Continuing professional development in pharmacy

MICHAEL J. ROUSE

Continuing professional development (CPD) is a framework for, or approach to, lifelong learning and is being discussed as a potential model for pharmacists in the United States. CPD is not a replacement for continuing education (CE), as quality-assured CE is an essential component of CPD. This article explains the concept and components of CPD, describes some of the driving forces behind the reevaluation of current systems of CE for pharmacists, defines relevant terms, and outlines some experiences with CPD in selected foreign and U.S. health systems that have already adopted the model. This article is intended to provide a basis for further discussions regarding CPD and explain what it could mean for the profession of pharmacy and pharmacists if implemented nationwide.

The following sentences introduce the American Society of Health-System Pharmacists (ASHP) statement on continuing education:

Next to integrity, competence is the first and most fundamental moral responsibility of all health professions . . . Each of our professions must insist that competence will be reinforced through the years of practice. After the degree is conferred, continuing education is society's only real guarantee of the optimal quality of health care.[1]

Perhaps ahead of their time, the objectives of the ASHP statement, approved in 1989, read remarkably like a framework for CPD.

What is CPD? CPD is an ongoing, self-directed, structured, outcomes-focused cycle of learning and personal improvement. The Chartered Institute of Personnel and Development (CIPD) put forth an early definition of CPD in October 1997[2]: "CPD is systematic, ongoing, self-directed learning. It is an approach or process which should be a normal part of how you plan and manage your whole working life."

In 2002, the concept of CPD was defined by the International Pharmaceutical Federation (FIP) as

the responsibility of individual pharmacists for systematic maintenance, development and broadening of knowledge, skills and attitudes, to ensure continuing competence as a professional, throughout their careers.[3]

Variations of the basic CPD model, using different terms to describe the stages, have been adopted or discussed in pharmacy, but the differences are not significant. Implementation strategies and the professional and regulatory framework within which the CPD model is adopted do, however, differ considerably, and some examples are described later. Essentially, the concept of CPD is based on a cycle in which individual practitioners reflect on their practice and assess their knowledge and skills, identify learning needs, create a personal learning plan, implement the learning plan, and evaluate the effectiveness of the educational interventions and the plan in relation to their practice. Documentation is an integral aspect of CPD, and a personal portfolio is typically used for this purpose. A five-step cycle was used to describe CPD in a statement adopted by FIP in 2002,[3] and an adaptation—in which the cycle includes self-appraisal, development of a personal plan, action, documentation, and evaluation—has been used as the basis for some of the early discussions of CPD in the United States.

Another representation of the CPD cycle, offered by the author (Figure 1), in which documentation—the portfolio—is shown as an integral component but not a separate stage, may help to explain the elements of CPD and their sequence.

MICHAEL J. ROUSE, B.PHARM. (Hons.), M.P.S., is Assistant Executive Director, International and Professional Affairs, Accreditation Council for Pharmacy Education, 20 North Clark Street, Suite 2500, Chicago, IL 60602 (mrouse@acpe-accredit.org).

Figure 1. Continuing professional development cycle centered around a portfolio.
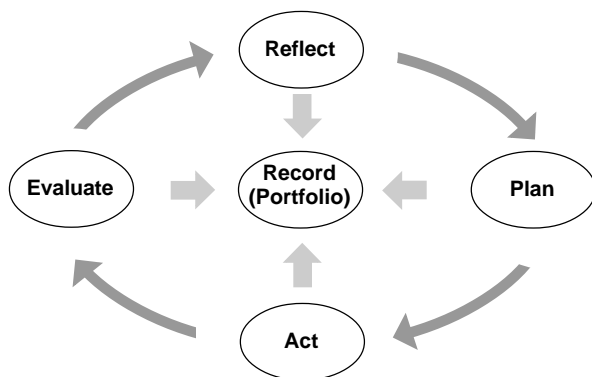
The purpose of CPD is to ensure that pharmacists maintain their knowledge, skills, and competencies to practice throughout their careers in their specific area of practice; improve personal performance; and enhance their career progression. CPD is designed to be self-directed, practitioner-centered, and outcomes-based to meet the specific goals and objectives of individual pharmacists, ultimately improving patient and public health outcomes. It emphasizes the importance of practice-based learning and, in the United Kingdom's model, of identifying and achieving organizational goals and objectives. As CPD is a relatively new concept, evidence has not yet been provided that widespread adoption of a CPD model is more effective than traditional CE systems in achieving these goals.

Definitions. An understanding of and a distinction between the terms used in this paper are important, and most of the following are currently used within pharmacy or other health care professions.

Competence is defined as follows:

The ability to perform one's duties accurately, make correct judgments, and interact appropriately with patients and with colleagues. Professional competence is characterized by good problem-solving and decision-making abilities, a strong knowledge base, and the ability to apply knowledge and experience to diverse patient-care situations.[4]

Lifelong learning is defined as follows:

All learning activity undertaken throughout life, with the aim of improving knowledge, skills and competences within a personal, civic, social and/or employment-related perspective.[5]

Continuing education was defined in 2000 as follows:

Organized learning experiences and activities in which pharmacists engage after they have completed their entry-level academic education and training. These experiences are designed to promote the continuous development of the skills, attitudes, and knowledge needed to maintain proficiency, provide quality service or products, respond to patient needs, and keep abreast of change.[4]

A more recent (2003) definition follows:

Continuing education for the profession of pharmacy is a structured process of education designed or intended to support the continuous development of pharmacists to maintain and enhance their professional competence. Continuing education should promote problem-solving and critical thinking and be applicable to the practice of pharmacy.[6]

Perhaps the terms lifelong learning and CE should be synonymous. CE has been associated more with organized or structured educational activities, as defined above by the Accreditation Council for Pharmacy Education (ACPE).

Why change? In a changing, increasingly complex profession, and with rapid medical and technological advances, the need for lifelong learning for pharmacists is irrefutable. Health care professionals are required to engage in CE. While appropriate, competency-based education can prepare a pharmacist to enter practice, no professional program can provide or develop the knowledge, skills, attitudes, and abilities that a pharmacist will ever need. Such development requires a combination of an appropriate preservice educational foundation, inservice training, hands-on work experience, and lifelong learning. For professionals, education is a continuum. Unlike medical practitioners, a minority of pharmacists obtain postgraduate qualifications or specialty certifications, although a variety of such programs are offered. Approximately 3% of licensed pharmacists are certified, and of the 2001–02 pharmacy school graduates, approximately 14% successfully completed an ASHP-accredited pharmacy practice residency in 2003.[7-12] Council on Credentialing in Pharmacy resource documents on CPD and credentialing in pharmacy provide details of these programs.[13,14] Certificate programs, for which national standards were introduced in 1999, are longer than the average CE program and de-

signed to develop knowledge or skills in a specific area (e.g., immunization, diabetes management). However, participation in certificate programs by pharmacists has been limited. In 2002–03, 4824 participants—some 2% of licensed pharmacists—completed the 81 certificate programs offered by 37 ACPE-accredited providers.[7,15] CE is, therefore, the simplest and most common form of postgraduate training for pharmacists.[16] Emphasizing the professional development of practitioners, the CPD model expands in breadth and depth the traditional model of lifelong learning, thereby offering, some believe, a quality improvement for current CE systems.

Many factors are driving a critical reevaluation of CE systems. Virtually all state boards of pharmacy rely on pharmacists' participation in a defined number of hours of ACPE-accredited or otherwise approved CE to provide assurance of pharmacists' competence.[7,17] Since the mid-1970s, when the number of states requiring mandatory CE started to grow, the number of accredited providers offering a broad range of quality CE programs has significantly increased. In 1978, ACPE accredited 72 CE providers; currently there are over 400.[18] CE programs are delivered in a variety of formats to accommodate different learning needs and preferences. However, state boards of pharmacy have few specific requirements regarding the content of CE and its relevance to the practice of the pharmacist. ACPE standards require CE providers to have systems in place to identify the learning needs of participants and offer programs to meet those needs.[19] In the current CE model, the programs offered are intended to meet the learning needs of a number of pharmacists. Clearly, it is unrealistic to expect CE providers to attempt to identify and respond to the individual needs of practitioners. Furthermore, meaningful assessment of learning is difficult and many

times not even attempted. In the CPD model, more responsibility is placed on individual practitioners to identify and participate in programs that meet their own specific learning needs and assess the impact and benefit of such programs.

A growing body of evidence (primarily from the medical literature) shows that, while CE can be effective in improving knowledge, skills, attitudes, behavior, and patient health outcomes, traditional approaches to CE are not usually curricular in nature, do not optimally address all required competencies, and are not always successful in changing practice behaviors.[20-25] Not only is the relative effectiveness of different educational strategies difficult to measure and compare, many extrinsic factors can influence the effectiveness of CE and its impact on performance, practice, and patient outcomes. More research is needed to improve our understanding of these factors and how they influence CE outcomes.

What is evident from the literature, however, is that achieving practice change requires some very uncommon practices, which do not consistently happen. Davis et al.[26] concluded that there is

some evidence that interactive CME [continuing medical education] sessions that enhance participant activity and provide the opportunity to practice skills can effect change in professional practice and, on occasion, health care outcomes [and] variables over which the CME provider has control and appear to have a positive effect are the degree of active learning opportunities, learning delivered in a longitudinal or sequenced manner, and the provision of enabling methods to facilitate implementation in the practice setting.

Ample studies indicate that utilization of multiple educational meth-

ods and participation in self-directed learning activities that are based on identified learning needs or personal goals, are relevant to practice, are interactive, are ongoing, have defined outcomes for the practitioner and the organization, and can be reinforced through practice are more likely to achieve sustainable learning and practice change.[23-25,27-31] The CPD model incorporates a number of these strategies.

Pressure to change approaches to continuing education is coming from outside and within the pharmacy profession. Providers of health care services are required to increase attention to quality and quality improvement. In a series of reports, the Institute of Medicine (IOM) highlighted deficiencies in health systems, identified key factors contributing to the state of affairs, and made a number of recommendations.[32-34] IOM notes that the knowledge and skills of health care professionals are often not optimally utilized and that problems arise because they work in a system that does not adequately prepare them, or support them once they are in practice, to deliver the best care to their patients. IOM has concluded that the education and training of health care professionals need a major overhaul and advocates that education and training (both preservice and lifelong) must be competency based. Pharmacy has been commended for its competency-based standards for degree-program accreditation and cited as an example for other health care professions to follow.[34] ACPE's new definition of CE highlights the professional competencies applicable to the practice of pharmacy.[6] IOM has identified five core competencies that all health care professionals should possess: (1) provide patient-centered care, (2) work on interdisciplinary teams, (3) employ evidence-based practice, (4) apply quality improvement measures, and (5) use informatics. It has recommended that all health profes-

sions should move toward requiring licensed health care professionals to periodically demonstrate their ability to deliver patient care through direct measures of technical competence, patient assessment, evaluation of patient outcomes, and other evidence-based assessment methods.[34] This latter recommendation has profound implications, but it is unlikely that a system of direct assessment (already in use in some countries) would be considered feasible or desirable by the pharmacy profession in the United States at this time. While many practitioners may already use a CPD model for their lifelong learning and professional development, could professionwide adoption of the model provide the required level of assurance (and public accountability) that licensed pharmacists are maintaining and updating their professional competencies?

Preparing pharmacists to deliver pharmaceutical care. In 2000, a white paper on pharmacy's future roles, responsibilities, and manpower needs noted that, while the philosophy of pharmaceutical care had been broadly endorsed in the early 1990s as the new vision for pharmacy, progress toward widespread implementation of the practice model had been frustratingly slow.[35] Many have probably underestimated the importance and enormity of the change involved. While many factors have affected the rate of implementation of pharmaceutical care, the fact that many practicing pharmacists were not originally trained for such a practice model and may lack some of the required knowledge and skills must be considered. For many pharmacists, a retooling of knowledge and skills is probably required, and it would appear that current CE systems, which primarily focus on improving and updating practitioner knowledge[36] (Travlos DV, ACPE, personal communication, 2003 Jul), are unlikely to adequately address this need.

Neither CPD nor CE alone can ensure professional competence. Although CPD is a largely unproven model in pharmacy, might it build on the traditional methods of CE and offer more effective lifelong learning for pharmacists? Early adopters of the concept believe it can, and some examples of CPD implementation are emerging in pharmacy and other professions. Great Britain and Ontario, Canada, provide good case studies from programs initiated for pharmacy in the mid-to-late 1990s.[13,37-41]

A better learning model? The CPD model for lifelong learning and professional development of practitioners is sound theoretically and was developed using well-tested principles of learning and continuous quality improvement.[42,43] In the 1970s and 1980s, Kolb and Smith[44-46] described how people learn and handle day-to-day situations in their lives.

Based on the work of Kolb, a four-stage cycle of experiential learning has been described: (1) have a new experience, (2) reflect on that experience, (3) draw some conclusions, and (4) act differently as a result of the experience.[47]

Research has demonstrated that learning that is sought to meet identified and existing needs and reinforced through practice is more likely to be sustained.[23] Some of the four-stage cycles that have been adopted within the context of CPD incorporate these principles of learning.[48,49] In this context, the terms reflection, assessment, and self-appraisal are somewhat interchangeable.

The CPD cycle. CPD has been described using four- and five-stage cycles. In essence, these cycles are very similar. In the five-stage cycle, documentation is included as a separate stage to emphasize its importance. Documentation is, however, an important component of each of the other four sequential stages. The elements of the four-stage cycle—

reflect, plan, act, evaluate—are now discussed. As shown in Figure 1, the record (documentation) step of the five-stage cycle is in the center of the four-stage cycle.

Reflect. Also referred to as self-appraisal or assessment, this stage requires pharmacists to reflect on personal and organizational needs and goals for professional development and to assess their knowledge, skills, and competence. Reflection is important to learning; it has been described as a complex and deliberate process of thinking about and interpreting an experience in order to learn from it.[50] Ideally, reflection is performed in two ways: (1) on an ad hoc or unscheduled basis, usually a reaction to specific day-to-day practice experiences (a "reflection in practice") and (2) on a scheduled or proactive basis (e.g., annually, biannually) or when a major career change occurs or is anticipated (a "reflection on practice").

Accurate self-assessment is difficult, and pharmacists are likely to need assistance in this task. Ideally, self-assessment should be balanced with the considered judgment and opinion of others, such as peers and supervisors. Tools to assist pharmacists in appropriately and accurately assessing their learning needs have been developed in a number of countries, including the United States.[51,52] The National Association of Boards of Pharmacy, which administers national licensure examinations on behalf of state boards of pharmacy, is developing an Internet-based self-assessment tool to offer pharmacists the opportunity to assess, in a non-threatening and supportive environment, their needs and interests.[53] Daily practice experiences should also contribute to the self-appraisal, leading to identification of individual learning needs based on actual issues confronting the pharmacist.

Documentation in the pharmacist's personal portfolio begins at this stage in the cycle.

Plan. The second stage involves the design of a personal development plan. Pharmacists who have no prior experience with such planning will probably need assistance with this, which will likely create service opportunities for professional membership organizations and CE providers. The plan should include all of the activities that will address identified learning and development needs and goals. The learning goals should be clear, specific, measurable, achievable, relevant, and time based. The outcomes should be linked to one or more specific professional competencies.[6] When possible, pharmacists should also address patient health care needs.

Personal development plans could include structured programs (such as accredited CE programs), as well as a diverse range of informal learning activities, many of which will be work based or work related (e.g., discussions with colleagues, job shadowing, interest group meetings, secondments, deputizing, peer review). The activities should fit with the pharmacist's preferred learning style. When specific subject matter is required, ACPE's P.L.A.N. (pharmacists' learning assistance network) database is available (www.acpe-accredit.org) to assist pharmacists to identify appropriate CE offerings and certificate programs in various formats (e.g., seminars, journals, Internet courses). Other resources or sources of support should be identified. The activities will help the pharmacist to use and augment his or her knowledge and skills base.[54]

Details of the personal development plan are recorded in the personal portfolio. While remaining focused on the pharmacist's identified needs and goals, the plan should be dynamic, being changed and updated as required. Because each pharmacist's situation is unique, no two sets of learning needs and personal plans will be the same. As with any planning process, priorities should

be established. Short-, medium-, and long-term objectives may be identified. Different objectives will require different strategies, and the plan's success will likely depend on the effective use of multiple learning methods.

Act. Putting the plan into action is the third stage. The activities chosen must be outcomes driven to meet identified needs and goals, not merely to meet a mandatory "hour requirement." CPD does not replace accredited CE programs. CPD builds on this essential, quality-assured component. It also encourages different methods of delivery for learning.

Evaluate. As with reflection, evaluation should occur on an ad hoc basis (reacting to day-to-day experiences) and through a more formal, structured or proactive process. Evaluation will consider (1) if and how well the learning and development objectives have been achieved, (2) how appropriate and effective the plan was, (3) how well the activities undertaken correlated with the plan, (4) if the methods of learning were appropriate, (5) what impact there has been on knowledge, skills, competence, and confidence, (6) if and how practice has changed, and (7) if there were improved patient outcomes as a result of the activities.

Evaluation can be conducted by the individual practitioner, by the practitioner's peers, or by the practitioner's supervisor or manager. It may form an integral part of a formal performance review, where individual and organizational goals are considered. In some CPD models (e.g., those in the United Kingdom), the portfolio is subject to review by the regulatory body. In Ontario, there is the opportunity for small-group peer review of the learning portfolio and direct assessment of knowledge and skills. Some form of third-party review or evaluation of the portfolio would appear to be valuable, not only to provide feedback to the pharmacist but also as a means to identify

those who may be having difficulty in one or more aspects of CPD and are in need of assistance or remediation. The evaluation also protects society from the few practitioners who otherwise would not self-assess and correct deficiencies. A further advantage of third-party evaluation is that areas for improvement, which are transferable elsewhere in practice, may be identified. Feedback from third parties should be given in a constructive and nonthreatening way, with the primary objective being to help the individual move forward in his or her professional development. In Ontario, data gathered during a review may not be shared with the investigative or disciplinary branches of the pharmacy registering and regulating body.[40]

Most importantly, the evaluation leads to the next stage of the continuum, reflection, followed by the design of a new plan based on updated learning and development needs and goals.

Record. Central to the CPD cycle is the practitioner's personal portfolio, which becomes a comprehensive record—much like a professional diary or transcript—covering all the stages. The portfolio, which can be electronic or paper based, should be readily accessible and simple to use. Ideally, a standardized format should be adopted to facilitate training, data entry, and, where applicable, portfolio evaluation.

Traditionally, there has been little or no need or incentive for the majority of pharmacists to document their learning activities, apart from their record of participation in accredited CE courses as a requirement of relicensure. In CPD portfolios, pharmacists record all relevant learning experiences, accredited CE courses and informal work-based or work-related activities. When such activity has had a tangible outcome (e.g., an improved patient outcome, a change in practice method or behavior, new knowledge or skills, a new credential), it is noted in the portfolio. In

time, the pharmacist's portfolio will develop into a comprehensive record of education and practice with multiple possible applications.

Principles of CPD. The principles of CPD can be summarized as follows[54]:

· CPD is a systematic, ongoing, cyclical process of self-directed learning.
· CPD includes everything that practitioners learn that enables them to be more effective as professionals.
· CPD includes the entire scope of the practitioner's practice and may include activities both within and outside the usual work setting.
· CPD can strengthen the partnership between the practitioner and his or her organization, so as to meet the development needs of both.
· Practitioners are responsible for their own professional development. The organization can have a role in helping practitioners meet the developmental needs related to job performance.

Three important features of CPD are clear: CPD is (1) practitioner centered and self-directed, (2) practice related, and (3) outcomes oriented.

Although defined as a continuous cycle involving multiple stages, CPD should be considered an approach to lifelong learning rather than a number of stages that a practitioner has to methodically and laboriously work through. Progression through the stages of CPD should, to a large extent, become seamless and second nature, although more conscious effort will be required until CPD becomes second nature to a practitioner.

CPD in health-system pharmacy. Although its adoption may not yet be widespread, the CPD model for lifelong learning is already in use in the United States. Apart from individual practitioners who use this approach, examples can be found in some health systems, including the Veterans Affairs health care system.[55] To comply with accreditation requirements (e.g., those of the Joint Commission on Ac-

creditation of Healthcare Organizations [JCAHO]), institutions must ensure that their health care practitioners are scientifically and professionally competent to practice. As stated earlier, as professionals, health care practitioners are responsible for maintaining their competence to practice, but institutions can assist with this responsibility. A number of JCAHO standards (e.g., HR.3.1, HR.4, HR.4.2, HR.5) address issues relating to competence, lifelong learning, and staff development. Accreditation standards require institutions to demonstrate that systems are in place to support staff learning and development and assess staff members' abilities to meet performance expectations, both initially (at employment) and on an ongoing basis. Assessment should include self-appraisal, peer review, and performance appraisal by a supervisor or manager.

An institution that is focused on quality and quality improvement can provide an excellent practice-based learning environment for groups of practitioners who are mutually supportive in addressing identified learning needs and meeting personal and organizational goals. Through inservice education programs, journal clubs, newsletters, case studies, and other means, practitioners can identify and address their own learning needs. While not all of these activities would meet the criteria for accredited CE, the value of such learning activities is obvious. Because of its relevance to daily work and the potential for regular reinforcement through practice, such learning is more likely to be sustained, result in practice change, and ultimately lead to improved patient outcomes. In such a learning environment, self-directed CPD becomes second nature rather than the mechanical, burdensome process that it might appear to be on initial consideration.

Future of CPD. In the United States, interest in CPD is growing, as

is support for the concept, evidenced by recent statements and resolutions by several national pharmacy organizations.[53,56-60] Not all stakeholders, however, will feel the need for change. While CPD appears logical and straightforward, implementation certainly poses a number of challenges. It would require a different approach by CE providers, practitioners, and health systems. New skills and competencies will need to be developed. For example, identifying individual learning needs and developing and evaluating a personal development plan are areas in which few currently have expertise. Based on the experiences of practitioners in other countries, a system that includes some flexibility is likely to achieve better "buy in" by pharmacists. Evidence from Great Britain and Canada also indicates that a majority of pharmacists have been able to demonstrate that they can self-direct their learning at the required level, that personal adoption of CPD was not as burdensome as expected, and that CPD, overall, was well accepted by pharmacists.[37,38,40]

The full implications of widespread adoption of a CPD model need further discussion. A perfect solution—simple, effective, inexpensive, and acceptable to all—does not exist and is unlikely to be realized. However, improving the quality of the existing CE system for pharmacists needs to be purposefully explored by the profession in a timely manner.

Conclusion. CPD appears to offer pharmacists a viable model for individualized ongoing learning and personal improvement.

References

1. American Society of Hospital Pharmacists. ASHP statement on continuing education. *Am J Hosp Pharm.* 1990; 47:1855.
2. Continuing professional development—the IPD policy. London: Chartered Institute of Personnel and Development; 1997:4.
3. International Pharmaceutical Federation. Statement of professional standards on continuing professional development.

www.fip.org/pdf/CPDstatement.pdf (accessed 2004 Feb 11).

4. Council on Credentialing in Pharmacy. Credentialing in pharmacy. *Am J Health-Syst Pharm.* 2001; 58:69-76.

5. Infobase Europe. Lifelong learning. www.ibeurope.com/Database/Factsheets/F052lifelong.htm (accessed 2003 Jul 11).

6. Accreditation Council for Pharmacy Education. Definition of continuing education. www.acpe-accredit.org/pdf/CEDefinition04.pdf (accessed 2003 Aug 6).

7. Survey of pharmacy law 2003–2004. Park Ridge, IL: National Association of Boards of Pharmacy; 2003.

8. Board of Pharmaceutical Specialties. www.bpsweb.org/About.BPS/SlideShow/Non-Framed/BPSPPPres01-04.ppt (accessed 2004 Apr 20).

9. Data supplied to author. Commission for Certification in Geriatric Pharmacy, Alexandria, VA; 2004 Apr.

10. Data supplied to author. National Institute for Standards in Pharmacist Credentialing, Atlanta, GA; 2004 May.

11. American Association of Colleges of Pharmacy. Profile of pharmacy students fall 2002. www.aacp.org/Docs/MainNavigation/InstitutionalData/4975_PPS_SummaryHighlights.pdf (accessed 2004 May 6).

12. Data supplied to author. American Society of Health-System Pharmacists. Bethesda, MD; 2004 May.

13. Council on Credentialing in Pharmacy. Resource document: continuing professional development in pharmacy. www.pharmacycredentialing.org/ccp/cpdprimer.pdf (accessed 2004 Apr 7).

14. Council on Credentialing in Pharmacy. Credentialing in pharmacy. www.pharmacycredentialing.org/ccp/CCPWhitePaper2003.pdf (accessed 2003 Dec 22).

15. Data supplied to author. Accreditation Council for Pharmacy Education, Chicago, IL; 2004 May.

16. Schneider PJ. Postgraduate training for pharmacists: an educational method to advance practice. *Int Pharm J.* 1998; 12: 141-4.

17. Report from a survey of continuing competence activity by regulatory boards and voluntary certification bodies and specialty boards. Washington, DC: Citizen Advocacy Center; 2002.

18. Accreditation Council for Pharmacy Education. Directory of accredited providers. www.acpe-accredit.org/ceproviders/providers.asp (accessed 2004 May 10).

19. Accreditation Council for Pharmacy Education. Standards for ACPE-accredited providers of continuing pharmacy education criterion 16. www.acpe-accredit.org/ceproviders/standards.asp (accessed 2004 May 10).

20. Hanson AL. Pharmacists' attitudes toward continuing education: implications for planning curricular CE programs. *J Contin Educ Health Prof.* 1989; 9:95-113.

21. Nona DA, Kenny WR, Johnson DK. The effectiveness of continuing education as reflected in the literature of the health professions. *Am J Pharm Educ.* 1988; 52: 111-7.

22. Manning PR, Petit DW. The past, present, and future of continuing medical education. *JAMA.* 1987; 258:3542-6.

23. Mazmanian PE, Davis DA. Continuing medical education and the physician as a learner: guide to the evidence. *JAMA.* 2002; 288:1057-60.

24. Davis DA, Thompson MA, Oxman AD et al. Changing physician performance: a systematic review of the effect of continuing medical education strategies. *JAMA.* 1995; 274:700-5.

25. Fjortoft NF, Schwartz AH. Evaluation of a pharmacy continuing education program: long-term learning outcomes and changes in practice behaviors. *Am J Pharm Educ.* 2003; 67:article 35.

26. Davis D, O'Brien MA, Freemantle N et al. Impact of formal continuing medical education. Do conferences, workshops, rounds, and other traditional continuing education activities change physician behavior or health care outcomes? *JAMA.* 1999; 282:867-74.

27. Lockyer JM, Parboosingh JT, McDougall GM et al. How physicians integrate advances into clinical practices. *Mobius.* 1985; 5:5-12.

28. Cox CL, Baker MG. Evaluation: the key to accountability in continuing education. *J Contin Educ Nurs.* 1981; 12:11-9.

29. Stein LS. The effectiveness of continuing medical education: eight research reports. *J Med Educ.* 1981; 56:103-10.

30. Thomson O'Brien MA, Freemantle N, Oxman AD et al. Continuing education meetings and workshops: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev.* 2001; CD 003030.

31. Davis D, Thomson MA, Oxman AD et al. Evidence for the effectiveness of CME: a review of 50 randomized controlled trails. *JAMA.* 1992; 268:1111-7.

32. Kohn LT, Corrigan JM, Donaldson MS, eds. To err is human: building a safer health system. Washington, DC: National Academy Press; 1999.

33. Committee on Quality of Health Care in America. Crossing the quality chasm: a new health system for the 21st century. Washington, DC: National Academy Press; 2001.

34. Greiner AC, Knebel E, eds. Health professions education: a bridge to quality. Washington, DC: National Academy Press; 2003.

35. American College of Clinical Pharmacy. A vision of pharmacy's future roles, responsibilities, and manpower needs in the United States. *Pharmacotherapy.* 2000; 20:991-1022.

36. Shannon MC, Schnobrich K. A descriptive analysis of pharmacy continuing education programs offered by ACPE-approved providers in 1989. *Am J Pharm Educ.* 1991; 55:317-21.

37. Royal Pharmaceutical Society. Progress of Society's CPD pilot. *Pharm J.* 2001; 266:673-4. News.

38. Royal Pharmaceutical Society. Implementing the CPD programme. *Pharm J.* 2002; 269:262-3.

39. James D, Beaumont S, Carter S et al. A framework for assessing the continuous development needs of community pharmacists. *Pharm Educ.* 2002; 2:63-8.

40. Austin Z, Croteau D, Marini A et al. Continuous professional development: the Ontario experience in professional self-regulation through quality assurance and peer review. *Am J Pharm Educ.* 2003; 67: article 56.

41. Hull H, Rutter P. Community pharmacists' attitudes and approaches to the Royal Pharmaceutical Society continuing professional development initiatives. *Int J Pharm Educ.* 2003; 11:R50.

42. Janke K. Continuing professional development: staying focused on the goal. *Am J Pharm Educ.* 2003; 67:article 50.

43. Shewhart WA. Statistical method from the viewpoint of quality control. Washington, DC: George Washington University; 1939.

44. Kolb DA. Experiential learning: experience as the source of learning and development. Englewood Cliffs, NJ: Prentice-Hall; 1984.

45. Smith DM, Kolb DA. The user's guide for the learning-style inventory: a manual for teachers and trainers. Boston: McBer; 1986.

46. Kolb DA. The learning style inventory: technical manual. Boston: McBer; 1976.

47. Archer J. CPD—What are the implications for pharmaceutical education? Paper presented at International Forum for Quality Assurance of Pharmaceutical Education. Nice, France; 2002 Aug.

48. The Pharmaceutical Society of New Zealand. Introducing the competence standards and ENHANCE. www.psnz.org.nz/Competence/Enhance/Enhance.htm (accessed 2003 Dec 22).

49. The Royal Pharmaceutical Society of Great Britain. Plan and record. www.uptodate.org.uk/PlanandRecord/PlanandRecord_TextV1.1.pdf (accessed 2004 Mar 12).

50. Boud D, Keogh R, Walker D, eds. Reflection: turning experience into learning. London: Kogan Page; 1985:7-17.

51. Foundation for Managed Care Pharmacy. Pharmacy's framework for drug therapy management in the 21st century. www.fmcpnet.org/fmcp.cfm?c=resources#a4 (accessed 2003 Dec 30).

52. American Society of Health-System Pharmacists. Best practices self-assessment tool. www.ashp.org/practicemanager/self-assessment.cfm?cfid=16071620& (accessed 2003 Aug 8).

53. Fiacco JA. President's address. NABP newsletter. 2003; 32:24.

54. Picton C, Brackley K. Using the medicines information framework to help continuing professional development (CPD).www.ukmi.nhs.uk/Policy_

product/Documents/Continuing Professional%20Development1.pdf (accessed 2004 Feb 16).

55. Carmichael JM. Continuous professional development (CPD): what is it? what does it mean from a practitioner point of view? Paper presented at ACPE's 10th Conference on Continuing Pharmaceutical Education. Seattle, WA; 2003 Sep 19.

56. Catizone CA. Report of the Executive Director. NABP newsletter. 2003; 32:19.

57. National Association of Boards of Pharmacy: Resolution 99-7-03. NABP newsletter. 2003; 32:14-5. 99th Annual Meeting, Philadelphia, PA, May 2003. www.nabp.net (accessed 2003 Jul 17).

58. American Association of Colleges of Pharmacy. Minutes of the House of Delegates sessions. www.aacp.org/Docs/AACPFunctions/Structure/5445_OfficialHOdMinutes03.pdf (accessed 2003 Aug 7).

59. Joint Commission of Pharmacy Practitioners news release. Washington, DC; 2003 Feb 26.

60. Accreditation Council for Pharmacy Education. Statement on continuing professional development. www.acpe-accredit.org/pharmacists/resources.asp (accessed 2004 Apr 6).