This course supports the assessments for Contemporary Pharmacotherapeutics. The course covers 5 competencies and represents 2 competency units.

Introduction

Overview
This course provides the opportunity to acquire advanced knowledge and skills in the therapeutic use of pharmacologic agents, herbals, and supplements. You will explore the pharmacologic treatment of major health problems and examine the principles of pharmacogenomics. The effects of culture, ethnicity, age, pregnancy, gender, healthcare setting, and funding of pharmacologic therapy will be emphasized. Legal aspects of prescribing will be fully addressed. Case studies will be utilized to present some of these concepts.

Getting Started
Welcome to Contemporary Pharmacotherapeutics! This course will explore all aspects of pharmacologic therapy in the health environment. You will be utilizing three different e-texts, case studies, and supplemental articles with direct links listed throughout the course. Begin the course reading through the preparing for success section, watching the welcome video, and by reviewing in the pacing guide to coordinate and plan your learning. Progress through each section of the course as outlined engaging in the readings, articles, and case studies as presented. Check your learning and preparation for the objective assessment using the study guide found with the pacing guide. When you feel ready, schedule and complete your objective assessment.

Competencies
This course provides guidance to help you demonstrate the following 5 competencies:

- **Competency 7008.1.1: Application of Pharmacotherapeutics**
  The graduate applies comprehensive principles of pharmacotherapeutics to nursing care with individuals, families, and communities.

- **Competency 7008.1.2: Adherence and Compliance**
  The graduate makes recommendations to address issues affecting adherence, safety, and compliance with prescribed, over-the-counter (OTC), and complementary drug regimens among patients and families.

- **Competency 7008.1.3: Drug Availability/Allotment**
  The graduate incorporates scientific and ethical principles to make decisions regarding drug distribution and availability.

- **Competency 7008.1.4: Social Ramifications**
  The graduate identifies social ramifications to health based on patterns of prescription and non-prescription medication use from an individual, community and global perspective.

- **Competency 7008.1.5: Regulatory Issues**
  The graduate identifies the role of regulatory agencies and their impact in drug therapy from development to delivery.
Nursing Dispositions Statement
Please review the Statement of Nursing Dispositions.

Course Instructor Assistance
As you prepare to demonstrate competency in this subject, remember that course instructors stand ready to help you reach your educational goals. As subject matter experts, instructors enjoy and take pride in helping students become reflective learners, problem solvers, and critical thinkers. Course instructors are excited to hear from you and eager to work with you.

Successful students report that working with a course instructor is the key to their success. Course instructors are able to share tips on approaches, tools, and skills that can help you apply the content you're studying. They also provide guidance in assessment preparation strategies and troubleshoot areas of deficiency. Even if things don't work out on your first try, course instructors act as a support system to guide you through the revision process. You should expect to work with course instructors for the duration of your coursework, and you are encouraged to contact them as soon as you begin. Course instructors are fully committed to your success!

Preparing for Success

The information in this section is provided to detail the resources available for you to use as you complete this course.

Learning Resources
The learning resources listed in this section are required to complete the activities in this course. For many resources, WGU has provided automatic access through the course. However, you may need to manually enroll in or independently acquire other resources. Read the full instructions provided to ensure that you have access to all of your resources in a timely manner.

Automatically Enrolled Resources

You will be automatically enrolled at the activity level for the following learning resources. Simply click on the links provided in the activities to access the learning materials.

VitalSource E-Texts
The following textbooks are available to you as e-texts within this course. You will be directly linked to the specific readings required within the activities that follow.


Note: These e-texts are available to you as part of your program tuition and fees, but you may purchase hard copies at your own expense through a retailer of your choice. If you choose to do so, please use the ISBN listed to ensure that you receive the correct edition.
Other Resources

The following textbook is available to you as e-text within this course. You will be directly linked to the specific readings required within the activities that follow.


Contemporary Pharmacotherapeutics Learning Community

You will need to access the Contemporary Pharmacotherapeutics Learning Community. In this community, you will receive notices and instructions related to this course, and you will share ideas and thoughts with your course instructor and other students.

Watch the following video: Course Community Walkthrough

*Note: To download this video, right-click the following link and choose “Save as...”: [download video]*

Nursing Standards

You will be able to access Nursing Professional Standards as they apply to your program through the WGU Library. Please access these documents at the following website:

- [WGU Library Nursing E-Reserves](#)

Case Studies in Pharmacotherapeutics

Case studies will be used to present the concepts of pharmacotherapeutics. Seven case studies have been selected for this course. You may not have adequate information to answer all the questions when a case is presented initially, but as you progress through the information presented in the course, you will be able to build upon your answers and improve the quality of your initial responses to the case.

Review and answer the questions for the following case studies by paying attention to the key points in the readings and applying the concepts from each unit in the course to address the issues presented in each case study:

<table>
<thead>
<tr>
<th>Case Study: Diabetes</th>
<th>Competency 1, 2, &amp; 3</th>
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<tr>
<td>Case Study: Substance Abuse</td>
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<td>Case Study: Polypharmacy</td>
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<td>Case Study: Depression</td>
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<td>Case Study: Medicare Patient</td>
<td>Competency 3, 4, &amp; 5</td>
</tr>
</tbody>
</table>
Pacing Guide

The pacing guide suggests a block of learning structure to pace your completion of learning activities. Each block is generally around a week of work for many students, but adaptations to fit your needs are acceptable. It is provided as a suggestion and does not represent a mandatory schedule. Follow the pacing guide carefully to ensure adequate progress through course materials.

Block of Learning 1: Application of Pharmacotherapeutics

Complete first half of Application of Pharmacotherapeutics

Read Appendix C and D, and chapters 1-6, 33, and 57.

Block of Learning 2: Application of Pharmacotherapeutics

Complete the remainder of the topic activities for Application of Pharmacotherapeutics

Block of Learning 3: Adherence and Impacts

Complete activities for Adherence to Pharmacological Therapy
Complete Activities for Pharmaceo-Economic Impact of Non-Compliance

Block of Learning 4: Warnings, Safety, Changes and Shortages

Complete activities for New Drugs, Warnings, Safety Information, Drug Label Changes, Medication Shortages

Block of Learning 5: Access, EBP, and Global Issues

Complete activities for Access to Pharmacologic Treatments
Complete activities for Evidence-Based Practice in Pharmacotherapeutics
Complete activities for Global Issues of Pharmacological Therapies

Block of Learning 6: Social Issues and Final Steps

Complete activities for Social issues of Pharmacotherapeutics and Drug Availability
Schedule and Pass your Objective Assessment

Note: This pacing guide does not replace the course. Please continue to refer to the course for a comprehensive list of the resources and activities.

Application of Pharmacotherapeutics
Master’s-prepared nurses should apply the principles of pharmacotherapeutics to their environments in healthcare.

**Application of Pharmacotherapeutics**

In this topic, you will learn how pharmacotherapeutics is applied in the healthcare environment.

This topic addresses the following competency:

- **Competency 7008.1.1: Application of Pharmacotherapeutics**
  The graduate applies comprehensive principles of pharmacotherapeutics to nursing care with individuals, families, and communities.

This topic highlights the following key concepts:

- the use and regulation of various classes of medications used to treat high priority and high volume diseases in contemporary practice
- the negative effects of overuse of over-the-counter (OTC) medications
- the essential role of the nurse in assessing and addressing controlled substance abuse among patients
- the advantages and disadvantages of using generic drugs vs. brand name drugs
- the benefits and limitations of customized treatments as they relate to pharmacogenomics
- potential adverse reactions to selected pharmaceutical interventions

**Readings for Application of Pharmacotherapeutics**

Reference the following sections in *Pharmacotherapy Casebook: A Patient-Focused Approach* by Schwinghammer:

- pages 433–440 of Appendix C Common Medical Abbreviations
- pages 441–450 of Appendix D Sample Responses to Case Questions

Read the following chapters in *Abrams’ Clinical Drug Therapy: Rationales for Nursing Practice*:

- chapter 1 Introduction to Pharmacology
- chapter 2 Basic Concepts and Processes
- chapter 27 Drug Therapy to Enhance the Adrenergic Response
- chapter 57 Drug Therapy for Substance Abuse Disorders

**Review Web Pages on Application of Pharmacotherapeutics**

Review the following article:

- [Results from the 2013 National Survey on Drug Use and Health Summary of National Findings](#)

Review the following material from the World Health Organization:
Case Study: Depression

Chief Complaint

- I’ve been crying a lot. I just can’t seem to get interested in life. No episodes of mania.

HPI

- Twenty-eight-year-old female with a family history of depression. Patient has been feeling depressed for the past three months.

PMH

- None

FH

- Mother has depression.

SH

- She has never been married.
- She works as a 911 operator.
- She denies any use of tobacco products and alcohol.

Meds

- St. Johns Wort

Allergies

- NKDA

ROS

- Complains of loss of interest in life, no suicidal ideation.
Physical Examination

- General: Thin, Caucasian woman in NAD
- VS: BP 122/74, P 80, RR 20, T 97.2°F; Wt 109 lbs, Ht 5'8"
- HEENT: PERRLA, EOMI
- Neck/Lymph Nodes: WNL, no enlargement of thyroid or nodules
- Lungs: Clear to A & P
- CV: RRR, no MRG
- Abd: NT/ND

- Genit/Rect: Deferred
- MS/Ext: Carotids, femorals, popliteals, and pedal pulses 2+
- Neuro: DTRs 2+ throughout

Labs

- Na 139 mEq/L
- Cl 103 mEq/L
- K 3.6 mEq/L
- CO2 31 mEq/L
- Gluc (fasting) 86 mg/dL
- Ca 9.4 mg/dL
- Phos 3.3 mg/dL
- Alk Phos 62 IU/L
- AST 15 IU/L
- ALT 18 IU/L
- T. bili 0.4 mg/dL
- BUN 15 mg/dL
- TSH 3.89

Assessment

- She usually exercises 45 minutes daily, but has not exercised since feelings of depression began.
- She has a loss of interest in food, picks at food.
- She was a weight loss of 15 lbs in the last few months.
- She rates 24/27 on the PHQ-9 depression questionnaire.

Plan

- Citalopram 20 mg PO daily
- Referral to counselor

QUESTIONS
1. Why is a TSH ordered when symptoms of depression are present?
2. When a patient presents with symptoms of depression, what other screening should be done?
3. What are some over-the-counter (OTC) medications used for depression?
4. What negative effects can occur as a result of the OTC medications for depression?

**Adherence and Compliance**

It is vital that graduate nurses are able to make recommendations for issues of adherence, safety, and compliance with drug regimens among patients and families.

**Adherence to Pharmacological Therapy**

In this topic, you will examine adherence to pharmacological therapy techniques and practices.

This topic addresses the following competency:

- **Competency 7008.1.2: Adherence and Compliance**
  The graduate makes recommendations to address issues affecting adherence, safety, and compliance with prescribed, over-the-counter (OTC), and complementary drug regimens among patients and families.

This topic highlights the following key concepts:

- issues related to patients’ adherence to multiple pharmacological therapies
- strategies to minimize potential abuse and misuse of drugs
- how polypharmacy affects drug therapy efficacy and overall health
- patient education procedures to address pharmacological therapy

**Readings on Adherence to Pharmacological Therapy**

Read the following chapters in *Pharmacotherapy Casebook: A Patient-Focused Approach* by Schwinghammer:

- chapter 3 Case Studies in Patient Communication
- chapter 13 Hypertension
- chapter 17 Ischemic Heart Disease

**Review Readings on Adherence to Pharmacological Therapy**

Review the following chapters from *Pharmacotherapy Casebook: A Patient-Focused Approach* by Schwinghammer.

Focus on ways to develop patient education programs.

- chapter 2 Active Learning Strategies
- chapter 3 Case Studies in Patient Communication

**Review the Web Pages on Adherence**

Review the following web pages:
Key Issue: USP–NF General Chapter <17> Prescription Container Labeling
Antibiotic/Antimicrobial Resistance

Pharmaco-Economic Impact of Non-Compliance
In this topic, you will examine the consequences of failing to comply with pharmacological therapy practices.

This topic addresses the following competency:

- **Competency 7008.1.2: Adherence and Compliance**
  The graduate makes recommendations to address issues affecting adherence, safety, and compliance with prescribed, over-the-counter (OTC), and complementary drug regimens among patients and families.

This topic highlights the following key concept:

- contemporary issues and social impacts related to prescription drug overuse and abuse

Review the 2010 National Survey on Drug Use

Review the following survey results:

- Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings

Case Study: Polypharmacy

Case studies will be used to present the concepts of pharmacotherapeutics to you. Review the data presented in the case study and answer the questions about the case listed at the end of the case presentation.

**Case Study: Polypharmacy**

**Chief Complaint**

- I’m here to get refills on my medications.

**HPI**

- The patient is a 65-year-old black female on multiple medications.

**PMH**

- Type 2 DM × 15 years
- HTN × 15 years
- Dyslipidemia × 10 years
• Morbid obesity × 15 years
• Rheumatoid arthritis × 10 years
• Asthma × 30 years

FH

• Father has history of Type 2 diabetes and hypertension.
• Mother has a history of dyslipidemia.
• Sister has Type 2 diabetes and hypertension.

SH

• She has been married for 40 years.
• She has never had any pregnancies or children.
• She is on Disability.
• She denies any use of tobacco products or alcohol.

Meds

• Ferrous Sulfate 325.0 Milligram Tablet, Sig: TAKE 1 TABLET BY MOUTH TWICE DAILY
• Promethazine HCl 25.0 Milligram Tablet, Sig: TAKE 1 TABLET BY MOUTH FOUR TIMES DAILY EVERY 6 HOURS AS NEEDED FOR NAUSEA AND VOMITING
• Trazodone HCl 100.0 Milligram Tablet, Sig: TAKE 1 TABLET BY MOUTH EVERY NIGHT AT BEDTIME
• Hydrocodone-Acetaminophen 10-325 MG Tablet, Sig: TAKE 1 TO 2 TABLETS BY MOUTH FOUR TIMES DAILY
• Carisoprodol 350.0 Milligram Tablet, Sig: TAKE 1 TABLET BY MOUTH TWICE DAILY AS NEEDED FOR SPASMS
• Triamterene-HCTZ 37.5/25 Tablet, Sig: TAKE 1 TABLET BY MOUTH EVERY MORNING
• Detrol LA 4.0 Milligram Capsule, extended release, Sig: TAKE ONE CAPSULE BY MOUTH DAILY
• Escitalopram Oxalate 20 MG Tablet, Sig: 1 TAB BY MOUTH ONCE A DAY
• Doxazosin Mesylate 1.0 Milligram Tablet, Sig: TAKE 1 TABLET BY MOUTH EVERY DAY
• Omeprazole 20.0 Milligram Capsule, extended release, Sig: TAKE ONE CAPSULE BY MOUTH TWICE DAILY
• Amlodipine Besylate 5 MG Tablet, Sig: 1 TABLET BY MOUTH ONCE A DAY
• Lisinopril 40 MG Tablet, Sig: 1 TABLET BY MOUTH ONCE A DAY
• Gabapentin 300.0 Milligram Capsule, Sig: TAKE ONE CAPSULE BY MOUTH THREE TIMES DAILY
• ProAir HFA 108 (90 Base) MCG/ACT Aerosol Solution, Sig: 2 PUFFS AS NEEDED INHALATION EVERY 4 HRS INHALATION EVERY 4 HRS
• Metformin HCl 500.0 Milligram Tablet, Sig: TAKE 1 TABLET BY MOUTH EVERY MORNING
Simvastatin 20.0 Milligram Tablet, Sig: TAKE 1 TABLET BY MOUTH EVERY EVENING (not taking)
Cartia XT 180 MG Capsule Extended Release 24 Hour, Sig: 1 CAPSULE BY MOUTH
Enbrel 50.0, Sig: INJECT 1 ML UNDER THE SKIN EVERY WEEK
Serevent Diskus 50 MCG/DOSE Aerosol Powder, Sig: USE 2 PUFFS BY MOUTH TWICE DAILY
Flovent HFA 220.0 Aerosol, Sig: INHALE 2 PUFFS BY MOUTH TWICE DAILY
Aspir-81 81 MG Tablet Delayed Release, Sig: 1 TABLET BY MOUTH ONCE A DAY
Alprazolam 0.5 Milligram Tablet, Sig: TAKE 1 TABLET BY MOUTH TWICE DAILY

Allergies
- NKDA

ROS
- All systems reviewed. She continues with pain secondary to rheumatoid arthritis.

Physical Examination
- General: Severely obese, black woman in NAD
- VS: BP 135/80, P 98, RR 18, T 98.2 F; Wt 260 kg, Ht 5'5"
- HEENT: PERRLA, EOMI, R and L fundus exam without retinopathy
- Neck/Lymph Nodes: WNL
- Lungs: Clear to A & P
- CV: RRR, no MRG
- Abd: NT/ND
- Genit/Rect: Deferred
- MS/Ext: Carotids, femorals, popliteals, and pedal pulses 2+, feet show mild calluses on MTPs
- Neuro: DTRs 2+ throughout, feet with normal sensation (5.07 monofilament)

Labs
- UA WNL, no microalbuminuria
- Na 136 mEq/L
- Cl 101 mEq/L
- K 3.7 mEq/L
- CO2 32 mEq/L
- Gluc (fasting) 110 mg/dL
- Ca 9.4 mg/dL
- Phos 3.3 mg/dL
- Fasting Lipid Profile: T. chol 236 mg/dL; LDL 135 mg/dL; Trig 223 mg/dL;
- HDL 56 mg/dL; TC/HDL ratio 4.2
- Alk Phos 62 IU/L
- AST 24 IU/L
Assessment

- Patient does not exercise.
- She follows diet as prescribed by dietician.
- Glycemic control has been maintained with a 7% A1C 6 months ago.
- Her weight has been the same for the past three years.
- Her blood pressure and cholesterol are not at goal on the current drug therapy.

Plan

- The healthcare provider sets up an appointment for the patient with the PharmD to determine polypharmacy and recommendations.

QUESTIONS

1. What issues can arise for this patient's adherence to this medication therapy?
2. How does polypharmacy affect drug therapy efficacy and overall health?

Drug Availability / Allotment

Graduate nurses should use scientific and ethical principles when making decisions about drug distribution and drug availability in healthcare settings.

New Drugs, Warnings, Safety Information, Drug label Changes, and Medication Shortages

This topic highlights issues that arise when dealing with the pharmacology industry.

This topic addresses the following competency:

- Competency 7008.1.3: Drug Availability/Allotment
  The graduate incorporates scientific and ethical principles to make decisions regarding drug distribution and availability.

This topic highlights the following key concepts:

- factors related to the patient’s individual circumstances and medical needs when prescribing medications
- how new drugs, warnings, and other safety information have been revised to address medication errors and safety concerns
- how medication shortages affect healthcare providers and patients
- the role of genetics/genomics in how the patient responds to drug therapies
Review: Chapters 1 - 3, 5 and 6 in Pharmacotherapy

Review the following chapters in *Pharmacotherapy Casebook: A Patient-Focused Approach* by Schwinghammer.

Focus on new drugs, warnings, safety information, drug label changes, and medication shortages.

- chapter 1 Introduction: How to Use this Casebook
- chapter 2 Active Learning Strategies
- chapter 3 Case Studies in Patient Communication
- chapter 5 Documentation of Pharmacotherapy Interventions
- chapter 9 Clinical Toxicology: Acetaminophen Toxicity

Read: Health Literacy and Medication Use

Read the following chapter in *Pharmacotherapy: A Pathophysiologic Approach* by DiPiro:

- chapter 3 Health Literacy and Medication Use

Review the Following Web Pages

Review the following web pages:

- FDA and ISMP Lists of *Look-Alike Drug Names with Recommended Tall Man Letters*
- Turing Pharmaceuticals – Compounding Pharmacy Fights Back

Check for New Drugs, Warnings, Safety Information, and Drug Labels

Consider the following questions:

- What is the purpose of the FDA?
- Due to the FDA's stringent criteria in the research and development of new drugs, what disadvantages occur?
- How have new drugs, warnings, and other safety information been revised to address medication errors and safety concerns?

Medication Shortages

There is an ongoing problem with drug shortages in the United States. Consult the following FDA web page.

- Drug Shortages

Answer the subsequent questions.

- What resources are available to obtain up-to-date information on drug shortages?
- What are the components of a successful communication strategy within a health system for managing drug shortages?
- How do medication shortages affect healthcare providers and patients?
What are the international agreements for obtaining pharmacological agents?

Application of Pharmacotherapeutics

Read the following scenario and answer the questions about the situation presented based on the readings.

1. A patient says she read an article about drugs in development for obesity and the use of pharmacogenomics. She asks the nurse to explain pharmacogenomics to her. How should the nurse respond?
2. What is a disadvantage of pharmacogenomics?
3. What role do genetics/genomics play in how the patient responds to drug therapies? (Refer to Ethical, Legal and Social Implications (ELSI) of human genomics or Abram’s Clinical Drug Therapy, page 25-26 of Chapter 2 Introduction to Pharmacology)
4. What are the benefits and limitations of customized treatments as they relate to pharmacogenomics?
5. What are the physical, genomic, social, and financial aspects of a patient as it relates to planning for pharmacotherapeutics?

How does patient medical and family history affect pharmacotherapeutic interventions?

Access to Pharmacologic Treatments

This topics the issues that arise in gaining access to pharmacological treatments.

This topic addresses the following competency:

- **Competency 7008.1.3: Drug Availability/Allotment**
  The graduate incorporates scientific and ethical principles to make decisions regarding drug distribution and availability.

This topic highlights the following key concepts:

- the effects that formulary restriction has on pharmacological treatments for clinical practice
- the effects that the source of payment has on pharmacological treatments for clinical practice
- a pharmaco-economic plan
- factors that influence resource allocations of pharmacological treatments

Readings on Access to Pharmacologic Treatments

Read the following chapters in Abrams’ Clinical Drug Therapy: Rationales for Nursing Practice by Frandsen and Pennington:

- chapter 1 Introduction to Pharmacology
- chapter 2 Basic Concepts and Processes
Read: Pharmacoeconomics: Principles, Methods, and Applications

Read the following chapter in Pharmacotherapy: A Pathophysiologic Approach by DiPiro:

- chapter 1 Pharmacoeconomics: Principles, Methods, and Applications

Evidence-Based Practice in Pharmacotherapeutics

In this topic, you will examine how evidence-based practice influences pharmacotherapeutics.

This topic addresses the following competency:

- **Competency 7008.1.3: Drug Availability/Allotment**
  The graduate incorporates scientific and ethical principles to make decisions regarding drug distribution and availability.

This topic highlights the following key concepts:

- pharmacotherapeutic interventions based on patient medical and family history
- factors derived from patient interviews that may be relevant to developing recommendations for pharmacological interventions
- physical, genomic, social, and financial aspects of a given patient as it relates to planning for pharmacotherapeutics
- appropriate pharmacologic interventions for the treatment of major health problems

Review the Following Readings for Evidence-Based Practice in Pharmacotherapeutics

Read the following chapters in Pharmacotherapy Casebook: A Patient-Focused Approach by Schwinghammer:

- chapter 4 Pharmaceutical Care Planning: A Component of the Patient Care Process
- chapter 8 Palliative Care

Review the following chapters in Pharmacotherapy Casebook: A Patient-Focused Approach by Schwinghammer:

- chapter 1 Introduction: How to Use This Casebook
- chapter 2 Active Learning Strategies
- chapter 3 Case Studies in Patient Communication
- chapter 9 Clinical Toxicology: Acetaminophen Toxicity

Case Study: Diabetes

Case studies will be used to present the concepts of pharmacotherapeutics. Review the data presented in the case study and answer the questions about the case listed at the end of the case presentation. If you cannot answer all the questions right away, don’t worry; additional information will be added to this case in upcoming sections of the course.

**Case Study: Diabetes**
Chief Complaint

- I was recently diagnosed with diabetes and am new to the city, and I would like to establish a PCP here.

HPI

- Sarah Martin is a 43-year-old woman who was diagnosed with diabetes mellitus, Type 2 about 6 months ago. She has been attempting to control her disease with diet and exercise but has had no success. Her physician has recently started her on Glyburide, 5 mg. She has gained 15 lbs over the past year. She monitors her blood sugar once a day with a range of 215–260 mg/dL. Her fasting blood sugars average 170 mg/dL. Vision is 20/80. She has difficulty hearing, and has fine hand tremors.

PMH

- Type 2 DM × 6 months
- HTN × 15 years
- Bipolar disorder × 25 years
- Dyslipidemia × 10 years
- Morbid obesity × 15 years

FH

- Father has history of HTN and bipolar disorder.
- Mother has a history of dyslipidemia.
- Brother has DM secondary to alcoholism.

SH

- She has been married for 21 years.
- She has two children who are teenagers.
- She works in a floral shop making deliveries.
- She denies any use of tobacco products but does drink alcohol occasionally (five beers/wine per week).

Meds

- Glyburide 5 mg po BID
- Lisinopril 20 mg po once daily
- Zyprexa 5 mg po Q HS
- Carbamazepine 200 mg po TID
- Lorazepam 1 mg po TID PRN
- Fluoxetine 20 mg po Q AM
- EC ASA 81 mg po once daily
- Pravastatin 40 mg po once daily
Allergies

- Morphine causes hives

ROS

- She complains of nocturia, polyuria, and polydipsia on a daily basis. She denies nausea, constipation, diarrhea, signs or symptoms of hypoglycemia, paresthesias, and dyspnea.

Physical Examination

- General: Severely obese, Caucasian woman in NAD
- VS: BP 165/90, P 98, RR 18, T 38.6°C; waist circ 38 in, Wt 109 kg, Ht 5'8"
- HEENT: PERRLA, EOMI, R and L fundus exam without retinopathy; vision 20/80 OU; unable to determine whispered word
- Neck/Lymph Nodes: WNL
- Lungs: Clear to A & P
- CV: RRR, no MRG
- Abd: NT/ND
- Genit/Rect: Deferred
- MS/Ext: Carotids, femorals, popliteals, and right dorsalis pedis pulses 2+ throughout; left dorsalis pedis 1+; feet show mild calluses on MTPs
- Neuro: DTRs 2+ throughout, feet with normal sensation (5.07 monofilament) and vibration; fine hand tremors

Labs:

- UA 1+ protein, (+) microalbuminuria
- Na 139 mEq/L
- Cl 103 mEq/L
- K 3.6 mEq/L
- CO2 31 mEq/L
- Gluc (random) 232 mg/dL
- Ca 9.4 mg/dL
- Phos 3.3 mg/dL
- Fasting Lipid Profile: T. chol 236 mg/dL; LDL 135 mg/dL; Trig 223 mg/dL;
- HDL 56 mg/dL; TC/HDL ratio 4.2
- Alk Phos 62 IU/L
- AST 15 IU/L
- ALT 18 IU/L
- T. bili 0.4 mg/dL
- BUN 15 mg/dL
- SCr 0.8 mg/dL
- A1C 9%

Assessment
- She exercises at most once a week.
- A diet is difficult to maintain due to the nature of her job as a delivery person.
- Glycemic control has been maintained with an 8.9% A1C 6 months ago.
- Moderate weight gain of 15 lbs (6.8 kg) over the past year has occurred.
- Blood pressure and cholesterol are not at goal on the current drug therapy.
- Bipolar disorder is moderately controlled on the current drug therapy.
- When the patient is in a depressive or manic phase, she tends to use food to “treat” the symptoms.

**Plan**

- The healthcare provider adds Janumet 50/500 mg PO bid to the medication regimen.

**Assignment**

- Search the Internet for the ADA guidelines regarding Type 2 diabetes.

**QUESTIONS**

1. How does each of the diabetic medications reduce blood sugar?
2. What findings indicate poorly controlled diabetes in this patient?
3. When would Metformin not be a drug to choose?
4. What other medications could be ordered if the patient doesn’t reach the goal of therapy with Janumet and Gyburide? How do the other medications reduce blood sugar?
5. What alternative herbal therapies could be used?
6. What are the goals of treatment for Type 2 diabetes in this patient?
7. In addition to treatment of hypertension, what are the benefits of Lisinopril in the Type 2 diabetic patient? What other class of drug has this same effect?
8. What are some potential adverse reactions to the medications utilized for this patient?
9. What information does the patient need to know about her medication?
10. Are there any interactions among the medications?
11. What core patient variables are present that might influence this patient’s education?
12. What methods of education can the nurse utilize to address the patient’s learning needs?

**Social Ramifications**

Graduate nurses should identify the social ramifications that affect prescription and nonprescription medication use from multiple perspectives.

**Global Issues of Pharmacological Therapies**

In this topic, you will learn about the global ramifications on pharmacological therapy.

This topic addresses the following competency:
- **Competency 7008.1.4: Social Ramifications**
  The graduate identifies social ramifications to health based on patterns of prescription and non-prescription medication use from an individual, community and global perspective.

This topic highlights the following key concepts:

- the healthcare implications related to the use of alternative suppliers of prescription drugs
- international agreements for obtaining pharmacological agents
- the impact of social determinants of health on effectiveness of drug therapy
- the societal impact of the war on illicit drugs on pharmacotherapeutics
- drug resistance issues relating to clinical practice

**Readings on Social Ramifications and Global Issues of Pharmacological Therapies**

Read the following chapter in *Pharmacotherapy Casebook: A Patient-Focused Approach* by Schwinghammer:

- [chapter 63 Multiple Sclerosis](#)

Read the following article:

- [Global Commission on Drug Policies](#)

**Additional Readings on Global Issues of Pharmacological Therapies**

Review the following web pages:

- [Counterfeit Medicine](#)
- [Social Determinants of Health](#)

**Social Ramifications**

There is a growing concern about multi-drug resistant organisms (MDROs). Consider the following questions about antibiotics usage and drug resistance:

1. What are some of the reasons for MDROs?
2. What are the issues related to drug resistance in clinical practice?
3. What systems can be utilized for the management of drugs with emerging infections, and what is the social impact?

**Social Issues of Pharmacotherapeutics and Drug Availability**

As with all things, pharmacotherapeutics has social ramifications. In this topic, you will discuss them.

This topic addresses the following competency:

- **Competency 7008.1.4: Social Ramifications**
The graduate identifies social ramifications to health based on patterns of prescription and non-prescription medication use from an individual, community and global perspective.

This topic highlights the following key concepts:

- a system for management of drugs for use with emerging infections and the social impact
- resources for obtaining up-to-date information on drug shortages
- the components of a successful communication strategy within a health system for managing drug shortages
- the effects of counterfeit medicine on patient treatment goals and compliance

**Case Studies: Medication Expense**

Complete the following questions after reading the case study below.

**Case Study: Medication Expense**

**Chief Complaint**

Half of my social security check goes to buying medications. Can you lower my medication cost?

**Assignment**

Give lower cost alternatives to the following medications:

- Toprol XL 100 mg PO daily
- Metformin ER 1000 mg PO bid
- Catapres-TTS 0.2/24 hr patch
- Ambien 10 mg PO hs
- Valtrex 1000 mg PO daily
- Actonel 35 mg PO weekly
- Allegra 180 mg PO daily
- Lipitor 20 mg PO hs

**QUESTIONS**

1. What does the impact of social determinants of health have on the effectiveness of drug therapy?
2. What are the advantages and disadvantages of using generic drugs vs. brand name drugs?

**Regulatory Issues**

This subject discusses regulatory agencies and their impact on drug therapy from initial drug
development to the delivery of that drug.

**Regulatory Issues**

In this topic, you will examine the regulatory issues of pharmacotherapeutics.

This topic addresses the following competency:

- **Competency 7008.1.5: Regulatory Issues**
  The graduate identifies the role of regulatory agencies and their impact in drug therapy from development to delivery.

This topic highlights the following key concepts:

- the impact of current law enforcement as it relates to pharmacotherapeutics
- the impact of malpractice and litigation as it relates to pharmacotherapeutics
- how adverse event reporting relates to pharmacotherapeutics
- how state prescription databases are helping to monitor controlled substances
- how state law regulates prescriptive authority and practices

**Readings on Regulatory Issues in Pharmacotherapeutics**

Read the following chapter in *Pharmacotherapy Casebook: A Patient-focused Approach* by Schwinghammer:

- chapter 13 Hypertension

Read the following web page:

- [Electronic Health Records: Privacy, Confidentiality, and Security](#)

Review the following web page for additional information on regulatory issues:

- [Guidance, Compliance, & Regulatory Information](#)

**Regulatory Control of Medications**

Regulations vary from state to state in the USA. Research your state’s regulations on prescriptive authority and practice for APN. You are encouraged to go to your State Board of Nursing to review regulations that apply to your work setting.

Review the following web page:

- [Prescriptive Authority](#)

**Case Study: Substance Abuse**

Case studies will be used to present the concepts of pharmacotherapeutics to you. Review the data presented in the case study and answer the questions about the case listed at the end of the case presentation.
Case Study: Substance Abuse

Chief Complaint

- I need help. I've been taking Norco for three years and I think I'm addicted.

HPI

- Thirty-two-year-old, white female started taking Norco for osteomyelitis after an open fractured femur. She takes 120 Norco a month; she's also self-medicating with alcohol.

PMH

- C section X 2
- Osteomyelitis after open fracture left femur

FH

- Father has history of alcoholism.
- Brother has DM secondary to alcoholism.

SH

- She has been married for ten years.
- She has two children who are ages five and seven.
- She is a homemaker.
- She admits to five hard liquor drinks a day and 120 tablets of Norco monthly. She denies any use of tobacco products.

Meds

- Norco 10/325 1 tab q6h
- Aleese, 1 tab daily

Allergies

- NKDA

ROS

- Denies any problems (all systems reviewed)

Physical Examination
Caucasian woman in NAD

BP 122/76, P 98, RR 18, T 98.4°F; Wt 109 kg, Ht 5’8”

PERRLA, EOMI, R and L fundus exam without retinopathy; vision 20/20 OU

WNL

Clear to A & P

RRR, no MRG

NT/ND

Deferred

Carotids, femorals, popliteals, and right dorsalis pedis pulses 2+

DTRs 2+ throughout

UA neg

Na 139 mEq/L

Cl 103 mEq/L

K 3.6 mEq/L

CO2 31 mEq/L

Gluc (random) 89 mg/dL

Ca 9.4 mg/dL

Phos 3.3 mg/dL

Fasting Lipid Profile: T. chol 189mg/dL; LDL 88 mg/dL; Trig 98 mg/dL;

HDL 56 mg/dL

Alk Phos 62 IU/L

AST 45 IU/L

ALT 34 IU/L

T. bili 0.4 mg/dL

BUN 15 mg/dL

Scr 0.8 mg/dL

When Hydrocodone/APAP wears off, she uses alcohol to self-medicate.

Plan
The healthcare provider plans methadone treatment.

QUESTIONS

1. What adverse effects can occur if alcohol is taken concurrently with barbiturates, benzodiazepines, or other CNS depressants?
2. Define the following: drug abuse, drug misuse, addiction, physical dependence, and psychological dependence.
3. What factors place a person at high risk for substance abuse?
4. Name several drugs that are frequently associated with abuse, and propose some reasons that they are abused.
5. Methadone maintenance for opioid addiction is controversial. Why is this so?
6. What is nursing’s role in assessing and addressing controlled substance abuse among patients?
7. What strategies can be utilized to minimize potential abuse and misuse of drugs?
8. What is the impact on society with the use of illicit drugs?
9. How do state prescription databases help to monitor controlled substances?

Case Study: Medicare Patient

Consider the following situation and respond to the questions at the end of the scenario.

**Case Study: Medicare**

**Chief Complaint**

- I've been feeling bad for the last two months, and my blood sugars are in the 200s each morning before breakfast.

**HPI**

- The patient has been getting all his medications from the Internet for the past two months.

**PMH**

- Type 2 DM × 5 years
- HTN × 15 years
- Dyslipidemia × 10 years
- MI 4 yrs ago

**FH**

- Father has history of HTN and diabetes, Type 2.
- Mother has a history of dyslipidemia.

**SH**
He has been married for 52 years.
He has three children and 11 grandchildren.
He is a retired postal worker.
He denies any use of tobacco products, but does drink alcohol occasionally (two beers per week).

Meds

- Avandia 4 mg orally daily
- Lipitor 40 mg orally at bedtime
- Toprol XL 50 mg orally daily
- Altace 10 mg orally daily
- Aspirin 81 mg orally daily

Allergies

- NKDA

ROS

- He complains of nocturia, polyuria, and polydipsia on a daily basis. He denies nausea, constipation, diarrhea, signs or symptoms of hypoglycemia, paresthesias, chest pain, and dyspnea.

Physical Examination

<table>
<thead>
<tr>
<th>Section</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Weight proportionate, Caucasian elderly male</td>
</tr>
<tr>
<td></td>
<td>NAD</td>
</tr>
<tr>
<td>VS</td>
<td>BP 165/90, P 98, RR 18, T 98.4 F; Wt 135 kg, Ht 5’8”</td>
</tr>
<tr>
<td>HEENT</td>
<td>PERRLA, EOMI, R and L fundus exam without retinopathy;</td>
</tr>
<tr>
<td>Neck/Lymph Nodes</td>
<td>WNL</td>
</tr>
<tr>
<td>Lungs</td>
<td>Clear to A &amp; P</td>
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<tr>
<td>CV</td>
<td>RRR, no MRG</td>
</tr>
<tr>
<td>Abd</td>
<td>NT/ND</td>
</tr>
<tr>
<td>Genit/Rect</td>
<td>Deferred</td>
</tr>
<tr>
<td>MS/Ext</td>
<td>Carotids, femorals, popliteals, and right dorsalis pedis pulses 2+throughout</td>
</tr>
</tbody>
</table>
Neuro: DTRs 2+ throughout, feet with normal sensation (5.07 monofilament) and vibration

Labs

- UA 1+ protein, (+) microalbuminuria
- Na 139 mEq/L
- Cl 103 mEq/L
- K 3.6 mEq/L
- CO2 31 mEq/L
- Gluc (random) 232 mg/dL
- Ca 9.4 mg/dL
- Phos 3.3 mg/dL
- Fasting Lipid Profile: T. chol 236 mg/dL; LDL 135 mg/dL; Trig 223 mg/dL;
- HDL 56 mg/dL; TC/HDL ratio 4.2
- Alk Phos 62 IU/L
- AST 25 IU/L
- ALT 38 IU/L
- T. bili 0.4 mg/dL
- BUN 15 mg/dL
- SCr 0.8 mg/dL
- A1C 9%

Assessment

- He walks daily for 30 minutes.
- He maintains an appropriate diet for diabetes.
- Blood pressure, A1C, and cholesterol are not at goal on the current drug therapy.
- Patient says the medications are Tier 3 on this Medicare part D, and he can't afford the medications, so he found them cheaper on the Internet.

QUESTIONS

1. What other effects do formulary restrictions have on pharmacological treatments for clinical practice?
2. What other factors besides cost can be derived from patient interviews that may be relevant to developing recommendations for pharmacological interventions?
3. What other factors can be related to the patient’s individual circumstances and medical needs when prescribing medications?
4. What effect does the source of payment have on pharmacological treatments for clinical practice?
5. What factors possibly affect this patient’s allocation of resources for his medications?
6. What health implications are related to the use of alternative suppliers of prescription drugs?
7. What factors contribute to counterfeit medications?
8. What are the consequences of taking counterfeit medications?
9. What methods can be taken to curtail the proliferation of counterfeit medications?
10. The patient states, “I have to buy my medications from Canada. They cost too much here.” What factors contribute to the high cost of medications in the US?

**Case Study on Regulatory Issues in Pharmacotherapeutics: Adverse Reporting**

Consider the following situation and respond to the questions at the end of the scenario.

**Case Study: Adverse Reporting**

**Medical Record #**

- 5473947

**HPI**

- The patient received Seroquel 100 mg PO for mania and had a respiratory arrest at 0900 on 6-4-13. Patient was resuscitated and placed on a ventilator. The patient is now in ICU in stable condition and weaning from the ventilator.

**PMH**

- Bipolar disorder × 25 years

**FH**

- Father has a history of HTN and bipolar disorder.

**SH**

- He has been married for 31 years.
- He has three children who are married, and five grandchildren.
- He works for UPS, delivering packages.
- He denies any use of tobacco products, but does drink alcohol occasionally (five beers/wine per week).
- DOB 5-28-53

**Meds**

- No other medications, Seroquel was discontinued

**Allergies**

- Penicillin

**Assignment**
Search the Internet for MedWatch. Complete the MedWatch adverse reporting form utilizing the information given in the scenario.

QUESTION

1. How does adverse event reporting relate to pharmacotherapeutics?

Final Steps

Congratulations on completing the activities in this course! This course has prepared you to complete the assessments associated with this course. If you have not already been directed to complete the assessments, schedule and complete them now.