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PHARMACOLOGY & THERAPEUTICS
COURSE GOALS & OBJECTIVES

Course Goals:

The central goals of the Pharmacology and Therapeutics course are:

1. To provide students with a solid grounding in the basic concepts and scientific underpinnings of the pharmacological sciences

2. To provide students with a comprehensive introduction to the fundamental Pharmacology and uses of the major classes of clinically important drugs currently used in medical practice.

Specific key concepts and learning objectives will be provided for each individual lecture topic. However, the general course goals are as follows:

Course Learning Objectives:

At the end of the course students will be able to:

MEDICAL KNOWLEDGE

1. Explain how the fundamental pharmacological properties of pharmacokinetics and pharmacodynamics influence routes of administration; drug distribution and drug levels in the body; drug efficacy and potency; potential for drug-drug interactions; drug toxicity; and the appropriate choice of drug for pharmacotherapy in a given patient. [SSOM 1.1 & 1.3]

2. Explain how to use drug-specific and patient-specific pharmacokinetic parameters to calculate the physiochemical properties that influence rates of drug disposition and clearance in the body, and how these parameters can be used to monitor, design and modify appropriate dosing regimens of drugs in specific patient populations. [SSOM 1.1,1.2, 1.3 & 2.3]

3. Describe the process by which new drugs are discovered, developed, tested and finally approved by the Federal Drug Administration for use in the clinic. [SSOM 1.3, 1.6 & 1.7]

4. Discuss the fundamental principles of pharmacogenomics including how specific patient genotypes can influence the pharmacokinetic and pharmacodynamics properties of a drug, thereby affecting the clinical response to particular classes of medications. [SSOM 1.3]

5. Describe how pharmacogenomics approaches can be used to influence the drug discovery process and the choice of drugs in the treatment of specific diseases. [SSOM 1.3 & 1.7]

6. List the major drugs and drug classes currently used in medical practice and describe their pharmacology including their indications, contraindications, clinical use, mechanisms of action, physiological effects, pharmacokinetic properties, major adverse effects and clinically significant drug interactions. [SSOM 1.3]

7. Apply knowledge of the pharmacology of the major drugs and drug classes currently used in medical practice, together with both disease-specific and patient-specific factors to select the most appropriate medication(s) for the effective pharmacotherapy of a given disease or condition in a specific patient. [SSOM 1.2, 1.3 & 2.3]

8. Demonstrate an understanding of the molecular, cellular, and physiological mechanisms underlying the pathophysiological changes that occur in the etiology of the most common disease states and describe how targeting these mechanisms with the appropriate choice of drug(s) can act to effectively treat, cure, or mitigate the underlying disease causes and/or symptoms. [SSOM 1.1, 1.2, 1.3 & 2.3]

9. Discuss the theoretical considerations and principles that underlie the successful pharmacotherapy of the major diseases and conditions. [SSOM 1.2, 1.3 & 2.3]

10. Recognize and explain the rationales behind the use of widely used, national organization-approved treatment algorithms for the management and treatment of common diseases and conditions, including identifying the currently accepted diagnostic criteria required to initiate drug therapy and the anticipated therapeutic goals likely to be achieved by therapeutic intervention. [SSOM 1.3, 1.6, 1.7 & 4.5]

11. Identify any clinical testing requirements for monitoring the effectiveness and potential toxicity of specific drugs used in the treatment of common diseases and conditions. [SSOM 1.3]

12. Explain the physiological, pharmacological, and psychological effects of acute and chronic exposure of individuals to drugs with abuse potential, and the consequences of sudden withdrawal of such a drug from a drug-dependent individual. [SSOM 1.1, 1.2 & 1.3]

13. Describe the effective use of non-pharmacological therapeutic interventions in the treatment of specific diseases, conditions and symptoms. [SSOM 1.3]

14. Discuss the basic principles of toxicology; the mechanisms by which excess exposure to certain drugs, toxins, chemicals, heavy metals and poisons can lead

to adverse toxicological effects; and the basic principles of clinically managing the poisoned patient. [SSOM 1.2, 1.3 & 2.3]

15. Evaluate the relative advantages and disadvantages in the use of dietary supplements and herbal medications in the treatment of certain specific conditions or diseases, including their efficacy, potential for causing adverse effects and drug interactions. [SSOM 1.1, 1.2, 1.3, 1.6, 1.7 & 4.5]

16. Compare and contrast the major differences in the laws and regulations governing the approval, safety, efficacy and marketing of dietary supplements and herbal medications compared to conventional FDA-approved drugs. [SSOM 1.3 & 1.7]

17. Demonstrate an understanding of the design and conduct of basic scientific and clinical research and explain how these findings can be applied to both develop new therapeutic modalities and influence patient care. [SSOM 1.6, 1.7 & 4.5]

INTERPERSONAL AND COMMUNICATION SKILLS

18. Demonstrate the ability to effectively communicate and work collaboratively together with peers in the small group setting to successfully address problems of pharmacological significance. [SSOM 3.3 & 3.6]

19. Contribute to the education of peers by actively engaging in small group sessions and other required group work within the course. [SSOM 3.6]

20. Demonstrate the ability to utilize effective oral and written communication skills to summarize and explain the clinical significance of pharmacologically relevant scientific studies to individuals of diverse educational backgrounds, including patients, using language appropriate to their level of understanding. [SSOM 3.2 & 3.3]

PRACTICE-BASED LEARNING AND IMPROVEMENT

21. Critically evaluate one's performance in the course to identify strengths and personal limitations in either pharmacological knowledge or study methods; develop learning goals to address any deficiencies and actively seek out assistance from appropriate sources to successfully remediate these deficiencies. [SSOM 4.1, 4.2, 4.3 & 8.2]

22. Demonstrate an ability to use online resources to objectively identify and evaluate the primary basic scientific and clinical literature relevant to pre-clinical drug discovery and drug development. [SSOM 4.5]

PROFESSIONALISM

23. Demonstrate professional behavior by completing all course requirements, including course evaluations, in a timely manner. [SSOM 5.2]

24. Demonstrate professionalism by behaving in a professional, courteous and respectful manner when engaged in course activities or interacting with course faculty and staff. [SSOM 5.1]

25. Demonstrate responsibility and accountability by attending and being punctual at all required course activities such as small groups, team-based learning exercises and exams. [SSOM 5.2]

26. Demonstrate professional behavior by requesting any excused absence from required course activities well ahead of the scheduled date. [SSOM 5.2]

27. Demonstrate professional behavior by responding to direct communication from the Course Director in a timely fashion, particularly in circumstances when a face-to face meeting is requested to discuss issues related to academic performance. [SSOM 5.2]

28. Demonstrate professional and ethical behavior by honestly completing course examinations without attempting to seek an advantage by unfair means; and by reporting any unethical behavior of peers to the course administration. [SSOM 5.2 & 5.6]