The University of Kansas School of Pharmacy
Learning Outcomes
Approved by Pharmacy Faculty December 15th, 2011

COMPETENCY DOMAIN 1

Translate basic science knowledge into clinical applications

1.1 Apply basic concepts of chemistry, biology and math (including statistics) in the design of rational drug treatment plans

- 1.1.1 Explain the structure and functions of cells, cell components, organs, and body systems in healthy and diseased individuals
- 1.1.2 Define physiological science and medical terminology including the identification of signs and symptoms associated with diseases and medical conditions
- 1.1.3 Describe the principles of human immunity and the immune response
- 1.1.4 Explain the fundamentals of infectious diseases, host-organism relationships and differences, pathogenic organisms, and clinical aspects of infection
- 1.1.5 Describe the use of molecular biology to produce therapeutic agents

1.2 Apply principles of molecular pharmacology and toxicology, pharmaceutical chemistry, and medicinal chemistry in the design of rational drug treatment plans

- 1.2.1 Classify drugs based on pharmacological actions
- 1.2.2 Describe different therapeutic effects of drugs within a class of medications
- 1.2.3 Describe structural features of drug molecules that may explain or predict drug interactions (drug-drug, drug-food, drug-herbal, drug-lab and drug-disease), side effects or toxicity
- 1.2.4 Explain the mechanism of adverse reactions, allergies, toxicity, overdose or drug-induced illness
- 1.2.5 Explain the physiochemical and formulation properties of drugs
- 1.2.6 Predict drug stability based on molecular properties
- 1.2.7 Identify, apply, and interpret biopharmaceutical principles and the pharmaceutical characteristics of drug dosage forms and delivery systems to assure bioavailability and enhance patient compliance
- 1.2.8 Explain advantages and disadvantages of the various routes of drug administration

1.3 Apply principles of pharmacodynamics and pharmacokinetics in the design of rational drug treatment plans

1.3.1 Identify the known or postulated sites and mechanisms of action, specific uses, and indications for traditional, alternative and complementary medicines and treatments
1.3.2 Identify the pharmacodynamics, pharmacokinetic and chemical interactions associated with a drug product's active and inactive ingredients; including interactions with other drugs, food, diagnostic tests, and monitoring procedures
1.3.3 Describe the effects of absorption, distribution, metabolism and excretion on the patient's exposure to and effects from the drug
1.3.4 Apply mathematical principles to determine the drug solubility, concentration or extent of ionization to explain activity or disposition of pharmacotherapeutic agents
1.3.5 Identify pharmacokinetic parameters and quality assurance data to determine equivalence among manufactured drug products, and identify products for which documented evidence of non-equivalence exists

1.4 Apply pharmacogenomics rationale to the design of optimal drug treatment plans
1.4.1 Identify genetic polymorphisms and determine risk for disease and effect on treatment outcome
1.4.2 Explain the value of genomic information on the individual patient in diagnosis and therapy of disease
1.4.3 Predict practical implications for optimizing therapy of a patient who has undergone a genomic screen
1.4.4 Describe the role of pharmacogenetic variability in drug-metabolizing enzymes on drug disposition, efficacy, and toxicity
1.4.5 Describe implications of drug transporter polymorphisms for drug response and toxicity as well as their significance in clinical pharmacy
1.4.6 Apply drug target pharmacogenetics to individualization of drug therapy

COMPETENCY DOMAIN 2

Provide comprehensive patient-centered pharmaceutical care

2.1 Obtain accurate and timely patient information pertinent to pharmacy care
2.1.1 Complete a structured medical history
2.1.2 Conduct a patient/caregiver interview
2.1.3 Identify the chief complaint
2.1.4 Document allergies and intolerances accurately
2.1.5 Complete biomedical calculations accurately (e.g. CrCl, IBW, etc)
2.1.6 Identify cultural, social, educational, economic, and health literacy levels that could affect health care access or medication use

2.1.7 Protect the confidentiality of patients and patient information
2.1.8 Utilize professional and ethical principles in making health care decisions
2.1.9 Review and interpret medical/medication records, including lab results, pharmacokinetic and pharmacodynamics data
2.1.10 Perform selected aspects of physical assessment in order to identify ongoing or potential medication-related problems and the root cause of the problems (e.g. BP, HR, Resp rate, etc.)

2.2 Identify and prioritize medication-related problems
2.2.1 Identify lack of adherence to medication use
2.2.2 Manage drug dosing based upon serum levels
2.2.3 Identify therapeutic duplications or contraindications to therapy
2.2.4 Determine untreated medical indications for drug therapy
2.2.5 Identify drug-drug, drug-food, drug-herbal, drug-lab, and drug-disease interactions
2.2.6 Distinguish potential adverse drug events and reactions associated with a drug regimen
2.2.7 Recognize patient-specific barriers to health care access or medication use adherence
2.2.8 Prioritize each identified problem

2.3 Design evidence-based patient-centered pharmacotherapy plan
2.3.1 Establish therapeutic goals and endpoints for each identified medication problem
2.3.2 Retrieve accurate and timely drug and drug class information
2.3.3 Evaluate clinical literature using analytical skills and critical thinking, including the interpretation of statistics
2.3.4 Identify evidence-based therapeutic alternatives
2.3.5 Make situation-appropriate referrals to other health care providers
2.3.7 Develop and/or modify therapy according to expected and realized outcomes
2.3.8 Devise a plan to assist with patient access and adherence barriers

2.4 Accurately interpret, calculate, prepare and dispense prescriptions and medication orders
2.4.1 Receive, interpret and transcribe prescriptions
2.4.2 Understand common prescription dosage ranges and identify errors
2.4.4 Recommend a course of action when a medication order should not or cannot be filled Perform accurate calculations for compounding, dispensing and administering medication

2.4.5 Use appropriate techniques to compound and prepare sterile and non-sterile prescriptions
2.4.6 Identify and address ingredient incompatibilities in preparations
2.4.7 Demonstrate appropriate techniques for administering immunizations
2.4.8 Conduct total parenteral nutrition solution calculations and preparation techniques
2.4.9 Program and adjust infusion devices
2.4.10 Prepare, package and label medications according to state and federal laws
2.4.11 Appropriately store medications to ensure stability and integrity

2.5 Communicate with patients and caregivers
2.5.1 Include the patient or caregiver's concerns and interests in communications
2.5.2 Exhibit behaviors and attitudes to effectively manage cross-cultural communication barriers with patients and caregivers
2.5.3 Educate patients or caregiver to enhance patient understanding regarding:
2.5.3.1 Administration, storage, handling and disposal of prescription medications
2.5.3.2 Recognition and management of adverse drug effects
2.5.3.3 Selection and use of non-prescription medications, complementary and alternative medications and monitoring devices
2.5.3.4 Disease management, preventative care and lifestyle modifications
2.5.3.5 Options for overcoming health care access issues or adherence therapy
2.5.3.6 Medication adjustments for patients transferring from one care setting to another
2.5.5 Confirm patient's understanding of care plan and drug information

2.6 Communicate and collaborate with other health care professionals
2.6.1 Work effectively with others as a member or leader of an inter-disciplinary health care team
2.6.2 Establish a working relationship with professional colleagues
2.6.3 Use effective verbal, nonverbal, explanatory, questioning and listening skills
2.6.4 Speak in a manner that demonstrates respect for a diverse work force and different approaches to patient care and problem solving
2.6.5 Express thoughts, research findings and recommendations clearly and accurately while using terminology appropriate to the situation and audience
2.6.6 Present ideas, proposals and recommendations confidently, persuasively and in an organized format
2.6.7 Demonstrate effective written communication skills
2.6.7.1 Compose and complete grammatically correct sentences

2.6.7.2 Communicate complex concepts or ideas in simple understandable ways
2.6.7.3 Use and cite the sources of reference material accurately
2.6.7.4 Organize written communication in a manner that highlights important content while using a format and terminology appropriate for the audience

2.7 Implement, monitor and assess patient-focused pharmacotherapy treatment plans
- 2.7.1 Collaborate with a health care team to implement pharmaceutical care plan
- 2.7.2 Communicate recommendations to patients, care givers and other health care providers
- 2.7.3 Implement monitoring plan for a patient
- 2.7.4 Assess patient response to therapeutic interventions
- 2.7.5 Assess the impact of a health problem and/or its treatment on patient's quality of life
- 2.7.6 Monitor the progress toward a patient's therapeutic goal
- 2.7.7 Adjust therapeutic plan to maximize patient outcomes when appropriate
- 2.7.8 Document patient care activities and outcomes

COMPETENCY DOMAIN 3

Manage resources effectively and efficiently

3.1 Manage medication use systems that promote safe, accurate, and timely distribution of medications
- 3.1.1 Describe the role of public and private insurers, pharmaceutical industry, and managed care on the delivery of health care in the United States
- 3.1.2 Describe the drug development and distribution systems
- 3.1.3 Discuss ethical concerns in balancing the needs of the system versus the needs of the patient
- 3.1.4 Comply with pharmacy law regarding drug acquisition and distribution
- 3.1.5 Describe humanistic and technological factors involved in the medication use process
- 3.1.6 Identify and describe common medication errors, adverse events and their causes
- 3.1.7 Identify institutional, state and national systems for reporting medication errors and adverse drug events
- 3.1.8 Accurately complete medication error report forms
- 3.1.9 Discuss methods to evaluate, correct and prevent errors in the distribution system

3.2 Develop and manage a successful pharmacy practice

- 3.2.1 Apply principles of fiscal management and evaluate financial resources
  - 3.2.1.1 Assess consumer demand for a service or business accurately
  - 3.2.1.2 Demonstrate an understanding of contractual agreements
  - 3.2.1.3 Interpret sound business planning including budgets and proforma statements for a new or established pharmacy service
  - 3.2.1.4 Manage formulary, purchasing and inventory control systems
  - 3.2.1.5 Evaluate the cost/benefit ratio of new technology
- 3.2.2 Apply principles of leadership and human resource management including recruiting, training, motivating and evaluating staff
- 3.2.3 Maintain appropriate drug records that comply with federal and state laws
- 3.2.4 Use legal and ethical principles to control all aspects of drug distribution including storage, security and monitoring functions
- 3.2.5 Write and negotiate collaborative practice agreements
- 3.2.6 Develop strategies for compensation for patient care services
- 3.2.7 Promote pharmacy and patient care services
- 3.2.8 Establish and evaluate workflows that ensure safe medication dispensing practices
- 3.2.9 Compare and contrast available informational and technological resources
- 3.2.10 Identify and implement cost-effective patient care and resource management practices that do not compromise quality of care

3.3 Develop drug use and health policies to manage pharmacy benefits

- 3.3.1 Identify the role or potential role of the pharmacist in health care policy development
- 3.3.10 Describe the role of the pharmacy and therapeutics committee
- 3.3.11 Describe the process of formulary development and management
- 3.3.12 Apply pharmacoeconomic principles to drug selection/formulary inclusion

COMPETENCY DOMAIN 4

Provide public/community-based health care

4.1 Promote/participate in effective health and disease prevention services as part of patient or population specific care.

- 4.1.1 Identify current and emerging public health issues and disease prevention services needed
- 4.1.2 Identify available health care resources (e.g., personal, education, financial, equipment) necessary to provide services

4.1.3 Account for cultural, social, educational, economic, health literacy and other patient-specific factors when creating and implementing health and disease prevention services

4.1.4 Develop patient/population specific services and educational programs in individual and group settings

4.1.5 Collect data on effectiveness (e.g., reception by patients, outcomes, and cost-effectiveness)

4.1.6 Evaluate the effectiveness of health improvement and disease prevention services.

4.2 Collaborate with policy makers, health care providers, members of the community and administrative and support personnel to identify and resolve health problems and evaluate health policy

4.2.1 Describe the process of health care policy development including the role the government and various organizations (e.g. community and charitable groups) have in defining health care policy

4.2.2 Define the importance of health care research in the development of health care policy (e.g., clinical trials, health care economics, epidemiology, outcomes)

4.2.3 Demonstrate an awareness of public health problems at local, state, national, and international levels

4.2.4 Discuss strategies to impact and/or influence health care policy

4.2.5 Describe the impact of health care policy on research initiatives