Continuing professional development: progress beyond continuing medical education

Helena Prior Filipe[1,2], Heather Gwen Mack[3], Karl C. Golnik[2,4]

[1]Hospital of the Armed Forces-PL-EMGFA, Lisbon, Portugal; [2]International Council of Ophthalmology, San Francisco, CA, USA; [3]University of Melbourne, Victoria, Australia; [4]University of Cincinnati, OH, USA

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Correspondence to: Helena Prior Filipe. Azinhaga dos Ulmeiros 1690 - 020 Lisboa, Portugal. Email: hpriorfilipe@gmail.com.

Abstract: Continuing medical education (CME) is rapidly evolving into competency-based continuing professional development (CPD) and this is driving change in self-directed CPD programs undertaken by individual practitioners as well as CPD programs or frameworks offered by CPD educators. This progression is being led by many factors including the rapid change in medical knowledge and medical practitioners along with changes in patients and society, healthcare systems, regulators and the political environment. We describe our experiences primarily concerning low-resource environments, in creating the International Council of Ophthalmology (ICO) Guide to Effective CPD/CME and in developing a CPD program for the Cambodian Ophthalmological Society (COS) twinned with the Royal Australian and New Zealand College of Ophthalmologists (RANZCO). At the conclusion of the project, 47 (100%) Cambodian practicing ophthalmologists were registered in the CPD program and 21 (45%) were actively participating in the online COS-CPD program recording. We discuss challenges in CPD, propose solutions to overcome them and recommend developing research in CPD as needed to effectively enhance educational activities with impact in public health.

Keywords: Continuing medical education; continuing professional development; competency; life-long learning; personal learning plan

Introduction

Continuing medical education (CME) (1), is rapidly evolving into competency-based continuing professional development (CPD) (2,3). This has been driven by many factors including rapid change in medical knowledge (4) and education of medical practitioners (5) along with changes in patients and society, healthcare systems, regulators and the political environment (2,3). In many jurisdictions, performing CPD is now an important component of maintenance of medical licensure (6,7). This narrative review provides clarification on changes in CME, describes CPD programs and systems, overviews the authors' experiences as CPD educators and highlights ongoing challenges in CPD in the healthcare professions, focusing on ophthalmology. Reflecting progress in the field we have chosen to use the term CPD throughout.

Life long learning: a professional culture

Life-long learning (LLL) consists of continuous training over the course of a professional career (8) and occurs over the continuum of competencies required for medical education (9). Good practices of CPD emphasize that LLL is a duty and an ethical obligation of the medical profession (10,11). LLL is implied when physicians take

the Hippocratic oath as a vowing demonstration that they should be primarily responsible for being self-directed lifelong learners, take personal responsibility for developing their learning goals and applying the best available evidence to address clinical questions.

The physician's motivation to engage in LLL is thought to derive from three main needs:

- To provide the best care for the individual patient;
- To honor the demands from employers and society;
- To attain and maintain job satisfaction (12).

Lack of time, insufficient compensation and poor system support may hinder professional engagement in LLL. Health care organizations and CPD educators need to nurture a culture whereby health professionals feel encouraged to further their learning (13).

Evolution of continuing medical education of healthcare professionals

CME is evolving to CPD and more recently competency-based CPD. The terms CME and CPD are closely associated and frequently used interchangeably. *Table 1* compares and contrasts the forms of on-going education.

CME may be defined as educational activities aiming to maintain and expand the knowledge, skills and professional performance required for a physician to serve patients, the public and the profession (1). CME is classically characterized by being teacher-driven and primarily lecture-based in order to deliver topics as chosen by the teacher with no necessary reference to individual learning needs, curriculum or patient outcomes. Nevertheless the contribution of effectively applied classical CME as a didactic, formal educational methodology to drive practice change should not be disregarded and is an interesting research field (14).

CPD may be defined as the process whereby physicians maintain and improve standards of medical practice through the development of knowledge, skills, attitudes and behavior (1). Worldwide, CPD has evolved from CME (15-17) and differs in a number of ways (*Table 1*). CPD recognizes competencies other than medical expertise as required to practice high quality medicine. In the Royal College of Physicians and Surgeons of Canada competency framework, the CanMEDS model includes leadership, communication, professionalism, collaboration, scholarship and advocacy (18). CPD acknowledges that learning can occur using multiple modalities, from which the interactive ones have been demonstrated as more

effective (19-22). It may occur in an informal setting, which can be unrecognized in a system based solely on lectures (23). CPD is ultimately self-directed and relies on the physician's learning needs self-assessment to tailor education to personal and organizational needs (24). This implies a reflective component, which despite its intrinsic value and recommendation to develop has been deemed as a significant limitation of CPD due to recognized difficulties in physician self-assessment (25-29).

As a further evolution from CPD, competency-based CPD is viewed as a dynamic process allowing lifelong development of competence. It is founded on clear, effective and measurable competencies necessary to practice high quality medicine (30). This implies the need for external assessment of patient outcomes, commonly by clinical audit (31).

Elements of a CPD program and system

A CPD program can be viewed from the perspective of the individual participant, but also from the perspective of CPD educators, providers and regulators (*Figure 1*).

Individual participant

CPD begins with developing a personal learning plan (PLP) (32-35). The PLP prompts a cycle of reflection, planned learning, undertaking activities and evaluation of learning known as the CPD cycle (36). The PLP allows each professional to tailor CPD activities (content, instructional design and setting) to their personal learning style, meet the identified learning need and apply the appropriate solution while meeting career objectives and ambitions. Recent participatory research following a modified Delphi method based on several CPD stakeholders' perspective (patients, education, scientific and society) confirmed the relevance of the individual needs analysis (37).

Elements of an individual CPD program are shown in *Figure 2*. A learning gap may be identified by reflection on clinical care activities, formal self-assessment or regulatory body examination. This triggers the foundational sequence of PLP professional questions: (I) What will I learn? (II) How will I learn? (III) How well have I learned? These activate the corresponding cyclic CPD actions: reflect, plan, learn and assess. Quality assurance, quality improvement, control and regulation are three critical elements of a CPD program. Accreditation of learning activities and re-licensure are highly related to producing effective CPD and

Table 1 Comparison showing the evolution of continuing medical education to competency-based continuing professional development for the medical professions

Characteristics	Continuing medical education	Continuing professional development	Competency-based continuing professional development
Drivers	Teacher	Self-directed	Self-directed; needs of health-care system
Focus	Clinical expertise	All competencies required by medical practitioner	Performance of medical practitioner in clinical practice
Curriculum	No	Yes	Yes
Delivery	Formal lectures in auditoria	Wide-range of learning methods, including on-line and informal, unplanned learning	Wide-range of learning methods, including on-line and informal, unplanned learning. Includes audit of performance in practice
Outcome	Improved patient care	Improved patient outcomes	Improved patient outcomes; meets needs health-care system
Comment	Decontextualized, fragmented	Self-assessment and reflection are assumed	Performance in practice is measured objectively
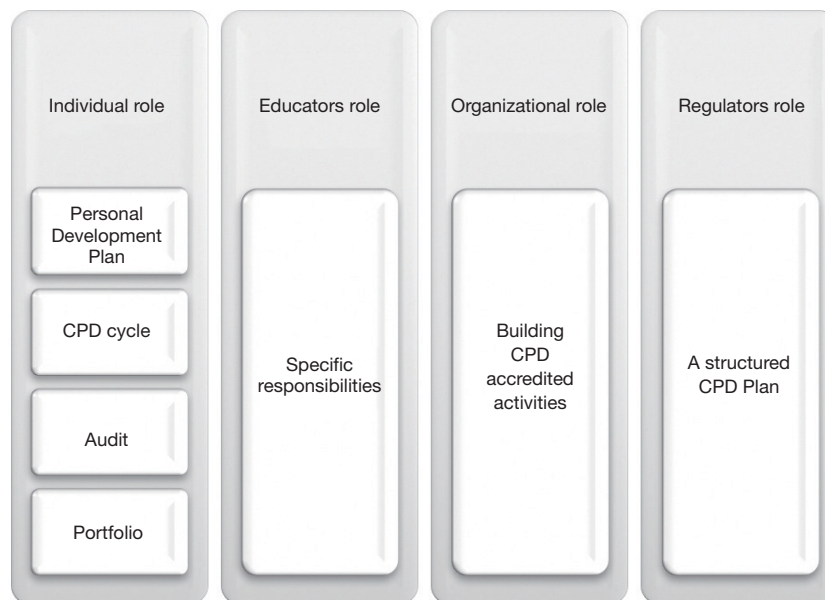
Figure 1 Continuing professional development may be viewed from the perspective of the individual, educator, organization and regulator.
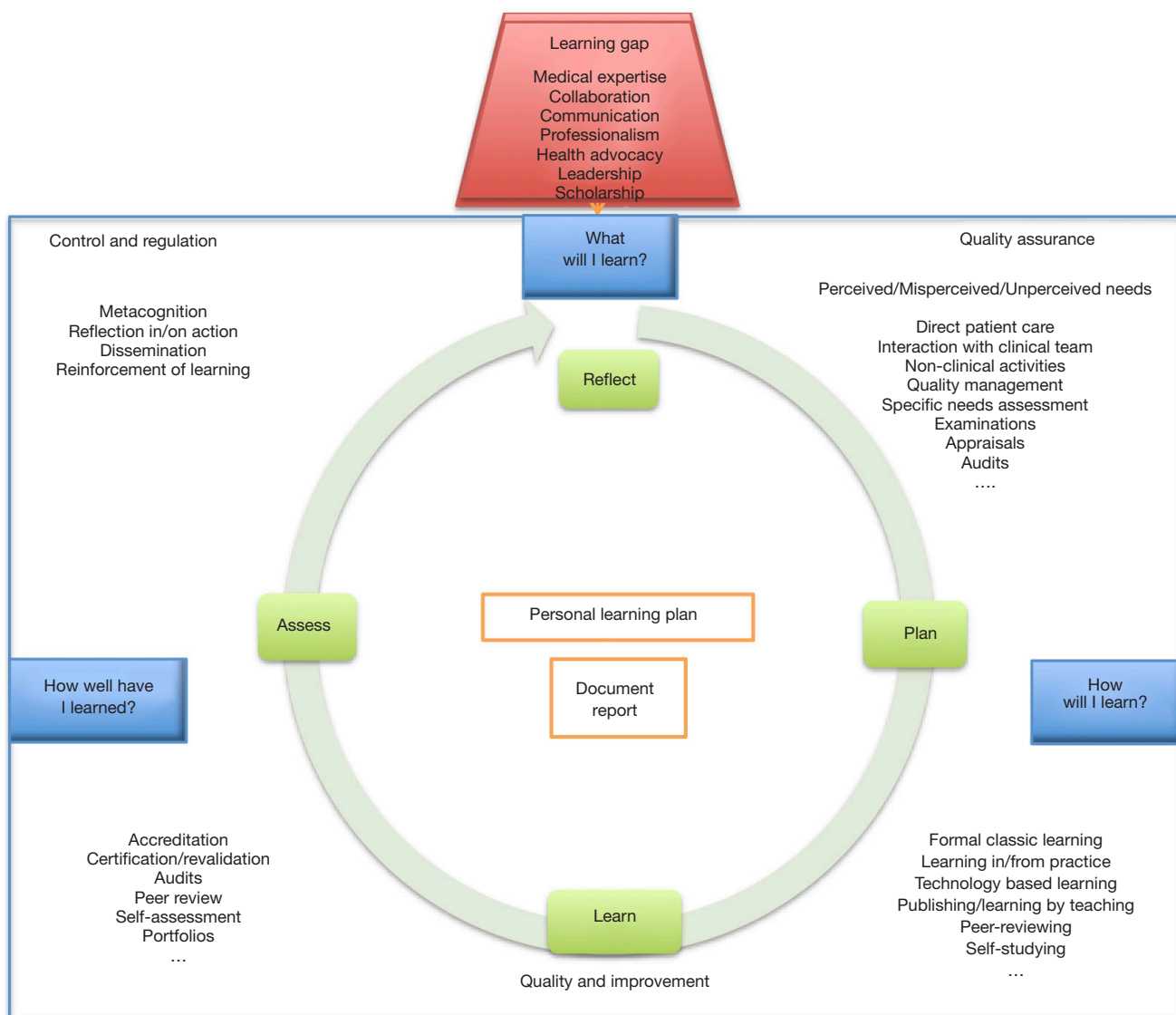
Figure 2 The relationship between continuing professional development performed according to an identified learning gap and its external influencing factors including quality assurance, quality improvement and control and regulation. A perceived, unperceived or misperceived professional learning need in any medical competency (red trapezoid) triggers the foundational sequence of the personal learning plan questions: (I) What will I learn? (II) How will I learn? (III) How well have I learned? (Blue rectangles). These generate the four personal cyclic CPD actions: reflect, plan, learn and assess (green boxes). Several activities should be undertaken to advance the CPD cycle (37) (side-text). An effective CPD system circumscribes and includes the demonstration of this process. Adapted from (38) with ICO permission. Available online: www.icoph.org/ICO-CPD-CME.html

may be undertaken by individual or combined regulatory authorities.

Clinical audit is one method to assess patient outcomes and review processes. An audit is a five-step cyclic process: (I) identify the problem; (II) set criteria and standards to establish the acceptable level of performance; (III) collect data through direct observation, peer-review, questionnaires, etc.; (IV) compare practice with the set standards, report if those were met, otherwise explain why not; and (V) implement changes. The process continues

with measurement of changes and re-audit if necessary (32,39).

Portfolios are useful tools to record and demonstrate CPD activities and review the physician's practice. Online or hard copy portfolios stimulate reflection on and in practice (40-42).

Effectiveness of CPD programs may be assessed using the classical descriptive Miller's pyramid, Moore's Outcome-based CME Evaluation Model and the Accreditation Council for Continuing Medical Education framework (43-45). Although not the topic of this review, there is extensive literature confirming that undertaking CPD (22,23,46-48) and clinical audit (49) improves physicians' performance and patient outcomes.

CPD educators

CPD can be considered part of the medical education continuum (9) and thus medical educators should be involved in CPD systems and curriculum design, teaching and outcomes assessment (50).

CPD as a discipline is evolving along with other aspects of the medical education continuum. Swanwick identified three trends driving development of postgraduate medical educators: professionalization of medical education, increasing accountability and the pursuit of educational excellence, all of which are evident in CPD (51). The medical education movement towards competency-based education is clearly important for developing skills during professional practice but has been incompletely studied in the CPD setting (31).

CPD systems and providers

CPD systems are the framework to guide individuals undertaking personally directed CPD. Ideally CPD systems are designed by CPD educators and implemented by CPD providers, which should include professional societies (e.g., ICO, RANZCO, American Academy of Ophthalmology).

Increasing mobility of the healthcare workforce in a globalized world will be facilitated by mutual agreements regarding professionals' qualifications and CPD systems (6,52). International standards encourage CPD participants to self-assessment, help providers to design and offer effective learning interventions, and support regulators.

Societies and Colleges should engage in developing structured systems to

- Facilitate overburdened physicians recording their personal learning activities and demonstrate CPD progression;
- Act as an interface and bridge all stakeholders;
- Inform clear guidelines and good practice standards within the medical profession;
- Provide templates and forms for submitting learning interventions to validate;
- Align CPD content, delivery format and outcomes assessment;
- Develop inter-professional education and teambuilding educational strategies;
- Embrace information technologies to enable timely learning opportunities stretching from the classroom to the point of care;
- Manage profession regulation aligned with improvement in patient safety and improvement in public health;
- Define program financing;
- Develop a scientific basis for CPD practice.

CPD and medical regulators

There is considerable worldwide variation regarding the process of regulating the maintenance of medical license to practice. Although foundational good practices are generally accepted, systems vary in detail or prescriptive criteria and corresponding consequences, with most of them relying on professional self-regulation. While in some jurisdictions there are no requirements, others request the demonstration of undertaken CME activities as credit units based on spent learning time. There is however a trend for demonstrating CPD progress supported on patient outcomes and improvement in public health as necessary for on-going medical licensure, known as revalidation, recertification or maintenance of certification (MOC) (6,7). Conversely, poor CPD performance has been associated with dyscompetence and investigation by medical regulators (53).

Factors driving change in continuing medical education

Several components concerning medical knowledge, medical practitioners, patients and society, healthcare

Table 2 Factors driving change in continuing professional development of medical practitioners

Factor driving change	Components
Medical knowledge	Rapid growth (4)
	Rapid redundancy (54)
	Evidence-based medicine
Medical practitioners	Need to demonstrate competency to patients
	Medico-legal consequences of changes in medical knowledge
	Increased global mobility
Patients and society	Demographic changes
	Increase in chronic disease
	Increased global mobility
	Increased expectations for doctor accountability
Healthcare systems	Increasingly complex (55)
	Funding constraints
	Inter-professional team work (56)
Regulators	CPD requirement for revalidation
	Patient outcome analysis requirement for revalidation
Political environment	Increased international recognition of professional qualifications (EU directive)

systems, regulation processes and requirements and the political environment account for the ongoing change in continuing professional education (*Table 2*).

The recently updated European Union directive on the recognition of professional qualifications represents a significant political endeavor to reach a mutual agreement in educational activities validation and healthcare qualifications. The document contains clauses regarding CPD for the healthcare workforce with the purpose to improve quality and maintain patient safety among the European Union (EU) countries (57).

Industry became a major source of research and funding after World War II. A study showed that 94% of U.S. physicians had a relationship with industry and from those 60% were involved in medical education and 40% in elaborating clinical practice guidelines. Given the significant industry sponsorship of CPD, disclosure of financial relationships between physicians and industry became critical. The Sunshine Act is a program created to balance data transparency against eventual effects on CME innovation. The program aims to manage potential conflicts of interest without affecting a constructive collaboration with industry (58,59).

Report of authors' experiences

As CPD educators and bearing in mind the special needs of low-resource countries we focused on creating the "ICO Guide for Effective CPD/CME" (38), and in developing a CPD program in Cambodia following the twinning model (60).

The additional challenges of CPD in low resource settings and difficult circumstances, the geographically remote regions, the worldwide variety of CPD programs and systems and the increasing need to hold a holistic perspective of CPD were among the major reasons for the members of the International Council of Ophthalmology (ICO) Committee for CPD and their invitees to create the "ICO Guide to Effective CPD/CME". They wrote collaboratively a collection of problem-based design manuscripts to guide to foundational concepts and relevant questions regarding CPD/CME. The manuscripts were organized into five sections reflecting the variety of perspectives of CPD stakeholders, who were grouped into four categories: Participant, Educator, Provider and

Regulator. A Glossary and a "Forward & Perspectives" section with comments from ICO leaders and other individuals with interest in CPD were added. Some planned redundancy prevents the need for sequential reading of the collection of evidence based, stand-alone chapters, each holding a learning event. Hyperlinked words or phrases direct the reader to more detailed reading in other chapters. After proof reading, edition, and revision by external reviewers the e-book was formatted to be available online and downloaded for free. As a living document, it will welcome updating of existing manuscripts, future additions and feedback of how users utilize it in practice (38).

A CPD program for Cambodian ophthalmologists was established by partnering (twinning) between RANZCO and the Cambodian Ophthalmological Society (COS) (60). A conjoint committee comprising four ophthalmologists from RANZCO and three ophthalmologists from COS was established, supported by a RANZCO administrative team experienced in CPD administration. CPD requirements and recording were adapted from the RANZCO CPD framework. At the end of the 3-year program, at handover to COS a CPD program and online recording system had been established. All 47 (100%) practicing ophthalmologists in Cambodia were registered for CPD and 21/47 (45%) were actively participating in the COS CPD program on-line recording.

Participants were surveyed for attitudes towards CPD before program development and after handover to COS. They were asked to use a Likert scale to rate statements such as "*I support the development of a CPD program for Cambodian ophthalmologists*" (Question 1) and "*I am happy for the Cambodian Ophthalmological Society to keep records about my CPD activities*" (Question 2). Responses demonstrated no statistically significant change. For example for Question 1 the proportion "agreeing" or "strongly agreeing" increased from 96.3% [2013] to 96.9% [2016], The reasons for no detected attitude change towards CPD might include a low response rate, biased responses (determined by participants uninterested in CPD and not responding), survey poor question wording eliciting expected rather than genuine responses and lack of cultural acceptance of the importance of participating in CPD.

Challenges in CPD

From our experiences we note the following challenges in CPD:

- Identification of the most consistent CPD tools to demonstrate outcomes for physicians and professional accountability to society;
- Worldwide constrained human, financial and didactic resources;
- Teaching material not available in participant's first language;
- Poor compliance with best CPD practices;
- Diversity in remediating, sanctioning and praising modes;
- A proper definition of commercial sponsorship and biased education might still be absent in some systems;
- Compulsory systems, sometimes associated with re-licensure, are expensive and have not yet been proven as associated to better healthcare outcomes;
- Assessment of CPD cost-effectiveness;
- Assessment of the cost-effectiveness of formal CPD accreditation systems;
- Lack of a clear role-definition and coordination of all CPD stakeholders.

We emphasize two approaches as potentially effective solutions for the challenges in CPD. These would include the recognition of

- The relevance of CPD by medical educators and medical regulators, particularly those in leadership positions. These key opinion leaders can effectively lead the cultural change necessary for CPD to take its place in the medical education continuum rather than being an optional activity after graduation from medical training;
- The CPD costs as part of the medical services provision budget, so that both medical services purchasers and providers are able to fully resource CPD activities and systems in a transparent manner.

With adequate recognition and resourcing, CPD providers will be better placed to improve the quality of educational activities and fund research in CPD that will underpin its ongoing quality improvement with a clear public health impact.

Our recommendations for future research are as follows:

- Researchers should adopt a common framework focused on the educational theory underneath CPD and its clinical application (50);
- Assessing CPD systems and their impact on health professionals' performance is essential to find guidance for investing in CPD. Evaluating outcomes' higher levels should be seamless and the

data used to enhance quality and evidence-based CPD (61);

- Enhancing the profession of CPD by developing CPD providers and educators skilled in needs assessment, instructional design and program evaluation is critical.

Conclusions

Professional, social, political and economic context is driving CPD to structured, regulated mandatory systems. Mandatory or voluntary, CPD systems should be flexible and focused on lifelong learning as a primary duty and an ethical obligation of the medical profession.

If effectively applied, formal, didactic CME lectures may be a component of best practice CPD systems. Content other than medical expertise and modalities including informal, social, web based learning activities are considered valid in effective CPD. CPD has been evolving to competency-based CPD. This is anchored on a framework of clear, effective and measurable competencies and places increased emphasis on aligning healthcare quality improvement with physicians' practice change, life long learning, assessment and educational strategies.

CPD systems should be built on the PLP, comprise several relevant components, promote innovative educational strategies at the professional and organizational levels and build upon robust research for self-regulation and effectiveness.

Despite the worldwide diversity to conduct CPD, the increasing globalized mobility of patients and healthcare professionals is leading to the need of some mutual agreement among professional organizations and harmonization of CPD best practice. CPD development in low resource regions represents an additional challenge though a significant rewarding value to pursue.

Structured CPD systems should facilitate health professionals to meet the system's requirements, provide an interaction interface for all stakeholders and enable the development of effective educational programs built upon CPD research.

Effective CPD systems should ensure that healthcare professionals are prepared to provide patient centered care, work effectively in inter professional teams, use evidence-based medicine and health information technologies to timely access educational resources, gather and analyze patient data to make informed decisions and apply quality improvement resources.

Footnote

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