NURS 115

PHARMACOTHERAPEUTICS FOR NURSING AND PRACTICAL NURSING

JANUARY 8th, 2014 - APRIL 16th, 2014

Tutor:
NURS 115
PHARMACOTHERAPEUTICS IN NURS
COURSE OUTLINE

CALENDAR STATEMENT:

NURS 115 – Pharmacotherapeutics in Nursing 3-Lecture, 0-Lab, 0-Clinical) in 14 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:

Name:
Phone:
Email:
Office:

Office Hours:
COURSE OBJECTIVES:

Upon completion of NURS 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 5th, 2014) 30%
2. Midterm #2 Examination (March 19th, 2014) 30%
3. Final Examination (April 23rd, 2014) 30%
4. Weekly quizzes 10%

Total 100%

COURSE EVALUATION REQUIREMENTS

1. **Midterm Examination #1**: (30%) Wednesday, February 5th (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 19th (1830h-2130h).
   
   This exam will consist of multiple choice and short answer questions. Content covered will be from weeks 6 - 9 inclusive.

3. **Final Examination**: (40%) Wednesday, April 23rd (1830 – 2130h).
   
   This exam will consist of multiple choice and short answer questions. Content covered will be from weeks 11 - 14 inclusive.

**Weekly Quizzes - 10% (total)**

Each week a quiz to assess student knowledge will be available on Moodle. Each quiz will be available until the closing date and time shown in the NURS 115 schedule (see page 6). After 2200h on the date shown the quiz will no longer be available to access and a grade of zero will be assigned to any student who has not completed that week’s quiz. All quiz marks will be combined for a final assigned alpha grade and count for 10% of the final course grade.

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 and assigned readings on Moodle 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 (2014)</th>
<th>Topic(s)</th>
<th>Pre-Readings</th>
<th>Quiz Closes @ 2200h</th>
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<tr>
<td>Week 1</td>
<td>January 8th</td>
<td><strong>Course Orientation</strong>&lt;br&gt;<strong>Chapter 1</strong> – Introduction to Pharmacology: Drug Regulation and Approval&lt;br&gt;<strong>Chapter 2</strong> – Drug Classes and Schedules</td>
<td><strong>Unit 1</strong>: Chapters 1, 2</td>
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<td>Week 2</td>
<td>January 15th</td>
<td><strong>Chapter 4</strong>: Pharmacokinetics&lt;br&gt;<strong>Chapter 5</strong>: Pharmacodynamics</td>
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<td>Week 3</td>
<td>January 22nd</td>
<td><strong>Unit 2</strong>: Pharmacology and the Nurse-Patient Relationship</td>
<td><strong>Unit 2</strong>: Chapters 6, 7, &amp; 8</td>
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<td>Week 4</td>
<td>January 29th</td>
<td><strong>Unit 3</strong>: Professional, Personal, and Cultural Influences in Pharmacotherapy</td>
<td><strong>Unit 3</strong>: Chapters 9, 10, 11, &amp; 12</td>
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<td>Week 5</td>
<td>February 5th</td>
<td><strong>MIDTERM #1 EXAM (30%)</strong></td>
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<tr>
<td>Week 6</td>
<td>February 12th</td>
<td><strong>Unit 4</strong>: The Nervous System</td>
<td><strong>Unit 4</strong>: Chapters 13, 14, 15, &amp; 16,</td>
<td>Feb 16th</td>
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<td>Week 7</td>
<td>February 19th</td>
<td><strong>Unit 4</strong>: The Nervous System</td>
<td><strong>Unit 4</strong>: Chapters 17, 18, &amp; 19</td>
<td>Feb 23rd</td>
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**READING WEEK (February 26th)**

| Week 8 | March 5th  | **Unit 5**: The Cardiovascular System                                      | **Unit 5**: Chapters 21, 23, 24, & 25                                         | Mar 9th             |
| Week 9 | March 12th | **Unit 5**: The Cardiovascular and Respiratory Systems                      | **Unit 5**: Chapters 22, 26, 27, & 29                                          | Mar 16th            |
| Week 10| March 19th | **MIDTERM #2 EXAM (30%)**                                                   |                                                                               |                     |
| Week 11| March 26th | **Unit 6**: The Immune System                                                | **Unit 6**: Chapters 30, 31, 32, 33, 34                                       | Mar 30th            |
| Week 12| April 2nd  | **Unit 7**: The Gastrointestinal System                                     | **Unit 7**: Chapters 36, 37, & 38                                             | Apr 6th             |
| Week 13| April 9th  | **Unit 8**: The Endocrine and Genitourinary Systems                         | **Unit 8**: Chapters 39, 40, 41, 42                                           | Apr 13th            |
| Week 14| April 16th | **Unit 9**: The Musculoskeletal System, Integumentary System and Eyes/Ears | **Unit 9**: Chapters 45, 46, 47, 48                                            | Apr 20th            |
|       | April 23rd | **FINAL EXAM (30%)**                                                        | **RM 195 1830 – 2130hrs**                                                     |                     |
WEEK ONE

Content to be covered

- Course Orientation
- Chapter 1 – Introduction to Pharmacology: Drug Regulation and Approval
- Chapter 2 Drug Classes and Schedules

Guiding Questions

1. What is the 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. Describe and give examples of the concepts of chemical, generic and trade names of drugs.
7. What are the advantages and disadvantages between prescription and over the counter OTC drugs?
8. What are the differences between brand name drugs and their generic equivalents?
9. Identify drug schedules in Alberta and Canada.
WEEK TWO

Content to be covered

- Chapter 4 - Pharmacokinetics
- Chapter 5 - Pharmacodynamics

Guiding Questions

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

Content to be covered

Adams:
• Chapter 6 – Drug Administration throughout the Lifespan
• Chapter 7 – The Nursing Process in Pharmacology
• Chapter 8 – Principles of Drug Administration

Henke’s Med-Math:
• Chapter 4 – Drug Labels and Packaging
• Chapter 12 – Information Basic to Administering Drugs

Guiding Questions

1. With respect to pharmacokinetics, what are the lifespan considerations as well as the related physiological concerns?
2. How can nurses educate parents to prevent child poisonings?
3. How is Safe Dose calculated?
4. What strategies can be used in teaching the elderly about safe medication administration?
5. How is drug safety for three trimesters of pregnancy determined?
6. What are some of the lifespan considerations related to the administration of medications?
7. How does the nurse use the nursing process in drug administration?
8. What different types and combinations of therapies can be implemented in a treatment plan?
9. What interactions may occur during drug therapy?
10. What information is available from a drug label?
11. What are the various methods by which drugs can be packaged?
12. What are the responsibilities of the nurse related to safe medication administration?
13. Describe the routes of medication administration, including enteral, topical, and parenteral.
14. What should be included in a patient teaching plan specifically related to safe medication administration?
WEEK FOUR

Content to be covered

- Chapter 9 – Medication Incidents and Risk Reduction
- Chapter 10 - Psychosocial and Cultural Influences on Pharmacotherapy
- Chapter 11 - Natural Health Products and Alternative Therapies
- Chapter 12 - Substances of Addiction

Guiding Questions

1. What are several issues that can contribute to medication errors? What prevention strategies can be implemented to prevent medication errors?
2. What ethical principles should be incorporated into medication administration?
3. What are the spiritual and psychosocial factors that can influence pharmacotherapeutics?
4. How does ethnicity affect pharmacotherapeutic outcomes?
5. What are some examples of how cultural values and beliefs can influence pharmacotherapeutic outcomes?
6. How can genetics and/or gender influence pharmacotherapy and the actions of certain drugs?
7. How do community and environmental factors influence pharmacotherapy?
8. What are the differences between prescription drugs, over-the-counter (OTC) drugs, and natural health products, including the legal implications?
9. What are the advantages and disadvantages of natural health products?
10. What patient teaching is required for a client taking a natural health product?
11. Define addiction, physical dependence, psychological dependence, withdrawal syndrome, tolerance.
12. What are the effects of misuse of CNS depressants and stimulants?
13. What are the effects of misuse of hallucinogens?
14. What are the effects of misuse of nicotine or caffeine?
WEEK SIX

Content to be covered

- Chapter 13 – Effects of Drugs on Autonomic Nervous System
- Chapter 14 – Drugs for Anxiety & Insomnia
- Chapter 15 – Drugs for Seizures
- Chapter 16 – Drugs for Emotional and Mood Disorders

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 four general classifications of autonomic drugs?
5. What is the prototype information related to ANS drug classifications?
6. What is the difference between a sedative and a hypnotic agent?
7. What are the general concepts related to seizure pharmacotherapy?
8. What is the prototype information for the different classifications of anti-seizure drugs?
9. What is the mechanism of action for antidepressants?
10. What is the prototype information for the three primary classifications of antidepressants?
11. What is Bipolar Disorder?
12. What is the prototype information for the primary agent used to treat bipolar illness?
13. What are the characteristics of ADHD?
14. What is the prototype information for the primary agent used to treat ADHD?
WEEK SEVEN

Content to be covered

- Chapter 17 – Drugs for Psychoses
- Chapter 18 – Drugs for Degenerative Diseases of the Nervous System
- Chapter 19 – Drugs for the Control of Pain

Guiding Questions

1. What are the four primary characteristics of psychoses?
2. What is the prototype information for the agents used to treat psychoses?
3. What are the most common degenerative diseases of the CNS?
4. What are the nursing responsibilities for the primary agents used to treat Alzheimer’s disease, Parkinson’s disease, and Multiple Sclerosis?
5. What are the mechanisms of pain?
6. What non-pharmacological techniques can be used for pain management?
7. What is analgesia?
8. What are opioids and what is the prototype information related to opioids.
9. What are opioids antagonists, and what is the prototype information related to opioids antagonists?
10. What are non-opioids analgesics and what is the prototype information related to non-opioids antagonists?

NEXT WEEK – READING WEEK
WEEK EIGHT

Content to be covered – See Appendix B

- Chapter 21 – Drugs for Hypertension
- Chapter 23 – Drugs for Angina Pectoris, Myocardial Infarction, and Cerebrovascular Accident
- Chapter 24 – Drugs for Heart Failure
- Chapter 25 – Drugs for Dysrhythmias

Guiding Questions

Given that ACE Inhibitors, Adrenergic Antagonists, Calcium Channel Blockers, and Diuretics are the main drugs used in the treatment of several cardiovascular diseases, it is important for nursing students to understand them well. See Appendix B for their commonality.

1. What are the risk factors for hypertension?
2. What are the factors responsible for blood pressure?
3. What is the prototype information for diuretics (potassium sparing, thiazide, thiazide-like, and loop/high ceiling) in the treatment of hypertension and heart failure?
4. What is the prototype information for calcium channel blockers in the treatment of hypertension, angina pectoris, and dysrhythmias?
5. What is the prototype information for ACE inhibitors in the treatment of hypertension, and myocardial infarction?
6. What is the prototype information for adrenergic agents’ (Beta-Blockers, Alpha-adrenergic antagonists and agonists) role in the treatment of hypertension, angina pectoris, myocardial infarction, heart failure, and dysrhythmias?
7. What is the pathophysiology of heart failure?
8. What is the prototype information for cardiac glycosides in the treatment of heart failure?
9. What is Angina?
10. What are the nonpharmacologic and pharmacologic treatments for angina?
11. What is a myocardial infarction?
WEEK NINE

Content to be covered

• Chapter 22 – Drugs for Lipid Disorders
• Chapter 26 – Drugs for Coagulation Disorders
• Chapter 27 – Drugs for Shock
• Chapter 29 – Drugs for Pulmonary Disorders

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 do Statins work in the reduction of cholesterol?
5. How does a bile acid-binding agent work in the reduction of cholesterol?
6. How does a vitamin lower lipid levels? Pharmacotherapy with Nicotinic Acid.
7. What is the process of hemostasis?
8. What is the prototype information for anticoagulants?
9. What is the prototype information for antiplatelet agents?
10. What is the prototype information for thrombolytic agents?
11. What is the prototype information for antifibrinolytics?
12. What are the characteristics of shock
13. How do colloids and crystalloids work in the treatment of shock?
14. How do vasoconstrictors work in the treatment of shock?
15. How do inotropic agents work in the treatment of shock?
16. What are the nursing considerations in each of the above treatments for shock?
17. What is the physiology of the upper and lower respiratory system?
18. Review administration of pulmonary drugs via the inhalation route.
19. What is asthma?
20. What is the prototype information for beta-adrenergic agonists in the treatment of asthma?
21. What is the mechanism of action for the prototype anticholinergic drug?
22. What are the nursing considerations for Atrovent?
23. What is the role of corticosteroids, mast cell stabilizers and leukotriene modifiers in the treatment of asthma?
24. What are some of the common cold agents that are used and what are the nursing considerations? (antitussives, expectorants and mucolytics)
25. What is COPD and what is the pharmacological treatment of this illness?

WEEK TEN - MIDTERM EXAM #2
WEEK ELEVEN

Content to be covered

- Chapter 30 - Drugs for Immune system Modulation
- Chapter 31 - Drugs for inflammation and fever
- Chapter 32 - Drugs for Bacterial infections
- Chapter 34 - Drugs for Fungal, Protozoan, and Helminth infections
- Chapter 35 - Drugs for Viral infections

Guiding Questions

1. What is the physiology of the immune system?
2. How do vaccines stimulate the immune system?
3. What is the prototype information for NSAIDs?
4. How do glucocorticoids treat inflammation?
5. How do antipyretics treat fever?
6. What is the pharmacotherapy of allergic rhinitis?
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 the one common side effect of anti-infective therapy?
11. What is the prototypic information for penicillins, cephalosporins, tetracyclines, macrolides, aminoglycosides, fluoroquinolones, and sulfonamides?
12. What causes Tuberculosis?
13. What are the nursing responsibilities for antituberculosis drugs?
14. What are the characteristics of fungi?
15. What is the prototype information related to fungal infection drug therapy both systemic and superficial?
16. What are protozoans? What is the most common disease caused by a protozoan?
17. What is the prototype information related to non-malarial protozoan infection drug therapy?
18. What causes helminthic infection? What are the nursing considerations related to anthelmintic therapy?
19. What are some of the characteristics of a virus?
20. What are some general principles of antiretroviral drug for HIV-AIDS?
21. Describe the herpes viruses?
22. What is the prototype information related to acyclovir?
23. What is the best approach to prevention of influenza and hepatitis?
WEEK TWELVE

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

- Chapter 36 - Drugs for Peptic Ulcer Disease
- Chapter 37 - Drugs for Bowel Disorders, Nausea and Vomiting

Guiding Questions

1. Describe normal digestion processes both lower and upper digestive tract.
2. What is Peptic Ulcer Disease?
3. What is the primary cause of this PUD?
4. What are some of the risk factors for this disease?
5. What is the prototype information of H2-receptor Antagonists?
6. What is the prototype information for Proton Pump Inhibitors?
7. What is the prototype information for antacids?
8. What is the prototype information for laxatives?
9. What is the prototype information for antidiarrheals?
10. What are the types of antiemetics available?
11. What are the nursing considerations for antiemetics?
12. What are the nursing considerations of drugs for weight loss?
13. What is the prototype drug for pancreatitis?
14. Describe the role of vitamins in maintaining health?
15. What are the two classifications of vitamins?
16. What are the nursing considerations for clients taking vitamins?
17. List the indications for nutritional supplementation.
18. Explain the difference between enteral and total parenteral nutrition.
WEEK THIRTEEN

Content to be covered

- Chapter 39 - Drugs for Pituitary, Thyroid, and Adrenal Disorders
- Chapter 40 – Drugs for Diabetes Mellitus
- Chapter 41 – Drugs for Disorders and Conditions of the Female Reproductive System
- Chapter 42 – Drugs for Disorders and Conditions of the Male Reproductive System

Guiding Questions

1. How does the endocrine system control homeostasis?
2. What is the prototype information for antidiuretic hormone?
3. What is the normal function of the thyroid gland?
4. What are the signs and symptoms of hypo and hyper-thyroidism?
5. What is the prototype information related to hypothyroidism?
6. What is the prototype information related to hyperthyroidism?
7. What is the normal function of the adrenal gland?
8. What controls glucocorticoid secretion?
10. What is the prototype information related to glucocorticoids?
11. What is the normal function of the pancreas?
12. What are the characteristics of Type 1 Diabetes Mellitus?
13. What is the prototype information related to Regular Insulin?
14. What are the characteristics of Type 2 Diabetes Mellitus?
15. What is the prototype information related to oral hypoglycemics?
16. What is the prototype information related to oral hypoglycemics?
17. Describe the process of female fertilization and ovulation and how oral contraceptives inhibit the process.
18. How does hormone replacement therapy affect menopause?
19. Describe the regulation of male reproductive function.
20. What are the are nursing considerations related to the pharmacotherapy of erectile dysfunction?
WEEK FOURTEEN

Content to be covered

- Chapter 45 – Drugs for Muscle Spasms and Spasticity
- Chapter 46 - Drugs for Bone and Joint Disorders
- Chapter 47 – Drugs for Skin Disorders
- Chapter 48 - Drugs for Eye and Ear disorders

Guiding Questions

1. What causes muscle injury and spasms?
2. What is the prototype information for skeletal muscle relaxants?
3. What is the role of calcium in homeostasis?
4. What is the pharmacotherapy of metabolic bone diseases?
5. What are the calcium and vitamin D supplement prototype drugs?
6. What is the prototype information for bone resorption inhibitor drugs?
7. Describe osteoarthritis, rheumatoid arthritis, and gout.
8. What are the prototype drugs for joint disorders?
9. What are the three classifications of skin disorders?
10. What are the nursing considerations for the drugs of choice for skin parasites?
11. What are the nursing considerations for the treatment of sunburn?
12. What are acne, rosacea, and dermatitis?
13. What are the pharmacological treatments and nursing considerations for these conditions?
14. What is glaucoma?
15. What are the different categories of medications that can be used for glaucoma? What are the side effects and nursing considerations for the prototype drugs for glaucoma?
16. What medications are used to treat health alterations of the ear?
17. What are some client teaching tips in the use of otic preparations?
# APPENDIX A
## KEYANO COLLEGE GRADING SCALE

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

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Alpha Scale</th>
<th>4.0 Numeric Scale</th>
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## APPENDIX B
DRUGS USED IN THE TREATMENT OF CARDIOVASCULAR DISEASES

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<tr>
<th>HYPERTENSION</th>
<th>ANGINA PECTORIS</th>
<th>MYOCARDIAL INFARCTION</th>
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<th><strong>HEART FAILURE</strong></th>
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<td>ACE Inhibitors (enalapril)</td>
<td>ACE Inhibitors</td>
<td>ACE Inhibitors (lisinopril)</td>
<td>Beta-Adrenergic Antagonists (carvedilol)</td>
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<td>Adrenergic Antagonists (doxazosin)</td>
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<tr>
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<td>Nitrates (nitroglycerine)</td>
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<tr>
<td></td>
<td>Thrombolytics</td>
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</tr>
</tbody>
</table>

### BREAKDOWN OF DRUG CLASSIFICATIONS NOTED ABOVE

<table>
<thead>
<tr>
<th><strong>Adrenergic Agents</strong></th>
<th><strong>Diuretics</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Beta-adrenergic antagonists (Beta-blockers)</td>
<td>• Potassium-sparing (Spironolactone)</td>
</tr>
<tr>
<td>• Alpha 1 – adrenergic antagonists</td>
<td>• Thiazide (Hydrochlorothiazide (HCTZ))</td>
</tr>
<tr>
<td>• Alpha 2 – adrenergic agonists (centrally acting)</td>
<td>• Thiazide-like</td>
</tr>
<tr>
<td>• Adrenergic neuron blockers (peripherally acting)</td>
<td>• Loop/high ceiling (furosemide)</td>
</tr>
</tbody>
</table>