COMMENTARY

The Need for Quality Assessment of Entrustable Professional Activities in Pharmacy Education

Abigail T. Elmes, PharmD,[a] Ara Tekian, PhD, [b] Jennie B. Jarrett, PharmD, MMedEd [a]

[a] University of Illinois Chicago, College of Pharmacy, Chicago, Illinois
[b] University of Illinois Chicago, College of Medicine, Chicago, Illinois

Corresponding Author: Abigail T. Elmes, University of Illinois Chicago, College of Pharmacy, 833 S. Wood St., Chicago, IL 60612. Tel: 312-355-4889. Email: aelmes2@uic.edu

Entrustable professional activities (EPAs) are specific tasks that a professional is entrusted to perform autonomously and, together, define the scope of a profession. There are specific attributes that a task must possess both structurally and conceptually to be classified as an EPA. A high-quality EPA must be an observable, measurable, and professional task that requires training to execute, is fit for entrustment, and can be performed independently. In 2017, the American Association of Colleges of Pharmacy (AACP) defined 15 Core EPAs expected of a pharmacy learner upon graduation (Core EPAs). Despite acceptance and implementation by pharmacy schools across the country, the Core EPAs have not been evaluated using an objective assessment tool to ensure that they meet specific EPA quality standards outlined in the literature. This article describes existing objective assessment tools for EPA quality and highlights the importance of high-quality EPAs in pharmacy education, which would be an important step for the AACP Academic Affairs Committee to utilize to further develop EPAs for implementation.
Keywords: entrustable professional activities, EPA, competency-based education, quality assessment

INTRODUCTION

Entrustable professional activities (EPAs) are specific tasks that a professional is entrusted to perform autonomously and, together, define the scope of a profession.[1] EPAs were proposed as a means to operationalize competency-based education, a curricular model defining learner outcomes using competencies, the components of a professional synthesizing a compilation of knowledge, skills, and attitudes.[1,2] Competencies describe the abilities of learners while EPAs describe units of work. A learner's EPA performance should be assessed using an entrustment-supervision scale that asks the evaluator to indicate the amount of entrustment and supervision they provided a learner performing an EPA.[3] EPAs should be mapped to the competencies most important to their execution, allowing the educator to infer proficiency in those competencies when the learner achieves complete entrustment for an EPA.[4]

There are specific attributes, outlined in the literature, that a task must possess both structurally and conceptually to be classified as an EPA.[2] A high-quality EPA must be an observable, measurable, and professional task that requires training to execute, is fit for entrustment, and can be performed independently.[2] EPAs should avoid descriptions of learners and focus only on the task. Usually, an EPA incorporates one or more competencies. Therefore, an EPA's execution should require proficiency in multiple competency domains.

Pharmacy education utilizes a competency-based approach with the Accreditation Council for Pharmacy Education (ACPE) Standards 2016 employing competency-based objectives to define learner outcomes.[4] In 2017, the American Association of Colleges of Pharmacy (AACP) defined 15 core EPAs, outlined in Table 1, categorized into 6 pharmacy practice domains, that a pharmacy graduate must be able to perform without direct supervision upon graduation (Core EPAs).[4] They have been linked to several educational outcome frameworks like the ACPE Standards 2016, the Center for the Advancement of Pharmacy Education (CAPE) Educational Outcomes 2013, the Joint Commission for Pharmacist Practitioners (JCPP) Pharmacists' Patient Care Process, among others.[5,6] In their implementation roadmap, the 2016-17 AACP Academic Affairs Committee recommended that graduates be able to perform the EPA with indirect supervision, but encouraged pharmacy schools to set individual standards for achievement and supplement the Core EPAs with additional EPAs as necessary to meet the institution's goals.[5] Pharmacy schools across the country have integrated the EPAs into curricula to develop instruments to assess practice readiness, create tools to assess experiential student performance, and blueprint objective structured clinical examinations (OSCEs), among others.[3,7–9] Notably, the 2021-22 AACP Academic Affairs Committee is charged with the responsibility of revising the Core EPA statements.[10]

Despite their implementation, the Core EPAs have not been evaluated to ensure they meet the specific extant quality standards outlined by ten Cate. The objective of this review is to highlight the importance of high-quality EPAs in pharmacy education and describe existing objective assessment tools to determine EPA quality for implementation.

Importance of Quality EPAs

Ensuring high-quality EPAs is essential given their patient safety roles across the pharmacy profession. EPAs clarify assessment expectations by setting a standard for reference.[5] For educators, EPAs outline professional abilities as a framework to document student progression within the program.[3] For pharmacy schools, EPAs serve as a mechanism for curriculum evaluation and improvement. For students, EPAs provide a foundation for setting goals, measuring progress, and building self-reflection skills.[4]

EPAs also define a pharmacist's value, scope of practice, and responsibilities to prospective students, regulatory policymakers, payers, interprofessional team members, patients, the public, and the media. Through reliable and high-quality EPAs, prospective students may better identify with what it means to be a pharmacist and begin to build a professional identity. Regulatory policymakers and payers may incorporate pharmacists into more clinical settings with knowledge obtained from EPAs. For the health care team, patients, the public, and the media, the pharmacist's role can be better defined as the medication expert rather than solely in a dispensing role.[5] Pharmacy organizations can align their visions utilizing EPAs thereby strengthening their communication, collaboration, and professional advocacy ability. Finally, revisions to existing EPAs can communicate changes in pharmacy practice within the profession.[5]

With their multifaceted role in curricular design, assessment standards, and representation to stakeholders, it is critical that EPAs be of high-quality to ensure that new graduates can perform the tasks of a pharmacist that contribute to patient safety and improve patient outcomes. New graduates may be unable to perform the actual duties of the profession if they have been assessed using poor-quality EPAs. Misrepresentations of pharmacy practice to stakeholders may also result, deemphasizing pharmacists' abilities and importance in health care.

EPA Quality Assessment Tools

Two assessment tools have been developed to assess EPA quality, the Quality of EPA (QUEPA) tool and the Queen's EPA Quality (EQual) rubric.[11,12] Characteristics of each are outlined in Table 2. To develop the QUEPA tool, researchers initially identified seven domains essential to EPA quality: Focus, Observable, Clear Intention, Realistic, Articulates Trustworthiness, Generalizable Across Rotations, and Integrates Multiple Competencies. Three items were created for each domain utilizing a 5-point Likert scale. After pilot testing, Clear Intention and Articulates Trustworthiness were removed due to low interrater reliability, leaving five essential EPA domains. These domains were then reduced to 4 distinct "factors" in the final 15-item instrument: Realistic and Generalizable, Observable, Focused, and Multiple Competencies. The development team applied the QUEPA tool to a series of established EPAs and identified multiple sources of validity evidence under content, internal structure, and criterion validity.[11]

There are challenges to the use of the QUEPA tool. The QUEPA tool has been criticized for excluding two of the original seven domains, Clear Intention and Articulates Trustworthiness, initially identified as vital to EPA quality simply due to poor interrater reliability.[13] Further, the application of the QUEPA tool to established EPAs by the developers themselves likely resulted in the high interrater reliability exhibited by the rest of the domains because users did not need to be trained for implementation. Moreover, the QUEPA tool does not provide user training resources, thus application, analysis, and interpretation of results by users outside of the development team may be inaccurate. Finally, the QUEPA tool does not provide pre-defined cut scores for acceptability of an EPA's quality, limiting its utility and interpretation.

To address these critiques, the EQual rubric was created. It identifies 3 essential domains of EPAs: discrete units of work, entrustable and essential tasks of the profession, and having a curricular role.[12] The criterion-based EQual rubric utilizes 5-point scales with specific, descriptive anchors. During development, the EQual rubric was applied to 31 EPAs under revision for medical residents by a team of clinicians and non-clinician support staff separate from the development team. The EQual rubric's results were compared to independent revisions made to these medical EPAs to demonstrate validity.[12]

The EQual rubric offers numerous solutions to some of the QUEPA tool's limitations. A user training video is available to orient the user to the instrument producing more reliable, consistent results. Additionally, the authors defined overall and domain-specific cut scores, above which an EPA is deemed to have acceptable EPA quality.[14] Still, generalizability limitations remain for EQual rubric application as it was created utilizing EPAs for post-graduate medical education. Some rubric items demonstrated low interrater reliability. However, developers attributed this not to the tool itself, but rather the idea that some EPA constructs are challenging to quantify and may be better assessed by means other than an EPA.[12] There are no published studies directly comparing the QUEPA tool to the EQual rubric.

Both assessment tools have been used to improve the development and evaluation of EPAs in other specialties. The American Society for Apheresis Graduate Medical Education (ASAGME) utilized the QUEPA tool during the development of 28 activities related to the Accreditation Council for Graduate Medical Education milestones and competencies. ASAGME defined their own acceptability cut scores by consensus given the lack of pre-defined cut scores under the QUEPA tool framework. The most common reason for unacceptability was being unobservable, followed by unrealistic, not generalizable, and/or did not address multiple competencies. ASAGME utilized the results to revise their activities to ensure that their final distribution list included high-quality EPAs.[15]

The EQual rubric has been utilized in both nursing and medical education to assess EPA quality.[14,16] For example, Meyer and colleagues utilized the EQual rubric to evaluate the 13 Core EPAs for Entering Residency developed by the Association of American Medical Colleges (AAMC) for undergraduate medical education.[14] EPA content experts applied the EQual rubric to each AAMC Core EPA and offered recommendations for revision. Four of the thirteen EPAs did not meet overall acceptability criteria, three of which did not meet the cut score for at least two EPA domains. One EPA did not meet acceptability criteria under the discrete unit of work domain, despite having an overall score above the acceptable value. Overall, this study reinforced the importance of evaluating the quality of EPAs prior to implementing them into a curriculum.[14]

Given the successful delivery of the EQual rubric on numerous limitations and problems with the QUEPA tool, the EQual rubric is the superior EPA quality assessment method.

Evaluating the Quality of the Core EPAs

Despite the availability of EPA quality assessment tools, there are no published studies evaluating the Core EPAs for pharmacy education utilizing an objective assessment tool like the QUEPA tool or EQual rubric. However, Haines and colleagues used a QUEPA tool-based questionnaire to evaluate the face validity of the Core EPAs.[17] In this study, pharmacist preceptors assessed each Core EPA for both pertinence to pharmacy practice and whether a pharmacist is expected to perform the activity. Each Core EPA demonstrated high levels of agreement regardless of respondent training level, institution, or geographic region. This level of agreement was likely a result of the extensive Core EPA development process, including input from several pharmacy organizations. Preceptors exhibited a similar level of agreement when asked whether the EPA is focused, observable, transferable to multiple settings, and integrates multiple competencies.[17]

Despite being frequently mentioned in the literature, face validity has been widely criticized for being misleading and having little meaning to scientific validity evidence.[18] Establishing an EPA's relevance does not necessarily imply that the EPA measures what it is intended to measure or at a high quality. Face validity does not add to the understanding of assessment data due to its potential association with marketing or educational politics.[18] Validity frameworks utilize various sources to better establish evidence for validity.[19] For example, Messick's framework identifies sources under content, response process, internal structure, relationships with other variables, and consequences.[19] One source of validity evidence for the Core EPAs could originate in evaluating their quality by utilizing an assessment tool like the EQual rubric. No such literature currently exists. Quality assessment is a critical step to ensure evidence-based revisions of the Core EPA statements to ensure they meet the extant EPA standards: discrete tasks, observable, entrusted to someone in the profession, and guide curricular efforts. This should be considered as an important component of the work by the AACP Academic Affairs Committee to establish integration of workplace-based assessments within a competency-based educational model.

CONCLUSION

The QUEPA tool and the EQual rubric are objective assessment tools that have been utilized to assess the quality of EPAs in other health professions education. While there is no universal agreement regarding which tool is preferred, the EQual rubric provides a higher quality assessment of EPAs for valid development and reliable outcomes of pharmacists upon graduation. More importantly, quality assessment results should be used to direct EPA revisions and should be quickly considered by the Academy and specifically the AACP Academic Affairs Committee in the execution of their work developing frameworks for competency-based education in pharmacy. Ensuring high-quality EPAs within pharmacy education is an important mitigating factor and supportive of the ongoing pharmacy practice evolution.

REFERENCES

1. ten Cate O, Scheele F. Viewpoint: competency-based postgraduate training: can we bridge the gap between theory and clinical practice? *Acad Med*. 2007;82(6):542-547. doi:10.1097/ACM.0b013e31805559c7
2. ten Cate O. Nuts and bolts of entrustable professional activities. *J Grad Med Educ*. 2013;5(1):157-158. doi:10.4300/JGME-D-12-00380.1
3. Pittenger AL, Chapman SA, Frail CK, Moon JY, Undeberg MR, Orzoff JH. Entrustable professional activities for pharmacy practice. *Am J Pharm Educ*. 2016;80(4). doi:10.5688/ajpe80457
4. Jarrett JB, Berenbrok LA, Goliak KL, Meyer SM, Shaughnessy AF. Entrustable professional activities as a novel framework for pharmacy education. *Am J Pharm Educ*. 2018;82(5):6256. doi:10.5688/ajpe6256
5. Pittenger AL, Copeland DA, Lacroix MM, et al. Report of the 2016-17 Academic Affairs Standing Committee: entrustable professional activities implementation roadmap. *Am J Pharm Educ*. 2017;81(5):S4. doi:10.5688/ajpe815S4
6. Kanmaz TJ, Culhane NS, Berenbrok LA, et al. A curriculum crosswalk of the core entrustable professional activities for new pharmacy graduates. *Am J Pharm Educ*. 2020;84(11). doi:10.5688/ajpe8077
7. Marshall LL, Kinsey J, Nykamp D, Momary K. Evaluating practice readiness of advanced pharmacy practice experience students using the core entrustable professional activities. *Am J Pharm Educ*. 2020;84(10). doi:10.5688/ajpe7853
8. Curtis S, Smith KJ, Taylor J. Implementation of objective structured clinical examinations (OSCEs) in a doctor of pharmacy program. *Curr Pharm Teach Learn*. 2019;11(8):832-837. doi:10.1016/j.cptl.2019.04.011
9. Jarrett JB, Goliak KL, Haines S, Trolli E, Schwartz A. Development of an entrustment-supervision assessment tool for pharmacy experiential education via sequential stakeholder focus groups. *Am J Pharm Educ*. 2021;85(8). doi:10.5688/ajpe8523
10. American Association of Colleges of Pharmacy. AACP Committees. Accessed January 21, 2022. https://www.aacp.org/article/aacp-committees
11. Post JA, Wittich CM, Thomas KG, et al. Rating the quality of entrustable professional activities: content validation and associations with the clinical context. *J Gen Intern Med*. 2016;31(5):518-523. doi:10.1007/s11606-016-3611-8
12. Taylor DR, Park YS, Egan R, et al. EQual, a novel rubric to evaluate entrustable professional activities for quality and structure. *Acad Med*. 2017;92:S110-S117.
13. Monteiro SD. Capsule commentary on Post et al., rating the quality of entrustable professional activities: content validation and associations with the clinical context. *J Gen Intern Med*. 2016;31(5):537. doi:10.1007/s11606-016-3662-x
14. Meyer EG, Taylor DR, Uijtdehaage S, Durning SJ. EQual rubric evaluation of the Association of American Medical Colleges' core entrustable professional activities for entering residency. *Acad Med*. Published online May 19, 2020. doi:10.1097/ACM.0000000000003504
15. Pagano MB, Treml A, Stephens LD, et al. Entrustable professional activities for apheresis medicine education. *Transfusion (Paris)*. Published online August 5, 2020:1-9. doi:10.1111/trf.15983
16. Lau ST, Ang E, Samarasekera DD, Shorey S. Development of undergraduate nursing entrustable professional activities to enhance clinical care and practice. *Nurse Educ Today*. 2020;87:104347. doi:10.1016/j.nedt.2020.104347
17. Haines ST, Pittenger AL, Gleason BL, Medina MS, Neely S. Validation of the entrustable professional activities for new pharmacy graduates. *Am J Health Syst Pharm*. 2018;75(23):1922-1929. doi:10.2146/ajhp170815
18. Downing SM. Face validity of assessments: faith-based interpretations or evidence-based science? *Med Educ*. 2006;40(1):7-8. doi:10.1111/j.1365-2929.2005.02361.x
19. Messick S. Validity. In: *Educational Measurement*. 3rd ed. American Council on Education and Macmillan; 1989:13-104.

Table 1. Core Entrustable Professional Activities for New Pharmacy Graduates

Domain	Entrustable Professional Activity
Patient Care Provider	Collect information to identify a patient's medication-related problems and health-related needs.
	Analyze information to determine the effects of medication therapy, identify medication-related problems, and prioritize health-related needs.
	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.
	Implement a care plan in collaboration with the patient, caregivers, and other health professionals.
	Follow-up and monitor a care plan.
Interprofessional Team Member	Collaborate as a member of an interprofessional team.
Population Health Promoter	Identify patients at risk for prevalent diseases in a population.
	Minimize adverse drug events and medication errors.
	Maximize the appropriate use of medications in a population.
	Ensure that patients have been immunized against vaccine-preventable diseases.
Information Master	Educate patients and professional colleagues regarding the appropriate use of medications.
	Use evidence-based information to advance patient care.
Practice Manager	Oversee the pharmacy operations for an assigned work shift.
	Fulfill a medication order.
Self-Developer	Create a written plan for continuous professional development.

Haines ST, Pittenger AL, Stolte SK, et al. Core entrustable professional activities for new pharmacy graduates. *Am J Pharm Educ.* 2017 Feb 25; 81(1): S2.

Table 2. Quality Assessment Tools for Entrustable Professional Activities

	QUEPA Tool	EQual Rubric
Number of items	15	14
Defined EPA domains	Realistic and generalizable Observable Focused Multiple competencies	Discrete units of work Entrustable and essential tasks of the profession Have a curricular role
Scale	5-point Likert scale	5-point scale, descriptive anchors
Cut score for acceptability	Not defined	4.07 (Overall) 4.17 (Domain 1) 4.00 (Domain 2) 4.00 (Domain 3)
Rater training resources	Not developed	Developed[*]

QUEPA=quality of entrustable professional activities; EQual=Queen's entrustable professional activity quality; EPA=entrustable professional activity
*https://www.youtube.com/watch?reload=9&v=yQZuWdzkQKM&t=314s

5