

## RESEARCH

# A Curriculum Crosswalk of the Core Entrustable Professional Activities for New Pharmacy Graduates

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**Objective.** To cross reference the core entrustable professional activities (EPAs) to a complete set of educational guidance documents for the Doctor of Pharmacy (PharmD) curriculum to create a map for pharmacy educators.

**Methods.** The Mapping EPAs Task Force consisted of nine members who first worked independently and then together in small working groups to map five assigned educational guidance documents (eg, Center for the Advancement of Pharmacy Education [CAPE] Outcomes, Accreditation Council for Pharmacy Education [ACPE] Standards 1-4, and the Essential Elements for Core Advanced Pharmacy Practice Experiences [APPEs]) to the Core Entrustable Professional Activities for New Pharmacy Graduates. Four working groups completed the mapping process during phases 1 and 2, which was followed by an independent quality assurance review and consensus in phase 3.

**Results.** All 15 core EPA statements were mapped to one or more of the educational documents. One item from the CAPE Outcomes could not be mapped to a core EPA statement. The first five EPA statements mapped directly to the five elements of the Pharmacists' Patient Care Process: collect, assess, plan, implement, and follow-up: monitor and evaluate.

**Conclusion.** This comprehensive EPA map is the first curriculum crosswalk that encompasses a complete set of educational guidance documents including the Essential Elements for Core APPEs for the Doctor of Pharmacy curriculum. If adopted by the Academy, this curriculum crosswalk will provide pharmacy schools with a common interpretation of important educational guidance documents; serve as the foundation for curricular development, revision, and assessment; and ensure student pharmacists are prepared to enter the pharmacy profession.

**Keywords:** Entrustable Professional Activities, Curricular Mapping for Experiential Education, Center for the Advancement of Pharmacy Education Outcomes, Pharmacists' Patient Care Process, Advanced Pharmacy Practice Experience Essential Elements

## INTRODUCTION

The term *entrustable professional activities* (EPAs) has been used in medicine and other health professions to

describe professional tasks that represent a core set of responsibilities learners should be able to perform at a sufficient level of competence prior to entering the profession.<sup>1,2</sup> The Academic Affairs Standing Committee of the American Association of Colleges of Pharmacy (AACP) proposed core entrustable professional activities for new pharmacy graduates in 2017.<sup>3</sup> Six domains and 15 EPAs were identified for schools and colleges of

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pharmacy to teach in the didactic and introductory pharmacy practice experience (IPPE) curriculum as well as in the advanced pharmacy practice experience (APPE) curriculum. Fourth-year pharmacy students' ability to perform these professional tasks and achieve a sufficient level of entrustment ensures they will enter the profession with a core set of knowledge, skills, and attitudes.<sup>4-8</sup> As the role of the pharmacist continues to expand from product-focused to patient-focused services, entry-level pharmacists must demonstrate competency across the spectrum of pharmacists' responsibilities to ensure positive patient care outcomes.

Building upon the Accreditation Council for Pharmacy Education (ACPE) Standards 2016, Center for the Advancement of Pharmacy Education (CAPE) Educational Outcomes 2013, the Pharmacists' Patient Care Process (PPCP), and the North American Pharmacist Licensure Examination (NAPLEX) Competency Statements (Blueprint), the EPAs seek to operationalize educational outcomes to ensure graduates are practice and team ready.<sup>9-12</sup> More recently, the AACP Experiential Education Section Task Force on Essential Elements for Core APPEs (Common Core Task Force) developed a set of practice activities and skills for the core APPEs intended to guide colleges and schools of pharmacy in performing quality assurance across experiential practice sites. Demonstrating the connections between these five educational guidance documents can assist pharmacy programs with curricular design and assessment of student learning.<sup>13</sup> The goal of the AACP Experiential Education Section's 2017-2019 Mapping EPAs Task Force Report was to provide a curriculum crosswalk of available professional and educational outcomes in order to facilitate curricular planning and mapping at individual schools and colleges of pharmacy.

## **METHODS**

The charges for the Mapping EPAs Task Force were to collaborate with the Essential Elements for Core APPEs Task Force to obtain the in-progress Essential Elements for Hospital/Health System Pharmacy APPE, and to map the EPAs to these pharmacy education guidance documents: ACPE Standards 1-4 and Pre-APPE domains, CAPE Outcomes, Essential Elements for Core Required APPEs, the PPCP, and NAPLEX Blueprint. At the time, the Essential Elements for Core APPEs Task Force and the Mapping EPAs Task Force were completing their work in parallel. The essential elements for the core APPEs were developed for acute care, ambulatory care, and community APPEs. The essential elements for the hospital/health-system APPE were not finalized when the Mapping EPAs Task Force was convened; therefore,

they were not included in the initial EPA curriculum crosswalk. The essential elements for the hospital/health-system APPEs were finalized in July 2019 and added to the final map thereafter. Institutional review board exemption for this nonhuman subjects research was obtained from all institutions for all investigators.

Two task force members with prior experience mapping EPAs shared program-specific documents to serve as a foundation for the task force's work. Published data, albeit limited, was referred to as well; however, published data were only used to orient the task force to the EPA mapping process.<sup>3,13</sup> The task force initially communicated in October 2017 and developed a mapping philosophy. The task force elected not to reference previous work or published data during the mapping process. The ACPE Standards 2016 were mapped to the level of the 15 key elements; the CAPE Outcomes were mapped to the level of the 15 subdomains and not to the level of the examples of learning objectives. The task force held seven 1-hour meetings via Webex (Cisco, Milpatas, CA) through June 2018. The task force reconvened in August 2019 to incorporate the Essential Elements for Core APPEs for the hospital/health-system APPE.

The task force consisted of nine members. Mapping was divided into three phases (Table 1). During mapping phase 1, the task force divided into four working groups: three groups of two members and one group of three members. During phase 1, the nine members worked independently to map assigned guidance document(s) to the EPAs. Once the individual mapping was complete, each working group compared their mapping and came to a consensus. However, they did not discuss their results with other groups. The working groups were then assigned different guidance documents to map during phase 2. The task force met as a group after phase 2 to compare and validate the work from phases 1 and 2. All members discussed each document, compared, debated, and came to consensus on the EPA map for Phase 2. During phase 3, each member worked independently reviewing each map for all educational guidance documents for a final quality assurance review. The task force met one last time to discuss and compare all maps and establish a final mapping consensus for phase 3. The content of this curriculum crosswalk reflects original work.

## **RESULTS**

The Mapping EPAs Task Force successfully mapped all 15 core EPA statements to the five educational guidance documents: ACPE Standards 1-4 Key Elements, APPE Essential Elements, CAPE Outcomes 2013, the PPCP, and NAPLEX Blueprint (Table 2). All EPAs were

Table 1. Process Used to Map the Core Entrustable Professional Activities to Key Educational Guidance Documents Used in Pharmacy Education

	<b>Working Group 1</b>	<b>Working Group 2</b>	<b>Working Group 3</b>	<b>Working Group 4</b>
Phase 1	APPE Essential Elements (Acute care, ambulatory and community)	ACPE Standards	PPCP	CAPE Outcomes and NAPLEX Blueprint
Phase 2	CAPE Outcomes and NAPLEX Blueprint	APPE Essential Elements (Acute care, ambulatory and community)	ACPE Standards	PPCP
Phase 3	Quality Assurance: All task force members individually reviewed the entire map and all educational guidance documents Final Additions and Approval: All task force members added and reviewed APPE Essential Elements (Hospital/Health-Systems) and approved final map.			

Abbreviations: APPE=advanced pharmacy practice experiences, ACPE=Accreditation Council for Pharmacy Education, PPCP=Pharmacists' Patient Care Process, CAPE=Center for the Advancement of Pharmacy Education, NAPLEX=North American Pharmacist Licensure Examination

mapped to one or more components of the educational documents. For 13 core EPA statements, each of the five documents were addressed via mapping. For two core EPA statements, gaps were identified. In the Practice Manager Domain, the EPA statement, "Oversee the pharmacy operations for an assigned work shift," could not be mapped to the Pharmacists' Patient Care Process. Also, in the Self-Developer Domain, the EPA statement, "Create a written plan for continuous professional development," could not be mapped to APPE Core Elements, NAPLEX Blueprint, or the PPCP. The CAPE Educational Outcomes 2013, Domain 4, Outcome 4.3, "Innovation and Entrepreneurship," could not be mapped to an EPA. The first five core EPAs were mapped directly to the five elements of the PPCP: collect, assess, plan, implement, and follow-up: monitor and evaluate.

## DISCUSSION

During the last decade, significant attention within academia has shifted toward student pharmacist competency-based education and programmatic assessment to ensure practice readiness of pharmacy graduates. Current pharmacy education guidance documents, while intended to guide curricular design and assessment, may cause confusion for educators and students. Confusion often arises from inconsistent language used within the many published guidance documents and lack of a well-defined connection among them. The EPAs evolved from previously established guidance documents that provided a clearer framework to communicate and operationalize the assessment of essential learning outcomes in preparation for APPEs and entry-level practice.<sup>4</sup>

After the 2017-2019 Mapping EPAs Task Force concluded its work, the previously published 2016-2017 Academic Affairs Committee map was reviewed.<sup>3</sup>

Several differences were identified, specifically with respect to how EPAs were mapped to the PPCP. The 2017-2019 Task Force interpreted the steps in the PPCP in a literal sense, recognizing that although all the steps are integrated, each step serves its individual role in the process. First, the population health promoter domain includes the EPA "Identify patients at risk for prevalent diseases in a population." The 2017-2019 Task Force mapped this EPA to PPCP "collect" and "assess," while the 2016-2017 Committee only mapped the EPA to "collect." Assessment is part of the process of identifying patients at risk for prevalent diseases, and the 2017-2019 Task Force agreed that this step was applicable to map. Second, the information master domain includes the EPA, "Educate patients and professional colleagues regarding the appropriate use of medications." The 2017-2019 Task Force mapped this EPA to the "implement" and "follow up" steps, while the 2016-2017 Committee mapped it to all of the PPCP steps except "collect."

The 2017-2019 Task Force interpreted the PPCP as a purely patient care-focused process. The skills used in the PPCP, however, can be transferrable to non-patient care situations and may explain the following differences in the mapping. As such, the 2017-2019 Mapping EPAs Task Force did not map the practice manager domain EPA "Oversee the pharmacy operations for an assigned work shift" to any steps of the PPCP, while the 2016-2017 Academic Affairs Committee mapped this EPA to all the steps of the PPCP except "collect." The 2017-2019 Task Force did not directly connect the PPCP to performing pharmacy operations which tend to focus primarily on administrative processes, such as managing pharmacy technicians, pharmacy workflow, and the drug distribution process. Additionally, the 2017-2019 Mapping EPAs Task Force did not map the self-developer domain EPA

Table 2. Curriculum Crosswalk of the Core Entrustable Professional Activities to Key Educational Guidance Documents Used in Pharmacy Education

EPA Patient Care Provider	ACPE Standards	CAPE	APPE Core Elements	NAPLEX	PPCP
Domain					
Collect information to identify a patient's medication-related problems and health-related needs.	1.1 Foundational Knowledge 2.1 Patient-centered care	1.1 Learner 2.1 Patient-centered care	PPC2 Efficiently and appropriately optimize patient-specific outcomes for acute care patients using the Pharmacist Patient Care Process.	1.1.0 Obtain, interpret, assess, and/or evaluate...	Collect
Analyze information to determine the effects of medication therapy, identify medication-related problems, and prioritize health related needs.	1.1 Foundational knowledge 2.1 Patient-centered care 3.1 Problem solving	1.1 Learner 2.1 Patient-centered care 3.1 Problem solving	PPC1 Demonstrate appropriate depth and breadth of pharmacotherapeutics and disease-related knowledge for a variety of common conditions seen in adult acute care patients. PPC2 Efficiently and appropriately optimize patient-specific outcomes for acute care patients using the Pharmacist Patient Care Process.	1.1.0 Obtain, interpret, assess, and/or evaluate...	Assess
Establish patient-centered goals and create a care plan for a patient in collaboration with the patient, caregiver(s), and other health professionals that is evidence based and cost-effective.	1.1 Foundational knowledge 2.1 Patient-centered care 3.1 Problem solving 3.3 Patient advocacy 3.4 Interprofessional collaboration 3.5 Cultural sensitivity 3.6 Communication	1.1 Learner 2.1 Patient-centered care 3.1 Problem solving 3.3 Patient advocacy 3.4 Interprofessional collaboration 3.5 Cultural sensitivity 3.6 Communication	PPC2 Efficiently and appropriately optimize patient-specific outcomes for acute care patients using the Pharmacist Patient Care Process. IPC1 Actively contribute as a member of an interprofessional healthcare team. EBM1 Apply evidence-based medicine practices to demonstrate knowledge of information applicable to acute care medicine.	1.2.0 Develop and implement individual treatment plans, taking into consideration... 1.4.0 Techniques for Effective Communication/ Documentation of the Development, Implementation, and Assessment of Individualized Treatment Plans	Plan
Implement a care plan in collaboration with the patient, caregivers, and other health professionals.	2.1 Patient-centered care 3.1 Problem solving 3.2 Education 3.4 Interprofessional collaboration 3.6 Communication	2.1 Patient-centered care 3.1 Problem solving 3.2 Educator 3.4 Interprofessional collaboration 3.6 Communication	PPC2 Efficiently and appropriately optimize patient specific outcomes for acute care patients using the PPCP. PPC3 Accurately prioritize multiple patient care responsibilities/need in times of high activity and workload. C&E1 Document patient care activities clearly and concisely to reflect the PPCP in the appropriate site-specific health record systems. C&E3 Perform patient-centered medication education. C&E4 Adjust communication style, techniques, and language in response to patient-specific needs and individual social determinants of health. IPC1 Actively contribute as a member of an interprofessional healthcare team. PSR1 Perform institutional procedures and apply best practices to ensure continuity of care for patients transitioning across healthcare settings.	1.2.0 Develop and implement individual treatment plans, taking into consideration 1.4.0 Techniques for Effective Communication/ Documentation of the Development, Implementation, and Assessment of Individualized Treatment Plans	Implement
Follow-up and monitor a care plan.	2.1 Patient-centered care 3.1 Problem solving 3.4 Interprofessional collaboration 3.6 Communication	2.1 Patient-centered care 3.1 Problem solving 3.4 Interprofessional collaboration 3.6 Communication	PPC2 Efficiently and appropriately optimize patient-specific outcomes for acute care patients using the Pharmacist Patient Care Process. PPC3 Accurately prioritize multiple patient care responsibilities/needs in times of high activity and workload.	1.3.0 Assess and modify individualized treatment plans, considering...	Follow-up

(Continued)

Table 2. (Continued)

EPA Patient Care Provider Domain	ACPE Standards	CAPE	APPE Core Elements	NAPLEX	PPCP
<b>Interprofessional Team Member Domain</b> Collaborate as a member of an interprofessional team.	2.1 Patient-centered care 3.4 Interprofessional collaboration 3.6 Communication	2.1 Patient centered care 3.4 Interprofessional collaboration 3.6 Communication	C&E2 Educate healthcare team members on pharmacy topics relevant to their roles and practice. IPC1 Actively contribute as a member of an interprofessional healthcare team	1.4.0 Techniques for Effective Communication/ documentation of the development, implementation, and assessment of individualized treatment plans	Collect, Assess, Plan, Implement and Follow Up
<b>Population Health Promoter Domain</b> Identify patients at risk for prevalent diseases in a population.	2.4 Population-based care 3.3 Patient advocacy	2.4 Population-based care 3.3 Patient advocacy	C&E4 Adjust communication style, techniques, and language in response to patient-specific needs and individual social determinants of health. EBM1 Apply evidence-based medicine practices to demonstrate knowledge of information applicable to acute care medicine. PH1 Provide patients with health and wellness strategies including provision of community screening and education services when indicated.	1.5.0 Advocate individual and population-based health and safety, considering...	Collect, Assess
Minimize adverse drug events and medication errors.	2.2 Medication use systems management 2.3 Health and wellness 3.3 Patient advocacy	2.2 Medication use systems management 2.3 Health and wellness 3.3 Patient advocacy	PPC2 Efficiently and appropriately optimize patient-specific outcomes for acute care patients using the Pharmacist Patient Care Process. C&E3 Perform patient-centered medication education. C&E4 Adjust communication style, techniques, and language in response to patient-specific needs and individual social determinants of health. PSR1 Perform institutional procedures and apply best practices to ensure continuity of care for patients transitioning across healthcare settings.	1.5.0 Advocate individual and population-based health and safety, considering...	Collect, Assess, Plan, Implement and Follow Up
Maximize the appropriate use of medications in a population.	2.2 Medication use systems management 2.3 Health and wellness 2.4 Population-based care 3.3 Patient advocacy 3.5 Cultural sensitivity	2.2 Medication use systems management 2.3 Health and wellness 2.4 Population-based care 3.3 Patient advocacy 3.5 Cultural sensitivity	PPC2 Efficiently and appropriately optimize patient-specific outcomes for acute care patients using the Pharmacist Patient Care Process. C&E3 Perform patient-centered medication education. C&E4 Adjust communication style, techniques, and language in response to patient-specific needs and individual social determinants of health. EBM1 Apply evidence-based medicine practices to demonstrate knowledge of information applicable to acute care medicine.	1.5.0 Advocate individual and population-based health and safety, considering...	Collect, Assess, Plan, Implement and Follow Up
Ensure that patients have been immunized against vaccine-preventable diseases.	2.3 Health and wellness 3.3 Patient advocacy	2.3 Health and wellness 3.3 Patient advocacy	PH1 Provide patients with health and wellness strategies including provision of community screening and education services when indicated.	1.5.0 Advocate individual and population-based health and safety, considering...	Collect, Assess, Plan, Implement and Follow Up
<b>Information Master Domain</b> Educate patients and professional colleagues regarding the appropriate use of medications.	3.2 Education 3.3 Patient advocacy 3.6 Communication	3.2 Educator 3.3 Patient advocacy 3.6 Communication	PPC1 Demonstrate appropriate depth and breadth of pharmacotherapeutics and disease-related knowledge for a variety of common conditions seen in adult acute care patients. C&E2 Educate healthcare team members on pharmacy topics relevant to their roles and practice. C&E3 Perform patient-centered medication education. C&E4 Adjust communication style, techniques, and language in response to patient-specific needs and individual social determinants of health.	1.4.0 Techniques for Effective Communication/ Documentation of the Development, and Implementation, and Assessment of Individualized Treatment Plans	Implement, Follow up

(Continued)

Table 2. (Continued)

EPA Patient Care Provider Domain	ACPE Standards	CAPE	APPE Core Elements	NAPLEX	PPCP
Use evidence-based information to advance patient care.	1.1 Foundational knowledge 2.1 Patient-centered care 2.2 Medication use systems management 2.4 Population-based care	1.1 Learner 2.1 Patient-centered care 2.2 Medication use systems management 2.4 Population-based care	EBM1 Apply evidence-based medicine practices to demonstrate knowledge of information applicable to acute care medicine.	1.2.0 Develop and implement individual treatment plans, taking into consideration...	Collect, Assess, Plan, Implement and Follow up
<b>Practice Manager Domain</b> Oversee the pharmacy operations for an assigned work shift.	2.2. Medication use systems management 3.1 Problem solving 3.6. Communication 4.2 Leadership	2.2. Medication use systems management 3.1. Problem solving 3.6 Communication 4.2 Leadership	PPC3 Accurately prioritize multiple patient care responsibilities/need in times of high activity and workload. PM1 Demonstrate the role of a pharmacist in managing legal, human, and financial, technologies and/or physical resources for day to day operations in the pharmacy. PM1 Oversee the workflow of the dispensing process. PM2 Participate in continuous quality improvement techniques to optimize the medication use process. D&S 3. Respond appropriately to basic drug procurement issues using site protocol(s).	2.1.0 Employ various techniques to calculate 2.2.0 Compound sterile and non-sterile products 2.3.0 Review, dispense, and administer drugs and drug products	N/A
Fulfill a medication order.	2.2. Medication use systems management	2.2. Medication use systems management	PPCP4 Apply pharmacokinetic dosing principles for a variety of commonly used drugs to determine the correct dose. D&S1 Accurately verify new medication orders. D&S2 Use a computerized pharmacy management system and best practices related to safe medication use in distribution of medications to patients. D&S 2. Ensure the accurate preparation of medication orders. D&S 3. Respond appropriately to basic drug procurement issues using site protocol(s). D&S 4. Perform IV admixture.	2.1.0 Employ various techniques to calculate 2.2.0 Compound sterile and nonsterile products 2.3.0 Review, dispense, and administer drugs and drug products	Implement
<b>Self-Developer Domain</b> Create a written plan for continuous professional development.	4.1 Self awareness 4.2 Leadership 4.4 Professionalism	4.1 Self-awareness 4.2 Leadership 4.4 Professionalism	N/A	N/A	N/A

1 Includes the essential elements for Acute Care, Ambulatory Care, Community, and Hospital/Health-System APPEs

2 Abbreviations: EPA = Entrustable Professional Activities, ACPE = Accreditation Council for Pharmacy Education, CAPE = Center for the Advancement of Pharmacy Education,

3 APPE = Advanced Pharmacy Practice Experiences, NAPLEX = North American Pharmacist Licensure Examination, PPCP = Pharmacists'

4 Patient Care Process, PPC = Pharmacist Patient Care, IPC = Interprofessional Collaboration, EBM = Evidence Based Medicine, C&amp;E = Communication and Education, PSR = Practice-

Specific Responsibilities,

5 PH = Population Health, PM = Practice Management, D&amp;S = Dispensing System and Safety Management

“Create a written plan for continuous professional development” to the PPCP, while the 2016-2017 Academic Affairs Committee mapped this EPA to all five steps of the PPCP. Creating a written plan for continuous professional development applies to individuals who may be pursuing leadership development, career advancement, or administrative initiatives that do not connect directly to the PPCP.

The 2017-2019 Mapping EPAs Task Force identified several strengths and limitations of the mapping process. The EPA mapping process was organized, systematic, and consensus-driven. All task force members had equal involvement in creating and approving the final map. Previously published curriculum maps served only as a guide for the mapping process and did not influence the final curriculum crosswalk. The EPAs were mapped to the CAPE Outcome sub-domains and not further down to the learning examples. The example learning objectives provided for each sub-domain are not meant to be prescriptive. Instead, they are intended to be used to meet mission-specific goals of individual institutions. This curriculum crosswalk is the only document that maps the Essential Elements for Core APPEs to the EPAs and the other guidance documents.

Limitations to this study include the task force members having different interpretations of and philosophy regarding the mapping process, particularly with respect to the PPCP. The Mapping EPAs Task Force was charged with mapping EPAs to education guidance documents used in the United States and did not include global education standards. A similar mapping process as described in this report could be applied to the International Pharmaceutical Federation Global Competency Framework and other related global standards. This curriculum crosswalk represents the thoughts and opinions of the EPA Task Force members and was not vetted nor approved by AACP nor the AACP Experiential Education Section.

## CONCLUSION

This curriculum crosswalk is the first comprehensive document that encompasses the Essential Elements for Core APPEs from AACP’s Experiential Education Section Task Force and all other pharmacy education guidance documents. It maps out the necessary connections among the educational guidance documents so that the EPAs may better serve as a foundation for schools and

colleges of pharmacy to use in curricular development and assessment.

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