

Continuing Professional Development

Reflections on a Lifelong Learning Process



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KEYWORDS

- Continuing professional development • Lifelong learning • Self-assessment • CME • CE

KEY POINTS

- Self-directed continuing professional development (CPD) is a key lifelong responsibility of health practitioners to maintain competencies requiring ongoing performance review and self-assessment.
- The creation and use of an individualized CPD plan with specific goals and identified resources and actions to meet them are critical to meaningful continuing education.
- Several evidence-based methods for self-assessing CPD are identified and discussed.

INTRODUCTION

Continuing professional development (CPD) is a responsibility of practicing health professionals to maintain and enhance their performance and improve health care outcomes. It requires professionals to monitor and reflect on their performance, identify opportunities to improve professional practice gaps, engage in formal and informal learning activities, and make practice changes to reduce or eliminate performance gaps.¹ CPD is a lifelong learning process that begins during graduate and postgraduate education and training and continues after obtaining independent licensure. Although initial professional education and training may be structured, as their careers develop, professionals generally have greater discretion in their learning processes. How practicing professionals approach and respond to ethical and legal CPD

Disclosures: The authors have nothing to disclose.

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Psychiatr Clin N Am 42 (2019) 447–461
<https://doi.org/10.1016/j.psc.2019.05.002>

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expectations is generally an individual decision, influenced by personal preferences, practice areas, and possibly explicit licensure and/or certification requirements.

This article reviews the value of CPD and presents some of the ways health professionals can develop, implement, and evaluate their personal CPD during their professional careers. Habits that facilitate CPD, the use of self-reflection and self-assessment of practices, developing a personal CPD plan, and obtaining and evaluating the impact of a diversity of learning experiences are presented.

CONTINUING PROFESSIONAL DEVELOPMENT EFFICACY AND BASIS FOR CONTINUING PROFESSIONAL DEVELOPMENT

The benefits of CPD activities have been shown to improve clinical competence and, to a lesser degree, practitioner performance, resulting in improved client/patient health.^{2,3} Some forms of continuing education (CE) have greater impact than others on practitioner performance and client/patient health. For instance, Cervero and Gaines² (2015), in a study of physician continuing medical education (CME), found that the most effective forms of CE were interactive, used multiple methods, involved multiple exposures, were longer, focused on outcomes, and were considered important by the participants.

In addition to demonstrating initial competency for independent practice, practitioners are increasingly being held to higher standards for relicensure and recertification by changing mandatory CE requirements. These requirements vary considerably across professions and regulatory jurisdictions and often include requirements for specific types of required content and amounts of time. As professional practices evolve, and new standards are adopted, CE requirements are becoming more specific, and, at times, limiting practitioners' choices about how they comply with them. An example of this is the increasing inclusion of telehealth practice in state health professional licensing laws and regulations that may include explicit CE requirements (eg, Georgia Composite Board of Professional Counselors, Social Workers, and Marriage and Family Therapists⁴; Texas Board for Marriage and Family Therapists⁵).

CPD is more than periodically obtaining a minimum number of CE credits. CPD is commonly considered to be a self-directed and planful ongoing process of maintaining and enhancing individual professional competencies as well as the improvement of practice performance. Much of currently mandated CE is didactic, knowledge focused, and as a result may relate little to practitioner performance.⁶ In addition to remaining knowledgeable about relevant practices, practitioners must maintain or acquire needed skills and attitudes to retain their ethical and legal requirement for competency maintenance. In a world where educators have struggled for decades to develop pretest and posttest models for assessing change after professional education programs,⁷⁻¹² educators have shifted their top-down stance to consider and address the perspective of the learner directly. As a result, and to improve on traditional training models, practitioners are now being urged to learn a variety of clinical skills through a process called lifelong learning (LLL) or the ongoing gaining of knowledge and skills throughout life. LLL is now considered to be crucial to apply knowledge, develop skills, and adjust attitudes for clinical care.^{13,14} Practitioners are therefore encouraged to reflect on, learn more about, and solve challenging problems in practice, which requires maintaining a variety of skills (not just knowledge),¹⁵ developing new ones, and fostering a drive for both excellence and learning.

Many fields, disciplines, and professions are also trying to help practitioners adapt to changes in health care (eg, technology), and this trend continues to shape change in graduate education programs. In the future, there will most likely be more online

training, simulation, and/or interactive electronic examinations that include technical innovations such as artificial intelligence. In addition, professions are beginning to move from training and follow-up examination steps to a longitudinal series of micro-steps; a culture of weekly to monthly learning rather than a quasiannual or 10-year cycle of recertification based on examinations.^{16,17}

Practitioners must recognize and deal with multiple potential barriers for CPD. Even if no negative attitudinal biases exist, other issues may interfere. For instance, time commitments and priorities for other activities may compete for availability to engage in CE activities, especially for extended or multiple CE activities. Other possible factors influencing and obtaining CE include organizational budgeting, personal costs, burnout, not having clear CE goals, work-personal balance, and geographic access.

SELF-CARE: SETTING THE STAGE FOR A CONTINUING PROFESSIONAL DEVELOPMENT PLAN

Nurturing yourself is not selfish – it's essential to your survival and your well-being.
—Renee Peterson Trudeau

Although CPD at times may seem like an added burden to an already challenging set of professional demands, it is helpful to keep in mind the positive aspects of CPD activities and motivations for choosing a medical or health care profession. Typically, health care professionals have a strong commitment to help benefit others and a desire to learn, wanting to give back to their profession and to experience having made a meaningful contribution in the life of others.

Professional well-being is not just altruistic care for colleagues but also benefits client/patients, because professionals work best when they care for themselves.¹⁸ The clinical career path can be an exciting and demanding endeavor, which at times can lead to stress and challenge to a professional's well-being. Being attentive to both personal and professional needs ought not be ignored. Regularly engaging in good self-care practices and activities that reduce stress, maintaining a daily routine, reasonable self-expectations, and a balance in personal and professional lives are advised.

DEVELOPING A CONTINUING PROFESSIONAL DEVELOPMENT PLAN

Once health professionals have completed formal education and training they are reliant on self-directed CPD to meet their professional goals and requirements for licensure and certification (Table 1). However, this emphasis on self-directed learning can be problematic because of the potential for inaccuracy in identifying learning needs.¹⁹ Namely, when examined, practitioners have shown difficulty in accurately identifying their own deficiencies or weaknesses. More specifically, a review of studies of competency self-assessments found a low relationship between physician self-ratings and external ratings.²⁰ Davis and colleagues²⁰ reported, in their review of such studies, that those practitioners with the lowest external competency ratings were consistently the most likely to overestimate their competence. Multiple studies of self-assessments have found the same flaws with self-assessments.²¹ The potential bias in self-assessment calls not only for humility but also for alternative sources of input when clinicians assess their own performance. Rather than relying solely on personal judgments, practitioners ought to discipline themselves by not only regularly evaluating their own professional practice and related attitudes but also inviting client/patient and peer review of the practitioner's performance along the same dimensions. To make the process manageable, developing a simple checklist of

Table 1
Components of an individual development/learning plan for professional and personal life

Component	Description	Outcome Measures	Concerns/Bad Signs
Health and Wellness			
Cognitive	Acquiring knowledge via senses	Attention, creativity	Forgetting context or key memories
Social	Meaningful interaction with others	Relationship quality and quantity;	Isolation
Physical	—	Adequate energy	Fatigue
Emotional	Interest, passion and empathy	Coping and presence	Depression
Necessary Self-directed Learning			
Case-based reading	Reread and/or read in depth on challenging issue	Self-efficacy and knowledge improve	Superficial and/or too in-depth passages
Individual journal clubs, webinars	Brief overview of new issue or recap of one	Knowledge and resources	Multitasking
Peer consultation: individual and/or group	Seeking help, advice, and perspective	Understanding, shared experience	Isolation; rote fixes
CE/CME in-depth course to target area	Depth-based priorities for new interests	Knowledge and skills, tips, and best practices	Cost, time, and failure to apply to cases
Longitudinal series on a topic	Incremental learning with others	Networking, application of information	Inadequate time to prioritize
Self-assessment and Peer Assessment/Reflection			
Our assessment of errors or things we would have done differently	Set aside time to review key decisions and outcomes Diary for logging path	Weigh outcomes over time for perspective and take preventive steps	Errors based on patterns continue and compound problems and bad outcomes

Feedback from client/patients, peers and systems	Ask client/patients periodically Use meetings, conferences for support	Structured time for support, feeling part of, and learning together	Improvement in medical practice (PIP) from American Board of Psychiatry and Neurology (see Table 2)
Examination on clinical practice	Objective verification of knowledge and skills	Identify strengths and areas for improvement to plan better	PIP examination from American Board of Psychiatry and Neurology (see Table 2)
Data-based feedback	Automated data systems provide input on outcomes and decisions	Perspective on patterns of behavior and positive/negative tendencies	Electronic health record, personal health monitor for client/patient
Mandated Components			
State (eg, pain/palliative care, suicide prevention, ethics)	Obtaining training in specific required topic areas	Improved knowledge and skills about mandated topics	Lack of awareness of need for training
Professional organization based (eg, medical license for psychiatry, ethics)	Stipulation of clinical training in line with clinical competence	Includes a wide range of knowledge, skills, and attitudes	Reports to professional and/or medical board may be frivolous or serious
Certification	Compliance with requirements for certification	Maintenance of certification	Loss of certification

Abbreviation: PIP, practice incentives program.

relevant criteria may be applied to self-review and, similarly, used to solicit client/patient and peer feedback along with a traditional review of individual client/patient outcomes.

CLINICAL MEASURES FOR EVIDENCE-BASED FINDINGS

Practitioners seeking to be rigorous about their professional development may also want to include more objective measures of performance with clients/patients based on competencies/skills, guidelines, practice metrics, and financing mechanisms for those in systems of care. Competencies dovetail with LLL as a part of ongoing practice, and some of the other approaches are easy to build into practice (eg, evidence-based practices in the Veterans' Health Administration).²²

A rigorous focus on personal competencies may lead to identification of areas of needed additional professional training, the development of health record templates, fidelity measurement, and long-term client/patient outcome metric analysis. Engaging in this process may be easier said than done. Guidelines may be difficult to implement, given that many existing guidelines are intentionally aspirational but lacking in specificity regarding outcome measurement; frequently incomplete, as when considering diverse populations or settings; and contradictory, such as with a client/patient struggling with 3 or more chronic diseases.²³ If it is assumed that the practitioner will conduct standardized assessments to measure targets such as depression severity, psychotic symptoms, or substance use,²⁴ questions begin to mount:

- How can topics of primary focus for self-review be identified?
 - Correct behaviors
 - Incorrect behaviors
 - Remediation or updates
 - Typical complaints from peers?
 - Client/patient?
- How much time does it take for the practitioner to complete a self-review?
- How regularly should that optimally be completed?
- How much time does it take for clients/patients/peers to complete any surveys?
- How much time should be budgeted to conduct and review the results of client/patient surveys?
- How can the data be efficiently collected, analyzed, and used?
- Where should the data be kept (cloud, thumb drive at home, office, hard drive)?

BOARD CERTIFICATION AND CONTINUING PROFESSIONAL DEVELOPMENT

Obtaining and maintaining specialty board certification can be a major influence on how health professionals approach CPD. Board certification is among the most important milestones in professionals' lives.²⁵ The primary purpose of certification and maintenance of certification is to protect the public. It is also a way for specialists to show to their peers and to institutions and organizations that they meet essential standards. The process (an example for psychiatry is outlined in [Table 2](#)) consolidates years of learning to assess competence as a specialist physician. The initial certification examination entails more knowledge-based than performance-based components, and recertification typically verifies the candidate's up-to-date knowledge of the field. Starting in the early 1990s, the American Board of Psychiatry and Neurology¹⁶ moved to issuing 10-year, time-limited certificates to candidates who had successfully passed part I and part II of the boards and to candidates who had successfully passed subspecialty certification examinations. Individuals also began

Table 2
Examples of current and projected professional organizational/board approach to development in practice (American Board of Psychiatry and Neurology Maintenance of Certification outline)

Component	Current ABPN	Transition from Current Medicine and Psychiatry to 2025 and Beyond	Comment
Part I: Professionalism and Professional Standing	<ul style="list-style-type: none"> Active, full, and unrestricted medicine in United States or Canada 	Continue	Interstate compacts and innovation across states rare (eg, Veterans' Affairs)
Part II: Lifelong Learning (CME) and SA	<ul style="list-style-type: none"> Diplomates choose their own category 1 CME activities. SA CME activities are selected from the ABPN Approved Products list or diplomates gain credit for up to 2 different types of non-CME SA activity options SA CME credits contribute to the overall number of CME Includes a 1-time patient safety activity for those certified in 2016 and after 	<p>Technology-structured CME increases Quality improves</p> <p>Integration increases, potentially across systems, and feedback and monitoring may increase</p> <p>Requirements, updates, and other such interventions may increase</p>	<p>There will most likely always be some elective, but selectives will increase because of time, money, and requirements from boards</p> <p>Boards may have more requirements because of showing impact of efforts</p>
Part III: Assessment of Knowledge, Judgment, and Skills	<ul style="list-style-type: none"> Take a recertification examination every 10 y 	Interactive electronic examinations, over time/longitudinal will be an option to replace formal examinations (eg, 10-y cycles of recertification; American Boards of Psychiatry and Neurology or Anesthesiology)	Microsteps (a culture of weekly to monthly learning) or a quasiannual approach is better for learning and practice (eg, MOC anesthesiology 2018)
Part IV: Improvement in Medical Practice (PIP)	<ul style="list-style-type: none"> Diplomates identify and implement areas for improvement based on review of their own patient charts (clinical module) or collect feedback on clinical performance from peers or patients via a questionnaire/survey (feedback module) Diplomates must select and complete their own PIP activity from the approved products 	Annual examinations, or the regular weekly/monthly option, will increase in popularity for a sizable group, but not all will want that option	These better examine practice, offer learning opportunities, and provide timely feedback

Abbreviations: ABPN, American Board of Psychiatry and Neurology; MOC, maintenance of certification; SA, self-assessment.

to participate in a maintenance of certification (MOC) program, which, in combination with the recertification, are vital steps in the process of lifelong learning.

With psychiatry, again, as an example, the American Board of Psychiatry and Neurology (ABPN) requires 4 components in an ongoing fashion. Part I is Professionalism and Professional Standing (eg, unrestricted medical license). Part II is Lifelong Learning (CME; CE for other fields) and Self-Assessment, with free choice of activities except for a 1-time client/patient safety activity for those certified in 2016 and after. Part III is Assessment of Knowledge, Judgment, and Skills via an examination every 10 years. Part IV is Improvement in Medical Practice (Practice Incentives Program [PIP]; unique across behavioral health professions but not within medicine), in which diplomates identify and implement areas for improvement based on review of their own client/patient charts (clinical module) or collect feedback on clinical performance from peers or clients/patients via a questionnaire/survey (feedback module). This quality improvement exercise is designed for clinically active physicians to identify and implement areas for improvement within their own practices.

Practitioners' choices for evaluation in this area could dovetail to some degree with clinical interests, individual learning plans, and with boarding requirements, overall. Evaluation selections are done with clients'/patients' input and should focus on a standard measure of a target outcome that is already widely used to capitalize on the evidence base. It should align with regulatory and payor metrics, which shift over time. The measure used should directly shape quality evaluation or clinical decision making. The results should be accessible or be technologically inserted into practitioner notes, if possible, to inform decision making.

Using the ABPN example given earlier, a practitioner's CME could focus on any area, although the PIP portion may fit with the evaluation of care metric (eg, health questionnaire for depression with client/patient and/or peer input). In other areas of medicine, the American College of Cardiology has introduced the Lifelong Learning Portfolio (LLP), largely conducted via technology, and tools such as CardioCompass to search guidelines.²⁶ The Maintenance of Certification for Anesthesiology uses the MOCA Minute, an interactive learning tool being piloted to replace the cognitive examination. It consists of multiple-choice questions such as those typically on MOC anesthesiology examinations (30 questions per calendar quarter).¹⁷

CONTINUING PROFESSIONAL DEVELOPMENT PLAN

Individual CPD means having an intentional approach to CE or CME that meets personal professional goals as well as external CE requirements. Knowing one's practice involves the process of ongoing self-assessment previously described that identifies practices that the practitioner seeks to improve, add to their areas of competency, or discontinue.

Deciding on personal goals based on the self-assessment is the next step in developing a CPD plan. Using the SMART approach (ie, writing goals that are specific, measurable, achievable, realistic, and time bound) is a useful time-honored way to describe CPD plan goals that provide clarity and accountability.

The next step in creating a CPD plan is to identify and access resources and learning opportunities to achieve the plan goals (Table 3 lists examples with some pros and cons for each). This step includes many diverse modalities from formal courses to informal interactions with peers. CE to achieve CPD goals may include a wide range of formal learning opportunities, such as courses, conferences, lectures, workshops, webinars, seminars, and symposia. Documenting or accounting for CE credits

Table 3

Continuing education development activities and resources

Activity/Resources	Pros	Cons
Formal course instruction	Selected topic can be very specific to individual needs, potential to interact with other learners regarding topic Selecting a course requires prioritization and use of resources; purposeful process	Time commitment, registration expense, scheduling, especially if done in person vs online
Webinar attendance	Selected topic can be specific to individual needs, if recorded version is available, easy to schedule	May not offer level of learning relevant to learner, if limited to live presentation may not be easy to schedule
Participation in peer consultation	Provides different practice perspectives (particularly if in a group format) and ideas, can be informal, may be as needed or regular intervals	Time commitment, availability of colleagues for meeting
Conferences and organizational meeting attendance	Interaction/discussion with professional colleagues, content may be timelier than published literature Purposeful, invigorating, and breaks up routine	Cost in travel, registration, lodging, scheduling
Providing supervision	Provides formal instruction and guidance for demonstrating and meeting competency requirements Rewarding and inspiring to work with trainees	Time commitment, availability of supervisor with desirable practice knowledge and skills, possibly expense
Reading professional literature	Remain informed about current research and practices, ease of access, inexpensive with university library access	Time commitment for regular reading, expense if numerous journal subscriptions
Writing professional publications	Motivates to remain current about current research and practices Solidifies and concretizes knowledge	Time commitment, availability of resources
Journal reviewer	Remain informed about current professional research and practices	Time commitment
Making presentations; conducting workshops, seminars; teaching classes	Motivates to remain current about current research and practices Networking is good, particularly in workshops and posters	Time commitment for preparation and presentations, demands remaining up to date regarding current practices

obtained is important for personal tracking as well as for licensure or certification requirements.

Although participation in formal CE or CME modalities is often the major focus of CPD, informal modalities can be important means of achieving individual CPD goals. Informal types of CE may include independent reading of professional literature, peer consultation, peer mentoring, and participating in professional organizations.

Clinicians engaging in informal types of CE may be underappreciated as a valuable way to broaden their professional perspective and learning opportunities. It frequently offers greater flexibility in what it focuses on and in gauging the amount of time and effort it involves. The following are several examples of informal CE for practitioners to consider.

Available and accessible professional information and educational resources have dramatically expanded during the computer age and are used by many health care professionals for CPD. Although younger practitioners may be more receptive to using technology for educational purposes than older practitioners,²⁷ it remains an important learning mode for all health care practitioners. For example, a recent national survey of board-certified US physicians that recorded what educational technologies they used found that nearly all (97%) used online learning and most (84%) had used simulation-based education for their professional development.²⁷ Online educational opportunities are not only convenient in terms of time and access but sometimes are available at no cost. For instance, one of the authors of this article recently, during the middle of a work day, attended such a CE-approved webinar sponsored by his liability insurance carrier that provided information about certification of emotional support animals.

A tremendous amount of professional literature is freely available on the Internet. Resources such as PubMed provide practitioners opportunities to find professional publications about specific topics within minutes. Some open access and full text professional publications are readily available at journal sites. Practitioners with academic affiliations can access university libraries at a distance to download articles and request and obtain access to books. Sites such as ResearchGate offer opportunities for sharing information about professional activities and publications.

Practitioners can benefit from engaging in individual or group peer consultation or peer mentoring.^{28–30} Regardless of what stage a practitioner's career is at, the use of informal collegial consultation can provide peer feedback, facilitate exchange of alternative perspectives and ideas, and be important in maintaining and improving practice performance. This process can effectively occur in person, or with the use of technology, at a distance. The use of secure teleconferencing for this purpose may be especially useful for practitioners who have few locally available peers.²⁸

Actively participating in professional organizations is a major way of remaining informed about current and changing professional practices. Practitioners, clients/patients, professional boards, licensing agencies and (if part of a network or system) many others (eg, payors) in health care shape the definition of quality, its measurement, and its outcomes.³¹ Although all efforts theoretically are directed toward good care, sometimes there are competing ideas, preferences, and agendas. Professional organizations play 2 important roles: one in buffering issues that do not align or are in contradiction, and the other in organizing issues by providing updates, translating complex concepts, and providing support (eg, networking, interest groups). In addition to traditional conferences, list serves also offer announcements, job opportunities, and important information about industry standards, codes of ethics, and updates on policies. Usually, institutions (eg, academic centers) and professional organizations usher in changes related to financing, critical incidents, and/or new

data that affect how practitioners provide care and leads backward to educational requirements (eg, CE) and at times service changes (eg, Joint Commission³² 2017).

EVIDENCE-BASED METHODS FOR EVALUATING PROFESSIONAL DEVELOPMENT

With the Internet at every professional's fingertips, almost anyone can find topics of interest to appease their curiosities, but planning, executing, and assessing the success of LLL is an different matter. Organizing training and conducting self-assessment of change for CPD is a challenge for many professionals. The issues are complex. The theory and application of assessment tools for structured, formal assessment of learning at the preclicensure and postlicensure levels for professionals is still in the throes of controversy and approximations to the goal.^{6,33}

Despite decades of research focused on evaluating in-person professional development, models for assessing the outcome of training experiences at conferences, conventions, and workshops have failed to lead to widespread usage of program assessment tools.⁶ At least as far back as 2002, researchers have documented that more than 90% of professional development programs measure participants' reactions because of issues relating to implementation, cost, and usage rather than a change in knowledge or related behavior.^{8,34} Even now, typical evaluations of learners' reactions are collected via so-called smile sheets administered at the end of each program. Such smile sheets typically include aspects of the registration process, the meeting room (too cold, too warm), as well as questions about whether or not the speakers knew their topics, adequately fielded questions, and provided useful handouts. Note that most of the aforementioned factors are not related the learner's change of knowledge, skills, or attitudes about the subject at hand. The formal evaluation of learning, then, is considered a serious challenge that cannot be met by many professional training groups.

In considering self-directed learning and possible self-assessment of behavior change related to learning, learners may want to commit to creating a to-do list related to any learning activity engaged in, rather than simply taking notes on the issues outlined by the speaker. After all, comprehension of concepts is one thing, but engaging in behavior change as the result of that comprehension is quite another. Such a to-do list might be reviewed at regular intervals to assess progress, again, not to measure comprehension of the material in a professional training experience but to assess how well the training activity inspired and motivated or prompted the learner to engage in real-life changes with regard to clients/patients, staff vendors, or other stakeholders.

The current professional training approaches to the assessment of predefined learning objectives for professional training programs are reviewed next and suggestions are presented regarding how professionals can extract self-assessment skills from this self-review.

SELF-ASSESSMENT

Self-assessment of competence is gaining increasing popularity as professionals are seeking new and often technology-based ways to augment their learning. This self-assessment movement is becoming increasingly visible through programs such as the Postlicensure Assessment System (PLAS), developed by the National Board of Medical Examiners and the Federation of State Medical Boards (<https://www.fsmb.org/spex-plas/>).

The PLAS was developed to assist medical licensing authorities in assessing physicians who have already been licensed. However, it can also be used for

self-assessment by professionals seeking a thorough self-review. Assessments available through the PLAS include resources for clinical competence assessment through a network of national assessment programs (<https://www.nbme.org/Clinicians/collaborators.html>). The assessment tools provided by these programs evaluate the physician's medical knowledge, clinical judgment, and patient management skills. A basic example of such a tool is the Special Purpose Examination administered by computer, which can be found at <https://www.nbme.org/clinicians/Spex.html>. It is an objective, standardized, cognitive examination of knowledge required for the general practice of medicine. Physicians can be referred to take these assessments by various groups or opt to self-refer to test their clinical knowledge and skills. For details, see <https://www.nbme.org/about/index.html>.

Other programs have a collaborative relationship with PLAS to offer other performance-based methods of assessment, such as medical record reviews, peer (preceptor) assessment and feedback, patient evaluations, and case-based evaluations of physician care. For details, see <https://www.nbme.org/clinicians/collaborators.html>.

In an effort spearheaded by researchers in the United Kingdom, researchers examining traditional posttest scoring approaches have been attempting to improve several factors related to such assessment techniques.³⁴ The most germane to the discussion at hand is that of a self-directed learning activity having an objective tool to determine whether learners might need additional focus after having completed a training experience.

Researchers in the United Kingdom have developed the University College London Scheme for Confidence-Based Assessment to solve a variety of learning assessment challenges.³⁵ The most relevant aspect of that work to self-assessment is related to the learners' structured focus on the confidence in their selected answers. Theoretic information is provided later to provide a context for why the authors of the current article consider this particular tool to be of direct relevance to self-assessment of learning.

As Gardner-Medwin and Gahan³⁶ (2003) state:

"To measure knowledge, we must measure a person's degree of belief. Though one could take this as the starting point for a learned debate in epistemology or the application of probability theory, the simple point is perhaps best made by considering some words we use to characterise different states. A student, with different degrees of belief about a statement that is in fact true, may be said to have one of the following:

- Knowledge
- Uncertainty
- Ignorance
- Misconception
- Delusion

The assigned probabilities for the truth of the statement would range from 1 for true knowledge, through 0.5 for acknowledged ignorance to zero for an extreme delusion, i.e. totally confident belief in something that is false. Ignorance (i.e. the lack of any basis for preferring true (T) or false (F)) is far from the worst state to be in." ^{36(p.147)}

The original reason for developing Gardner-Medwin and Gahan's³⁶ model was to improve students' study habits. They sought to help students develop an awareness of which answers they lacked confidence in and therefore made lucky guesses for, and helped students identify which areas they could improve with additional study.

Gardner-Medwin and Gahan³⁶ further explained:

“Reflection strengthens links between different strands of knowledge, both before and after feedback - checking an answer or viewing it from different perspectives before placing what is essentially a bet under the confidence-based marking scheme. It strengthens the ability to justify an answer, one of the essential elements in an Aristotelian definition of knowledge (as justified true belief) that is often missing in students who prefer rote-learning to understanding.” ³⁶(p. 148)

Students reportedly have embraced the model, explaining that it helps them identify areas where they have inadequate knowledge. It helps them reflect on their answers and consider additional focus for self-development. This posttest assessment technique has found success in eLearning, as shown by its incorporation into digitized content management software such as the open source Moodle software, commonly used by colleges and universities internationally. The model can be used for any type of answer that can be marked as definitely either right or wrong using answers that are true/false, multiple choice, extended matching sets, text, numbers, or quantities.

Each time an answer is entered, it is followed with a request for the learners to rate their levels of confidence in their selected responses. Readers interested in examining this approach are invited by Gardner-Medwin and Gahan³⁶ to sample the model in this browser-based version of their software: <http://www.ucl.ac.uk/lapt/laptlite/>

Practitioners embarking on a path of lifelong learning may want to consider their own confidence levels in the professional development they embrace, and check themselves on their processes when completing posttest items. If they are fortunate enough to have found learning programs that offer confidence-based assessment, they can benefit from noting their own scores that are reflective of guessing at answers to questions that are particularly germane to their own goals for professional development.

If they have to keep track of such guesswork without the assistance of a posttest that is preconfigured to help them conduct this type of self-assessment, they may wish to keep track of such confidence levels in a separate document, so as to be reminded to remediate their self-identified deficiencies before embarking on professional service delivery, in which clarity may be essential to the well-being of a client/patient relying on the practitioner's professionalism.

SUMMARY

CPD is a lifelong learning process that requires health professionals to consider their basic personal welfare needs, professional goals, and self-assessment of current practices, creating a plan for maintaining and/or developing practice competencies and compliance with ethical and regulatory requirements. Given the difficulties in performing unbiased self-assessments, it is important that practitioners obtain information, data, and feedback from other sources, such as client/patient and peers, and any relevant and available clinical or outcome data. An individualized CPD plan to organize this process can provide structure and a format for ongoing reassessment and identifying areas for needed change.

CPD plans need to be regularly reviewed and updated to be responsive to changes in personal, professional, and patient needs and changes in best practices. Finding and accessing formal and informal CE opportunities and resources to meet identified CPD goals is an ongoing process that goes beyond obligations to meet mandatory CE credits for licensure or certification. It requires personal review and reflection by practitioners about their current practices and consideration about what knowledge, skills,

and attitudes need to be learned to optimize professional performance. Several evidence-based forms of self-assessment are identified that offer ways for practitioners to evaluate their CPD efforts.

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