

**PHARMACY PRACTICE  
SUPPLEMENTAL EDUCATIONAL OUTCOMES  
BASED on CAPE 2004**

**PHARMACEUTICAL CARE** Provide pharmaceutical care in cooperation with patients, prescribers, and other members of an interprofessional health care team based upon sound therapeutic principles and evidence-based data, taking into account relevant legal, ethical, social, economic, and professional issues, emerging technologies, and evolving biomedical, sociobehavioral, and clinical sciences that may impact therapeutic outcomes.

- I. Formulate a patient-centered pharmaceutical care plan (new or revised) in collaboration with other health care professionals, patients, and/or their caregivers.
  - A. Gather and organize accurate and comprehensive patient information to identify ongoing or potential drug therapy problems.
    1. Obtain necessary information from the patient, caregiver, and/or other members of the health care team.
    2. Identify relevant information in the patient profile or medical record.
    3. Interview the patient or caregiver employing effective communication strategies.
    4. Identify the patient's primary complaint(s) and reason(s) for seeking medical care
    5. Perform selected aspects of physical assessment, as appropriate.
    6. Protect the confidentiality of patient information.
  - B. Interpret and evaluate patient and drug-related data needed to identify actual or potential drug therapy problems (prescription and non-prescription).
    1. Evaluate information obtained from the patient's history and physical assessment.
    2. Assess any patient history of allergies and intolerances.
    3. Evaluate laboratory test results and pharmacokinetic data.
    4. Perform any additional patient calculations needed (e.g. creatinine clearance, ideal body weight, body surface area, body mass index)
    5. Identify the cause and significance of adverse drug effects.
    6. Evaluate the significance of actual or potential drug interactions.
    7. Assure that there is not excessive medication use or unnecessary drug duplication.
    8. Determine the extent to which medical conditions or diseases are treated or controlled.
    9. Assess patient adherence to previously prescribed medication regimens.
    10. Identify signs or potential indicators of drug misuse or abuse.
  - C. Develop a complete medical and drug therapy problem list.
    1. Use relative priority to direct the pharmacotherapeutic plan.
    2. Differentiate active from inactive problems.
    3. Rank patient problems based on urgency and severity.
    4. Identify any preventative and health maintenance issues.
  - D. Retrieve, analyze, and interpret the professional, lay, and scientific literature to make informed, rational, and evidence-based decisions.
    1. Construct well-built questions based on the patient's drug therapy problem(s) or needed information.
    2. Identify the types and quality of information that are available in primary, secondary, and tertiary information sources, including web-based resources and those intended for lay audiences.

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3. Employ effective and efficient search strategies to find appropriate sources of drug and health information using a variety of information resources.
  4. Effectively and efficiently search secondary sources such as MedLine to locate pertinent primary literature.
  5. Critically analyze all relevant literature, considering its applicability and validity to the information needed.
  6. Critically analyze primary literature with regard to study design, methodology, findings, and conclusions.
  7. Integrate evidence from the literature with clinical expertise and consideration of patient preferences to draw a conclusion.
  8. Provide drug information clearly, accurately, concisely, and in a timely manner in a language appropriate for the target audience.
  9. Properly cite reference sources utilized.
- E. Select and recommend appropriate drug (prescription and non-prescription) and non-drug therapy as part of the care plan.
1. Identify pharmacotherapeutic goals and endpoints of therapy.
  2. Apply principles of biochemistry, medicinal chemistry, pharmacology, and pathophysiology to select the appropriate drug(s).
  3. Consider social, economic, and cultural factors that influence a patient's perspective on health, illness, and medication use.
  4. Apply pharmacokinetic and pharmacodynamic principles to select the appropriate dose, dosage schedule, and drug delivery system.
  5. Determine the appropriate therapy duration.
  6. Apply pharmacoeconomic principles in drug selection.
  7. Identify and minimize or avoid drug interactions, adverse effects, and contraindications associated with the recommended drug therapy.
  8. Assure that there is not excessive medication use or unnecessary drug duplication.
  9. Recommend complementary therapies as appropriate to enhance therapeutic outcomes.
  10. Apply principles of nutrition to improve health, augment drug therapy, and reduce disease risk.
  11. Recommend medical goods and devices that are appropriate based on the patient's needs.
- F. Devise and implement a patient monitoring plan to ensure achievement of desired therapeutic outcomes.
1. Monitor patient-specific subjective and objective parameters for drug efficacy and toxicity.
  2. Assess appropriate parameters in a timely manner and at appropriate intervals/frequencies.
  3. Determine whether patient-specific goals have been met and adjust the care plan accordingly.
  4. Anticipate, monitor for, and report adverse effects and drug interactions.
  5. Refer patients to other health care professionals when indicated.
- II. Prepare and dispense medication(s) prescribed (or recommended) as part of the patient's care plan.
- A. Review and interpret prescription orders for patients.

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1. Evaluate the acceptability of prescription order transmission and legitimacy of source.
  2. Determine the validity of the patient-prescriber relationship.
  3. Clarify, add, and/or correct prescription order information when necessary.
- B. Accurately prepare and dispense medications and/or supervise the preparation of medications.
1. Correctly count, measure, mix, reconstitute, and calculate the quantity of medications to dispense.
  2. Correctly prepare the label for the finished prescription.
  3. Select an appropriate container based on the chemical and physical properties of the drug that meets the patient's characteristics or needs.
- C. Accurately compound individual or bulk medications.
1. Locate accurate information on extemporaneous formulations.
  2. Evaluate the suitability of an extemporaneously compounded formulation.
  3. Calculate the correct quantity of ingredients.
  4. Use correct gravimetric and volumetric measuring procedures to obtain the desired quantity of the formulation component.
  5. Use good compounding practices in the extemporaneous production of a patient-specific drug delivery system.
  6. Identify physical and chemical incompatibilities among components of a given formulation and recommend appropriate alternatives to avoid incompatibilities.
- D. Prepare, store, and assure quality of sterile dosage forms.
1. Calculate the correct quantity of components when preparing a sterile product.
  2. Use proper aseptic techniques to prepare sterile dosage forms.
  3. Use sterilization methods that are appropriate for the pharmaceutical product.
  4. Calculate the rate of drug administration based on the prescription order and the type of infusion pump used.
  5. Determine a patient's fluid, electrolyte and nutritional needs and calculate the amount and composition of parenteral nutrition sources to meet those needs.
  6. Perform proper quality control procedures.
  7. Evaluate the stability and compatibility of sterile formulations.
- E. Comply with federal, state, and local statutes and regulations that affect pharmacy practice.
- F. Resolve ethical and moral decisions faced by pharmacists.
- III. Develop population-specific, evidence-based disease management programs.
- A. Assess the health needs of a specific patient population by analyzing epidemiologic data and identifying risk factors that would adversely affect patient health.
  - B. Develop appropriate criteria and outcome indicators and conduct medication reviews in specific populations.
  - C. Evaluate pharmaco-economic data relevant to appropriate disease-specific treatment plans.

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- D. Design evidence-based disease management programs that incorporate outcome indicators, drug treatment protocols, risk reduction strategies, and education programs for health care providers and patients.
  - E. Assure that all relevant members of a patient population receive needed services.
- IV. Communicate and collaborate with prescribers, patients, caregivers, and other involved health care providers to engender a team approach to patient care.
- A. Communicate clearly, accurately, compassionately, confidently, and persuasively with patients, caregivers, other health care professionals, and the public using appropriate listening, verbal, nonverbal, and written communication skills.
  - B. Exhibit a caring and respectful attitude and demonstrate empathy while establishing rapport and communicating with the patient and/or caregiver.
  - C. Establish collaborative relationships with other healthcare professionals that foster a team approach to patient care.
  - D. Demonstrate professionalism and leadership within professional and civic organizations.
  - E. Effectively communicate drug and health information at appropriate levels for patients and healthcare professionals.
  - F. Demonstrate sensitivity and tolerance within multicultural interactions and settings.
  - G. Educate patients and/or caregivers about drug therapy.
    - 1. Explain to patients or caregivers the drug, dosage, indication, and storage requirements for a given drug.
    - 2. Educate patients or caregivers on the symptomatology, significance, frequency, and management of adverse drug reactions.
    - 3. Explain any action that should be taken in the event of a missed dose.
    - 4. Demonstrate proper administration technique for a given drug delivery system and, as appropriate, confirm the patient's ability to perform such techniques.
    - 5. Facilitate patients assuming an active role in their self-care and overall health.
    - 6. Choose communication methods that are sensitive to the social and cultural background of the target audience.
    - 7. Confirm patient understanding of counseling provided and clarify if needed.
  - H. Educate patients or caregivers about the proper use of medical goods and devices.
    - 1. Identify print, audiovisual, and/or computerized sources of patient education information on medical devices and goods that meet the patient's needs.
    - 2. Demonstrate and verify the proper use of medical goods and devices to ensure effective use.
    - 3. Communicate storage, calibration, and maintenance information for medical goods and devices.
  - I. Document pharmaceutical care activity in a patient profile or medical record to facilitate communication and collaboration among healthcare providers.
- V. Maintain professional competency in providing pharmaceutical care by committing oneself to being an independent, self-initiated life-long learner.
- A. Identify and analyze emerging issues, products, and services that may impact patient-specific and population-based pharmaceutical care.
  - B. Assess one's own knowledge and abilities independently.
  - C. Set personal knowledge and ability goals and take responsibility for attaining them.
  - D. Recognize self-limitations and seek appropriate assistance/clarification.

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- E. Review topics relevant to patient care activities to enhance knowledge base and preparedness.
  - F. Accept feedback and implement suggestions for improvement.
  - G. Manage time appropriately and efficiently.
  - H. Exhibit intellectual curiosity and personal commitment to ensure ongoing professional competency.
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The supplemental outcomes were developed by the 2005 and 2006 AACP Pharmacy Practice Educational Outcomes and Objectives Supplements Task Forces: Mary Stamatakis, West Virginia University (chair); Marie Abate, West Virginia University; Eric Boyce, Wingate University; Shauna Buring, University of Cincinnati; Ina Lee Calligaro, Temple University; Ann Canales, Texas Tech University; Allison Chung, Auburn University; Lawrence Cohen, Washington State University; Wafa Dahdal, Midwestern University; Michelle Easton, University of Charleston; Diane Ginsburg, University of Texas at Austin; Brenda Gleason, St. Louis College of Pharmacy; Stuart Haines, University of Maryland; Dennis Hedge, South Dakota State University; Paul W. Jungnickel, Auburn University; James Karboski, University of Texas at Austin; Connie Kraus, University of Wisconsin - Madison; Roger Lander, Samford University; Sara Lanfear, St. Louis College of Pharmacy; Wanda Maldonado, University of Puerto Rico; Nanci L. Murphy, University of Washington; Erica Murrell, Massachusetts College of Pharmacy; Susan Paulsen, University of Colorado - Denver; Theresa Salazar, Butler College of Pharmacy; Jennifer Santee, Univ. of Missouri - Kansas City; Karen Sauer, University of Arizona; Amy H. Schwartz, University of Southern Nevada; Terry Schwinghammer, West Virginia University; Steven A. Scott, Purdue University; Kelly Shields, Ohio Northern University; Christopher Turner, University of Colorado; Ann Zweber, Oregon State University.