REVIEW

Pillars and Foundations of Quality for Continuing Education in Pharmacy

Dr. sc. Arijana Meštrović, MPharm,^a Michael J. Rouse, BPharm (Hons), MPS^b

^a Pharma Expert Consultancy and Education, Zagreb, Croatia

^b Accreditation Council for Pharmacy Education, Chicago, Illinois

Submitted July 30, 2013; accepted February 17, 2015; published April 25, 2015.

The past century saw spectacular gains in the breadth and depth of biomedical knowledge, but the potential of these gains has been limited by inadequate, inequitable, and inefficient translation of knowledge and skills to the health care workplace.¹ The needed transformations in education and practice will not come at the desired rate without new approaches and commitment to change from all stakeholders, including educators, practitioners, regulators, policy makers, and those responsible for assuring educational quality. Without behavioral and performance changes among practitioners that have a positive impact on practice and patient outcomes, continuing education activities will not fully achieve their desired objectives.²

INTRODUCTION

While many countries have made major changes to the way that the members of the health workforce are educated and trained before entering service, not as much attention has been given to models and approaches—including regulatory systems—that assure on-going competence and support practitioners' professional development. Not all countries have postgraduate requirements for practice (such as licensure or registration) beyond graduation from an approved educational program, nor for maintenance of licensure/registration, where applicable. Although the number is growing, few countries have national systems or structures in place to ensure the quality of continuing education (CE) activities.³ Substantial differences in requirements for pharmacist relicensure exist globally in terms of quality and quantity of CE. Even within some countries, differences exist.⁴

Uptake and implementation of the continuing professional development (CPD) model has been slow. Not all pharmacists are convinced yet of the benefits of the model, which entails more learner effort and engagement than traditional CE.⁵ Moreover, self-directed lifelong learning requires certain skills and attitudes best developed

before graduation; adult learners achieving them is likely to be more of a challenge.⁶ Factors beyond methodology also impact the outcomes and impact of learning; these include organizational, political, and regulatory constraints.

In countries that have requirements for CE or CPD, systems are credit-based or time-based, and learners are, in most cases, only required to produce evidence of participation in a specified minimum quantity of CE. Not all countries have systems or standards in place to ensure quality educational activities, and where they do exist, they largely focus on the structure and process of the educational activity. There are generally no requirements for the learner to provide rationale for participation in the activity (context; ie, relevance or identified learning need or goal), evidence of meaningful personal learning (outcomes), or changes to practice and improvements for patients (impact).⁷

Therefore, pharmacists pursuing educational activities or employers investing in employee development and directing educational efforts often rely on a subjective assessment of the quality and benefits of that education. Quality assurance systems for CE must consider real health care needs and priorities, which should be adopted at the individual, organizational, and national levels and include multidisciplinary and transnational approaches.

Challenges in pharmacy continuing education

As the need for new competencies grows, quantity but not necessarily quality educational programs increase. Pharmacists may avoid more demanding and time-intensive educational activities, given that pharmacists have cited time as a barrier to adopting the CPD approach.^{8,9} Knowledge-based activities can be delivered in a relatively shorter time, but application and practice-based activities—as defined by the Accreditation Council for Pharmacy Education (ACPE)—take longer. In recent years, knowledge-based activities have constituted more than 90% of ACPE-accredited CE activities.¹⁰ Higher quality educational activities are likely to be more complex

Corresponding Author: Arijana Meštrović, Dunjevac 2, Zagreb, Croatia, 10 000. Tel: 00-385-91-630-7116. E-mail: arijana.mestrovic@pharmaexpert.hr

but, therefore, more expensive to provide, and cost is also a barrier to participation.⁹ National organizations and universities that organize such activities may be challenged to attract enough participants. Many pharmacists pursue CE only to fulfill the requirement of collecting CE points or credits for license renewal. Sometimes they collect points despite only passive involvement, and in some cases, only declare their presence at the education sessions. Outcomes of the training and willingness to apply the learning to practice are rarely evaluated or quality assured.

Leading organizations have called for radical changes in CE models for health professionals, and CPD has been advocated as a promising model.² Continuing professional development entails lifelong active participation in learning activities that assists individuals in developing and maintaining continuing competence, in enhancing their professional practice, and in supporting achievement of their career goals.¹¹ This method is also described as a self-directed, ongoing, systematic, and outcomes-focused approach to learning and professional development.¹²

The need to expand and equip the global health workforce to meet societal needs has resulted in increased capacity in education and training. In some countries, this expansion has been achieved, but not always qualitatively. In recent years, the International Pharmaceutical Federation's Education Initiative (FIPEd) initiated and developed competency-based educational models, including programs and frameworks to evaluate and enhance the quality of education and to support countries in their own quality improvement and capacity-building initiatives.¹³ New models for self-directed lifelong learning are advocated, which, can be used to tailor, document, and evaluate individualized educational plans to develop health care professionals' competencies.¹⁴⁻¹⁶

Competency evaluation and development using the CPD approach

To optimally achieve educational goals and increase competent pharmacy practice, the current level of practitioners' competency needs to be evaluated.¹⁷ The evaluation can be done on an individual, organizational, or national level, and undertaken as self-assessment or by external assessors, peers, or national organizations. Evaluation should be objective and structured, and not based on acceptance of expected standards of conduct in principle, but on alignment of the practitioner's attitude and actual behavior in practice.¹⁸ Such an evaluation would expose possible discrepancies, omissions, and inconsistencies in pharmaceutical care and provide a framework for development of competencies using appropriate learning activities.¹⁹

An example of such an assessment tool is the *Global Competency Framework* developed by FIP. It has been validated internationally and is already in use in many countries, including Australia and in Europe. According to this model, the professional and scientific competencies of pharmacists are divided into 4 basic groups of competencies: (1) pharmaceutical care, (2) public health, (3) organization and management, and (4) professional and personal. While FIP envisions the framework primarily to be used at a national level for quality assurance or review by "external" evaluators, individual institutions could also use the framework in self-assessment and quality improvement efforts. As many countries have not yet developed national frameworks, FIP recommends these countries base the development of their frameworks on this global tool.²⁰

Many countries, however, lack the resources, expertise, and experience to effectively ensure the quality of their education and training, especially CE and CPD. Some regulatory systems—which are intended to protect the public by assuring that practitioners become and remain competent to practice—and core requirements for CE and CPD have not changed significantly in decades despite changes occurring in health care delivery and the abundance of evidence regarding suboptimal approaches to life-long learning in place.²¹⁻²³ Mandatory participation in a prescribed "quantity" of CE activities (typically a number of hours, units, or credits) is still the most common regulatory model among health professions.²⁴ Such systems, however, are at best a proxy for assurance of competence. Often, gaps exist between the classroom and the workplace.² In some cases, there is no opportunity to apply the learning to practice, so the learning cannot be sustained. Also the mandatory (ie, directed) accumulation of CE credits can lead to disengaged, dependent, and passive learners.^{25,26}

Regulatory systems are likely to address the "lowest common denominator" in terms of competence. These systems are designed to minimize the chance of harm to the patient, and not necessarily to assess performance, evaluate competencies, and support advances in practice. They encounter difficulties adequately addressing expanding and emerging scopes of practice and competence, which may be measured using objective examination and achieved through advanced or specialized education and training. As professionals, health care practitioners need to assume a greater responsibility for ensuring their own level of competence in their practice (knowledge, skills, attitudes, and values (KSAV)) associated with their professional responsibilities.²⁷ They also need to develop the skills and attitudes to self-direct lifelong learning—skills and

attitudes not all practitioners achieved in their pre-service education.

Quality criteria in continuing pharmacy education

Education and training of health professionals must be viewed and treated as a continuum by all key stakeholders, including educators, practitioners, employers, regulators, policy makers, and quality assurance (QA)/accreditation agencies. Quality assurance systems must ensure educational programs are competency-based, reflect a vision for practice and education developed through profession-wide consensus, are of high quality and appropriate, and meet the needs of the country and its people.²⁸ A CE activity must meet several quality criteria. In recent years, the main focus, with respect to quality of pharmacy education, has been on structure, process and outcomes, and the criteria included the following categories: the length of education (hours), the form of the educational activity (lectures, workshops, tests), trainers' academic qualifications and affiliations, the scientific basis of the content, active involvement of participants, and the evaluation of acquired knowledge and skills.²⁸⁻³⁰ Contemporary approaches, however, must go beyond these 3 "pillars" to include context and impact, which together reflect and address social accountability as described by Boelen and Woollard.^{31,32} A new model, adopted by FIP in the second edition of its *Global Framework for Quality Assurance of Pharmacy Education*, is based on 5 pillars and 3 foundations (Figure 1).²⁸

Countries that have adopted a CPD-oriented approach to requirements for maintaining a license, in pharmacy and other health professions, are increasingly

addressing all 5 pillars: context, structure, process, outcomes, and impact. For learners, identifying the learning context is achieved through reflection; choosing and completing formal and informal educational activities with the most appropriate structure and process is achieved through planning; assessing outcomes is achieved by evaluating what has been learned and achieved as a result of the educational activities; and impact is evaluated once the learning has been applied to practice. Figure 2 shows how the 5 pillars are aligned at each stage of the CPD cycle. The 3 competency foundations of ethics, practice, and science need to be considered at each stage. For the provider, addressing all 5 pillars is critical. Examples of how ACPE's Continuing Pharmacy Education (CPE) Provider Accreditation Standards address the 5 pillars include the following: educational activities should be planned and offered in the context of the provider's mission (Standard 1); identifying the context for learning should be achieved through systematic needs assessment and practice gap analysis (Standard 2); Standards 3 through 8 address structure and process issues; Standards 9 through 11 address outcomes; Standard 12 addresses impact. The 3 foundations of educational quality are addressed by several standards, notably, 1, 2, 3, 6, 8, and 11. A more detailed "mapping" is provided in Table 1, which highlights opportunities for future improvements using this model.

Strategies effective in achieving sustained learning and changes in practitioner behavior and performance are included in the CPD approach. According to these strategies, learning should involve an area of interest or preference, relate to daily practice, involve activities selected in response to an identified need, be interactive and hands-on, use more than one intervention, be continuing not opportunistic, use reflection, be self-directed (in content and context), focus on specific outcomes/objectives, and include a commitment to change.¹⁶

To a large extent, the environment (professional, political, social, cultural, and regulatory) in which CE providers operate is beyond their control. The context, therefore, will determine, or at least influence, the structure, processes, and outcomes, over which the CE provider does have some control. The educational organization should evaluate its impact as a leader in changing the environment and creating the desired new environment. In many countries, making these changes can be challenging and slow.

The insights in this model could help CE providers address challenges and improve quality, including factors external and internal to their organizations. Adding context and impact changes the old model from a flat structure to a more dynamic cyclical form, where the impact of

Figure 1. Pillars and foundations of educational quality

Figure 2. Alignment of the continuing professional development (CPD) cycle with the 5 pillars of educational quality

one or more generations of learners could create new context and be a driver of change. Drawing additional attention to context and impact could improve the overall quality and outcomes of CE activities, given that, in terms of compliance by accredited providers, educational needs assessment, and achievement and impact of CPE mission and goals rank as the fourth lowest (39% provider compliance) and lowest (24% provider compliance), respectively.¹⁰

PILLARS OF EDUCATIONAL QUALITY IN PHARMACY

Context

Ideally, offering quality educational activities should be a key part of the mission of the education provider. At the same time, the educational needs of the participants—to serve society and align with organizational, national and global needs—have to be met. Learning needs may also relate to observed or documented “gaps” in service delivery or knowledge, skills, attitudes, and values that

have been observed or documented.² According to United Nations Educational, Scientific and Cultural Organization’s (UNESCO) International Institute for Educational Planning, context of education should be carefully established. Education plans are most likely to succeed if they result from a process led by the government and internalized by all national stakeholders. It is important that the process is fully participatory and includes partners who will implement the plan at the local level. For example, education providers should participate in expert panels, surveys, round table discussions, and focus groups in pharmacy education. The plan has to be strategic, holistic, feasible, and sensitive to the current situation in the country or organization. It has to provide principles to fit the context, so educational activities can be guided by an overall vision.³³ Community plays an important role in creating a vision of education. There are 3 sets of strategic levers that can enhance learning through community processes: the design of spaces that support learning, the use of information technologies, and the design of structures

Table 1. Mapping ACPE CPE Provider Standards to the Pillars and Foundations

Standard	Context	Structure	Process	Outcomes	Impact	Science	Practice	Ethics
1. Goal and Mission of the CPE Provider	X	X	X	X	X		X	
2. Educational Needs Assessment	X	X	X				X	
3. CE Activities	X	X	X	X		X	X	X
4. Activity Objectives	X		X	X				
5. Commercial Support		X	X			X		
6. Faculty	X	X	X	X		X	X	
7. Teaching and Learning Methods			X	X				
8. Educational Materials		X	X		X	X	X	
9. Assessment of Learning			X	X			X	
10. Assessment Feedback			X	X				
11. Evaluation of Activities	X	X	X	X	X	X	X	
12. Achievement of Mission and Impact		X	X	X	X		X	

ACPE=Accreditation Council for Pharmacy Education; CPE=continuing pharmacy education

for learning that encompasses pedagogy, curriculum, and co-curricular programming.³⁴

For learners it is important to choose activities that address practice-related learning needs or goals identified in advance through reflection and competency evaluation and that are commensurate with their level of knowledge and experience. It is essential, therefore, that learners actively participate in the identification of the learning needs on which activities are based.¹¹ Learners also need to set realistic goals and meet the objectives of educational activities; this applies both to students and practitioners. For educational providers, structured processes of learning needs assessment at the individual and profession-wide levels should provide appropriate context for activities, thereby determining the learning objectives and content. Their input in the evaluation of educational activities will create new context, and will also result in the expectation that their responses will be acted upon when asked for feedback on the activity.³⁵ Ascertaining appropriate CE context,- which informs structure, process, outcomes, and ultimately impact, can be a challenging process for CE providers, but without it, the desired impact may not be achieved.

Structure

The structure of the educational activity should be announced in advance, preferably with a statement about accreditation, if applicable. Presenters should have appropriate qualifications, experience, and teaching ability and be able to adjust their teaching style according to the competency area being addressed (KSAV), as well as moderate the learning styles of participants to support their well-rounded development. Content should be balanced, objective, evidence-based, referenced, unbiased, and free from commercial interest and promotional activity. Learning objectives must be appropriate to the learners' competencies and scope of practice. Additional materials and resources should be provided to learners to enhance understanding and application of the educational material in practice. The setting, environment, and facilities must be conducive to learning, and enhance the learning experience.

Process

Teaching and learning methodologies need to account for and cater to diverse learners with different learning styles and preferences, practice backgrounds, educational qualifications, work experience and generational issues. Educational activities must use active-learning strategies and promote problem solving and critical thinking, as well as reinforce application of learning with case studies. Active-learning strategies should include

feedback to participants (eg, discussing wrong answers). Such methodologies pose a greater challenge for individual presenters and for provider organizations than didactic lectures; they must, however, be accepted as best practice for effective teaching and learning. Presenters should be free of conflict of interest, or manage any conflicts; that is, they must fully disclose any relevant conflicting connection, affiliation, or interest.

An essential part of the process is the evaluation of the activity by participants. Evaluation should address applicability of the CE activity to educational needs or goals, alignment of content with learning objectives, perceived achievement of each stated objective, impact on personal competencies, quality of presentations (presenter qualifications, experience, and presentation skills, content validity, and relevance), usefulness of educational material, opportunities for application in practice, level of commitment to change, effectiveness of teaching and learning methods, including active learning, appropriateness of learning assessment activities, and perceptions of bias or commercialism. Wherever possible, evaluation should extend to outcomes and impact of the activity on learners, on their practice/work setting, and on those to whom services are provided.

Outcomes

Educational activities should have SMART (specific, measurable, achievable, relevant, timed) learning objectives.³⁶ Educational activities must contribute to the development of competent practitioners; therefore, learning outcomes need to be assessed. In credit-based systems, CE credit should only be awarded upon demonstration of learning, not upon participation alone. Learning outcomes should be aligned with the daily practice needs or goals and, if applicable, goals and objectives of the pharmacist's organization. In the "Pillars of Quality" concept, outcomes are considered immediate or short-term, directly associated with or related to the educational activity, and easily observed or measured. At the lowest levels, outcomes include participation and satisfaction, levels 1 and 2 in Moore et al's expanded continuing medical education (CME) framework).³⁷ At higher levels, outcomes relate to the individual's learning, competence development, behavioral changes, and performance improvement (levels 3, 4, and 5 in the framework). Active participation in learning assists individuals in enhancing their professional practice and supporting achievement of their career goals.³⁸

Impact

Assessment of the impact of educational activities, although more challenging, should be undertaken wherever

and whenever possible. Ideally, learning should lead to practice and behavioral changes that positively impact the learner's organization, patients, populations, and national health-related issues. Impact can be visible in increased learner motivation, which can lead to a greater sense of responsibility and commitment to change. Learners' competencies should be developed or enhanced, and new projects, services, or activities might result in practice. Both Wass et al and Kansanaho et al showed education and training can change the level of pharmacists' competencies.^{18,39} A portfolio (eg, a collection of reported adverse drug reactions, medical reviews, documented medical interventions) can also be used as evidence of impact as it demonstrates performance.

True success is not in the learning itself, but in its application to the benefit of mankind.⁴⁰ This approach supports education as a process that leads to visible and measurable improvements in performance of practitioners, behavioral changes in pharmacy practice, and a positive impact on patient outcomes, fitting the national context and organizational needs. This principle is applicable to all aspects of pharmaceutical care, public health, organization and management competencies, as well as professional skills and personal values.

FOUNDATIONS OF EDUCATIONAL QUALITY IN PHARMACY

In addition to the 5 pillars, quality education in this approach is based on 3 important foundations: science (knowledge), practice (skills and experience) and ethics (attitudes and values). By integrating knowledge, experience, and personal values, in accordance with professional roles and responsibilities, a pharmacist can make choices based on a repertoire of contextually relevant behaviors.⁴¹ This ability is defined as a competence.⁴² Based on knowledge, experience, attitudes, and values, competent pharmacists must establish an appropriate relationship with patients, colleagues in pharmacy practice, and other health care professionals.⁴³ Competency-based educational activities must, by definition, collectively address all competency areas (Figure 1).

This model could help CE providers ensure they have addressed the main challenges in CPE: educational activities in CE/CPD should be evidence-based and facts properly referenced (ie, scientific foundation); CE activities should be offered after graduation and present real-life situations under the guidance of faculty members who have practiced pharmacy (ie, practice foundation);⁴⁴ educational activities in both CE/CPD and in undergraduate curricula should address pharmacists' attitudes and ethics,⁴⁵ encouraging participants to be dedicated to quality service and to make their own decisions regarding

scope of professional autonomy and professionalism (ie, ethical foundation).

In the past, CE activities focused on the knowledge component of competency.^{46,47} Several reasons contribute to this focus: knowledge-based activities are easier to deliver, an adequate supply of presenters are willing and qualified to deliver the material, the pharmaceutical industry financially supports such activities, and the method of delivery (didactic, lecture-based) suits the learning style of most pharmacists and is easily delivered to a larger number of participants.^{48,49} Innovation in CE/CPD should go beyond achieving competencies and ensure that educational activities have a so-called "3C outcome:" competent, committed, and compassionate pharmacists. This translates to education addressing all components (knowledge, skills, and attitudes) in the right context, with the right impact. Other innovations can affect the process and structure of educational activities, offering IT support, virtual cases, simulation, interprofessional education, small group interactive learning, and including mentors and peers in the CPD process.⁵⁰

Science

The scientific foundation of education and training includes authenticity and validity of the principles and methods used in the process of shaping and increasing knowledge and skills. Educators and trainers should be adequately educated, unbiased, and recognized as experts in the scientific community. Evidence from the medical, pharmacy, and scientific literature must be appropriately cited. Content should be recognized as relevant in the academic community and sourced from scientific databases. Flaws associated with a lack of adequate quality assurance mechanisms can include incorrect interpretation and data manipulation, simple and baseless conclusions, and health claims without clinical evidence.

One should not assume that an educational activity organized or supported by a pharmaceutical company does not have a satisfactory level of quality (scientific foundation and evidence base). Many representatives of this stakeholder group recognize pharmacists as partners in patient care and support quality, unbiased education and professional development. In some countries, however, it has been necessary to introduce standards or criteria for commercial support of education activities for which CE credit is awarded.⁵¹ A code of conduct for the pharmaceutical industry's interactions with health care professionals also exists.⁵²

Practice

Learning should provide clear and evident links with real-life situations, as well as relevance and applicability

to practice. Participants may only rate training content highly if they feel the activity could be useful in and applicable to their daily work and if the instructor is personally experienced in the content area.⁵³ More interactive educational activities are already in place, such as small group discussions, round tables, problem-based learning including exchange of experience, and workshops with practical examples. Moreover, criteria for abstract selection at leading international pharmacy conferences include demonstration of the practical aspects of the learning. New challenges and tasks in pharmacy practice should be well addressed in educational activities and updated with current information and guidelines.

Ethics

Incorporating the ethical aspect in training ensures that the participants are not only receiving new knowledge and experience, but also are reexamining their motives, values, and attitudes regarding change and improvement in practice and patient care. Quality educational content should address ethical issues, provide answers, allow participants to develop decision-making skills in the process of pharmaceutical care, and learn to responsibly apply acquired knowledge to practice. Highly valued behavior-shaping processes in education should increase motivation and professionalism and advance the reputation of the pharmacy profession in the health system.⁵⁴⁻⁵⁷ Enhancing the self-image of pharmacists, fostering commitment to change, and building professional autonomy and personal development are ethical aspects of quality in education.⁵⁸⁻⁶⁰

DISCUSSION

Before pharmacists decide to participate in an educational activity, they need to assess whether the activity is based on the foundations of science, practice, and ethics, and whether its context, structure, process, outcomes, and (intended) impact suit their current needs, goals, and professional orientation with the guidance of a reliable quality criteria framework such as the one provided in Appendix 1. This framework is a practical tool to help learners find a quality CE activity and/or provider and to help providers self-assess their activities and operations. It also helps learners assume a role in assuring quality when completing activity evaluations and providing feedback to the CE provider. Ensuring time for learning and professional development, planning and choosing quality educational activities, and actively participating in them are not only a pharmacist's right but also his/her duty to demonstrate professional awareness, responsibility, and autonomy.

Continuing professional development offers a potentially greater "return on investment" for employers

because it has a greater focus on the context of learning (achieved through reflection on personal and organizational objectives) and on the outcomes and impact of learning. Employers who desire outcomes and impact beyond maintenance of licensure and minimal competence for their pharmacists and technicians will see the benefits when practitioners adopt a systematic and structured approach to learning. Although this concept of CPD is articulated here in the context of pharmacy, it can be applied to all health professions education and training. As such, it can be recognized and adopted by all stakeholders who have an interest in the quality of education and competency development.

CONCLUSION

If pharmacy education is life-long, a significant percentage of learning occurs after pharmacy school. Pharmacists must ask themselves in what kind of training and education they want to invest their time and money. They should also ask themselves what their role and responsibilities are in ensuring the quality of CE activities; ie, how they can promote and actively contribute to quality improvement. They should also ask to whom they will entrust their competency development in their country or organization. Countries need to adopt a national plan for the development of the profession. Professional and academic organizations must agree on the vision for pharmacy and the profession's priorities, plans, and strategies for the future. In the meantime, as described in the pillars and foundations of quality, pharmacists should set their own goals and minimum standards below which they should not agree to be taught or trained.

Most importantly, pharmacy regulators, CE providers, academic pharmacy, and employers have to be more engaged in the future of CPD, working together to define the skills and competencies needed for self-directed, life-long learning and exploring the impact of CPD on engagement in the workplace.

ACKNOWLEDGMENTS

The authors wish to thank the following members of ACPE's Continuing Provider Accreditation Program for reviewing the text and providing comments: Dimitra V. Travlos, Jennifer L. Baumgartner, and Jacob M. Adams. The ideas expressed in this manuscript are those of the authors and may not always represent the position of ACPE.

REFERENCES

1. Dorman T, Miller BM. Continuing medical education: the link between physician learning and health care outcomes. *Acad Med*. 2011;86(11):1339.
2. Institute of Medicine. *Redesigning Continuing Education in the Health Professions*. Washington, DC: The National Academies Press; 2009.

3. International Pharmaceutical Federation. *Continuing Professional Development/Continuing Education in Pharmacy: Global Report*. The Hague, Netherlands: International Pharmaceutical Federation; 2014.
4. National Association of Boards of Pharmacy. 2013 *Survey of Pharmacy Law*. www.nabp.net/publications/survey-of-pharmacy-law/ Accessed July 24, 2013.
5. Bellanger RA, Shank TC. Continuing professional development in Texas: survey of pharmacists' knowledge and attitudes: 2008. *J Am Pharm Assoc*. 2010;50(3):368-374.
6. Knowles MS. *Self-directed learning: A guide for learners and teachers*. Englewood Cliffs, NJ: Prentice Hall; 1975.
7. Tofade T, Tran D, Thakkar N, Rouse M. *Continuing Professional Development Frameworks in Health Professions Across the Globe*. Poster. FIP Congress; 2013.
8. McConnell K, Newlon C, Delate T. The impact of continuing professional development versus traditional continuing pharmacy education on pharmacy practice. *Ann Pharmacother*. 2009;29(8):906-13.
9. Aziza Z, Jeta CN, Rahman SSA. Continuing professional development: views and barriers toward participation among Malaysian pharmacists. *The European Journal of Social & Behavioural Sciences*. 2013; 2301-2218
10. Accreditation Council for Pharmacy Education. *Update Regarding CPE Enterprise and Collaborations at 15th Conference on Continuing Pharmacy Education: Navigating the Waters of CPE, October 1-4, 2013*.
11. Accreditation Council for Pharmacy Education. *Accreditation Standards for Continuing Pharmacy Education*. Chicago, Illinois. 2007. www.acpe-accredit.org/pdf/CPE_standards_final.pdf, Accessed January 20, 2014.
12. Dopp AL, Moulton JR, Rouse MJ, Trewet CB. A five-state continuing professional development pilot program for practicing pharmacists. *Am J Pharm Educ*. 2010;74(2):Article 28.
13. International Pharmaceutical Federation. *FIP Global Conference on the Future of Hospital Pharmacy Final Basel Statements*. The Hague, The Netherlands: International Pharmaceutical Federation; 2008.
14. Meštrović A, Staničić Ž, Ortner Hadžiabdić M, et al. Individualized education and competency development of Croatian community pharmacists using the General Level Framework. *Am J Pharm Educ*. 2012;76(2):Article 23.
15. Rouse MJ. Continuing professional development in pharmacy. *Am J Health-Syst Pharm*. 2004;61:2069-2076.
16. Wakefield JG. Commitment to change: exploring its role in changing physician behavior through continuing education. *J Contin Educ Health Prof*. 2004;24:197-204.
17. Greiner AC, Knebel E, eds. *Health Professions Education: A Bridge to Quality*. Washington, DC: The National Academies Press; 2003.
18. Wass V, Van der Vleuten C, Shatzer J, et al. Assessment of clinical competence. *Lancet*. 2001;357(9260): 945-949.
19. Bruno A, Bates I, Brock T, Anderson C. Towards a global competency framework. *Am J Pharm Educ*. 2010;74(3):Article 56.
20. International Pharmaceutical Federation *A Global Competency Framework*. The Hague, The Netherlands: International Pharmaceutical Federation (FIP); 2012.
21. Mazmanian PE, Davis DA. Continuing medical education and the physician as a learner. *JAMA*. 2002;288(9):1057-1060.
22. Davis DA, Thompson MA, Oxman AD, Haynes RB. Changing physician performance: a systematic review of the effect of continuing medical education. *JAMA*. 1995;274(9):700-705.
23. Wakefield J, Herbert C, Maclure M, et al. Commitment to change statements can predict actual change in practice. *J Contin Educ Health Prof*. 2003;23(2):81-93.
24. Citizen Advocacy Center. *Report from a Survey of Continuing Competence Activity by Regulatory Boards and Voluntary Certification Bodies and Specialty Boards*. Washington, DC: Citizen Advocacy Center; 2002.
25. Gitterman A. Interactive andragogy: principles, methods, and skills. *Journal of Teaching in Social Work*. 2004;24(3-4):95-112.
26. Kaufman DM. ABC of learning and teaching in medicine: applying education theory in practice. *BMJ*. 2003;326:213-216.
27. Chappell NL, Barnes GE. Professional and business role orientations among practicing pharmacists. *Soc Sci Med*. 1984;18(2):103-110.
28. International Pharmaceutical Federation. *Quality Assurance of Pharmacy Education: the FIP Global Framework*. 2nd Ed. The Hague, The Netherlands: International Pharmaceutical Federation (FIP); 2014.
29. FIP International Forum for Quality Assurance of Pharmacy Education. *A Global Framework for Quality Assurance of Pharmacy Education*. The Hague, The Netherlands: International Pharmaceutical Federation (FIP); 2008.
30. Donabedian A. The quality of care: how can it be assessed? *JAMA*. 1988;260(12):1743-1748.
31. Boelen C, Woollard R. Social accountability and accreditation: A new frontier for educational institutions. *Med Educ*. 2009;43(9):887-894.
32. Boelen C, Woollard R. Social accountability: the extra leap to excellence for educational institutions. *Med Teach*. 2011;33(8):614-619.
33. UNESCO, *International Institute for Educational Planning, Guidelines for Education Sector Plan Preparation and Appraisal, Global Partnership for Education*. Nov 2012. <http://www.iiep.unesco.org/sites/default/files/121106-guidelines-for-education-sector-plan-preparation-and-appraisal-en.pdf>, Accessed November 10, 2014
34. Bickford JD, Wright DJ. Community: The Hidden Context for Learning. In: Oblinger DG. *Learning Spaces*. ed, 2006 EDUCAUSE. www.educause.edu. Accessed November 13, 2014.
35. Knowles, M.S. *The Adult Learner: a Neglected Species*, 4th ed. Houston, TX: Gulf Publishing Company, Book Division; 1990.
36. Tofade T, Khandoobhai A, Leadon K. Use of SMART learning objectives to introduce continuing professional development into the pharmacy curriculum. *Am J Pharm Educ*. 2012;76(4):Article 68.
37. Moore DE, Green JS, Gallis HA. Achieving desired results and improved outcomes: Integrating planning and assessment throughout learning activities. *J Contin Educ Health Prof*. 2009;29(1):1-15.
38. Medina MS, Plaza CM, Stowe CD et al. Center for the Advancement of Pharmacy Education (CAPE) Educational Outcomes 2013. *Am J Pharm Educ*. 2013;77(8):Article 162.
39. Kansanaho H, Pietilä K, Airaksinen M. Can a long-term continuing education course in patient counselling promote a change in the practice of Finnish community pharmacists? *Int J Pharm Pract*. 2003;11(3):153-160.
40. HRH Prince Mahidol of Songkla (quote). Mahidol University. www.mahidol.ac.th. Accessed December 29, 2014.
41. Govaerts MJ. Educational competencies or education for professional competence? *Med Educ*. 2008;42(3):234-236.
42. Meštrović A, Staničić Z, Hadžiabdić MO, et al. Evaluation of Croatian community pharmacists' patient care competencies using the General Level Framework. *Am J Pharm Educ*. 2011;75(2): Article 36.

43. Council on Credentialing in Pharmacy. Credentialing in Pharmacy. *Am J Health-Syst Pharm*. 2001; 58(1):69-76.
44. Evidence scan: Quality improvement training for healthcare professionals. The Health Foundation. 2012.
45. Remington JP, Troy DB, Beringer P. *Remington: The Science and Practice of Pharmacy*, 21st ed. Philadelphia, PA: University of Sciences in Philadelphia; 2006.
46. Shannon MC, Schnobrich K. A descriptive analysis of pharmacy continuing education programs offered by ACPE-approved providers in 1989. *Am J Pharm Educ*. 1991;55(4):317-321.
47. Travlos DV, Chung UK, Sesti AM, Vlasses PH. Pharmacy's continuing education enterprise: 2005 update. *Am J Pharm Educ*. 2006;70(3):Article 65.
48. Austin Z. Development and validation of the Pharmacists' Inventory of Learning Styles (PILS). *Am J Pharm Educ*. 2004;68(2): Article 37.
49. Austin Z. Learning styles of pharmacists: Impact on career decisions, practice patterns and teaching method preferences. *Pharm Educ*. 2004;4(1):13-22.
50. Hess G, Janota L. Innovations in Education. *Frontiers in Pharmacy*. 2012.www.pharmacytimes.com. Accessed December 29, 2014.
51. Standards for Commercial Support: Standards to Ensure Independence in CME Activities. Accreditation Council for Continuing Medication Education. <http://www.acme.org/requirements/accreditation-requirements-cme-providers/standards-for-commercial-support>. Accessed July 19, 2013.
52. The Pharmaceutical Research and Manufacturers of America (PhRMA). *Code on interactions with health care professionals*. <http://www.phrma.org/code-on-interactions-with-healthcare-professionals>. Accessed July 24, 2013.
53. Brophy J. Toward a model of the value aspects of motivation in education: Developing appreciation for particular learning domains and activities. *Educ Psychol*. 1999;34(2):75-85.
54. Haddad A. *Teaching and Learning Strategies in Pharmacy Ethics*, 2nd ed. New York, NY: The Pharmaceutical Products Press; 1997.
55. Latif D. Cognitive moral development and pharmacy education. *Am J Pharm Educ*. 2000;64(4):451-454.
56. Schafheutle EL, Hassell K, Ashcroft DM, Hall J, Harrison, S. How do pharmacy students learn professionalism? *Int J Pharm Pract*. 2012;20(2):118-128.
57. Latif D, Berger BA. Cognitive moral development and clinical performance: implications for pharmacy education. *Am J Pharm Educ*. 1999;63(1):20-27.
58. International Pharmaceutical Federation. *Understanding, preserving, and protecting pharmacists' professional autonomy*. FIP Executive Committee and the Community Pharmacy Section Session Summary. FIP Congress, Istanbul, Turkey; 2009.
59. Hammer DP. Professional attitudes and behaviors: the As and Bs of professionalism. *Am J Pharm Educ*. 2000;64(4):455-464.
60. Berlinger N. Conscience clauses, health care providers, and parents. In: Crowley M, ed. *From Birth to Death and Bench to Clinic: The Hastings Center Bioethics Briefing Book for Journalists, Policymakers and Campaigns*. Garrison, NY: The Hastings Center; 2008:35-40.

Appendix 1. Quality Criteria Framework to be Used by Providers and Learners to Assess CE and CPD Educational Activities

Are the plans, mission and vision for pharmacy education well coordinated and transparent at the national level?		YES - NO
Are the quality criteria (standards) for continuing education clearly defined?		YES - NO
50 Questions to Assure the Quality of Educational Activities		
1	SCIENCE	The lecturers and trainers are adequately educated, qualified, unbiased, and recognized as the experts in the scientific community. YES - NO
2	SCIENCE	The content and teaching methods are current, evidence-based, and source-referenced from scientific databases. YES - NO
3	SCIENCE	The content is recognized as relevant in the academic community. YES - NO
4	PRACTICE	The education addresses an educational need and/or a knowledge or practice gap. YES - NO
5	PRACTICE	Presenters are experienced in the topic area of the lecture or workshop. YES - NO
6	PRACTICE	The educational activity provides practical examples and the opportunity to actively participate and exchange experiences. YES - NO
7	PRACTICE	New challenges and tasks in pharmacy practice are well addressed and updated with current information and guidelines. YES - NO
8	PRACTICE	The educational activity is useful and applicable to learners' daily work and practice. YES - NO
9	ETHICS	The participants are provided with the opportunity to not only receive new knowledge and skills, but also to re-examine their motives, values, and attitudes. YES - NO
10	ETHICS	Open-ended ethical issues are well addressed in the educational content. YES - NO
11	ETHICS	Education provides answers to ethical dilemmas, allowing participants to develop decision-making skills in the process of pharmaceutical care. YES - NO
12	ETHICS	Behavior-shaping processes in education increase motivation and professionalism in the pharmacy profession. YES - NO
13	ETHICS	Education is building the self-image of pharmacists and fosters pharmacists' commitment to change. YES - NO
14	ETHICS	Education is enhancing professional autonomy and personal development based on ethical aspects of the pharmacy profession. YES - NO
15	ETHICS	Principles of professional ethics and autonomy are guiding pharmacists in the responsible use of medicines. YES - NO
16	ETHICS	Pharmacists are reminded of an Oath of a Pharmacist and/or Code of Ethics for the pharmacy profession. YES - NO
17	CONTEXT	Education is based on the evidence of real educational needs, such as competency evaluation or other "gap" analysis. YES - NO
18	CONTEXT	New findings in science and developments in practice are considered in the education program. YES - NO
19	CONTEXT	The content is well aligned with official (legal) scope of practice. YES - NO
20	CONTEXT	There are opportunities for participation in projects and activities suitable for competency development. YES - NO
21	CONTEXT	Education provides national and international perspectives on the selected topics. YES - NO
22	STRUCTURE	Pharmacists are recognized as partners in patient treatment. YES - NO
23	STRUCTURE	There are no conflicts of interest, or conflicts of interest are appropriately managed. YES - NO
24	STRUCTURE	Learning objectives are appropriate to the competencies and scope of practice of the learners. YES - NO
25	STRUCTURE	Educational content and teaching style address generational issues. YES - NO
26	STRUCTURE	Teaching and learning methodologies account for and cater to diverse learners, including those with different learning styles and preferences. YES - NO
27	STRUCTURE	Teaching and learning methodologies account for different practice backgrounds. YES - NO
28	STRUCTURE	Teaching and learning methodologies account for educational qualifications. YES - NO
29	STRUCTURE	Teaching and learning methodologies account for different levels of work experience. YES - NO

(Continued)

Appendix 1. (Continued)

30	STRUCTURE	Materials and resources are provided to the learners (or cited) to enhance understanding and application of the educational material in practice.	YES - NO
31	STRUCTURE	Educational activities address all competency areas (knowledge, skills, attitudes, values).	YES - NO
32	PROCESS	The educational activity ensures interactive involvement of the learners.	YES - NO
33	PROCESS	Content is balanced, objective, and unbiased, especially free from commercial interest and promotional activity.	YES - NO
34	PROCESS	The educational activity uses active learning strategies and exercises and promotes problem solving and critical thinking.	YES - NO
35	PROCESS	Learners actively participate in the identification of learning needs.	YES - NO
36	PROCESS	Each stated learning objective is achieved.	YES - NO
37	PROCESS	Time is well managed.	YES - NO
38	PROCESS	Presenters make full disclosure of any relevant connection, affiliation, or interest.	YES - NO
39	PROCESS	Evaluation of the activity is provided to and completed by participants.	YES - NO
40	PROCESS	Elements of the evaluation form address all pillars and foundations of quality such as : applicability of the activity to meeting learners' educational needs, achievement of each stated objective, quality of teaching for all presenters, usefulness of educational material, effectiveness of teaching and learning methods (including active learning), appropriateness of learning assessment activities, perceptions of bias or commercialism.	YES - NO
41	OUTCOMES	Outcomes are specific and measurable.	YES - NO
42	OUTCOMES	Learning outcomes are assessed.	YES - NO
43	OUTCOMES	CE credits are awarded on demonstration of learning, not just on participation.	YES - NO
44	OUTCOMES	Learners are developing new skills and accepting new knowledge to improve patient and population health.	YES - NO
45	IMPACT	Impact of educational activities is assessed.	YES - NO
46	IMPACT	Learning leads to practice and behavior changes, which have an impact on patients, populations and the learner's organization.	YES - NO
47	IMPACT	Impact is visible through increased motivation that leads to a greater sense of responsibility and commitment to change.	YES - NO
48	IMPACT	New projects, services, or activities are visible in pharmacy practice and competency development as a result of the education.	YES - NO
49	IMPACT	Impact is achieved in leadership and advocacy in the development of the profession and agents of change.	YES - NO
50	IMPACT	Innovations and changes that address or solve national and/or international health care needs and priorities are encouraged and initiated.	YES - NO