

**THE UNIVERSITY OF TEXAS AT TYLER  
SCHOOL OF NURSING**

**NURS 3307 (Longview, Tyler)  
PHARMACOLOGICAL BASIS FOR NURSING  
SYLLABUS  
Spring 2016**

**LONGVIEW**

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Monday 11 AM – 1:50

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Request for Appointments Should be made in Person or via UT Tyler Email

The content of this syllabus/WEB site is subject to change at the discretion of the faculty leaders according to current learning needs. Approved by FO: 10/02

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**NURS 3307 - Pharmacological Basis for Nursing Practice**  
**CLASS SCHEDULE - Mondays**  
**Spring 2016**

Date	Unit	Lecture/Class	ATI
Week 1	MLK Holiday NO CLASS	Dosage Calculation Lecture - Tegrity	Begin Dosage Calc 2.0 Dim. Analysis
Week 2 1/25/2016	Unit 1	Introduction to Course (Bring syllabus)	Dosage Calc 2.0 Dim. Analysis
	Unit 2	Dosage Calculations Pharm Basics - Part 1	
Week 3 2/1/2016	Unit 2	Pharm Basics - Part 2	Intro to Pharmacology
Week 4 2/8/2016	Unit 3	Autonomic Nervous System*	<b>Dosage Calc Final Test</b> <b>Due Tues 2/9/16 by 5 pm</b>
Week 5 2/15/2016	<b>EXAM #1</b>		
	Unit 4	Respiratory	Respiratory
Week 6 2/22/2016	Unit 5 part 1	Cardiovascular - Part 1*	Cardiovascular
Week 7 2/29/2016	Unit 5 part 2	Cardiovascular - Part 2*	Hematologic <b>Dosage Calc Final Make-up</b> <b>due Tues 2/29/16 by 5 pm</b>
Week 8 3/7/2016	<b>SPRING BREAK</b>		
Week 9 3/14/2016	<b>EXAM #2</b>		
	Unit 6 part 1	Central Nervous System - Part 1 Pain & Drugs of Abuse	Pain/Inflammation, Neurological Part 1
Week 10 3/21/2016	Unit 6 part 2	Central Nervous System - Part 2*	Neurological Part 2, Musculoskeletal
Week 11 3/28/2016	Unit 7	Anti-Infective - Anti-Viral*	Infection <b>Online Practice Test A</b> <b>due Fri 3/25/16 by 5 pm</b>
Week 12 4/4/2016	<b>EXAM #3</b>		
	Unit 8	Gastrointestinal, Fluid, Electrolytes, % Nutrition	Gastrointestinal
Week 13 4/11/2016	Unit 9 Unit 10	Endocrine Misc., Eye, Ear & Dermatologic*	Endocrine <b>Online Practice Test B</b> <b>Due Friday 4/15/16 by 5 pm</b>
Week 14 4/18/2016	Unit 11 Unit 12	Reproductive & Gender related Immune, Biological Modifiers, & Chemotherapy *	Reproductive - Urinary Immune
Week 15 4/25/2016	<b>EXAM #4</b> <b>ATI Proctored Test – TBA in Computer Lab</b>		
Week 16 5/2/2016	<b>FINAL EXAM</b>		

\*Class Participation Days for Longview Campus

**TITLE**  
 NURS 3307: Pharmacological Basis for Nursing Practice  
**SEMESTER CREDIT HOURS**  
 Three (3) hours didactic

**2.0 COURSE DESCRIPTION**

Pharmacotherapeutic aspects of nursing care are introduced and supported by evidenced-based findings to improve patient care. Emphasis is on principles of safe administration of medications and patient education for major drug classifications. The impact of technology, economic, and regulatory forces as well as collaboration with the health team are discussed. Ethical/legal and cultural considerations are explored across the life span. **Prerequisites:** Admission to the nursing program.

**3.0 Student Learning Outcomes**

Upon successful completion of the course, students will have demonstrated the ability to:

- 1.) Integrate knowledge from the biological sciences and principles of mathematics to pharmacological aspects of nursing practice.
- 2.) Discuss the importance of accountability in safe medication administration.
- 3.) Apply evidence-based findings regarding the safe administration of medications.
- 4.) Integrate the use of technology and information systems to facilitate safe medication administration.
- 5.) Demonstrate basic knowledge of healthcare policy, finance, and regulatory environments related to safe medication administration.
- 6.) Discuss importance of inter/intra-professional collaboration related to safe medication administration to diverse populations across the lifespan.
- 7.) Integrate health promotion, maintenance, restoration, and disease prevention in educating patients regarding medications and complementary therapies to reduce risks and improve health outcomes
- 8.) Discuss the influence of historical, moral, ethical and legal aspects of medication administration in delivering care to diverse populations.
- 9.) Explain how knowledge, skills and attitudes impact the delivery of safe, holistic, evidence-based patient-centered care when delivering medications to diverse populations across the healthcare continuum.

APPROVED: Approved by Undergraduate Studies 05/09/12  
 Texas Board of Nurse Examiners

**4.0 TEXTBOOKS:**

American Psychological Association. (2009). *Publication manual of the American psychological association* (6<sup>th</sup> ed.). Washington DC: Author. ISBN: 978-1-4338-0561-5

ANA Foundation of Nursing Packet (current versions purchased for Level I)  
*Nursing's Social Policy Statement*. Washington, D.C.: American Nurses Association.  
*Nursing: Scope and Standards of Practice*. Silver Spring, MD: American Nurses Association.  
*Code of Ethics for Nurses with Interpretive Statements*. Silver Spring, MD: American Nurses Association.

College of Nursing. (2016). *BSN/MSN guide for nursing students*. Tyler: The University of Texas at Tyler. (Note: *Must be current version of student guide*)

Kee, J. L., Hayes, E.R. & McCuiston, L.E. (2015). *Pharmacology: A Patient Centered Nursing Process Approach* (8<sup>th</sup> ed.). St. Louis, Missouri: Saunders. ISBN: 978-1-4557-5148-8

Kee, J. L., Hayes, E.R. & McCuiston, L.E. (2015). *Pharmacology: A Patient Centered Nursing Process Approach: study guide 8th ed.*. St. Louis, Missouri: Saunders. ISBN: 978-1-4557-7053-3

ATI Nursing Education Online: *Pharmacology Made Easy 3.0 and Dosage Calculation 2.0 Tutorials*. Assessment Technologies Institute (ATI), LLC. Accessed from ATI Website at <http://www.atitesting.com/Home.aspx>

Turning Technologies ResponseCard NXT "Clicker". ISBN # is 978-1-934931-49-3. Student must register the Device ID (alpha numeric) located on the back of the unit.

## **5.0 GRADING POLICY**

Completion of NURS 3307 is based on satisfactory attainment of didactic criteria. Any student failing to meet the course objectives and expectations must repeat the entire course and may not progress to the next level.

The simple average of the 5 exam grades, before weighted calculation is performed, must be 75% or above to pass the course. Grades will not be rounded when calculating the average (74.5 – 74.9 is not rounded to 75). Students with an overall exam average of 75 or higher will have course grades calculated based on the weighted calculation of the exams and other required course work.

The **Course Grade** consists of the following components:

4 Exams and 1 Comprehensive Final (17% each)	85%
12 ATI Pharm Made Easy modules with tests (80% test score required; 0.25 points each test)	3%
10 ATI Dosage Calculation modules with Tests (80% test score required; 0.3 points each test)	3%
ATI Dosage Calculation Test (92% score required-two tries)	1%
ATI on-line Practice Tests A <u>and</u> B (80% scored required; 0.5% each test)	1%
ATI Proctored Pharm Test	1%
Class Participation Grade (determined on each campus)	6%

**Letter grades** will be assigned according to the following scale:

A	90-100
B	80-89
C	75-79
D	60-74
F	Below 60

## **6.0 UNIVERSITY POLICIES FOR STUDENTS (Rev 10/2013)**

The following University policies must appear on each course syllabus or be provided as an informational sheet (web-links to these policies may be used in the print or electronic syllabus)

<http://www.uttyler.edu/academicaffairs/syllabuspolicies.pdf>

### **Students Rights and Responsibilities**

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: <http://www.uttyler.edu/wellness/rightsresponsibilities.php>

### **Grade Replacement/Forgiveness and Census Date Policies**

Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at <http://www.uttyler.edu/registrar>. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar. Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions that students need to be aware of. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a "W" grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

### **State-Mandated Course Drop Policy**

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date). Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

### **Disability Services**

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University offers accommodations to students with learning, physical and/or psychiatric disabilities. If you have a disability, including non-visible disabilities such as chronic diseases, learning disabilities, head injury, PTSD or ADHD, or you have a history of modifications or accommodations in a previous educational environment you are encouraged to contact the Student Accessibility and Resources office and schedule an interview with the Accessibility Case Manager/ADA Coordinator, Cynthia Lowery Staples. If you are unsure if the above criteria applies to you, but have questions or concerns please contact the SAR office. For more information or to set up an appointment please visit the SAR office located in the University Center, Room 3150 or call 903.566.7079. You may also send an email to [cstaples@uttyler.edu](mailto:cstaples@uttyler.edu)

### **Student Absence due to Religious Observance**

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

### **Student Absence for University-Sponsored Events and Activities**

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

### **Social Security and FERPA Statement:**

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

**Emergency Exits and Evacuation:** Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

## **7.0 EXAMINATION AND EXAMINATION REVIEW POLICY**

1. Attendance for an exam is mandatory.
2. If absence for an exam is necessary, the student is responsible for notifying the faculty prior to the exam with an acceptable reason.
3. Students will not be allowed entry to the computer lab after an exam has started (only with faculty discretion).
4. Exams will be administered at the prescheduled time.
5. All hats/caps must be removed during exam time. All personal items such as purses, books, backpacks, notebooks, and briefcases will be left in the front of the room during testing.
6. Silence will be enforced during the exam time. In order to avoid distraction during the exam, no one will be permitted to leave the room during the exam.
7. Make-up exams will only be given at the discretion of the faculty member and may be in a different format than the original exam.
8. Students will not bring their own calculators, cell phones, or any communicating devices into an examination.
9. Exam reviews will be conducted at the discretion of the faculty. Test review may be scheduled with the faculty during office hours and within 10 school days from the return of the exam grades.
10. Any student achieving an examination grade less than 75% must schedule an appointment with the faculty within 10 school days from the return of the exam grades.

## **8.0 ACADEMIC INTEGRITY POLICY**

1. Students are expected to assume full responsibility for the content and integrity of all academic work submitted as homework and examinations.
2. Students are advised to review the UT Tyler Academic Dishonesty Policy and Academic Integrity Policy in the Current College of Nursing Student handbook and Academic Integrity Policy for UT Tyler students at [www.uttyler.edu](http://www.uttyler.edu); click on current students, then Vice-President for Student Affairs, then Student Guide for Conduct and Discipline at UT Tyler. These policies are fully endorsed and enforced by all faculty members within the College of Nursing.
3. Plagiarism, cheating, and collusion are unacceptable and if found violating any of these standards the student will be disciplined accordingly
4. The College of Nursing reserves the right to dismiss students from the program for an infraction of a legal, moral, social, or safety nature, pursuant to the procedures detailed in the Regent's Rules.
5. Students will review and sign Student Affirmation Form and Social Networking Policy form and submit to Blackboard Grade Assignment the first week of class.

## **9.0 GENERAL EXPECTATIONS OF STUDENTS IN PHARMACOLOGICAL BASIS FOR NURSING**

### 5. Dress Code for the University of Texas, College of Nursing:

A. General: It is the philosophy of the College of Nursing that the student has a responsibility to be neatly groomed and modestly dressed. Appearances should promote good health, safety and general well-being of the student. Clothing should avoid brevity and/or design that is offensive to the dignity and rights of others. School officials have the right and responsibility to counsel with the student or take any other corrective action. Types of clothing (other than those specified in this document) may be worn at the direction of the nursing instructor for special events.

B. Classroom: Casual or every day business wear is recommended. This includes but is not limited to the following: Slacks or skirt; sweater, blouse, and shirt. Jeans as well as conservative shorts (mid-thigh or longer) may be worn, but avoid overly frayed or soiled. Shoes must be worn. See items to be avoided below.

C. Items to be avoided in all School-related Functions (including but not limited to): Overly frayed, worn or soiled garments. Costume look, transparent blouses, bare midriff shirts, tank tops, spaghetti straps, muscle shirts, overtly sexual, gang colors or logos, facial or body piercing, obscene slogans or pictures, bedroom wear, short-shorts, short skirts, or clothing that may be offensive to others. If the dress code rules are broken and a change of clothes is not available, the student may be removed from the school-related function for the remainder of the day. Appropriate disciplinary action will be taken for repeated violations of this code.

## **10.0 GENERAL COURSE INFORMATION**

A. If lecture outlines are used; they will be posted on Blackboard a minimum of two (2) working days prior to class and will remain posted for the duration of the semester.

B. All submitted written material (papers, assignments, examinations, etc.) are the property of the College of Nursing. They will be maintained in an archived file in the College of Nursing.

C. The BSN/MSN Nursing Student Guide is available on the CON website at <http://uttyler.edu/nursing/college/undergraduate/documents/Baccalaureate-StudentGuide.pdf> Students must review and sign the Student Affirmation Form and the Social Networking policy form and submit to Blackboard Grade assignment the first week of class

D. ATI Policy: Students must complete the ATI Pharmacology Test by the due date listed in the schedule.

E. All nursing students are required to use their student email accounts for all correspondence (Approved FO: 2/03)

## LEARNING OUTCOMES FOR NURS 3307

**For all outcomes - Upon successful completion of the course the student will...:**

### ***UNIT 1: DOSAGE CALCULATIONS***

#### **1. Medications and Calculations**

1. Discuss basic math concepts that are utilized when calculating medication dosages.
2. Identify key issues related to accurate dosage calculations from research in the clinical setting.
3. Solve dosage calculation problems for adults and children using the following concepts: Roman numerals and Arabic numbers, fractions, percentages, decimals, fractions, ratios and proportions, dimensional analysis.
4. Convert units of measure between metric, apothecary and household equivalents.
5. Interpret oral and injectable drug labels.
6. Discuss differences in dosage calculations with respect to oral, injectable and topically applied medications.
7. Discuss differences in pediatric drug dosages and calculation of dosages to ensure safe delivery within the approved therapeutic range.

#### **Required Pre-Class Assignments**

Keen Textbook: Chapter 14, Medications and Calculations (use Dimensional Analysis method of calculation)

ATI Dosage Calculation Tutorials (10 Modules with required tests after each module; must make 80% on each test)

Practice Math Test (See Blackboard Assignments for practice tests and resources)

#### **Recommended Optional Reading:** Keen Study Guide, Chapter 14

1.) Cookson, K.L. (2013). Dimensional analysis: Calculate dosages the easy way. *Nursing 2013*, 43(6), 57-62 (this is an excellent review of how to use dimensional analysis with medication problems)

2.) Koohestani, H., & Baghcheghi, N. (2010). Comparing the effects of two educational methods of intravenous drug rate calculations on rapid and sustained learning of nursing students: formula method and dimensional analysis method. *Nurse Education in Practice*, 10(4), 233-237. doi:10.1016/j.nepr.2009.11.011

#### **Evaluation:**

Exam: ATI Dosage Calculation test (must make 92% on Final dosage Calculation Test. Dosage calculation problems are on all major exams and the final exam.

***Other: Bring calculator to class for practice.***

***On-line Activities (Practice Math Sheets & tests on Blackboard)***

## **UNIT 2: NURSING PHARMACOLOGY BASICS - PART I**

### **1. Nursing Process and Client Teaching**

1. Identify the five phases (assessment, nursing diagnosis, planning implementation and evaluation) of the nursing process and apply to situations where patients are receiving medications.
2. Develop patient-centered goals.
3. Discuss principles for health teaching related to drug therapy plans.
4. Describe culturally sensitive health teaching tips.
5. Analyze the nurse's role related to drug therapy plans.

#### **Required Pre-Class Assignments**

    Kee Textbook: Chapter 11

    ATI Tutorial: Introduction to Pharmacology

#### **Recommended Reading**

    Kee Study Guide: Chapter 11

#### **Evaluation**

    Exam: Unit Exam 1

    ATI Test: Introduction to Pharmacology

### **2. Drug Action: Pharmaceutic, Pharmacokinetic and Pharmacodynamic Phases**

1. Explain the three basic areas of pharmacology (pharmaceutics, pharmacokinetics and pharmacodynamics) and discuss the relationship between the dose of a drug and its effectiveness in treating disease.
2. Discuss the four phases of pharmacokinetics (absorption, distribution, metabolism and excretion) and apply to situations where patients receive medications.
3. Explain how the following pharmacokinetic processes affect drug therapy: first-pass effect, half-life, bioavailability, protein-binding, free drugs, and creatinine clearance.
4. Discuss pharmacodynamics and explain the process of dose-response, drug-receptor interaction, onset, peak and duration of action, agonist/antagonist, non-specific and nonselective effects, therapeutic index and range, and peak and trough drug levels.
5. Explain how adverse drug effects, side effects and toxic reactions occur.

#### **Required Pre-Class Assignments**

    Kee Textbook: Chapter 1

    ATI Tutorial: Introduction to Pharmacology

#### **Recommended Reading**

    Kee Study Guide: Chapter 1

#### **Evaluation**

    Exam: Unit Exam 1

    ATI Test: Introduction to Pharmacology

### **3. Life Span Considerations - Pediatric and Geriatric Populations**

1. Discuss how age affects medication therapy.
2. Explain how the anatomy and physiology of neonates, children and geriatrics influence drug administration and therapeutic outcome.
3. Discuss special concerns for geriatrics including non-compliance, polypharmacy and problem drugs.
4. Apply steps of the nursing process to life-span issues to insure safe drug therapy.

#### **Required Pre-Class Assignments**

    Kee Textbook: Chapter 7 & 8

    ATI Tutorial: Introduction to Pharmacology\*

#### **Recommended Reading**

    Kee Study Guide: Chapter 7 & 8

#### **Evaluation**

    Exam: Unit Exam 1

    ATI Test: Introduction to Pharmacology\*

## **UNIT 2: NURSING PHARMACOLOGY BASICS - PART II**

### **4. The Drug Approval Process**

1. Discuss significant drug legislation at the state and federal level that influences drug standards today.
2. Compare differences in categories of drugs (controlled substance, generic, chemical and brand names, pregnancy categories) and explain implications for medication administration, including use of Poison Control.
3. Discuss legal and ethical considerations which impact nursing practice related to drug administration; include the ANA Code of Ethics for Nurses and Nurse Practice Acts.
4. Discuss the impact of healthcare policy, finance and regulatory environments related to safe medication administration.

#### **Required Pre-Class Assignments**

Keep Textbook: Chapter 2

ATI Tutorial: Introduction to Pharmacology\*

#### **Recommended Reading**

Keep Study Guide: Chapter 2

#### **Evaluation**

Exam: Unit Exam 1

ATI Test: Introduction to Pharmacology\*

### **5. The Role of the Nurse in Drug Research**

1. Discuss the process involved in the development of new drugs including investigational drugs and informed consent.
2. Discuss ethical principles and apply to situations related to medication administration (include: informed consent, risk-to-benefit ratio)
3. Explain nursing responsibilities related to research involving medications.

#### **Required Pre-Class Assignments**

Keep Textbook: Chapter 10

ATI Tutorial: Introduction to Pharmacology\*

#### **Recommended Reading**

Keep Study Guide: Chapter 10

#### **Evaluation**

Exam: Unit Exam 1

ATI Test: Introduction to Pharmacology\*

### **6. Drug Interactions, Over-the-Counter Drugs and Herbal Products**

1. Discuss how drug interactions occur, including the phenomena of additive, synergistic and antagonist drug effects; and, drug-drug-interactions and photosensitivity.
2. Discuss nursing implications of drug-food interactions.
3. Discuss the differences between prescription drugs, over-the-counter (OTC) drugs and herbal products including legal implications.
4. Describe the advantages and disadvantages of OTC drugs, herbal and complementary therapies, including potential dangers.
5. Apply the concepts of the nursing process, particularly patient teaching, to administration of herbal and OTC drugs.

#### **Required Pre-Class Assignments**

Keep Textbook: Chapter 4 & 6

ATI Tutorial: Introduction to Pharmacology\*

#### **Recommended Reading**

Keep Study Guide: Chapter 4 & 6

Optional Reading: Acee, A., & Sharoff, L. (2012). Herbal remedies, mood, and cognition. *Holistic Nursing Practice*, 26(1), 38-51. (Retrieved online through UT Tyler Library database)

#### **Evaluation**

Exam: Unit Exam 1

ATI Test: Introduction to Pharmacology\*

## **7. Cultural and Pharmacogenetic Considerations**

1. Discuss how cultural and geographic factors (communication, social organization, health care practices related to wellness and disease prevention) can influence compliance with drug therapy and medication-related behavior.
2. Discuss the influence of biocultural ecology in patient's response to selected medications, e.g. antihypertensive drugs.

### Required Pre-Class Assignments

Keep Textbook: Chapter 3

ATI Tutorial: Introduction to Pharmacology\*

### Recommended Reading

Keep Study Guide: Chapter 3

### Evaluation

Exam: Unit Exam 1

ATI Test: Introduction to Pharmacology\*

## **8. Safety and Quality with Medication Administration**

1. Describe the "five plus five rights" of drug administration.
2. Discuss types of medication errors common to nurses and factors that contribute to their occurrence.
3. Discuss National Patient Safety Goals (patient ID, communication among caregivers, safety using medications, medication reconciliation, and patient involvement in their own care) and methods of preventing and responding to medication errors.
4. Identify a "culture of safety" including advances in technology that enhance safety and delivery of medications, e.g. electronic records, barcoding, pregnancy categories.
5. Explain guidelines for correct administration of medications.
6. Describe routes of drug administration (Enteral: oral, gastric, rectal; Parenteral: intravenous, subcutaneous, intramuscular, intradermal; Topical: eye, ear, nasal, inhalation, rectal, skin and vaginal). **Note: oral and injectable methods of administration are emphasized here.** Eye, ear, nasal, inhalation, transdermal, rectal, vaginal and artificial feedings methods will be discussed under applicable drug categories in later chapters.
7. Utilizing evidence-based findings, discuss skills, knowledge and attitudes required of the nurse in the safe administration of medications to diverse populations in a variety of settings.

### Required Pre-Class Assignments

Keep Textbook: Chapter 12 & 13

ATI Tutorial: Introduction to Pharmacology\*

### Recommended Reading

Keep Study Guide: Chapter 12 & 13

### Evaluation

Exam: Unit Exam 1

ATI Test: Introduction to Pharmacology\*

### Optional Recommended Reading: Evidence-based practice

Reid-Searl, K. & Happell, B. (2012). Supervising nursing students administering medication: a perspective from registered nurses. *Journal of Clinical Nursing*, 21(13/14), 1998-2005.

Tzeng, H., Yin, C., & Schneider, T. E. (2013). Medication Error-Related Issues In Nursing Practice. *MEDSURG Nursing*, 22(1), 13-50.

### **UNIT 3: Autonomic Nervous System Agents**

**\*Note: Prototype drugs for each unit are provided in text boxes. Additional drugs may be added by lecturing instructor and posted on Blackboard.**

#### **1. Adrenergic and Adrenergic Blockers**

1. Discuss sympathetic nervous system stimulation and blockade related to drug therapy, including responses of alpha and beta receptors.
2. Discuss use, action, effect and side effects of sympathomimetic and sympatholytic drugs in general, and for selected *Prototype Drugs*.
3. Describe differences between selective and non-selective adrenergic drugs.
4. Apply the nursing process to clinical situations involving the administration of adrenergic agents; include specific teaching points for patients and caregivers.
5. Discuss emergency drugs that stimulate the adrenergic system: **epinephrine**, pg. 921, **norepinephrine**, pg. 920, dopamine, pg. 919; **dobutamine**, pg. 920)

**\*Prototypes**

epinephrine (Adrenaline)  
atenolol (Tenormin)  
albuterol (Proventil)  
Additional drugs per instructor

#### Required Pre-Class Assignments

Keep Textbook: Chapter 18  
ATI (no Tutorial or Test)

#### Recommended Reading

Keep Study Guide: Chapter 18

#### Evaluation

Exam: Unit Exam 1

#### **2. Cholinergic and Anticholinergics**

1. Discuss parasympathetic stimulation and blockade related to cholinergic and anticholinergic medications, including the role of muscarinic and nicotinic receptor.
2. Differentiate between direct-acting, indirect-acting cholinergic drugs and cholinesterase inhibitors.
3. Explain use, action, effect and side effects of parasympathetic drugs (cholinergic agonists and antagonists) in general, and for selected *Prototype Drugs*.
4. Discuss how acetylcholinesterase inhibitors/cholinesterase inhibitors are used to treat Myasthenia Gravis
5. Discuss anticholinergic drugs for Parkinson's disease and urinary frequency.
5. Discuss steps of the nursing process applied to cholinergic drugs, including interventions and patient teaching.
6. Discuss an emergency drug used to block the parasympathetic system (atropine, pg. 912)

**Prototypes**

benztropine (Cogentin)  
tolterodine tartrate (Detrol)  
atropine (Atropine)  
bethanechol (Urecholine)  
Additional drugs per instructor

#### Pre-Class Assignments

Textbook Chapter 19

#### Recommended Reading

Study Guide: Chapter 19

#### Evaluation

Exam: Unit Exam 1

## **UNIT 4: Respiratory Agents**

### **1. Drugs for Upper Respiratory Disorders**

1. Compare and discuss antihistamine, decongestant, antitussive and expectorant drug groups.
2. Describe the actions, uses, effects and side effects of 1st and 2nd generation antihistamines, nasal and systemic decongestants, intranasal steroids, antitussives and expectorants for selected **Prototype Drugs.**
3. Compare advantages and disadvantages of drug routes (nasal, inhalation and oral-systemic) for respiratory conditions.
4. Apply the nursing process including nursing interventions and patient teaching for drugs used to treat the common cold and allergic rhinitis.
5. Apply evidence-based practice guidelines to the administration of upper and lower respiratory agents.
6. Identify an emergency drug for severe allergic reactions (diphenhydramine, pg. 921)

#### **Required Pre-Class Assignments**

Keep Textbook: Chapter 40  
ATI Tutorial: Respiratory System\*

#### **Recommended Reading**

Keep Study Guide: Chapter 40

#### **Evaluation**

Exam: Unit Exam 2  
ATI Test: Respiratory System\*

#### **Prototypes**

Diphenhydramine (Benadryl)  
Guaifenesin and dextromethorphan  
(Robitussin-DM)  
Additional drugs per instructor

### **2. Drugs for Lower Respiratory Disorders**

1. Define *chronic obstructive pulmonary disease* (COPD), to include asthma, bronchitis and emphysema.
2. Describe common symptoms of asthma and COPD and the classifications of drugs used to treat.
3. Discuss the action, major effects, side effects and precautions for bronchodilator drug categories: sympathomimetics (alpha and beta 2 adrenergic agonists), anticholinergics, xanthine derivatives (aminophylline –theophylline); include selected **Prototype Drugs.**
4. Explain how other respiratory agents are used to control asthma, emphysema and chronic bronchitis: antileukotriene agents, glucocorticoids and mast cell stabilizers; include use, action, and side effects.
5. State the therapeutic and toxic serum or plasma theophylline level.
6. Discuss common side effects of long-term steroid use.
7. Discuss the use of special equipment (nose drops/sprays, hand-held nebulizer [HHN], metered dose inhaler [MDI], dry powdered inhaler [DPI]) for administering respiratory tract medications.
8. Apply steps of the nursing process including nursing interventions and patient teaching for the client taking drugs commonly used for COPD and asthma.
9. Identify emergency drugs for respiratory distress or allergic reactions and the mechanism for action (Albuterol, pg. 260)

#### **Pre-Class Assignments**

Chapter 13, Medication Administration, pgs. 136-138 (inhalation)  
Keep Textbook: Chapter 41  
ATI Tutorial: Respiratory\*

#### **Recommended Reading:**

Keep Study Guide: Chapter 41

#### **Evaluation**

Exam: Unit Exam 2  
ATI Test: Respiratory\*

#### **Prototypes**

Albuterol (Proventil)  
Tiotropium (Spiriva)  
Montelukast (Singulair)  
Prednisone (Deltasone, pg 753)  
Additional drugs per instructor

## **UNIT 5: CARDIOVASCULAR SYSTEM AGENTS - Part I**

### **1. Cardiac Glycosides**

1. Define inotropic, chronotropic and dromotropic.
2. Discuss disruptions in cardiac rate, rhythm, contraction and blood flow to the myocardium; and, how cardiac drugs regulate these abnormalities to maintain circulation.
3. Discuss cardiac glycoside drugs, including **Prototype Drug**, used to treat heart failure and cardiac dysrhythmias: including use, action, side effects and important steps of the nursing process related to drug administration.
4. Discuss the role of BNP in treating heart failure.
5. Explain the risks for digoxin toxicity and overdose (including serum levels) and prevention/treatment.
6. Discuss an emergency drug used to enhance a positive chronotropic and inotropic effect on the heart (dobutamine, pg. 920)

#### **Required Pre-Class Assignments**

Keep Textbook: Chapter 42, pgs. 601-607  
ATI Module: Cardiovascular System\*

#### **Recommended Reading**

Keep Study Guide: 42

#### **Evaluation**

Exam: Unit Exam 2  
ATI Test: Cardiovascular System\*

#### **Prototypes**

Digoxin (Lanoxin)  
Digibind  
Additional drugs per instructor

### **2. Diuretics**

1. Describe how diuretics work in the kidney to filter sodium, potassium and water.
2. Describe indications, actions, uses, effects, side effects and adverse reactions related to thiazide, osmotic, loop, and potassium-sparing diuretics; include selected **Prototype Drugs**.
3. Apply the nursing process, including nursing interventions and patient teaching, to patient situations where diuretics are used to affect fluid and/or electrolyte disturbances.
4. Identify potent diuretics used for emergency situations to produce a rapid diuresis (mannitol, pg. 917 and furosemide, p. 924 and p.626).

#### **Required Pre-Class Assignments**

Keep Textbook Chapter: 43,  
ATI Module: Cardiovascular System\*

#### **Recommended Reading**

Keep Study Guide: 43

#### **Evaluation**

Exam: Unit Exam 2  
ATI Test: Cardiovascular System\*

#### **Prototypes**

hydrochlorothiazide (Diuril)  
furosemide (Lasix)  
spironolactone (Aldactone)  
mannitol (Osmitrol, see pg. 917)  
Additional drugs per instructor

### **3. Antianginals and Antidysrhythmics**

1. Discuss the term dysrhythmia, explain causes for common types, and describe how these abnormal rhythms affect circulation in the heart and to the body.
2. Differentiate between the 4 types of antidysrhythmic drugs (Class I -membrane stabilizing, II - Beta Blockers, III – Prolong repolarization and IV – Calcium channel blockers, and an unclassified antidysrhythmic); and, explain their use, actions, effects and common side effects.
3. Address the use, action, effect and side effects of selected **Prototype Drugs**.
4. Apply the nursing process to patient situations where antidysrhythmic drugs are given to control irregular heart rhythms and/or slow the heart rate.
5. Explain how myocardial ischemia is responsible for causing angina, including the precipitating factors and measures that decrease its occurrence.
6. Differentiate between the types of angina and types of treatment for each one.
7. Compare the various antianginals, such as nitrates, beta-blockers and calcium channel blockers in regard to use, action, effects and side effects; include selected **Prototype Drugs**.

8. Apply the nursing process, including nursing interventions and patient teaching, to patient situations where antianginal drugs are given to manage angina.
9. Discuss emergency drugs used to control cardiac arrhythmias (nitroglycerine, pg. 911, amiodarone, pg. 913, lidocaine, pg., 914, adenosine, pg. 912, diltiazem. pg. 913, magnesium sulfate, pg. 914) and treat myocardial infarction (morphine, pg. 911)

#### Pre-Class Assignments

Kee Textbook: Chapter 42, p. 607-619  
ATI Tutorial: Cardiovascular\*

#### Recommended Reading:

American Heart Association. (2011). Management of Patients with Unstable Angina/Non-ST Elevation Myocardial Infarction. Retrieved from

[http://jaccjacc.cardiosource.com/DataSupp/ACCF/2011\\_UA\\_NSTEMI\\_PocketGuide.pdf](http://jaccjacc.cardiosource.com/DataSupp/ACCF/2011_UA_NSTEMI_PocketGuide.pdf)  
Kee Study Guide: Chapter 42

#### Evaluation

Exam: Unit Exam 2  
ATI Test: Cardiovascular\*

#### **Prototypes**

nitroglycerine (Nitrostat)  
acebutolol (Sectral)  
diltiazem (Cardizem), p. 913  
amiodarone (Cordarone), p.913  
lidocaine (Xylocaine), p.914  
Additional drugs per instructor

## **UNIT 5: CARDIOVASCULAR SYSTEM AGENTS - Part II**

### **4. Antihypertensives**

1. Describe hypertension and factors affecting the development of high blood pressure.
2. Discuss the classification system used to categorize individuals with hypertension and the management of blood pressures according to the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC-7).
3. Identify non-pharmacological life-style modifications to reduce BP along with medication.
4. Describe the actions, use, effects, side effects and adverse reactions for major categories of antihypertensive drugs: adrenergic agents, angiotensin-converting enzymes (ACE inhibitors), angiotensin II receptor blockers (ARBs), calcium channel blockers, diuretics and vasodilators; include selected ***Prototype Drugs***.
5. Apply steps of the nursing process, including patient teaching, to situations where patients are being treated for hypertension with appropriate medication.
6. Identify medications for acute blood pressure emergencies - hypertensive (labetalol, pg. 922 and nitroprusside, pg. 923) and hypotension (dopamine, pg. 919-920).

#### Required Pre-Class Assignments

Keep Textbook: Chapter 44  
ATI Tutorial: Cardiovascular\*

#### Recommended Reading

Keep Study Guide: Chapter 44

#### Evaluation

Exam: Unit Exam 2  
ATI Test: Cardiovascular\*

#### **Prototypes**

metoprolol (Lopressor)  
prazosin (Minipress)  
valsartan (Diovan)  
Additional drugs per instructor

### **5. Anticoagulants, Antiplatelets and Thrombolytics**

1. Summarize the general process of hemostasis and describe how anticoagulants, antiplatelets, antifibrinolytics and thrombolytics modify the coagulation process.
2. Discuss the use, action, effects and side effects of anticoagulants, antiplatelets, antifibrinolytics and thrombolytics; include selected ***Prototype Drugs***.
3. Apply the nursing process, including nursing interventions and patient teaching, to patient situations where coagulation modifiers are used to affect clotting disturbances in the body.
4. Explain the choice of laboratory monitoring for anticoagulants, including PTT, PT and INR and and apply in selected therapeutic situations.

#### Required Pre-class Assignments

Keep Textbook: Chapter 45  
ATI Tutorial: Hematologic System\*

#### Recommended Reading

Keep Study Guide: Chapter 45

#### Evaluation

Exam: Unit Exam 2  
ATI Test: Hematologic System\*

#### **Prototypes**

Heparin (Lipo-Heparin)  
warfarin (Coumadin)  
alteplase - tissue plasminogen activator (Activase or tPA)  
clopidogrel (plavix)  
Protamine (Table p.655)  
Vitamin K ( Table p. 655)  
Additional drugs per instructor

### **6. Antilipemic Agents**

1. Explain how hyperlipidemia evolves, the risk factors, and the relationship to coronary heart disease.
2. Discuss the various types of lipoproteins and how antilipemic drugs, as well as life-style changes, manage abnormal values.
3. Discuss the role of statins as first-line drug therapy for hypercholesterolemia; include use, actions and side effects for statin drugs in general and selected ***Prototypes***.
4. Apply steps of nursing process to patient situations where statin drugs reduce hyperlipidemia.

#### Required Pre-class Assignments

Keep Textbook: Chapter 46  
ATI Tutorial: Cardiovascular\*

#### Recommended Reading

Keep Study Guide: Chapter 46

#### Evaluation

Exam: Unit Exam 2  
ATI Test: Cardiovascular\*

#### **Prototypes**

Rosuvastatin (Crestor)  
Cilostazol (Pletal)  
Additional drugs per instructor

## **UNIT 6: Central Nervous System - Part I**

### **1. Antiinflammatory, Antirheumatoid, and Related Agents**

1. Discuss the inflammatory response and the part it plays in generation of pain.
2. Compare various disease processes that are often identified as inflammatory in nature (rheumatoid arthritis, osteoarthritis, degenerative joint disorders and gout).
3. Contrast non-steroidal anti-inflammatory drugs (NSAIDs), anti-gout agents and anti-arthritis agents in relation to their mechanism of action, use, effect, side effects and precautions; include selected **Prototype Drugs**.
4. Apply steps of the nursing process, including patient teaching, to clinical situations where patients receive NSAIDs, anti-gout, anti-arthritis and other anti-inflammatory agents.
5. Identify research from evidence-based practice related to treatments for inflammation.

#### **Prototypes**

Aspirin (ASA)  
Ibuprofen (Motrin)  
Celecoxib (Celebrex)  
Infliximab (Remicade)  
Allopurinol (Zyloprim)  
Additional drugs per instructor

#### Required Pre-Class Assignments

Keep Textbook: Chapter 25  
ATI Tutorial: Pain/Inflammation\*

#### Recommended reading:

Keep Study Guide: Chapter 25

#### Evaluation

Exam 3  
ATI Test: Pain/Inflammation\*

### **2. Nonopioid and Opioid Analgesics**

1. Describe pain, types of pain and how pain can be managed through the use of pharmacologic methods.
2. Compare non-narcotics, salicylates, non-steroidal anti-inflammatory drugs (NSAID's), and narcotics in pain management.
3. Discuss the difference between an opioid agonist, agonist – antagonist and antagonist agents.
4. Compare the mechanisms of action, drug effects, indications, side effects/adverse actions, contraindication and interactions with non-narcotics, salicylates, NSAIDs, narcotic agonists, agonist – antagonist agents, and, selected **Prototype Drugs**.
5. List age-related concerns for pediatric and geriatric populations regarding use of opioids.
6. Explain steps of the nursing process, particularly interventions such as methods of administration and patient teaching, with regards to non-narcotic and narcotic analgesics e.g. use of PCA pump, transdermal patch.
7. Discuss management of opioid overdose, including reversal agent in emergency situations (naloxone, see page 918).

#### Required Pre-Class Assignments

Keep Textbook: Chapter 26  
ATI Tutorial: Pain/Inflammation\*

#### Recommended Reading

Keep Study Guide: Chapter 26

#### Evaluation

Exam: Unit Exam 3  
ATI Test: Pain/Inflammation\*

#### **Prototypes**

morphine sulfate  
naloxone (Narcan) p.918  
nalbuphine (Nubain)  
acetaminophen (Tylenol)  
sumatriptan (Imitrex)  
Additional drugs by instructor

### **3. Drugs of Abuse**

1. Differentiate between appropriate use and drug (substance) abuse, drug misuse, addiction, dependence, tolerance, detoxification, withdrawal, and abstinence.
2. Identify common stimulants (cocaine, amphetamines, nicotine) and depressants (alcohol, sedative-hypnotics [barbiturates, benzodiazepines, opioids] that are abused, and factors predisposing their abuse.
3. Discuss adverse effects of drug abuse and manifestations that indicate the need for treatment.
4. Describe effective treatments for drug abuse, including: nicotine (nicotine replacement therapy, bupropion, varenicline) and depressants (alcohol; - Thiamine & glucose, Librium, Ativan, Antabuse,

Naltrexone; sedative-hypnotics – Romazicon; opioids – Narcan, Methadone, Buprenorphine, Naltrexone).

5. Discuss special situations with surgical patients and those experiencing pain.
6. Explain dangers of drug abuse for health professionals.

Required Pre-Class Assignments

Kee Textbook: Chapter 5

No ATI tutorial

Recommended

Kee Study Guide: Chapter 5

Evaluation

Exam: Unit Exam 3

ATI Test: None

**3. Central Nervous System Depressants**

1. Identify the types and stages of sleep and discuss the differences between a sedative and hypnotic.
2. Identify nonpharmacologic ways to induce sleep.
3. Discuss adverse effects of *hangover*, *REM rebound*, *dependence*, *tolerance* and *withdrawal symptoms*.
4. Describe differences in short-acting, intermediate-acting and long-acting barbiturates used as sedative-hypnotics.
5. Discuss the use, action effect and side effects of barbiturates, benzodiazepines, non-benzodiazepines and muscle relaxants; and, for selected **Prototypes Drugs**
6. Discuss steps in the nursing process for barbiturates, benzodiazepines and muscle relaxants, including nursing interventions and patient teaching.
7. Identify the emergency reversal agent for benzodiazepines (**flumazenil, Romazicon**), pg. 918).
8. Define anesthesia and discuss differences in the use of general, balanced anesthesia, local anesthetics and moderate sedation.
9. Discuss use, action, effect and side effects of selected **Prototype Drugs** for sedatives, hypnotics and anesthesia.
10. Discuss abuse potential and general treatment for depressants, including: alcohol and sedative-hypnotics.

Required Pre-Class Assignments

Kee Textbook: Chapter 21

ATI Tutorial: Neurological Part I\*

Recommended Reading:

Kee Study Guide: Chapter 21

Evaluation

Exam: Unit Exam 3

ATI Test: Neurological Part I\*

**Prototypes**

zolpidem tartrate (Ambien)

alprazolam (Xanax)

flumazenil (Romazicon) p. 918

Additional drugs per instructor

## **UNIT 6: Central Nervous System - Part II**

### **4. Anticonvulsants**

1. Describe classifications of seizures and give examples of the different types of seizures.
2. Describe how antiepileptic drugs are used to control seizures; describe their effects, side effects, and contraindications; and, for selected **Prototype Drugs**.
3. Explain the emergency treatment for status epilepticus (diazepam or ativan).
4. Apply the steps of the nursing process to a patient with epilepsy receiving an anticonvulsant drug; include patient teaching.
5. Discuss differences in types of anticonvulsants drugs including hydantoins, barbiturates and benzodiazepines.
6. Explain the steps of the nursing process, including interventions and patient teaching, related to the use of hydantoins and other anticonvulsants.
7. State the therapeutic range of phenytoin (Dilantin) and implications of abnormal values.

#### Required Pre-Class Assignments

Keep Textbook: Chapter 22  
ATI Tutorial: Neurological Part I\*

#### Recommended Reading:

Keep Study Guide: Chapter 22

#### Evaluation

Exam: Unit Exam 3  
ATI Test: Neurological Part I\*

#### **Prototypes**

phenytoin (Dilantin)  
Additional drugs per instructor

### **5. Central Nervous System Stimulants**

1. Explain the effects of stimulants on the central nervous system (CNS).
2. Discuss terms: *narcolepsy*, *attention deficit disorder*, *headaches and drugs used in treatment*.
3. Discuss uses, actions effects and side effects of amphetamines, anorexiant, analeptics and serotonin agonists; and for selected **Prototype Drugs**
4. Identify treatment modalities for migraine headaches.
5. Discuss steps in the nursing process related to CNS stimulants, including nursing interventions and patient teaching.
6. Discuss stimulant addiction (nicotine) and general treatment (Chapter 5, Drugs of Abuse)

#### Required Pre-Class Assignments

Keep Textbook: Chapter 20 (stimulants); Chapter 26 (migraines), p. 365-367  
ATI Tutorial: Neurological Part I\*

#### Recommended Reading

Keep Study Guide: Chapters 20, 26

#### Evaluation

Exam: Unit Exam 3  
ATI Test: Neurological Part I\*

#### **Prototypes**

methylphenidate (Ritalin)  
sumatriptan (Imitrex) p.367  
Additional drugs per instructor

## **6. Drugs for the Neurologic and Neuromuscular Disorders: Parkinsonism, Alzheimer's, Myasthenia Gravis, Multiple Sclerosis, Muscle Spasms**

1. Discuss the pathophysiology of specific neurologic and neuromuscular disorders.
2. Explain the actions, use, effect and side effects of the following categories of drugs used to manage PD: selective monoamine oxidase inhibitors, dopaminergic agents, COMT inhibitors and anticholinergic therapy; and, muscle relaxants and depolarizing agents to treat muscle spasms and as an adjunct to anesthesia.
3. Discuss selected **Prototype Drugs**.

### Required Pre-Class Assignments

Keen Textbook: Chapter 23: Neurologic Disorders (Parkinsonism and Alzheimer's disease); Chapter 24: Neuromuscular Disorders (Myasthenia Gravis, Multiple Sclerosis and skeletal muscle spasms)

ATI Tutorial: Neurological Part I\* and Musculoskeletal\*

### Recommended Reading

Keen Study Guide: Chapters 23, 24

### Evaluation

Exam: Unit Exam 3

ATI Test: Neurological Part I\* and Musculoskeletal\*

#### **Prototypes**

Carbidopa-levodopa (Sinemet)  
Rivastigmine (Exelon)  
pyridostigmine Bromide (Mestinon)  
cyclobenzaprine (Flexeril)  
Additional drugs per instructor

## **7. Psychiatric Agents: Antipsychotics, Anxiolytics, Antidepressants and Mood Stabilizers**

1. Define psychosis and describe how typical (traditional) and atypical antipsychotic medications treat this disease.
2. Define the *extrapyramidal syndrome* related to use of antipsychotic medications.
3. Discuss the use, actions, effects and side effects of phenothiazines, nonphenothiazines and atypical (Serotonin/Dopamine Antagonists) antipsychotics; and selected **Prototype Drugs**
4. Describe the role of benzodiazepines and miscellaneous anxiolytics in treatment of anxiety disorders.
5. Describe the uses, actions, effects and side effects of selective serotonin reuptake inhibitors (SSRIs), second and third generation antidepressants, including tricyclic antidepressants and monoamine oxidase inhibitor (MAOI) and for selected **Prototype Drugs**
6. Discuss bipolar disorder and drugs used to stabilize mania (Lithium) and antidepressants to control the depressive side of the disorder.
7. Discuss the use, action, effect and side effects of lithium as well as the serum range for this drug and implications for nursing.
8. Apply steps of the nursing process to patients receiving medication for psychotherapeutic drugs; include significant patient education points.

### Required Pre-Class Assignments

Keen Textbook: Chapter 27: Antipsychotics and Anxiolytics

Chapter 28: Antidepressants and Mood Stabilizers

ATI Tutorial: Neuromuscular Part 2\*

### Recommended Reading

Keen Study Guide: Chapter 27, 28

### Evaluation

Exam: Unit Exam 3

ATI Test: Neurological Part 2\*

#### **Prototypes**

fluphenazine (Prolixin)  
haloperidol (Haldol)  
aripiprazole (Abilify)  
lorazepam (Ativan)  
fluoxetine (Prozac)  
venlafaxine (Effexor)  
lithium (Eskalith)  
Additional drugs per instructor

## **UNIT 7: Antibacterial, Antiviral and other Anti-infective Agents**

1. Explain the mechanisms of action of antibacterial and antiinfective drugs.
2. Differentiate between bacteria that are naturally resistant and those that have acquired resistance to an antibiotic.
3. Discuss pan-resistance and its importance on the effectiveness of antibiotics world-wide.
4. Discuss the development of community-acquired and nosocomial infections
5. Summarize the three general adverse effects associated with antibacterial/antiinfective drugs.
6. Differentiate between narrow-spectrum and broad-spectrum antibiotics
7. Summarize the general categories for antibiotics and reasons for choosing one type over another type.
8. Discuss actions, use, effects and side effects for the following general categories: Penicillins, Cephalosporins, Sulfonamides Macrolides, Tetracyclines, Aminoglycosides, Fluoroquinolones, Carbapenems, Antituberculars, Antifungals, Peptides, and Metronidazole Antivirals, Antimalarials, Anthelmintics and Urinary Tract Disorders and Antiretroviral drugs, including selected prototype drugs.
9. Discuss special precautions when giving antibiotics, specifically allergies, ototoxicity, nephrotoxicity.
10. Discuss how persons become infected with Tuberculosis (TB) and treatment using first-line and second-line antitubercular drugs.
11. Discuss the infections that are labeled as fungal, malarial, protozoal and/or helminthic in origin and list common signs and symptoms.
12. Discuss the process of immunosuppression in patients with viral infections, especially human immunodeficiency virus (HIV), acquired immune deficiency syndrome (AIDS).
13. Discuss antiretroviral therapy, and fusion inhibitors in the management of HIV and the importance of adherence to drug regimen.
14. Apply steps of the nursing process, including nursing interventions and patient teaching for each of the drug agents.

### Required Pre-Class Assignments

Keen Textbook: Antibacterial Agents:

- Chapter 29, Penicillins and Cephalosporins, p. 400,
- Chapter 30, Macrolides, Tetracycline's, Aminoglycosides, and Fluoroquinolones, p. 414
- Chapter 31, Sulfonamides, p. 429

Keen Textbook: Anti-infective Agents:

- Chapter 32, Antituberculars, Antifungals, Peptides, and Metronidazole p. 436
- Chapter 33 Antivirals, Antimalarials, and Anthelmintics p. 448
- Chapters 35: HIV and Aids-related Drugs, p. 469
- Chapter 34: Drugs for Urinary Tract Disorders p. 460

World Health Organization (2010). Antimicrobial resistance:

Revisiting the "tragedy of the commons." *Bulletin of the World Health Organization* 8 (805-806). (Will be provided in lecture notes)

ATI Tutorial: Infection\*

### Recommended Reading:

Keen Study Guide: Chapters 29 - 35

### Evaluation

Exam: Unit Exam 3,

ATI Test: Infection\*

### **Prototypes**

#### **Antibiotics:**

Amoxicillin (Amoxil)  
Ceftriaxone (Rocephin)  
Azithromycin (Zithromax)  
Doxycycline (Vibramycin)  
Gentamicin (Garamycin)  
Levofloxacin (Levaquin)  
CO-Trimoxazole/TMP-SMZ  
(Bactrim)

#### **Anti-infectives:**

Isoniazid (INH)  
Fluconazole (Diflucan)  
Acyclovir Sodium (Zovirax)  
Chloroquine HCL (Aralen HCL)

#### **Urinary Tract:**

Nitrofurantoin (Macrochantin)

#### **HIV:**

atazanavir (Reyataz)  
efavirenz (Sustiva)  
tenofovir (Viread)  
zidovudine (AZT)  
Additional drugs per instructor

## *Unit 8: Gastrointestinal, Fluid and Electrolyte, Nutrition*

### **1. Gastrointestinal Tract and Antiulcer Drugs**

1. Discuss hyperacidic states in the GI system and influences on the development of peptic ulcer disease, spastic colon and gastroesophageal reflux disease (GERD).
2. Describe the actions, uses, effects and side effects of various groups of antiulcer drugs: antacids, protectants, histamine-2 blockers and proton pump inhibitors. (Note: other anti-ulcer drugs such as anticholinergics, antibiotics, and antidepressants are discussed in other chapters.); identify selected **Prototype Drugs** used in the treatment of ulcers.
3. Compare two treatments for diarrhea (adsorbents and anticholinergics) and constipation (laxatives and stool softeners) and explain uses, actions and side effects; identify selected **Prototype Drugs** used for diarrhea and constipation.
4. Apply the nursing process, including nursing interventions and patient teaching, for clinical situations where antiulcer drugs, antidiarrheals, and laxatives are used to treat problems related to bowel elimination.
5. Discuss nausea and vomiting, including precipitating factors and/or diseases; and, common antiemetic agents, including use, action and side effects; identify **Prototype Drug** for nausea and vomiting.
6. Identify hazards of a previously recommended drug for poisoning (Syrup of Ipecac) and current advice regarding treatment for accidental ingestion of a potentially poisonous substance (**activated charcoal**, see p. 919).
7. Discuss insertion technique for a rectal suppository.

#### **Prototypes**

##### **Gastrointestinal :**

aluminum hydroxide (Amphojel)  
 promethazine ( Phenergan)  
 ondansetron (Zofran) See ATI  
 Review Module)  
 bisacodyl (Dulcolax)  
 diphenoxyllate (Lomotil)  
 psyllium (Metamucil)

##### **Antiulcer:**

sucralfate (Carafate)  
 esomeprazole (Nexium)  
 ranatadine (Zantac)

Additional drugs per instructor

### **2. Vitamin and Mineral Replacement**

1. Discuss the importance of various vitamins and minerals to the functioning of the human body.
2. Describe nutritional states and diseases caused by vitamin and mineral imbalances.
3. Discuss vitamins A, D, E, K (fat-soluble) and B1, B2, B6, B12, C (water-soluble); include uses, actions and side effects for each.
4. Discuss minerals including calcium, magnesium and phosphorus; include use, actions and side effects.
5. Apply steps of the nursing process, including patient teaching, to clinical situations where vitamins and minerals are used to promote health and treat illness.

### **3. Fluid and Electrolyte Replacement**

1. Discuss fluid balance, including movement between fluid compartments; and, discuss the role of colloids, osmotic pressure and hydrostatic pressure.
2. Compare isotonic, hypotonic and hypertonic fluid.
3. Describe the classifications and give examples of intravenous fluids including crystalloids (D5W, saline, Lactated Ringers), colloids (volume expanders) and blood products (whole blood, packed red blood cells-RBCs), plasma and albumin; include indications, use, action, side effects/complications.
4. Explain the role of sodium, potassium and magnesium; describe several signs and symptoms of hypokalemia, hyperkalemia, hyponatremia, hypernatremia and recommended treatment.
5. Discuss the role of **sodium bicarbonate** in elevating pH and moving potassium back into the cell; see also Emergency Drugs, p. 915-916)
6. Discuss action, effect, side effects and precautions necessary when administering electrolyte solutions; and, apply steps of the nursing process, including patient teaching, for clinical situations where parenterally administered fluids, electrolytes and blood products are administered to prevent or correct imbalances.

Required Reading:

Keen Textbook: Chapter 13: Medication Administration,  
Rectal suppositories, p. 137-138  
Chapter 47, Drugs for Gastrointestinal Tract Disorders, p.676  
Chapter 48, Antiulcer Drugs, p, 693  
Chapter 15, Vitamin and Mineral Replacement, p. 211  
Chapter 16, Fluid and Electrolyte Replacement, p. 223  
ATI Tutorial: Gastrointestinal\*

Optional Reading:

Keen Study Guide: Chapters 47, 48, 15, 16

Evaluation

Exam: Unit Exam 4

ATI Test: Gastrointestinal\*

Vitamin and Mineral Replacement

Vitamin A (Aquasol A)

Vitamin C (Ascorbicap)

Iron – Ferrous sulfate (Feosol)

Fluid and Electrolytes

Potassium (K-Dur)

Calcium

## **UNIT 9: Endocrine & Unit 10: Miscellaneous Eye, Ear and Dermatologic Agents**

### **1. Endocrine Drugs: Pituitary, Thyroid, Parathyroid, and Adrenal Disorders**

#### **Antidiabetic Drugs**

1. Discuss hormones and the relationship between the anterior and posterior pituitary gland, thyroid, parathyroid, adrenal glands and other target glands.
2. Identify the actions, uses, effects and side effects of the pituitary hormones: adrenocorticotropic hormone, growth hormone and posterior pituitary hormones; include selected **Prototype Drugs**.
3. Differentiate between hypo and hyperthyroidism.
4. Discuss the actions, effects and side effects for agents used to treat thyroid conditions requiring replacement hormones; or, for antithyroid agents for hyperthyroidism; include selected **Prototype Drugs**.
5. Compare Type I and Type II diabetes mellitus.
6. Explain the differences between hyper and hypoglycemia; give examples of signs, symptoms and treatment of both.
7. Compare the indications, actions, effects and side effects of oral diabetic agents and insulins used in the management of diabetes mellitus; including selected **Prototype Drugs**.
8. Compare and contrast the differences in rapid-acting, short-acting, intermediate-acting, long-acting, fixed combination and sliding scale insulins; and, the drug **Glucagon** and **Dextrose 50%**, (p.771) used in hypoglycemia or insulin shock.
9. Identify the peak concentration time for the different types of insulin action when a hypoglycemic reaction may be most likely to occur.
10. Apply the nursing process, including interventions and patient teaching, for endocrine agents.
11. Identify alternatives in insulin delivery and research findings from evidence-based practice related to insulin.

#### **Required Reading:**

Kee Textbook: Chapter 51, Endocrine drugs, p.742  
Chapter 52, Antidiabetics, p. 758

ATI Tutorial: Endocrine\*

#### **Recommended Reading:**

Kee Study Guide: Chapter 51  
Journal article: Gebel E. Aids for insulin users. (2013). These devices may ease your routine. *Diabetes Forecast* [serial online], 66(1):62-65.

#### **Evaluation**

Exam: Unit Exam 4  
ATI Test: Endocrine\*

#### **Prototypes**

##### **Endocrine :**

Repository corticotropin (Acthar)  
levothyroxine sodium (Synthroid)  
calcitriol (Rocaltrol)  
prednisone (Deltasone)

##### **Antidiabetics**

##### **Insulins:**

humalog, (Lispro)--rapid acting  
regular, (Humulin R)-- short acting  
Humulin N-- intermediate acting  
glargine (Lantus)-- long acting

##### **Oral:**

glipizide (Glucotrol)  
metformin (Glucophage)  
Additional drugs per instructor

## **2. Drugs for Eye and Ear and Skin:**

1. Discuss disorders of the eye and medications that are used to treat them.
  2. Explain the differences between chronic open-angle and acute closed-angle glaucoma, and explain how miotics, beta blockers, prostaglandin analogues and carbonic anhydrase inhibitors are used in treatment.
  3. Discuss the role of ocular antiinfectives, antiinflammatory and topical anesthetics in treating infections, inflammation and eye pain, respectively.
  4. Discuss common disorders of the ear and treatments, including administration of ear medications and irrigation.
  5. Explain techniques of applying medications to the eye and ear (see Principles of Drug Administration)
  6. Discuss the use, action, effect and side effects of selected **Prototype Drugs**
1. Apply steps of the nursing process, including patient teaching, for clinical situations where patients are treated for eye and ear disorders.
  2. Differentiate acne vulgaris, psoriasis, drug-induced dermatitis, and contact dermatitis.
  3. Describe non-pharmacologic measures used to treat mild acne vulgaris..
  4. Compare the topical antibacterial agents used to prevent and treat burn tissue infection.
  5. Discuss the nursing process, including client teaching, related to commonly used drugs for acne vulgaris, psoriasis, and burns.
  - 6.

### **Required Reading:**

Kee Textbook: Chapter 49 Drugs for Disorders of the Eye and Ear  
 Chapter 50, Drugs for Dermatologic Disorders, p. 727  
 Chapter 14, Medication Administration, p. 135-136

ATI Tutorial: None

### **Recommended Reading:**

Kee Study Guide: Chapters 49, 50

### **Evaluation**

Exam: Unit Exam 4  
 ATI Test: None

### **Prototypes**

#### **Eye, Ear:**

latanoprost (Xalatan)

#### **Dermatologic:**

mafenide acetate (Sulfamylon cream)

Additional drugs per instructor

## UNIT 11: Reproductive and Gender-related Agents

### 1. Female Health Agents

1. Describe the use, action, effect and side effects of estrogen and progesterone products, contraceptive agents drug, therapy for osteoporosis, drugs used for pregnancy, labor, delivery and the postpartum period (include vitamins, fertility agents, uterine stimulants and relaxants); include selected **Prototype Drugs**.
2. Discuss management of pain during labor.
3. Explain the Rh factor related to pregnancy and treatment of the mother.
4. Summarize concerns for hormonal replacement therapy (HRT) and contraceptive agents.
5. Discuss the special problems of infertility, menopause and osteoporosis and the role of drug therapy.
6. Discuss method of inserting vaginal suppositories.p.138
7. Apply steps of the nursing process, including patient teaching, to clinical situations where drugs are administered to women to prevent, maintain or treat common female conditions.
8. Identify evidence-based research related to medications or women's health issues.

#### Required Reading:

Keen Textbook: Chapter 13, Medication Administration, p.138  
 Chapter 53, Female Reproductive Cycle: I: Pregnancy and Preterm Labor Drugs, p.777  
 Chapter 54, Female Reproductive Cycle II: Labor, Delivery, Pre-term Neonatal Drugs, p. 800  
 Chapter 55, Postpartum and Newborn Drugs, p. 826  
 Chapter 56, Drugs for Women's Reproductive Health and Menopause, p. 845  
 ATI Tutorial: Reproductive and Genitourinary\*

#### Recommended Reading:

Keen Study Guide: Chapters 53-56  
 EBP article: Rachel, H., Montsine, N., Andrea, M., & Alwyn, T. (2010). There's always Plan B: Adolescent knowledge, attitudes and intention to use emergency contraception. *Contraception*, 81, 128-132.

#### Evaluation

Exam: Final exam  
 ATI Test: Reproductive and Genitourinary\*

#### Prototypes

Oxytocin (Pitocin)  
 conjugated estrogens (Premarin)  
 magnesium sulfate  
 RhO(D) Immune Globulin  
 Erythromycin Ophthalmic Ointment  
 Additional drugs per instructor

### 2. Men's Health Agents

1. Describe the uses, actions, effects and side effects of androgen therapy, including testosterone and anabolic steroids.
2. Discuss the use of androgen inhibitors for benign prostatic hypertrophy and drugs for male-pattern baldness and prostatic cancer.
3. Explain how drugs can treat male sexual dysfunction and identify associated risks.
4. Describe the use, action, effect and side effects of drugs for men's health agents; include selected **Prototype Drugs**.
5. Apply the nursing process, including patient teaching, to clinical situations where patients receive drugs for male reproductive disorders.

#### Required Reading:

Keen Textbook: Chapter 57, Drugs for Men's Health and Reproductive Disorders, p. 891

#### Recommended Reading:

Keen Study Guide: Chapter 57

#### Evaluation

Exam: Final Exam

#### Prototypes

testosterone (Depotestosterone)  
 Additional drugs per instructor

## **UNIT 12: Immune, Biological Modifiers and Chemotherapy**

### **1. Vaccines**

1. Compare active and passive immunization.
2. Outline the currently recommended childhood immunization schedule, including DTaP, tetanus and diphtheria (Td), polio, varicella, measles-mumps-rubella (MMR), Hib, Hep-B, Hep-A and pneumococcal conjugate, influenza meningococcal, HPV and rotavirus.
3. Outline routine vaccines for adults: tetanus, diphtheria, pertussis, influenza, pneumococcal, human papilloma virus, MMR, varicella and zoster.
4. Discuss actions, use, effect, contraindications and side effects for immunizing agents; include selected **Prototype Drugs**.
5. Apply steps of the nursing process to patient situations where a toxoid or vaccine is being administered.

#### **Prototypes**

Varicella vaccine (Varivax)  
Additional drugs per instructor

### **2. Anticancer Drugs**

1. Discuss the characteristics of normal cells and compare with cancerous or malignant cells.
2. Explain cell growth cycle and it's relation to antineoplastic drugs which are cell-cycle specific (CCS) and cell-cycle non-specific (CCNS).
3. Explain how chemotherapy drugs are used more effectively in combination.
4. Describe the use, action, side effects, adverse reactions, and nursing interventions associated with common anticancer drugs.
5. Explain precautions that should be taken with IV administration of chemotherapy agents and treatment of adverse side effects such as extravasation.
6. Identify research findings from evidence-based practice related to cancer treatment and quality of life.

#### **Required Pre-Class Assignments:**

    Kee Textbook: Chapter 36 Vaccines, p. 489  
 Chapter 37, Anticancer Drugs, p.502  
 Chapter 38, Targeted Therapies to Treat Cancer  
 p. 530  
 Chapter 39: Biologic Response Modifiers, p. 554  
 ATI Tutorial: Immune\*

#### **Recommended Reading**

    Kee Study Guide: Chapters 36-39  
 Website: Agency for Healthcare Research and  
 Quality: <http://www.ahrq.gov/>

#### **Evaluation**

    Exam: Unit Exam 4  
 ATI Test: Immune\*

#### **Prototypes**

##### **Anticancer:**

Example: cyclophosphamide (Cytoxan)

**Targeted Cancer Therapy:** Drugs end in  
ib or ab

##### **Biologic Response Modifiers:**

Example: epoetin alfa (Epogen)  
 filgrastim and pegfilgrastim (Neupogen)  
 Additional drugs per instructor

(Anti-cancer drugs will be reviewed at the end of the semester. You instructor will notify you if they will be included on the Final Exam. Chemotherapy drugs are normally given by specially trained nurses; however, general nurses may care for these patients).