmacotherapy?
12. What is the prototype information for the different classifications of anti-seizure drugs?
13. What are the characteristics of ADHD?
14. What is prototype information for the primary agent used to treat ADHD?
WEEK NINE

Content to be covered (Chapters 21, 22, 23, 24, & 25)

- Antilipid agents
- Antihypertensive agents
- Drugs for heart failure
- Drugs for Angina Pectoris, Myocardial Infarctions, and Cerebrovascular Incidents
- Drugs for Dysrhythmias

Guiding Questions

1. What are the three types of lipids?
2. What are lipoproteins and how are they classified?
3. What are some lifestyle changes that can be used to control lipid levels?
4. How does Lipitor work in the reduction of cholesterol?
5. How does Questran work in the reduction of cholesterol?
6. How do bile acid resins work in the reduction of cholesterol?
7. What are the risk factors for hypertension?
8. What are the factors responsible for blood pressure?
9. What is the nurse’s role in the treatment of hypertension with diuretics?
10. What is the prototype information for calcium channel blockers in the treatment of hypertension?
11. What is the prototype information for ACE inhibitors in the treatment of hypertension?
12. What is the prototype information for adrenergic agents’ role in the treatment of hypertension?
13. What is the pathophysiology of heart failure?
14. What is the prototype information for cardiac glycosides in the treatment of heart failure?
15. What is Angina?
16. What are the nonpharmacologic and pharmacologic treatments for angina?
17. How do Beta-Blockers work in the treatment of Angina?
18. What is a myocardial infarction?
19. How do thrombolytics work in the treatment of an MI and a CVI?
20. What are the classifications of Antidysrhythmic drugs?
21. What is the prototype information for antidysrhythmic drugs in the treatment of dysrhythmias?
22. What are the nursing implications for the above medications?
WEEK TEN

Content to be covered (Chapters 26, 27, 28, & 29)

- Drugs for Coagulation Disorders
- Drugs for Hematopoietic Disorders
- Drugs for the treatment of Shock
- Common Cold Agents
- Drugs for Respiratory Disorders including COPD and asthma

Guiding Questions

1. What is the process for hemostasis?
2. Describe the coagulation cascade.
3. What is the prototype information for anticoagulants?
4. What is the prototype information for antiplatelet agents?
5. What is the prototype information for thrombolytic agents?
6. What is the prototype information for antifibrinolytics?
7. What is hematopoiesis?
8. How does erythropoietin affect hematopoiesis?
9. What is anemia?
10. How do Iron, Vitamin B₁₂, and Folic Acid enhance the oxygen-carrying capacity of blood?
11. What are the nursing implications for the above medications?
12. What are the characteristics of shock
13. What are the causes and types of shock?
14. How do colloids and crystalloids work in the treatment of shock?
15. How do vasoconstrictors work in the treatment of shock?
16. How do cardiotonic agents work in the treatment of shock?
17. What are the nursing considerations in each of the above treatments for shock?
18. What are some of the nursing considerations for each of the above medications?
19. What is the pathophysiology of the upper and lower respiratory system?
20. What are some of the common cold agents that are used and what are the nursing considerations?
21. What are expectorants and mucolytics?
22. What is COPD and what is the pharmacological treatment of this illness?
23. What is asthma?
24. What is an aerosol and why is it used?
25. What is the prototype information for beta-adrenergic agonists in the treatment of asthma?
26. What is the mechanism of action for the anticholinergic drug Atrovent?
27. What are the nursing considerations for Atrovent?
28. What is the role of corticosteroids in treatment of asthma?
29. How do Leukotriene Modifiers work in the treatment of asthma?
30. How do mast cell stabilizers work in the treatment of asthma?
WEEK TWELVE

Content to be covered (Chapters 30, 31, 32, 33, & 34)

- Drugs for Immune system Modulation
- Drugs for inflammation and fever
- Drugs for Bacterial infections
- Drugs for Fungal, Protozoan, and Helminth infections
- Drugs for Viral infections

Guiding Questions

1. How do vaccines stimulate the immune system?
2. What is the pathophysiology of inflammation and fever?
3. What is the prototype information for NSAIDs?
4. What is the prototype information for salicylates and ibuprofen?
5. How do glucocorticoids treat inflammation?
6. How do antipyretics treat fever?
7. How are bacteria classified?
8. How are anti-infective drugs classified?
9. What are the actions of the anti-infective drugs?
10. What is one of the common side effects of anti-infective therapy?
11. What is the prototypic information for penicillins, cephalosporins, tetracyclines, macrolides, aminoglycosides, fluoroquinolones, and sulfonamides?
12. What is Tuberculosis?
13. What are the nursing responsibilities for antituberculosis drugs?
14. What are the characteristics of fungi?
15. What are the actions of the agents for systemic and topical fungal infections?
16. What is the prototypic information related to fungal infection drug therapy?
17. What are protozans?
18. What is the prototypic information related to protozoan infection drug therapy?
19. What are Helminthic infections?
20. What is the prototypic information related to Helminthic infections?
21. What are some of the characteristics of a virus?
22. What are some of the general principles of HIV Pharmacotherapy?
23. What is the prototypic information related to HIV pharmacotherapy?
24. What are Herpes Simplex viruses?
25. What is the prototype information related to HIV pharmacotherapy?
26. What is the pharmacotherapy for Viral Hepatitis?
WEEK THIRTEEN

Content to be Covered (Chapters 36, 37, & 38)

- Drugs for Peptic Ulcer Disease
- Drugs for Bowel Disorders, Nausea and Vomiting
- Drugs for Nutritional Disorders

Guiding Questions

1. What is Peptic Ulcer Disease?
2. What is the primary cause of this disease?
3. What are some of the risk factors for this disease?
4. What is the prototype information for antacids?
5. What is the prototype information for Proton Pump Inhibitors?
6. What are H2-receptor Antagonists?
7. What is the prototype information for laxatives?
8. What is the prototype information for antidiarrheals?
9. What are the types of antiemetics available? What are the nursing considerations for these medications?
10. Describe the role of vitamins in maintaining health?
11. List the indications for nutritional supplementation.
WEEK FOURTEEN

Content to be covered (Chapters 39, 40, 41, & 42)

- Drugs for Thyroid Disorders
- Drugs for Adrenal Gland Disorders
- Drugs for Pancreatic Disorders

Guiding Questions

1. What is the function of the thyroid gland?
2. What is the difference between hypo and hyperthyroidism?
3. What is the prototype information related to hypothyroidism?
4. What is the prototype information related to hyperthyroidism?
5. What is the function of the adrenal glands?
6. What controls glucocorticoid secretion in the blood?
7. What is the prototype information related to Glucocorticoids?
8. What is the function of the pancreas?
9. What are the characteristics of Type 1 diabetes?
10. What is the prototype information related to Insulins?
11. What is Type 2 diabetes?
12. What is the prototype information related to oral hypoglycemics?
WEEK FIFTEEN

Content to be covered (45, 46, 47, & 48)

- Drugs for Bone and Joint Disorders
- Skin Disorders and Treatment
- Drugs for Eye and Ear disorders

Guiding Questions

1. What is the role of calcium in homeostasis?
2. What is the pharmacotherapy of metabolic bone diseases?
3. What are osteoarthritis, rheumatoid arthritis, and gout?
4. What are the prototype drugs for osteoarthritis, rheumatoid arthritis, and gout?
5. What are the three causes of skin disorders?
6. What are the drugs of choice for skin parasites?
7. What are the nursing considerations for administering medications for skin parasites?
8. What are acne, rosacea, and dermatitis?
9. What are the pharmacological treatments and nursing considerations for these conditions?
10. What is glaucoma?
11. What are the different categories of medications that can be used for glaucoma? What are their side effects and nursing considerations?
12. What medications are used to treat health alterations of the ear?
13. What are some client teaching tips?
### Appendix A

**Keyano College Grading Scale**

**Overview of 4.0 Point Alpha and Numeric Grading System**

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<th>Descriptor</th>
<th>Alpha Scale</th>
<th>4.0 Numeric Scale</th>
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