Creation and Implementation of a Learning Outcomes Document for a Doctor of Pharmacy Curriculum

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The four-year endeavor of a college evaluation committee in creating and incorporating the use of a learning outcomes document in a Doctor of Pharmacy curriculum is chronicled. The committee's activities are detailed with particular attention given to the sources reviewed, approaches taken, and materials developed. The final product is titled, "Outcomes Expected of Graduates of the Doctor of Pharmacy Program." The document contains 18 competency statements with 47 associated components across the following five domains: (i) patient care - ensuring appropriate therapy and outcomes; (ii) dispensing medications and devices; (iii) health promotion and disease prevention; (iv) professionalism; and (v) health systems management. General ability-based outcomes such as thinking, communication, and self-learning are embedded throughout the professional practice-based outcomes. Current applications of the competency document such as guiding students in writing reflective reports, documenting activities in the experiential component of the curriculum, and a curriculum mapping project with course coordinators are presented and potential future applications explored.

INTRODUCTION

Subsequent to the last American Council on Pharmaceutical Education (ACPE) accreditation cycle in 1998, the Evaluation and Special Study Committee (ESSC) of the University of Arizona College of Pharmacy embarked on the long-term goal to develop learning outcomes for the Doctor of Pharmacy curriculum. The PharmD program is a 2-4 program type housed in a health sciences center of a public land-grant university. To complete the requisite self-study process in 1997, the College used the new accreditation standards and guidelines which were adopted June 14, 1997 and given the timing, a self-study guide was not yet available. Thus a prospective approach was taken such that recommendations, suggestions, and plans were included in the self-study document for those standards that were identified as deficient. For example, Standard No. 3 - Systematic Assessment of Achievement contains the passage - "The College or School should show evidence of using analysis of outcome measures throughout the educational, research, service, and pharmacy practice programs, for purposes of continuing development and improvement, including revisions in curriculum, and modifications of faculty and student policies." The overall review of the evaluation process revealed that substantial amounts of evaluation data on student achievement were being collected. However, a systematic plan for reviewing and using the data was not in place.

It was recommended that the ESSC assume responsibility for overseeing the evaluation component of the professional program. That is, assume responsibility for interpreting data...
Currently collected (e.g., the student exit survey) and making recommendations to the Dean or other appropriate persons. It was further suggested to conduct an analysis of the required competencies as delineated by the American Association of Colleges of Pharmacy (AACP) in the "Educational Outcomes" monograph to identify where in the curriculum each competency is taught, how outcomes are assessed, and minimal levels of performance expected. When other taxonomies became available they were to be considered as well. The ESSC felt the desired student outcomes should eventually be packaged in a document that could be used for a variety of initiatives. The purpose of this paper is to chronicle the four-year endeavor of the creation, incorporation, and application of a learning outcomes document in a Doctor of Pharmacy curriculum.

DOCUMENT DEVELOPMENT

The ESSC consists of one administrator, four faculty members, two PharmD students, and one graduate student. The faculty and administrative members have remained fairly constant over the past five years and student members typically serve one or two academic years. The ESSC is a standing College committee appointed by the Dean on an annual basis. Each department is represented and PharmD student members are typically in the third or fourth professional year. Committee members give progress reports and ask for faculty input via department and college faculty meetings and retreats.

During the 1998-1999 academic year the committee located and reviewed numerous sources for ability-based outcome statements. See Table I for a listing of useful source documents. The outcomes were divided into five domains: (i) patient care — ensuring appropriate therapy and outcomes; (ii) dispensing medications and devices; (iii) health promotion and disease prevention; (iv) professionalism; and (v) health systems management.

Specific competency statements were developed for each domain. To begin writing the competency statements, the ESSC members (sans students) attended the May 1999 AACP Pedagogical Institute. The meeting materials from the Institute were added to the information from the literature and from colleagues to write the competency statements. The competency-based curriculum initiative at the Baylor College of Dentistry was selected as a model based on its years of experience; where "the logical order for developing a competency-based education is to: (i) define competencies; (ii) measure competency; and (iii) design a curriculum to support the development of student competency. Thus, one essentially backs into a competency-based curriculum"(1). Several points that seemed especially critical were gleaned from the Baylor experience. Specifically, the competency document should focus on beginning professional practice and the number of competencies needed to be limited.

Using the AACP "Educational Outcomes" monograph as a guide, activities were identified related to each domain. However the activities were too specific and restrictive to serve as general competencies expected of graduates. To develop model competency statements at the appropriate level, the competency statements needed for domain 1, patient care - ensuring appropriate therapy and outcomes were developed by referring to the framework described by Cipolle, Strand, and Morley for pharmaceutical care(2). For this domain, competencies could be specified based on assessment, problem identification and prioritization, designing and implementing a care plan, and documenting care. More specific components of each competency also could be identified. For example, "Write a SOAP note" is a component of the competency, document care. With the competencies for domain 1 as a model, competencies and their associated components were written for the four remaining domains.

Other problems encountered in developing the competency statements included what to do with content (e.g., identifying what disease states students should be competent to manage), how to deal with general ability-based outcomes (e.g., thinking or communication skills), and how to handle basic science knowledge. After further evaluation, it was decided that content, general ability-based outcomes, and basic science knowledge were embedded in the competency statements. For example, communication skills are embedded in the component "communicate with other health care professionals" as are content and basic science knowledge. Specific content and knowledge would be required for communications related to a particular problem.

Goals of the Outcomes Expected Document

The goals of the outcomes expected (OE) document were delineated as: (i) provide a clear statement of how students are expected to perform at graduation; (ii) enable students to monitor their progression of skill on core competencies; (iii) enable faculty to improve the quality of instruction within specific courses; (iv) inform curricular change; and, (v) meet university and professional accreditation requirements.

A clear statement of how students are expected to perform at graduation allows the College to accurately demonstrate to various stakeholders the outcomes of education in this College. It allows all stakeholders to examine the outcomes and to reach a consensus on whether important outcomes are omitted or trivial outcomes are included. The application of the OE document enables the College to collect data on core practice skills to determine if the curriculum is adequately meeting the needs of students.

Currently, data for student performance on specific core competencies are not available. Some believe that the licensing examination is a source of such information. However, the licensing examination provides information on the number of students who pass or fail; it does not provide specific information that could be used to modify the curriculum or improve specific courses.

Table I. Useful sources for competency statements

<table>
<thead>
<tr>
<th>Source</th>
<th>Year</th>
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<tbody>
<tr>
<td>AACP-CAPE Educational Outcomes, 1998</td>
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<tr>
<td>APHA Pharmacy Practice Activity Classification, 1998</td>
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<tr>
<td>ACPE Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to The Doctor of Pharmacy Degree, adopted June 14, 1997</td>
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<tr>
<td>NAPLEX Competency Statements</td>
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<tr>
<td>Competencies for the Dental Hygienist Caruth School of Dental Hygiene, Baylor College of Dentistry, Dallas, Texas, June 1, 1994 (revised 1-24-97)</td>
<td></td>
</tr>
<tr>
<td>Competencies for the New Dentist, The Texas A &amp; M University System, Baylor College of Dentistry, Dallas, Texas. April 25, 1997</td>
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</tbody>
</table>

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One of the goals of a professional education is to enable students to become self-directed learners, a skill necessary to maintaining competence in a practice environment where educational activities are primarily the responsibility of the individual practitioner. If students know what is expected of them at the end of their program, they can monitor their progress and seek remediation if necessary.

Faculty, like all professionals, must continuously monitor program performance and improve instruction. If changes in instruction are to improve quality, the changes must be supported by data. The competency document can be used to obtain data on specific competencies so that instruction in relevant courses can be improved.

The final goal of the competency document is to meet university and professional accreditation requirements. Both types of accrediting organizations specifically state that programs should collect outcomes data and use that data to improve instruction. (Several programs at the University have received provisional accreditation because they could not demonstrate that they have used outcomes data to improve instruction.) Accreditation organizations also have requirements related to enabling students to become self-directed learners.

Additionally, the University is a public land-grant institution; its mission is to prepare students for a diverse and technological world while improving the quality of life for the people of the state. Outcomes that are specified and public can enable the College to provide evidence that students have been adequately prepared and can, in the case of pharmacy, improve health-related quality of life. They also can facilitate the University goal of life-long learning. Finally, the College mission is to educate and prepare professional students to become highly skilled, ethical, and compassionate pharmacists. By identifying the core or critical skills then monitoring student attainment of these skills, the College can assure that graduates have been adequately prepared.

Outcomes Expected Document

The OE document, shown in Appendix A, contains a total of 18 competencies and 47 components in the five identified domains listed above. A competency represents the ability to use a specific set of knowledge, skills, and attitudes to meet patient needs. It is stated in a manner that reflects how a task is performed in a practice setting. For example, a task for practitioners is to document the care provided to the patient, a competency represented by the statement "Document all components of care" (competency 1.4).

Listed under the competency are components that represent dimensions of the competency. The "Document all components of care" competency contains three components: (i) Write a SOAP note; (ii) document care in patient record; and (iii) communicate with other health care providers (e.g., letter to MD summarizing findings and recommendations).

Characteristics of the Competency Statements

The components reflect the reality that a complete competency represents a substantial set of skills with its requisite knowledge and attitudes. Because of the complexity, a complete competency is rarely taught in its entirety in a classroom setting. In addition, assessing performance on the entire competency is very difficult. In the above example, the three components under "Document care" likely are taught separately and tested separately in the classroom. By separating the components, each component can be tracked in the curriculum and student performance monitored.

As indicated above, the OE document does not specify the knowledge required for each competency or component. Again, inclusion of knowledge would require an enormous number of competencies. For example, skill in documenting care for patients with diabetes, asthma, hypertension, and otitis media represent but a small sample of the care that students are expected to be able to document.

The competencies in the OE document represent the competencies of entry level generalist pharmacists. They are the competencies that students are expected to have at graduation; very few students entering their first professional year would be able to perform at an acceptable level on any of the competencies. However, all students should be able to perform all competencies at a specified level at graduation. In addition, the competencies are considered core or critical. As discussed above, they cannot possibly represent all the competencies that students should have at graduation - rather they represent those competencies that are essential for further professional development. In the above example on documenting care, graduates would not be performing at an entry level if they were unable to document the care they provide. In addition, ability to document care is required for quality assurance activities that improve care and increase the competence of individual practitioners.

Also, as indicated above, the OE document does not include knowledge of the basic sciences or general abilities that are required to perform competently. Again, including basic science knowledge would substantially increase the number of competencies that would need to be tracked. However, faculty should be able to relate basic science knowledge to specific competencies. For example, medicinal chemistry is related to competency 2.2, select and prepare appropriate medical goods and devices for the patient. Knowledge of pharmacology is clearly needed to perform competency 1.3, design and implement a care plan and to competency 2.1, review, assess, and prioritize problems on all requests for medications and devices. General abilities, for example, thinking critically or communicating clearly, are not specifically included in the document. A large number of the competencies, if not all, obviously require a substantial amount of general ability. In a manner analogous to the basic sciences, general abilities can be related to specific competencies.

Implications for Assessment

The competency statements have implications for assessing attainment of specific competencies. Because the competencies are written at the task level and represent an individual's performance in practice rather than discrete items of knowledge, test items related to the competencies also must be developed at the task level. For example, examinations covering patient care would need to use case descriptions, mock patient records, actual patient records, Objective Structured Clinical Examinations (OSCEs), or actual patients. That is, the student must be asked to apply knowledge and the item should test the skill actually required to perform the task in a practice setting. The student response format would vary according to the setting; in the classroom, the student could be presented with a case description and respond to a multiple-choice question. In a practice setting, the student may be working with an actual patient and respond by presenting the case to a preceptor or in a seminar.

The OE document is considered a tentative delineation of
Table II. Summary of the current uses of the outcomes expected document

<table>
<thead>
<tr>
<th>User category</th>
<th>Use</th>
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</thead>
<tbody>
<tr>
<td>College administration</td>
<td>1. Curriculum mapping</td>
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<tr>
<td></td>
<td>• didactic curriculum</td>
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<tr>
<td></td>
<td>• advanced practice experiences</td>
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<td></td>
<td>• work experiences</td>
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<td></td>
<td>• extracurricular activities</td>
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<td></td>
<td>2. Development and interpretation of a comprehensive exam</td>
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<td></td>
<td>3. Describing curriculum to entering students</td>
</tr>
<tr>
<td>Students</td>
<td>1. Framework for portfolio</td>
</tr>
<tr>
<td></td>
<td>2. Self assessment of progression in the professional program</td>
</tr>
<tr>
<td>Faculty</td>
<td>1. Design of new course offerings</td>
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</tbody>
</table>

core competencies. It is intended to be a working document. As faculty, students, and stakeholders have an opportunity to use the document, they will undoubtedly identify areas that are lacking or areas that are over emphasized. On a related issue, the document can serve as a foundation for the development of more detailed outcomes for specific areas, either in the basic sciences or clinical practice areas. Clinical faculty may want to delineate the types of patients for whom they want students to be able to perform specific skills at graduation. Basic science faculty may want to identify the specific knowledge that they expect of all students in pharmacology or medicinal chemistry.

APPLICATIONS OF THE OUTCOMES EXPECTED DOCUMENT

The current uses of the OE document are summarized in Table II. To date, the primary use has been by the college administration to map the curriculum, describe the curriculum, and to assess student competence. Students have used the OE document as a framework for writing reflective statements on their progression through the professional program. Faculty have used the competencies to design new practice experiences.

An orientation to the OE document was developed for introducing the document to other faculty and students. In the orientation, the goals and development of the document were described, the relationship to the college and university mission delineated, the characteristics of the competencies discussed, and a "glossary of terms" was provided.

Administration Use of the OE Document

In the summer of 2000, a fourth-year student beta-tested the OE document during an elective pharmaceutical education rotation. Didactic course work was examined retrospectively to see where the competencies and components were addressed in the curriculum. Attainment of competencies and components during experiential rotations were noted prospectively. Recommendations were made based on the review and use of the OE document. They included: introduce the competencies to first-year students during orientation, describe work experience and extracurricular activities using the OE document in addition to the formal curriculum, have faculty members consider where their instructional activities fit in, and eventually convert to on-line entry and tracking. Minor formatting and content improvements were suggested as well.

To describe work experience using the OE document, a student member of the ESSC conducted her senior investigative project using the competency statements as a framework to describe how students' work experience augments their academic learning. A questionnaire was developed for third-year students (N = 52); for each competency component, students indicated whether they learned nothing (zero percent) to everything (100 percent) of what they know from work experience. All students except one had had at least some work experience and most had experience in a retail setting (88 percent). Students attributed at least 70 percent of their learning related to selecting an appropriate storage container, accurately preparing prescriptions, maintaining honesty and confidentiality in professional interactions, and providing humane and compassionate care to their work experience. They attributed at least 50 percent of their learning related to appropriate dose and duration, information on taking with food, special instructions for product use, appropriate storage methods, knowledge of brand/generic names, and use of information technology resources, to their work experience. They also learned about technician and intern responsibilities.

Additionally, students with more than two years work experience attributed a greater portion of their knowledge to work experience. Thus work experience appears to contribute substantially to third year students' knowledge and skill before they begin their advanced pharmacy practice rotations. Of particular interest is that students are not learning just technical skills but are learning about ethical and professional behavior. Also of note is the variability in students' experience in that 15 competency components had coefficients of variation greater than one.

During the 2001-2002 academic year, all didactic course coordinators used the OE document to provide data for their respective courses. These data are being analyzed to determine where topic areas are addressed in the curriculum and whether students are exposed to content, whether they are assessed on content, and modes of assessment. For example, it will be apparent where in the didactic curriculum students are afforded the opportunity to design a care plan. The summarized results will be provided to the College Curriculum Committee for use in curricular revision efforts and also as a basis for the next accreditation self-study.

The OE document competencies and components provide a framework for the construction of a 75-item multiple choice comprehensive exam, which was prepared and administered to the Class of 2002 in March of 2001 and was re-administered in May 2002. The content of the exam was primarily concerned with Domain 1: Patient care - ensuring appropriate therapy and outcomes. For example, there were items specific to therapeutics, pharmacology, and pharmacokinetics. This inquiry will employ a pretest-posttest design to gauge gains in knowledge and skills over the experiential year of the curriculum. The baseline measure will be used to assess where students were upon completion of the third year of pharmacy school, which marks the end of the didactic component of the curriculum. Data analysis will be performed on both administrations (pre and post) as a form of curricular evaluation. Specific procedures and results will be reported elsewhere.

During the week-long orientation program for the entering Class of 2005, five faculty members (three members of the ESSC and two members of the Curriculum Committee) conducted a 2.5-hour session. The topics addressed included history of the college, mission and goals, curriculum, instruction, learning, and evaluation and assessment. Particularly germane to this paper were the themes of responsibility for one's own
learning, how assessment and evaluation activities are conducted in the College, and introduction and discussion of the OE document.

**Student Uses of the OE Document**

The experiential director introduced the professional portfolio to the incoming students as a means to provide assessment and documentation of professional growth as a pharmacy student using the OE document as the underlying structure. The goals of the portfolios are: to provide a documented overview of the experiences encountered during the student's professional training, to connect the PharmD program outcomes to the professional training process, and to allow the student an opportunity for self-assessment during the professional training process. The student assumes the responsibility for the selection of the materials to support the experiences related to each domain. Materials could come from course assignments and activities, extracurricular activities, and internship experience. Previously, students did not begin to formally construct their portfolio until the third year in the curriculum and the portfolios did not relate to curriculum outcomes per se. Now all students will begin to write reflective reports addressing activities accomplished under each of the domains of the OE as well as short-term and long-term professional plans at the completion of each year. Students in the Class of 2005 wrote their first reflective report in the second semester of the Introduction to Pharmacy course sequence in Spring 2002. The ESSC assisted the course coordinator in grading these reports.

Students in the class of 2003 were introduced to the portfolio and OE document during the fall semester of 2001 in the required course, PhPr 495b - Preparation for Rotations. They wrote reflective reports using a retrospective look at the first two years of the pharmacy curriculum and related experiences. The insight displayed by two of the students is illustrated in the following paragraphs.

"Before starting this report, I did not really know what the College of Pharmacy goals were and what students were expected to get out of the program. All I thought students needed to know was every drug's name, chemical structure, pharmacology, and interactions. Not knowing all of this, I felt as if I was not going to be a good pharmacist. This semester in PhPr 495b the class received the Outcomes Expected of Graduates of the Doctor of Pharmacy program at the University of Arizona. This document contains five domains each with different components explaining the domain. After reading this document, I now know what is expected of me and I am headed in the right direction. The remainder of this report will discuss each domain and the competencies achieved as well as future plans related to my professional growth."

"At this point in my pharmacy education, it is a good idea to step back and take a look at all that I have learned over the almost two and a half years that I have completed. Using the College of Pharmacy's list of expected outcomes, I can compare what I feel I have learned to the goals the College has set and see where everything I have learned fits in with the College's plan. I can use this analysis to determine in which areas I need to improve and in which areas I am proficient."

After the course coordinator gave feedback on first drafts, ESSC members evaluated the full reports using the grading rubric shown in Appendix B. The course coordinator evaluated the other sections of each portfolio. Committee members found the experience gratifying and were impressed with the achievements noted and short-term and long-term plans articulated by the students.

In May 2001, the experiential director (ESSC member) oriented six members of the class of 2002 to the OE document. Throughout their advanced pharmacy practice experiences, these students used the instrument to document their rotation activities. At the completion of each six-week rotation, the students submitted forms on which they indicated specific actions taken in addressing the various components and competencies. See Figure I for an example. Based on this pilot study, decisions will be made regarding how to have all students use the OE document throughout the final experiential year.

**Faculty Use of the Document**

Another application of the OE is with new preceptors in the experiential component of the curriculum. For example, the document can provide structure to a newly created rotation. Specifically, in addition to general rotation goals and objectives, domains 3-Health promotion and disease prevention, 4-Professionalism, and 5-Health systems management, were useful to prospective preceptors planning a pharmaceutical industry field rotation as these domains and associated competencies best related to their site (i.e., no patient care).

The OE document should guide faculty in course planning and revision efforts. For example, faculty members in the social and administrative sciences determined in which courses relevant competencies and components should be addressed when re-evaluating their division's offerings.

Currently, competencies are assessed in individual classes and typically if the student amasses sufficient total points to pass the course, competence is assumed. There are some exceptions including, an interviewing and counseling course where students must demonstrate minimum competence in a clinical simulated encounter (35 percent of total course grade) by achieving a score of at least 75 percent. Additionally, in a drug information course students must achieve at least 70 percent on a formulary review assignment and on literature search assignments in order to pass the course.

**FUTURE PLANS**

"Acceptable" levels of performance must be determined for each of the competencies and if necessary, methods and means for remediation opportunities discerned. Movement from paper to a web-based OE electronic tracking system is anticipated, thereby increasing student self-assessment and self-guided learning, while providing a means for the College to more easily conduct program evaluation.

**CONCLUSIONS**

Outcomes documents are difficult to develop such that they can serve as the foundation for curriculum development and assessment. However, clearly stated outcome statements enable faculty, students, and other interested parties to systematically evaluate the curriculum as well as to describe critical outcomes to all stakeholders. The ultimate goal is to engender increased student accountability and control in the learning process.
APPENDIX A. OUTCOMES EXPECTED OF GRADUATES

1.0 Domain: Patient Care—Ensuring appropriate therapy and outcomes

Description: The graduate provides patient care by assessing patient status and identifying problems, design and implementation of a care plan as well as documentation of all components of care.

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<thead>
<tr>
<th>Competency Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>1.1</td>
<td>Conduct a complete patient assessment, including establishment of RPh-patient relationship, history, physical exam, &amp; review of patient record.</td>
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</table>

Components
- a. Obtain a history (medical, social, medication management, and/or financial)
- b. Conduct a physical assessment and/or review of systems
- c. Review a patient record.

1.2 Problem identification and prioritization; including communication of problem analysis to other providers and collaboration with the patient to prioritize problems.

Components
- a. Identify problems
- b. Prioritize problems

1.3 Design and implement a care plan including identification of the appropriate drug delivery system and container, recommendations of doses and dosage schedules, and referral to other providers as appropriate (including specialty RPh).

Components
- a. Design a care plan using appropriate therapeutics and pharmacokinetic principles
- b. Counsel a patient on medication use and management based on care plan
- c. Refer patient to appropriate medical or social services based on care plan

1.4 Document all components of care.

Components
- a. Write a SOAP note
- b. Document care in patient record
- c. Communicate with other health care providers (e.g. letter to MD summarizing findings and recommendations)

2.0 Domain: Dispensing medications and devices

Description: The graduate ensures and documents the appropriate status and identifying problems, design and implementation of a care plan as well as documentation of all components of care.

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<th>Competency Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>2.1</td>
<td>Review, assess, and prioritize problems on all requests for medications and devices.</td>
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Components
- a. Identify appropriate information in profiles, medical records, or by patient (caretaker) interview that will affect drug dose and schedule identifying and prioritizing potential problems
- b. Assess and optimize patient therapeutic self-management identifying and prioritizing potential problems

2.2 Implementation of order dispensing. Design includes identification of the appropriate drug, delivery system, container, and counseling information.

Components
- a. Determine appropriate drug delivery system for the patient based upon individual patient needs and characteristics
- b. Select appropriate container for the drug product or determine if original packaging is safe and appropriate for the product and consumer
- c. Identify and collect all information necessary to select appropriate medical goods and devices for the patient identifying and prioritizing potential problems
- d. Accurately prepare prescriptions
- e. Accurately compound individual or bulk medications
- f. Apply guidelines and standards of practice for preparation, storage, in-process quality control, and administration of sterile dosage forms and enteral nutrition products in various pharmacy practice settings
- g. Provide counseling to patients (or caregivers) relative to proper therapeutic self-management
- h. Provide counseling relative to the proper use of medical goods and devices

2.3 Document information related to dispensing of medications and devices.

Components
- a. Document decisions about appropriate drug therapy
- b. Record actions taken to achieve desired therapeutic outcomes
- c. Document effectiveness of therapy

3.0 Domain: Health promotion and disease prevention

Description: The graduate provides services to a target population by assessing population needs, identification of a population-level intervention; design and implementation of an intervention, and evaluation of the impact on the target population.

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<th>Competency Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>3.1</td>
<td>Conduct a complete assessment of the target population, including a description of their demographic characteristics and health status, and a description of the community context.</td>
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</table>

3.2 Identification of a population-level intervention.

3.3 Design and implement an intervention.

3.4 Evaluate the impact of the intervention on the target population.

4.0 Domain: Professionalism

Description: The graduate provides pharmaceutical care based on contemporary knowledge and therapeutics in a compassionate, empathetic, and ethical manner. They must bring to the practice of pharmacy the necessary values, attitudes, and behaviors to discern and manage the ethical issues of pharmacy practice. The graduate must deal with large and diverse amounts of information.

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<th>Competency Number</th>
<th>Description</th>
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<tr>
<td>4.1</td>
<td>Make and defend rational, ethical decisions within a context of personal and professional values.</td>
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Components
- a. Articulate ethical principles relevant to
Competencies in each of the five domains should be supported with examples of activities in courses, extracurricular activities, and work related experience.

Report should contain an introduction, information related to the five domains of the Outcomes Expected Document, as well as short-term and long-term goals.

1. Organization (5 points available)
   a. Identify preventable causes of adverse drug reactions and medication errors and recommend actions to minimize future occurrences
   b. Identify and report adverse drug reactions and medication errors to appropriate individuals and authorities
   c. Evaluate information obtained from adverse drug reaction and medication error occurrences

2. Evidence Provided (10 points available)
   a. Use appropriate data to make and support formulary recommendations
   b. Compile and evaluate literature necessary to review a class of medications and make a formulary recommendation
   c. Communicate with health care providers and patients about formulary decisions

APPENDIX B. PHARMD STUDENT REFLECTIVE REPORT EVALUATION FORM (TOTAL POSSIBLE POINTS = 20)

The following rubric has been developed to use when evaluating a student's reflective report. For each of the three sections, circle the number that best reflects the student's performance in that area. Sum the values and record the total at the bottom of the page.

Student Name:_______________________________________________________ Date:_______________________________

1. Organization (5 points available)
   Report should contain an introduction, information related to the five domains of the Outcomes Expected Document, as well as short-term and long-term goals.
   a. Identify preventable causes of adverse drug reactions and medication errors and recommend actions to minimize future occurrences
   b. Identify and report adverse drug reactions and medication errors to appropriate individuals and authorities
   c. Evaluate information obtained from adverse drug reaction and medication error occurrences
   Report lacks focus and structure. No clear relationship exists between the report and either the Outcomes Expected document or pharmacy education in general.

   (“A/B” level) 5 4
   (“C” level) 3
   (“D/E” level) 2 1

2. Evidence Provided (10 points available)
   Competencies in each of the five domains should be supported with examples of activities in courses, extracurricular activities, and work related experience.
   a. Use appropriate data to make and support formulary recommendations
   b. Compile and evaluate literature necessary to review a class of medications and make a formulary recommendation
   c. Communicate with health care providers and patients about formulary decisions
   Student provides numerous examples of activities related to competencies. Also provides information.
   Student provides some examples of activities related to competencies. Examples are primarily limited to
   Student repeats items from Outcomes Expected document but does not relate

   (“A/B” level) 5 4
   (“C” level) 3
   (“D/E” level) 2 1

3. Evaluation and Self-Assessment (5 points available)
   a. Demonstrate knowledge of personnel management principles used to recruit, hire, train, develop, supervise, motivate, retain, and evaluate staff
   b. Identify appropriate medications for review
   c. Develop appropriate criteria and outcome measures for medication use based on analysis of the literature
   Report lacks focus and structure. No clear relationship exists between the report and either the Outcomes Expected document or pharmacy education in general.

   (“A/B” level) 5 4
   (“C” level) 3
   (“D/E” level) 2 1
on where they expect to achieve competencies to which they have not yet been exposed.

("A/B" level)
0 9 8

3. Spelling and Grammar (5 points)
Report shows a great deal of effort. No spelling or grammar errors present. It is an example of excellent writing skills at this education level.

("A/B" level)
5 4

Total Points for all Three Sections:
Additional Comments:

listing the name of the course, the extracurricular activity or job.

("C" level)
7 6 5

Report shows some effort but contains a fair number of spelling and grammar errors. It is an example of marginal writing skills at this education level.

("C" level)
3

to specific courses, extracurricular, activities, or work related experiences.

("D/E" level)
4 3 2 1

Report resembles a rough first draft. Each paragraph contains numerous spelling errors, incomplete sentences, and incidents of poor grammar. It is an example of very poor writing skills at this education level.

("D/E" level)
2 1