RESEARCH ARTICLE

Using CAPE Outcome-Based Goals and Objectives to Evaluate Community Pharmacy Advanced Practice Experiences

Jennifer Cerulli, PharmD; Margaret Malone, PhD
Albany College of Pharmacy

Objectives. The purpose of this project was to develop and implement CAPE outcome-based goals, objectives, and assessment tools for community pharmacy advanced practice experiences (CPAPE).

Methods. A focus group of preceptors was convened to conduct a needs assessment. The number and types of experiential activities from faculty-based CPAPE and examples of objectives from other colleges of pharmacy were reviewed. Key CAPE outcomes to be achieved and assessed during the CPAPE were identified and linked with specific student activities. Assessment tools were adapted or developed. A new document was developed, pilot tested, and revised prior to implementation.

Results. The resulting document combines CAPE-based objectives with specific clerkship activities and assessment tools, as well as a midpoint and final evaluation form. The document has been used for 55 experiences, resulting in positive feedback from preceptors and students.

Conclusions. The standardized outcomes and assessment document that was developed clarified the expectations for CPAPE preceptors and students.

Keywords: Center for the Advancement of Pharmaceutical Education, community pharmacy, advanced practice experience

INTRODUCTION

The American Association of Colleges of Pharmacy (AACP) Center for the Advancement of Pharmaceutical Education (CAPE) Advisory Panel on Educational Outcomes has defined criteria for professional and ability-based outcomes. The CAPE outcomes provide a framework for United States Colleges of Pharmacy to ensure that the expected abilities and competencies of a Doctor of Pharmacy (PharmD) graduate are being addressed throughout the curriculum. Although data on the assessment of curricular outcomes have been reported, previous reports addressed only the didactic part of the curriculum and not the experiential component of pharmacy education. The authors acknowledged the difficulties in applying and assessing the CAPE outcomes in experiential education, which varies widely with the nature of the experience, the site, and the preceptor. Since advanced practice experiences form the capstone year for the PharmD program it is essential to ensure that the CAPE outcomes are met. Therefore, the development of standardized goals, objectives, and evaluation tools for advanced practice experiences would provide a strong base for a structured approach to achieving those outcomes.

The didactic curriculum at the Albany College of Pharmacy incorporates CAPE outcomes into each course syllabus. However, the experiential education objectives and the existing evaluation form focused on the students’ ability to identify drug-related problems and did not incorporate the CAPE outcomes. The existing method had been originally designed for traditional inpatient or ambulatory care (physician office) clerkship sites. To improve student awareness of the CAPE outcomes, 2 faculty members incorporated them into the goals and objectives for their advanced practice experiences in nutrition and nephrology.

The College offered introductory community practice experiences that focused mainly on drug distribution activities, which did not incorporate all the pharmaceutical care skills identified in the CAPE outcomes. Since many PharmD graduates practice in
Table 1. Average Number of Activities Performed Per Student During 18 Five-Week Community Pharmacy Advanced Practice Experiences

<table>
<thead>
<tr>
<th>Activity</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient histories</td>
<td>11.8 (9.8)</td>
</tr>
<tr>
<td>Interventions documented to solve drug-related problems</td>
<td>14.3 (11.4)</td>
</tr>
<tr>
<td>Letter to prescriber to resolve drug-related problems</td>
<td>2.6 (5.6)</td>
</tr>
<tr>
<td>Drug information requests</td>
<td>12.0 (8.6)</td>
</tr>
<tr>
<td>Additional pharmacy services provided to patients*</td>
<td>2.4 (3.2)</td>
</tr>
</tbody>
</table>

*Additional pharmacy services provided to patients included medication review (brown bag) and patient training in the use of an inhaler/spacer, peak flow meter, blood glucose meter, and blood pressure monitoring device.

In community pharmacies, students’ ability to demonstrate the CAPE outcomes in this setting is important. Therefore, the College developed new community pharmacy advanced practice experience (CPAPE) sites between 1998 and 2001, using 2 full-time faculty members and 7 adjunct faculty preceptors. Adjunct preceptors were selected based on recommendations from experiential education faculty and positive student evaluations received following introductory practice experiences. Five experiences were offered in the chain setting and 2 were offered in independent pharmacies. Preceptor training was offered to the adjunct preceptors; however, each site was responsible for developing their own rotation objectives, which resulted in a wide range of requirements. Adjunct faculty preceptors began to request more guidance concerning the College of Pharmacy’s expectations and suggestions for activities and assignments that the student would be required to complete. In addition, many believed the existing evaluation form did not meet the needs of the CPAPE. Informal discussions with preceptors indicated that a more structured approach to this experiential offering was required.

The purpose of this project was to develop and implement CAPE outcome-based goals, objectives, and assessment tools for community pharmacy advanced practice experiences (CPAPE) in order to ensure CAPE outcomes were identified and achieved, to provide standardization of and quality assurance for the experience, and to develop an evaluation tool for student performance that addressed the requirements and expectations of the CPAPE.

METHODS

In January 2001, the faculty member who had been appointed as Coordinator of the CPAPE began to develop a standardized outcomes and evaluation form for the experience that included a checklist of suggested activities. The development process involved using a focus group, reviewing the literature and documents from other colleges of pharmacy, selecting appropriate CAPE outcomes, and incorporating this information with the Coordinator’s own experience in administering CPAPE programs. A focus group of 5 of the adjunct faculty preceptors met with the Coordinator to identify areas that needed improvement. The Coordinator then reviewed CPAPE goals and objectives from other colleges of pharmacy in addition to the ACPE position paper on clerkships in community pharmacy.\(^3\)\(^5\) The CAPE outcomes desired for the experience were selected by the Coordinator and reviewed by the Experiential Education Committee. These outcomes were then linked with specific activities identified from the review of the literature and the Coordinator’s experience offering CPAPE to formulate the outcomes and evaluation form. The activities checklist was developed to provide preceptors with an estimate of a reasonable workload for the experience. Student workload sheets from 18 CPAPE rotations that the Coordinator had precepted were reviewed to identify the number and type of student activities completed. This information was used as a baseline for the new checklist. Additional assessment tools and documentation forms referred to as appendices in the activities checklist were developed or adapted from existing documents. One year after implementing the new system, preceptor feedback regarding the new
**RESULTS**

Several major needs and concerns were identified during the preceptor focus group. Preceptors requested a list of suggested student activities to provide them with guidance on the College’s expectations for this new type of experiential offering. Both preceptors and the Coordinator felt that the evaluation form currently in use did not work well in the community setting and requested an abbreviated document that contained the goals and objectives, as well as an evaluation tool. To streamline the evaluation process, the midpoint and final evaluation needed to be incorporated into one form to improve the ability of both students and preceptors to identify strengths and weaknesses that needed to be addressed during the experience. The existing process required separate forms to be completed and submitted at the midpoint and final assessment, which made it difficult to compare progress between assessment periods. Finally, preceptors felt there was too much emphasis on the identification of drug-related problems and limited attention on other CAPE outcomes, particularly communication with different audiences (eg, patients, co-workers, and health care professionals) and in different formats, both verbal and written. An assessment of the student’s ability to provide drug information in the community setting also was not addressed in the evaluation form.

From the student workload sheets, the average number of selected activities performed during 18 five-week CPAPEs was identified (Table 1). Using this information, in addition to feedback from the focus group and a review of the literature, a comprehensive outcomes and assessment document was designed, which included an activities checklist (Appendix 1). This new document combined CAPE-based objectives with specific community pharmacy advanced practice experience activities. In addition, it used uniform documentation and assessment tools and integrated both the midpoint and the final evaluation on the same form. One community pharmacy faculty member and the Coordinator piloted the document during several practice experiences offered in the Spring of 2001. It was then slightly modified to the current format.

The new document was used for 55 CPAPE between June 2001 and May 2002. Feedback using an electronically mailed questionnaire was obtained from 6 of 10 preceptors who had used the old and the new assessment tool. Results from this survey are presented in Table 2. A review of written comments from 55 student evaluations of the CPAPE indicated that students enjoyed taking patient histories and performing blood pressure screenings. The objectives and requirements were clearly identified. Students indicated a large amount of written documentation was required and felt the medication write-ups were not useful and

---

**Table 2. Feedback Obtained on an E-mail Questionnaire (n=6) Sent to Community Pharmacy Advanced Practice Experience Preceptors**

<table>
<thead>
<tr>
<th>Question</th>
<th>Preceptor Responses,*</th>
</tr>
</thead>
<tbody>
<tr>
<td>The new clerkship form helped me to identify the Albany College of Pharmacy clerkship expectations.</td>
<td>5.0 (4-5)</td>
</tr>
<tr>
<td>The new clerkship form identified the correct outcomes for my clerkship site.</td>
<td>4.0 (4-5)</td>
</tr>
<tr>
<td>The number of required activities was reasonable.</td>
<td>4.0 (4-5)</td>
</tr>
<tr>
<td>The form was easy to complete.</td>
<td>4.5 (4-5)</td>
</tr>
<tr>
<td>The completed evaluation form provided an accurate and fair representation of the student’s performance on clerkship.</td>
<td>4.0 (4-5)</td>
</tr>
</tbody>
</table>

*Participants were asked to respond based on a scale of 1 to 5, in which 1 = strongly disagree and 5 = strongly agree.
too time consuming, which took away from other patient care activities.

DISCUSSION

The standardized outcomes and assessment document that was developed clarified educational expectations for CPAPE preceptors and students. Using the document, preceptors could more effectively make student assignments based on their improved knowledge of the educational and professional outcomes that are expected of the PharmD graduate. The new document increased emphasis on the evaluation of the student’s verbal and written communication skills with patients and health care professionals, which is a key area of competency for pharmacists in the community setting. The student feedback obtained from the 2001-2002 academic year evaluations led to one of the assigned activities, completing medication monographs, being changed to an optional, preceptor-assigned activity for those students requiring additional reinforcement in this area, or to use as a template for new drug reviews. In the future, the use of an electronic format and a computer database for documentation should reduce the paperwork involved in completing the required activities.

Previous studies have evaluated the types of activities and requirements for an ideal community pharmacy-based advanced practice experience using a drug-related problem (DRP) approach. The present document further enhances this experience by incorporating both a DRP and a CAPE outcome-based approach to the activities required and the assessment of the student. Based on the feedback received, the new outcomes and assessment document has been adopted for use in all patient care advanced practice experiences. Faculty members have adapted the additional forms provided (activities checklist, patient history, case presentation evaluation, and drug information documentation form) for use in other practice sites.

CONCLUSIONS

The newly developed CPAPE outcomes and assessment document provided both the students and the preceptors with a comprehensive and objective approach to documenting clerkship activities and reduced areas of ambiguity related to clerkship performance. Use of this approach should enhance the expansion of community pharmacy advanced practice experiences in a standardized way.

REFERENCES

Appendix 1. Outcomes and Assessment Document Used to Assess Students’ Performance During Community Pharmacy Advanced Practice Experiences

Albany College of Pharmacy
Community Pharmacy Advanced Practice Experience

OUTCOMES AND EVALUATION FORM

Student: __________________________
Preceptor: __________________________
Site: __________________________
Module: __________________________

Please use the following:

1 = Unacceptable
2 = Marginal
3 = Acceptable
4 = Commendable
5 = Outstanding
NA = No opportunity to observe

Through the advanced practice community clerkship experience the student will be able to demonstrate the following competencies

I. PROFESSIONAL PRACTICE BASED OUTCOMES: Provide Pharmaceutical Care to Individual Patients in the Community Setting:

A. Gather and Organize Patient Information in Order to Identify Ongoing or Potential Drug-Related Problems and the Root Cause of the Problems: Identify and collect all information needed (from pharmacy records, patient/caregiver interviews or other health care providers) to prevent or resolve medication-related problems or to respond to information requests

- Patient interview/assessment:
  - Identify patient’s primary complaint(s)/reason(s) for seeking medical care.
  - Collect accurate, comprehensive and relevant information from patient
  - Perform selected aspects of patient assessment and collect laboratory information from patient records (peak flow, BP, blood glucose diaries).
  - Provide a comfortable environment for the patient to allow for two-way communication.

B. Evaluation and Interpretation of Data: Integrate basic knowledge as needed to design, implement and evaluate patient-specific pharmacotherapeutic regimens to prevent or resolve medication-related problems or to respond to information requests.
• Disease Knowledge: Is able to provide the etiology, clinical presentation, pathophysiology, and the pharmacologic approaches to the management of specific disease states common to the ambulatory population.

• Pharmacotherapy Knowledge: Is able to supply the following for prescription products during case presentations and routine daily activities:
  - brand and generic name
  - drug interactions
  - appropriate place in therapy
  - monitoring criteria
  - the mechanism of action
  - dose and dosing adjustments
  - adverse effects
  - information for consultation

• OTC knowledge: Is able to supply the following information for OTC products during case presentations and routine daily activities:
  - brand & generic ingredient names
  - drug interactions
  - appropriate place in therapy
  - monitoring criteria
  - the mechanism of action
  - dose and dosing adjustments
  - adverse effects
  - information for consultation

C. Identification of DRP (Problem Solving Ability)
• Reviews available information to prospectively identify DRP
• Explores problems in orderly, logical manner
• Applies risk factors or % incidence occurring in given patient

D. Develop Pharmacy Care Plan: Collaborate with physicians, other health care professionals, patients and/or their care givers to formulate a pharmaceutical care plan, including the recommendation of pharmacotherapy specific to patient needs and desired outcome.
• States desired clinical outcomes
• Identifies therapeutic alternatives and chooses an appropriate therapy.
• Determines the appropriate drug delivery system for the patient based upon individual patient needs and characteristics.
• Recommends therapeutic regimen (medication doses and dosage schedules) based upon relevant patient factors, such as pharmacodynamic, physiologic and pharmacokinetics parameters.
• Evaluates patient’s clinical situation to select appropriate OTC medications or referral to a health care provider when appropriate.
• Devises appropriate monitoring plan.
E. Implementation of Pharmaceutical Care Plan

- Accurately prepares prescriptions complying with federal, state and local laws and related regulations which affect the practice of pharmacy.
- Communicates recommendations clearly and concisely to health care providers.
- Patient Counseling: Provide counseling to patients and/or care givers (provide knowledge and skills to effectively utilize medication)
  - Uses effective written, visual, verbal and nonverbal communication skills when providing pharmaceutical counseling to patients and/or care givers.
  - Utilizes an interactive approach that to ensure patient understanding of the correct use of medications and the goals, risks, and benefits of the drug therapy being implemented to optimize patient participation.
  - Relates to patients in a professional manner, responds discreetly to questions.
  - Demonstrates proper administration technique for a given drug delivery system. (MDI, DPI, Injectable products)
  - Provide counseling relative to the proper use of medical goods and devices.
    - Spacers
    - Peak flow meters
    - Blood pressure monitors
    - Home diagnostic products (i.e. pregnancy, HIV, cholesterol)

F. Monitoring and Follow-up: Plan and perform ongoing patient evaluation to identify additional drug-related problems and implement changes in the pharmaceutical care plan.

- Develops logical monitoring plan with appropriate endpoints and parameters
- Assesses patient compliance
- Monitor the safety and efficacy of therapeutic plans

G. Documentation: Documents pharmacy practice activity in patient record

- Maintains patient history records and documents interventions as indicated
- Prepares correspondence to other providers/prescribers as indicated
H. Drug Information and Literature Evaluation Skills: Provides pharmaceutical information to health professionals and the general public.
- Determines nature and specific aspects of the request
- Obtains complete background information to determine the full drug information question.
- Utilizes appropriate references, including primary journal articles and standard textbooks to support information and recommendations (lecture notes are never acceptable references).
- Critically evaluates literature with respect to reliability of study results and applicability to a particular patient where appropriate.
- Delivers timely, complete and accurate oral or written answers to drug information questions, taking the particular patient into account, where appropriate.

I. Professionalism: Displays the attitudes, habits and values required to render pharmaceutical care.
- Provides pharmaceutical care ethically and compassionately.
  - Gives the well-being of the patient highest consideration in provision of pharmaceutical care.
  - Exhibits empathy and a caring attitude when dealing with patients.
  - Facilitates the resolution of ethical dilemmas in the provision of optimal pharmaceutical care.
- Respects the dignity and autonomy of individual patients.
- Provides pharmaceutical care in a professional manner.
  - Dresses and speaks in ways that convey a professional image.
  - Maintains personal self-control and professional decorum.
- Compliance with policies and procedures of the practice site.
- Maintains confidentiality while fulfilling professional responsibilities.
- Demonstrate reliability and dependability to fulfill expectations.
- Is punctual, attentive to deadlines and uses time efficiently.

II. GENERAL ABILITY BASED OUTCOMES
A. Social Interaction and Citizenship: The student shall demonstrate effective interpersonal and intergroup behaviors in a variety of situations and circumstances.
- Functions independently and effectively in interpersonal and intergroup situations.
- Considerate of other professionals’ expertise and viewpoints.
- Develops a good rapport with pharmacy personnel.
B. Communication Abilities:

- Confidently/professionally communicates with health care providers.
- Uses appropriate terminology, body language and vocabulary for audience.
- Communicates assertively and appropriately. He/she is not afraid to provide his/her viewpoint.
- Effectively communicates via telephone to health care providers.
- Is able to present concepts concisely and accurately.
- Effective presentation of patient cases

C. Self-Learning Abilities and Habits: The student shall effectively self-assess and satisfy learning needs on an ongoing basis.

- Uses self-assessment and feedback from others to improve performance.
- Initiates action to correct identified learning deficiencies without prompting.
- Aggressively seeks new knowledge and demonstrates desire to continue to expand their knowledge base.
Albany College of Pharmacy  
Community Pharmacy Advanced Practice Experience  
Activities Checklist

<table>
<thead>
<tr>
<th>Activity</th>
<th>Minimum Quantity Completed</th>
<th>Actual Quantity Completed</th>
<th>Appendix</th>
<th>Preceptor Initials once completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Histories (2 per week)</td>
<td>10</td>
<td></td>
<td>I. Patient History form</td>
<td></td>
</tr>
<tr>
<td>Student Self-evaluation of Patient History &amp; Counseling</td>
<td>2</td>
<td></td>
<td>II. Patient History &amp; Counseling Evaluation form</td>
<td></td>
</tr>
<tr>
<td>Preceptor Evaluation of Patient History &amp; Counseling</td>
<td>2</td>
<td></td>
<td>II. Patient History &amp; Counseling Evaluation form</td>
<td></td>
</tr>
<tr>
<td>Patient Case Presentations</td>
<td>2</td>
<td></td>
<td>III. Case Presentation Format</td>
<td></td>
</tr>
<tr>
<td>Preceptor evaluation of case presentations</td>
<td>2</td>
<td></td>
<td>IV. Case Presentation Evaluation</td>
<td></td>
</tr>
<tr>
<td>Medication write-ups:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTC</td>
<td>10</td>
<td></td>
<td>VI. OTC Write-up form</td>
<td></td>
</tr>
<tr>
<td>Herbal</td>
<td>5</td>
<td></td>
<td>VII. Herbal Write-up form</td>
<td></td>
</tr>
<tr>
<td>Rx</td>
<td>10</td>
<td></td>
<td>VIII. Rx write-up form</td>
<td></td>
</tr>
<tr>
<td>Interventions made to resolve DRP</td>
<td>15</td>
<td></td>
<td>IX. Intervention form</td>
<td></td>
</tr>
<tr>
<td>Interventions to recommend or counsel on OTC product</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug Information Requests</td>
<td>10</td>
<td></td>
<td>X. Drug Information Request Form</td>
<td></td>
</tr>
</tbody>
</table>

**Other**

- New Drug presentations to staff
- Pharmacist Newsletter
- Patient Newsletter
- Blood Pressure Screening
- Asthma Patient Education
- Antibiotic Call-back program
- Metered Dose Inhaler Training
- Poison Prevention Programs
- Discussion of Therapeutic Topics
- Grand Rounds
- Community Presentations

All forms associated with required activities should be turned in to the Division of Experiential Education by the student with the evaluation form and this checklist.

* Other suggested activities are assigned at the preceptor’s discretion or completed in conjunction with corporate objectives. Have student attach a brief description of their role in these optional activities.