

Program-Level, Ability-Based Outcomes for Pharm.D. Education
College of Pharmacy
The Ohio State University

Executive Summary:

New graduates of a Pharm.D. program are expected to be able to deliver pharmaceutical care at a level of competence consistent with their being entry-level practitioners. This document identifies the minimal set of abilities a student should master during his or her educational experience to be prepared to deliver such service. These abilities are consistent with current expectations described in accreditation standards published by ACPE, as well as other professional standards, guidelines, and codes. Thus, the abilities enumerated in this document provide a basis for evaluation of curriculum design and assessment of student competency.

The mission of Doctor of Pharmacy education is to prepare generalist, entry-level pharmacists who are able to deliver high-quality pharmaceutical care. To achieve this mission, students must develop the knowledge, skills, and attitudes that enable them to competently

1. provide population-based and patient-specific pharmaceutical care.

This outcome area is comprised of 76 outcomes, including the ability to develop and implement population-specific pharmaceutical care programs, the ability to provide patient-specific pharmaceutical care, and the ability to assure the safe and accurate dispensing of medications.

2. manage and use resources of the health-care system.

This outcome area is comprised of 22 outcomes, including the ability to prevent and manage problems, the ability to manage resources, and the ability to manage medication use systems.

3. promote health improvement, wellness, and disease prevention.

This outcome area is comprised of two outcomes, including the ability to assure the availability of effective public health and disease prevention services and the ability to develop health policy, both as related to pharmaceutical care.

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Preamble:

The purpose of this document is to define a minimal set of clear, concise, program-level, ability-based outcomes for Doctor of Pharmacy education at The Ohio State University. The missions of pharmacy practice and Doctor of Pharmacy education are also defined to provide a context for the outcomes.

The outcomes in this document have at least three important characteristics. First, they are **ability-based outcomes**. This means that each outcome is an explicit statement of what students will be able to do as a result of Doctor of Pharmacy education at The Ohio State University. Ability-based outcomes do not explicitly define the knowledge, skills, and attitudes that enable students to achieve the outcomes. Rather, they define what graduates of the program are able to do as a result of the knowledge, skills, and attitudes gained during their educational program.

Second, the outcomes in this document are **program-level outcomes**. They reflect the abilities of students as a result of completion of a curriculum as a whole, rather than completion of a single course or course sequence. Program-level, ability-based outcomes are achieved via a curriculum composed of courses that impart knowledge, skills, and attitudes that are clearly connected to the program outcomes.

Third, the outcomes in this document may be achieved with varying levels of competency. At any given point in the curriculum, students may be not achieving an outcome or achieving that outcome at a low, intermediate, or advanced level. However, by graduation, all students should be able to competently perform the functions described in the outcomes at the level of a **generalist, entry-level pharmacist**.

Development of these program-level, ability-based outcomes is intended to provide a solid basis for curricular design and assessment. These outcomes can guide what is taught and what is assessed in the Doctor of Pharmacy programs. A curricular map can be developed to explicitly identify the connections between what is taught in each course and the program outcomes. This map may be used as a tool to help visualize what content is being taught, the level at which it is being taught, and where it is being taught in the curriculum.

The College's current *Missions, Outcomes, Competencies, Practice Functions, And Goals Associated With An Entry-Level Pharm.D. Curriculum Report* (OSU College Of Pharmacy, 1993) provided the starting point for the Curriculum Committee's effort to develop ability-based outcomes. The Committee used a variety of resources including standards,

guidelines, and codes from the American Association of Colleges of Pharmacy, Accreditation Council for Pharmacy Education, National Association of Boards of Pharmacy, and American Pharmacists Association. These key resources are included in the bibliography at the end of this document (Appendix A).

As with most fields, the area of educational assessment has its own vocabulary, with sometimes conflicting definitions of terms. The Curriculum Committee has therefore provided a glossary at the end of this document to define key phrases or terms as they are used in this document (Appendix B). It is the Committee's sincere hope that this will help foster understanding of and productive communication regarding these ability-based outcomes.

Finally, the Curriculum Committee has assumed that an appropriate standard of excellence applies throughout these ability-based outcomes. It has therefore minimized the use of modifiers such as "effectively", "high quality", "appropriately", and "accurately" within the outcomes.

The Mission of Pharmacy Practice:

The mission of pharmacy practice is to help people make the best use of medications. This mission is achieved by caring, proactive pharmacists who prepare and provide drug products and assume responsibility for the rational use of drugs by contributing to the design, implementation, and monitoring of therapeutic plans that will achieve defined goals and improve therapeutic outcomes. This patient-oriented practice is termed pharmaceutical care.

The Mission of Doctor of Pharmacy Education:

The mission of Doctor of Pharmacy education is to prepare generalist, entry-level pharmacists who are able to deliver high-quality pharmaceutical care. To achieve this mission, students must develop the knowledge, skills, and attitudes that enable them to competently

1. provide population-based and patient-specific pharmaceutical care,
2. manage and use resources of the health care system, and
3. promote health improvement, wellness, and disease prevention.

While preparing pharmacy practitioners is the primary mission of Doctor of Pharmacy education, the program also provides an avenue by which students may begin to prepare for other career opportunities. The program therefore aspires to foster interest in the creation of new knowledge to enhance patient health outcomes and quality of life and to prepare students for further education.

OUTCOME AREA 1: Graduates provide population-based and patient-specific pharmaceutical care, thereby helping patients achieve optimal clinical and patient-centered outcomes. To achieve this outcome, graduates

- 1.1 develop and implement population-specific, evidence-based pharmaceutical care programs
 - 1.1.1 interpret epidemiologic and pharmaco-economic data relevant to specific diseases and their management
 - 1.1.2 develop medication use criteria
 - 1.1.3 conduct and analyze medication use reviews
 - 1.1.4 identify and use risk reduction strategies
- 1.2 understand and use the pharmaceutical care process to provide patient-specific care that is based on sound therapeutic principles and literature-based evidence
 - 1.2.1 create a patient-specific database
 - 1.2.1.1 use patient medical records
 - 1.2.1.2 take a patient health history, including a medication history
 - 1.2.2 identify medication-related problems for each of the patient's health problems
 - 1.2.2.1 identify suboptimal drug therapy
 - 1.2.2.2 assess patient adherence
 - 1.2.2.3 identify adverse drug events associated with a drug regimen
 - 1.2.2.4 identify drug-drug and drug-food interactions
 - 1.2.2.5 identify barriers to health care for a patient
 - 1.2.3 develop a pharmaceutical care plan to manage each medication-related problem

- 1.2.3.1 retrieve, evaluate and apply current disease state information in the delivery of pharmaceutical care
- 1.2.3.2 retrieve, evaluate, and apply current drug information in the delivery of pharmaceutical care
- 1.2.3.3 define therapeutic goal(s) for a patient
- 1.2.3.4 design a dosage regimen for a drug based on patient-specific or population pharmacokinetic and dynamic data
- 1.2.3.5 develop strategies for enabling patients to enhance poor adherence to treatment regimens
- 1.2.3.6 prospectively recognize and manage potential adverse drug events associated with a drug regimen
- 1.2.3.7 prospectively recognize and manage drug-drug and drug-food interactions
- 1.2.3.8 develop a monitoring plan for a patient
- 1.2.3.9 manage an undesired outcome in a patient care setting
- 1.2.3.10 provide preventive care consistent with the role of the pharmacist
- 1.2.3.11 counsel a patient about life style modifications to help achieve optimal patient outcomes
- 1.2.3.12 help patients develop strategies for overcoming barriers to access to health care
- 1.2.4 work with the health care team to implement the pharmaceutical care plan
 - 1.2.4.1 collaborate with other health care providers to engender a team approach to patient care
 - 1.2.4.2 empower the patient and care givers as active partners in the health care process
 - 1.2.4.3 counsel a patient on the correct method for taking or administering a given dosage form

- 1.2.4.4 provide counseling on the selection and use of non-prescription medications
- 1.2.4.5 administer immunizations
- 1.2.4.6 provide emergency first care
- 1.2.5 document the pharmaceutical care activities
- 1.2.6 monitor patient response to therapy
 - 1.2.6.1 implement a monitoring plan for a patient
 - 1.2.6.2 assess patient response to therapeutic interventions
 - 1.2.6.3 assess the progress toward a patient's therapeutic goal
 - 1.2.6.4 modify the therapeutic plan when medication-related problems occur
 - 1.2.6.5 assess the impact of a health problem and/or its treatment on the quality of a patient's life
- 1.3 assure safe and accurate preparation and dispensing of medications
 - 1.3.1 read and interpret written prescriptions
 - 1.3.2 receive and transcribe verbal prescription orders
 - 1.3.3 recognize when a given prescription falls outside the usual dose range
 - 1.3.4 determine whether a medication order should be filled
 - 1.3.5 recommend a course of action when a medication order should not or cannot be filled
 - 1.3.6 perform calculations required to compound, dispense, and administer medication
 - 1.3.7 select medications that promote safe and effective use

- 1.3.8 prepare and compound extemporaneous preparations and sterile products
- 1.3.9 prepare, package, and label a dosage form according to state and federal laws
- 1.4 communicate with patients, patients' agents, and health care providers
 - 1.4.1 establish rapport with patients, patients' agents, and health care providers
 - 1.4.2 use non-verbal communication with patients, patients' agents, and health care providers
 - 1.4.3 actively and empathetically listen to patients, patients' agents, and health care providers
 - 1.4.4 assess the ability of patients, patients' agents, and health care providers to communicate
 - 1.4.5 assess the ability of patients, patients' agents, and health care providers to obtain, process, understand, and use health-related information
 - 1.4.6 identify the appropriate type of communication for a given situation
 - 1.4.7 verbally communicate with patients, patients' agents, and health care providers
 - 1.4.7.1 verbally communicate a complex concept, idea, or educational message in simple terms
 - 1.4.7.2 verbally present an idea, proposal, or recommendation persuasively
 - 1.4.7.3 validate the understanding of the knowledge or skill communicated
 - 1.4.8 communicate with a patient, patient's agent, and health care providers in writing
 - 1.4.8.1 communicate a complex idea or educational message in simple terms in writing

- 1.4.8.2 present an idea, proposal, or recommendation persuasively in writing
- 1.5 exhibit professional attitudes and behaviors
 - 1.5.1 establish and maintain covenantal relationships with patients
 - 1.5.2 promote the good of every patient in a caring, compassionate, and confidential manner
 - 1.5.3 respect the autonomy and dignity of each patient
 - 1.5.4 act with honesty and integrity in all professional matters
 - 1.5.5 demonstrate an ongoing commitment to maintaining professional competence
 - 1.5.6 respect the values and abilities of others
 - 1.5.7 serve individual, community, and societal needs
 - 1.5.8 seek justice in the distribution of health resources
- 1.6 provide pharmaceutical care in accordance with legal, ethical, social, economic, and professional guidelines

OUTCOME AREA 2: Graduates effectively manage and use resources of the health care system to promote health and improve pharmaceutical care outcomes. To achieve this outcome, graduates

- 2.1 use a systematic strategy to prevent and manage problems
 - 2.1.1 gather all information relevant to a potential or existing problem
 - 2.1.2 define the problem
 - 2.1.3 develop a strategy for managing the problem by
 - 2.1.3.1 generating potential strategies
 - 2.1.3.2 evaluating those potential strategies
 - 2.1.3.3 selecting the "best" strategy

- 2.1.4 implement the selected strategy for managing the problem
- 2.1.5 monitor the results of the implemented strategy for managing the problem and respond appropriately
- 2.2 manage human, physical, medical, informational, and technological resources
 - 2.2.1 assure efficient, cost-effective utilization of human, physical, medical, informational, and technological resources in the provision of patient care
 - 2.2.2 assess the cost effectiveness of a therapeutic approach to resolution of a medical problem in a patient care setting
 - 2.2.3 assess the cost-effectiveness/cost-benefit of a clinical service in a patient care setting
 - 2.2.4 communicate and collaborate with patients, prescribers, caregivers, other health care providers, and administrative and supportive personnel to engender a team approach to assure efficient, cost-effective utilization of human, physical, medical, informational, and technological resources in the provision of pharmaceutical care
- 2.3 manage medication use systems
 - 2.3.1 assure safe, accurate, and time-sensitive medication distribution
 - 2.3.2 assure that medication use systems minimize medication errors
 - 2.3.3 assure that medication use systems optimize patient outcomes
 - 2.3.4 develop drug use and health policy
 - 2.3.5 design pharmacy benefit plans
 - 2.3.6 communicate and collaborate with prescribers, patients, caregivers, other involved health care providers and administrative and supportive personnel to identify and resolve problems related to medication use
- 2.4 perform management responsibilities in accordance with legal, ethical, social, economic, and professional guidelines

OUTCOME AREA 3: Graduates promote health improvement, wellness, and disease prevention in cooperation with patients, communities, at-risk populations, and other members of an interprofessional team of health care providers. To achieve this outcome, graduates

- 3.1 apply population-specific data, quality assurance strategies, educational strategies, and research processes to identify and resolve pharmaceutical care-related public health problems
- 3.2 apply population-specific data, quality assurance strategies, educational strategies, and research processes to develop pharmaceutical care-related health policy

APPENDIX A: BIBLIOGRAPHY

Center for the Advancement of Pharmaceutical Education (CAPE) Educational Outcomes 2004 (American Association of Colleges of Pharmacy, 2004)

ACPE Draft Revision of Standards 2000 and Proposed Guidelines (Accreditation Council for Pharmacy Education, 2005)

Code of Ethics for Pharmacists (American Pharmacists Association, 1994)

NAPLEX Blueprint (NABP, 2004)

Zlatic TD, Abilities-Based Assessment Within Pharmacy Education: Preparing Students for Practice of Pharmaceutical Care. *Journal of Pharmacy Teaching* 2000;7:5-27.

APPENDIX B: GLOSSARY

Ability: the capacity to do something or perform successfully.

Attitude: a complex mental state involving beliefs, feelings, and values and dispositions to act in certain ways (e.g., exhibit empathy).

Covenantal relationship: professional obligation between a pharmacist and a patient characterized by reciprocity between the two parties. "Considering the patient-pharmacist relationship as a covenant means that a pharmacist has moral obligations in response to the gift of trust received from society. In return for this gift, a pharmacist promises to help individuals achieve optimum benefit from their medications, to be committed to their welfare, and to maintain their trust." (Quotation from *APhA Code of Ethics for Pharmacists*.)

Knowledge: acquired information necessary to perform the functions of an entry level pharmacist (e.g., principles of drug delivery).

Medication error: "any preventable event that may cause or lead to inappropriate medication use or patient harm, while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems including: prescribing; order communications; product labeling, packaging, & nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use." (as defined by The National Coordinating Council for Medication Error & Prevention)

Medication use system: the structure and processes of the "system" within which medications are used, including the prescribing, order processing, dispensing, administration, and monitoring of a medication's effects.

Mission: written description of the broadest and most fundamental purposes of an activity or program.

Outcome: the results associated with instructional experiences.

Ability-based outcomes: explicit statements describing what students will be able to do as a result of the integration of knowledge, skills, and attitudes gained from their instructional experiences.

Program-level outcomes: the abilities of students resulting from completion of a curriculum as a whole.

Course-level outcomes: the knowledge, skills, and attitudes of students resulting from completion of a single course.

Program-level, ability-based outcomes: explicit statements describing what students will be able to do as a result of the integration of knowledge, skills, and attitudes gained by completion of the curriculum as a whole.

Pharmaceutical care: a patient-centered practice of pharmacy in which the practitioner assumes responsibility for a patient's medication-related needs and is held accountable for this commitment.

Patient-specific pharmaceutical care: individualized pharmaceutical care provided to specific patient.

Population-based pharmaceutical care: pharmaceutical care provided to specified groups of patients.

Evidence-based pharmaceutical care: an approach to pharmacy practice and teaching that integrates knowledge, caregiver experience, and patient preferences with valid and current clinical research evidence.

Pharmaceutical care process: the defined process by which pharmaceutical care is delivered. The steps in this process are to create a patient-specific database, identify medication-related problems for each of the patient's health problems, develop a pharmaceutical care plan to manage each medication-related problem, work with the health care team to implement the pharmaceutical care plan, document the pharmaceutical care activities, and monitor patient response to therapy.

Skill: the ability to perform a task, usually gained through experience & training (e.g., taking a blood pressure).