Helping Physicians Learn and Change Their Practice Performance: Principles for Effective Continuing Medical Education

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What happened to "CME"? This traditional vehicle for the classic conference, course, or refresher program, complete with the credit certificate for continuing medical education (CME), alas, appears not to have for the most part worked (1, 2). Although useful for disseminating new knowledge and helping physicians engage in well-intended activities, in many ways CME has not contributed optimally to the profession and to patient care.

Why? There are many reasons that CME—at least in its older, passive, teacher-driven, and outcomes-poor guise—fell short of its potential. It failed to attend to the needs of real physicians and was often driven by the content interests and needs of the faculty or commercial interests. It didn't address or simulate real patient problems; instead, it frequently offered updates, knowledge, and research topics on specific clinical disciplines and was often more academic or theoretical than applied. It often offered these updates in settings remote from the clinical practice environment, both logistically and contextually. It didn't help physicians make accurate self-assessments. It didn't present knowledge in a way that could be applied in practice. It rarely considered outcomes beyond attendance. It was not integrated into the practice milieu and was rarely seen as—or sought the role of—a partner in practice improvement or systems improvement. Finally, perhaps as a

KEY POINTS

- CME should be designed to have clinician-learners achieve and maintain an optimal evidence-based practice.
- Previous CME activities have not reached the desired goals of contributing effectively to the profession and to patient care.
- A new construct, CPD—continuous professional development—is needed so that CME appropriately applies to patient care.
- The new CME incorporates the practicing learners' experiences, societal expectations, practice characteristics, and in-context learning using methods that facilitate practice change.
- By fostering meaningful learning, rather than simply "teaching," the CME teacher enables an understood, reflective, and thoughtful application of new knowledge and skills.
- By understanding the broader construct of continuing professional development, the CME teacher can use more tools and methods to impart knowledge to the learner.
- The new CME may not occur in a conference setting at all. It may, in fact, occur in settings and with timing identical to practice settings and be integrated with ongoing clinical activities.
- Effective CME is augmented by tools and resources that CME teachers can provide their learner: checklists, algorithms, and patient education materials are good examples.
- The successful CME teacher recognizes the ongoing nature of continuing professional development, values and uses the learner's experience, and exploits the learners' practice (either the setting or the data generated by it) as a platform for learning and improving patient care.

result of the preceding issues, it was detached from the complexities of clinical practice: knowing what to change, when, why, and how (3).

Over the past two decades, numerous studies of the effectiveness of CME (mostly quantitative, such as that by Marinopoulos and colleagues [4]) and of the process of learning and change (generally qualitative, such as that by Fox and colleagues [5]) have shown that physician learning

requires teaching methods that facilitate learning and improve competence and performance. These improvements would, in turn, increase the likelihood of better patient care. In short, CME needed a new construct. Some call this new model "continuing professional development" (CPD); this chapter often refers to it as the "new CME."

❖ Continuous Professional Development: A New Vision for CME

CPD—or the new CME—includes the forces, activities, and systems of care that help refine or alter clinical performance to bring about a planned, purposeful change in patients' health. In this new model of CME, the elements of education and the practice of medicine work together. Both individual patients and groups of patients benefit from a seamless integration of education, quality improvement methods, principles of teaching and learning, health care systems, and culture. The goal is to improve physician performance and thus clinical care. The role of teacher is critical to the new CME or CPD—and to the intent of this chapter. This role must be seen differently. Instead of simply "teaching," the CME teacher provides an understood, reflective, and thoughtful delivery of new knowledge and skills so that physicians can apply them and thus improve the system of care—in other words, the teacher enables participants' learning for the benefit of patients.

Furthermore, because CPD interacts with quality improvement, systems design, and cultural change, CME teachers working in this environment need to understand the multiple external forces at work. Thus, in addressing the entire concept of CME, one must attend to a more thorough learning and change experience, not just the formal, planned activity that most call "CME."

There are three notable differences between the new and old constructs of CME (6). First, CPD is less focused on the faculty and the delivery of educational content. Instead, it is more focused on the needs, wants, and clinical care issues generated by the physician-learner. Second, CPD is more ubiquitous than the CME that limits its location (at least in most professionals' minds) to the lecture hall or conference room. This shift acknowledges that real learning and change occur everywhere—from a physician's home study to her office or clinical practice setting to more formal learning environments. Third, the content of CPD is less specifically factual knowledge about disease states and more broadly constructed to address the integration and application of that learning. This broader picture derives in part from the Accreditation Council for Graduate Medical Education (ACGME) competencies (7), which focus on communication skills, professionalism, teamwork, and other dimensions of care. Others describe this shift as moving clinical content from the theoretical or more

abstract to the practical, and moving the educational methods from the didactic lecture or textbook to more interactive, engaging, and practice-based experience. The following case example illustrates the new and older versions of CME, as does Table 6-1.

Learning About End-of-Life Care

Traditionally, the clinician who wanted to learn more about end-of-life (or palliative) care would attend one or more conferences on the subject, including lectures, and read the take-home syllabus or other printed materials. The content of such traditional learning would include explicit knowledge—the dosage of medications in pain and symptom management, for example.

In contrast, newer ideas about CME or CPD entail a broader learning experience that involves undertaking a more objective needs assessment (reviewing charts of several terminally ill patients, for example); reflecting on one or more past clinical cases (asking "Was my patient's pain really well controlled?"); participating in several methods of learning (conferences, small

Table 6-1. CME Versus CPD

Characteristic	"Old CME"	CPD (the "New CME")
Educational format	Didactic, formal	Interactive, engaging the learner, often using case scenarios
Setting	Lecture or conference center	Practice settings, online, and other information technology–mediated methods, plus more traditional educational venues
Basis	Frequently teacher-driven	Based on real and perceived learner needs, patient demands and expectations
Content	Discipline-specific knowledge	Clinical knowledge, plus elements of professionalism, communication skills, knowledge management, teamwork
Outcomes	Attendance	Increased competency, better performance in the work setting, improved health care outcomes

CME = continuing medical education; CPD = continuing professional development

groups, consultation with a palliative care specialist, on-line self-study modules, and other methods); learning and practicing so as to gain practical knowledge; and absorbing a broader range of knowledge beyond the traditionally "clinical" or disease-based (for example, communicating bad news to families, collaborating with team members, or even appreciating the roles of music or art therapy); and, finally, assessing his or her progress by further reflection, chart audit, or other means to improve and integrate quality of care for the terminally ill.

❖ Teaching in the CME Environment

Understanding Learning

To help explain what is meant by "learning" in the clinical context, the work of Fox and colleagues offers a way in which to understand internal and external factors, educational resources, and the importance of the teacher (4). The authors asked the following questions of more than 300 North American physicians: "What did you change last in your practice? What caused that change? What resources did you use in order to make the change?" The results provide answers that may help the CME teacher or organizer prepare for this audience.

First, physicians undertaking any change to their practice revealed that they had an image of what that change was going to look like—a surgeon envisioned full competency in a laparoscopic technique, for example. Second, the forces for change were widespread. While some drew from educational and CME experiences, many more were intrapersonal (for example, a recent personal experience), or external, resulting from changing demographics (aging patients, ethno-cultural shifts in patient populations) or regulatory and other changes. This first deep study of why and how physicians learn and change, along with many subsequent examinations of learning in practitioners, also identified voluntary self-directed learning actions taken by clinicians once they have begun to try to solve patient problems and address clinical performance needs.

In addition to the rich information it provided on the learning and change experience, this study offers a structure by which internal and external factors relevant to the learner-clinician may be incorporated into CME. Here, given the highly voluntary nature of CPD, internal factors—such as personal experience, beliefs, learning style, and preferences—assume even greater importance than is the case for medical students or residents. External factors also influence this learning. These range from

the immediate and proximal (for example, the clinical team and availability of point-of-care educational resources) to those that are more remote (such as regulatory and societal factors). Furthermore, Fox and colleagues' study described the use of a wide variety of learning resources—colleagues, written materials, patient experiences, and team members—well beyond the traditional "old" venues of CME.

Understanding the Learner

In CME, perhaps even more than other forms of medical education, planners need to be attuned to the learning needs of their students. "Who's the target audience?" is a favorite planning phrase of many adult educators, as well it should be. The answer is not straightforward, and may inform an important step in the process of providing CPD. This section briefly explores factors within the learner that impede or support learning and translates the relevant literature into messages that are meaningful to clinicians and their learning experience.

In addition to commonly described characteristics of the adult learner (8)—such as age, sex, training, experience, and learning style—there are subtle but important differences within groups of physicians (for example, generalists compared with specialists). Several characteristics, shaped by their practices and perhaps their own personalities, are notable among generalist populations: their wide scope of knowledge, their need to deal with ambiguity and vague illness presentations, and their need to balance and manage multiple comorbid conditions. The need to understand and address the complexity of interactions in a patient with obesity, diabetes, osteoarthritis, and depression is not uncommon. In contrast, more highly specialized internists who articulate a need to keep abreast of latest findings in a narrower (but deeper) field express comfort with definitive answers to clinical problems (9, 10).

There are other differences, too, relating to the awareness and application of new findings. Some learners may not be aware of an innovation or new findings. Some may be aware of a new finding but have not made the change because they disagree with it or are uncertain about it. Others have made the change but implement it sporadically. Finally, others may have integrated the new finding completely into their practice (11). Each of these learners requires a different educational approach.

External Factors

Societal, Government, and Regulatory Factors

Many external factors drive the learning needs of CME learners, and rightfully should determine CME, or CPD, content. Arguably, of all the external

factors affecting learning in future decades, none may be more dramatic or more powerful than the issues related to health care reform. Included in its wide-ranging directions are at least two elements of relevance to CME: the increasing use of quality measures in payment systems (12) and the concept of the medical home (13). Quality measures are indicators of performance derived from evidence, with consensus used to assess practitioners' clinical actions. These measures are increasingly related to funding (for example, the physician quality reporting initiative of the Centers for Medicare & Medicaid Services [14]). Frequently used within hospital and health care systems, such measures can be easily transformed into learning objectives. Likewise, several of the criteria used to distinguish a medical practice as a "medical home" (13), such as performance in patient care coordination, prevention, screening, long-term care management, and health maintenance, all topics of importance in the new world of CME.

More Proximal Factors

In addition to the broad and overarching elements of societal or government health care changes are numerous, more proximal regulatory factors that apply to practicing physicians and other health care providers, and the environment in which they learn. For physicians, state medical boards generally require a finite number of hours (often called credits) to maintain licenses (15); in this process, some states (for example, California [16]) require regular training in specific topics, such as cultural competence. At another level of regulation, specialty boards are moving incrementally away from counting hours of CME participation to "maintenance of certification" programs (17), stressing knowledge-based examinations, participation in a practice-based performance improvement program, maintenance of licensure, and other standards of the profession in addition to traditional CME credits. The American Board of Internal Medicine (18) provides a robust working and evolving example of these changes. Two educational accreditation programs have added to this shift in emphasis, urging more uptake of the new CME. The ACGME (7), for example, stresses practice-based learning and improvement—detecting performance gaps and correcting them by educational and other means. In addition, the Accreditation Council for Continuing Medical Education (19) has prompted CME providers to demonstrate the effect of their educational programs on physician competence or performance and on health care reforms, further shifting CME toward newer models.

Immediate Clinical Environment: Workplace Learning

The CME teacher must also remember the workplace or clinical setting in which learning becomes translated into clinical practice and where its

impact may be best judged. Several issues concerning the workplace are important. First, it is necessary to understand and incorporate the concept of constructivism, in which abstract knowledge is constructed (20). This construction of knowledge, from a theoretical, disease-based approach to a more practical, patient-centered focus, enables its application in the practice setting. For example, knowledge that the p450 pathway is used for metabolism of statins, for example, can be translated into suggestions for clinical practice—for example, asking patients about their diet and checking for consumption of foods, such as grapefruit, that also use the pathway and interfere with drug absorption.

A second factor in the immediate work setting is that of the clinical team—a highly variable instance of communities of practice (see chapter 4 in this book and chapter 1 in another book in the *Teaching Medicine* series, *Theory and Practice of Teaching Medicine* [21]) described by Wenger (22) that represents interprofessional collaboration and education and team training (23). These concepts too are highly important for clinicians' learning, and they frequently act as either impediments to or facilitators of learning. The third factor relates to the clinician's (and the CME teacher's) learning resources: To the extent that these resources are immediately available in the workplace, they may be considered important variables in the learning process. Finally, any discussion of the workplace environment, and the CME that pertains to it, fails if the patient is not mentioned as a key, central, driving element in the process of learning and change.

Learning Resources in the Environment

Apart from team members, patient interactions, local rounds, and other educational resources, today's workplace environment contains many other resources. Many of these have been based on the concept of evidence-based medicine (EBM) (24, 25), a construct that has significantly altered the practice of medicine and our understanding of the word "evidence." These include clinical practice guidelines and online point-of-care reference sources such as UptoDate (26), MD Consult (27), Clin-eguide (28), and WebMD (29) (see chapter 5 in *Theory and Practice of Teaching Medicine* [21]). Despite the impressive uptake of EBM in teaching, research, education, and clinical practice, there are significant problems with evidence as it is presented and available in the clinical setting (Box 6-1). These relate to the degree to which clinical guidelines in particular fail to 1) be integrated into health systems, 2) provide information on costs or quality measures, and 3) be integrated into the culture of physician practice. Each of these "failures" provides an opportunity for the new CME teacher. For example, using specific guideline recommendations as learning objectives, the teacher can build cases for discussion or offer protocols or algorithms for take-home use.

Box 6-1. The "Failure" of Clinical Practice Guidelines (From a CME Perspective)

- Straus and Haynes (33) offer clues as to why clinical practice guidelines may lack traction in the clinical setting. Large volumes of personal experience and primary studies form a large part of the information sources clinicians use in decision-making, followed in decreasing amounts by systematic reviews and by guidelines themselves. Straus and Haynes argue that a much smaller but important portion is often lacking: the creation of tools (patient education materials, reminders at the point of care, and other measures) that could embed knowledge into the practice setting.
- Although clinical practice guidelines attempt to increasingly represent best evidence, their frequent inattention to cost, patient choice, and use of quality measures derived from the guideline remains problematic.
- EBM has failed to percolate perfectly into the culture of physicians, who regard it as teaching "cookbook" medicine that too narrowly defines and limits clinical practice. Despite the increasing emphasis on information technology–based point-of-care learning activities, important internal personal characteristics must be weighed here, too (e.g., the degree to which clinicians actively seek knowledge and possess knowledge management or critical appraisal skills).

Facilitating Learning

The clinician's rich, interactive internal and external environment creates a medium in which learning and change may or may not occur. Different in subtle and not-so-subtle ways from undergraduate or graduate education, the critical role of the CME teacher includes teaching in ways already described in earlier chapters of this book. The CME teacher must understand the setting in which learning is applied, including the nature, needs, motivation, and environment of the learner. The following section outlines the process of learning in CPD, from the determination of learner needs to the tools or methods of CME to the characteristics of the successful CME teacher. An educational scenario accompanies each component of this section.

The CME Teacher: Part I

Dr. Rodriguez, an internist with a sizable academic, clinical, and research-intense HIV-AIDS practice, has taught in her medical school's annual general internist refresher program aimed at community-based general internists for several years. She has regularly filled a 90-minute lecture time slot in these programs and has been reasonably happy with her course evaluations, which demonstrate that she communicates her content area very well. This content has been described as an "update in HIV-AIDS" and focuses on the antiretroviral agents, side effect profiles, and new research findings in the field, with implications for practice. She is puzzled, however; her referrals from community-based internists show a common pattern: problems with drug resistance, poor patient adherence, patient unhappiness with side effects, and a general lack of compliance with clinical practice guidelines. She decides to do something different this year.

The Physician as an Active Learner-Practitioner: The Process of CPD

Successful education should reflect the basic principles of adult learning. In their decisions about how to facilitate learning, teachers and program planners must account for differences in how practitioners learn. Differences between principles for teaching children and those for facilitating learning in adults are a matter of degree. However, among fully certified practicing physicians who are responsible for their patients, these differences are most clearly evident and most important as conditions for learning and changing practices.

First and foremost, the practicing physician most often learns in connection with an immediate and consequence-laden problem in patients for whom they are responsible, even in a team setting. This means that CPD is a problem-solving strategy for these clinicians, and the problems it solves are patient problems. Therefore, education must be relevant, pointed to the problem, and timely. Teachers must use clinical problems as organizing frameworks if they expect to penetrate the learner's clinical practice. To do otherwise is to risk missing the point of learning for these physicians: "Help me solve my real problems."

Determining Learning Needs

Second, because learning is generated from practice, teaching must focus on the perceived and real needs of the clinician. Here, needs are defined as gaps between what is (current practice) and what ought to be (a clear recommendation in a clinical practice guideline, for example). When a perform-

ance or a systems gap occurs because the level of knowledge and skill is not what it ought to be, we have a learning need. In any of these instances, helping the clinician meet that need is the role of the CPD process; in this case, assessment forms a basis for educational decision-making.

Here the new CME teacher can provide a format in which alternative explanations and management strategies can be used. This can occur in traditional CME settings by encouraging participants to discuss (perhaps in pairs or small groups) perplexing patient problems. The same gap-based approach can be used to describe system problems in health care. In this vignette, an examination of several referrals might reveal where the gaps occur—what common, repeated patient problems or other patient care needs are present.

What about clinicians' self-assessment of learning needs? What if clinicians incorrectly perceive what they know and can do? In this case, physicians may think they can do something that they cannot do, or they may inaccurately self-assess their knowledge and skill. These phenomena can profoundly affect clinicians' motivation to learn and change. When they do not perceive these needs, physicians may not feel uncomfortable with the gaps in health performance or in knowledge and skill; as a result, they may not be motivated to address those needs. Consequently, a CME teacher working with practitioners will have little success if he or she attempts to address real needs without attending to the important role that perception and motivation play in the outcomes. If the learner-physician's processes of self-assessment and subsequent motivation are not activated, education suffers because the physician may think, "That's not my problem." The learners may be unaware of their needs; until these needs become evident, the learners will not learn and change. Here, the CME teacher may draw on external observations, such as chart audit, referral data, medication reconciliation lists, and other external data sources to demonstrate unperceived needs to clinicians. Of sizable help in this area, the increasing use of quality measures by health care systems and insuring bodies, and of other objective, practice-based data generated in specialty board recertification processes, can help physicians more clearly understand their learning needs and practice gaps.

Tailoring Learning to the Learner

With the teaching techniques and methods described elsewhere in this book as a guide, teachers can adapt their approaches to meeting their learners' needs. The continuation of the vignette illustrates how these institutional decisions can be made.

The CME Teacher: Part II

On the advice of her dean for CME and an adult educator based in the medical school, Dr. Rodriguez chooses a several-pronged approach to improving her teaching. First, she asks that the CME office e-mail a questionnaire to registrants at an upcoming CME event. In it, she asks community-based physicians to describe clinical HIV-AIDS problems that plague them and their patients. Second, she and an interested resident undertake a chart review of their own records and those of 10 recent referrals as part of a graduate education quality project. Using these data sources subjectively and objectively to obtain information, she undertakes a new approach to her 90-minute time slot.

She uses a handout to communicate much of the "update" portion of her previous talks, and so keeps the didactic portion of her presentation to a minimum. Consistent with the principles of adult education, which value the learner's experience and prior knowledge, she presents several cases for group discussion based on the physicians' stated problems and those determined by chart audit. She encourages discussion in small groups, then solicits solutions from the audience using an audience response system. In this way, she provides a smooth transition from theoretical to practical knowledge. Finally, she offers several take-home "practice-enablers," including patient education materials; communication tips for asking about medication adherence; and a flow chart for use by community-based internists and their staff to monitor medication use, side effects and adherence, patient concerns, and laboratory profiles. On the basis of the clinical practice guidelines, these protocols should improve adherence to standardized and effective management and therapeutic regimes.

After her presentation, she is pleased to see that her post-course evaluations have improved, and—more important—her referrals now reflect a better understanding of and adherence to treatment protocols and patient concerns.

When Teaching Is Not Enough: Moving From the Classroom to the Practice Setting

What happens when physicians do not attend CME activities? Much of the content and construct of CME can be handled in the traditional teaching venues described here as the classroom. However, many other methods, roughly characterized as "implementation strategies" (30), can deliver information

and help transfer research findings and clinical practice guidelines into practice. Returning to our vignette, Dr. Rodriguez may decide that she wishes to reach out to regional physicians who do not participate in CME activities, to those who work in hospital or clinic settings, and to others—even patients—in order to improve the quality of HIV-AIDS care. Several alternative funding sources exist for such activities: State, disease-specific, and other funding agencies increasingly recognize the merit of such efforts.

Derived from a coupling of educational and health services literature, often called "knowledge translation" (31), these measures can include outreach methods, practice-based initiatives, and alternative educational strategies (Box 6-2).

Characteristics of the Effective Clinical Teacher/Facilitator

This scenario and its learning implications highlight the characteristics of the CME teacher or facilitator of CPD. A successful teacher of practicing

Box 6-2. Alternative Educational Strategies

- Academic detailing: Visits to physicians by health professionals, such as pharmacists or nurses, to raise issues of prescribing, disease prevention, and screening (32)
- Opinion-leader and train-the-trainer methods: Opinion leaders are community-based clinicians who are considered educationally influential by their peers; the trainer programs frequently use opinion leaders to disseminate information (30, 32)
- Reminders at the point of care: Electronic or paper reminders used at the point of care (30)
- Audit and feedback: The use of data derived form charts, utilization reviews, or other databases to demonstrate how clinicians perform in specific areas and to provide educational feedback (32).
- Problem-based small groups (32): Groups of eight to 10 physicians or other health professionals involved in case discussion and problem-solving.

Data obtained from Dixon J. Evaluation criteria in studies of continuing education in the health professions: a critical review and a suggested strategy. Eval Health Prof. 1978;1:47-65.

physicians can organize content and select methods of teaching that bring real needs to the surface as they address them. This teacher can motivate learners by making them reflect effectively on their practices, clinical performance, health care systems, and level of knowledge and skill in a way that makes learners aware of their real needs. By maintaining a clinical problem focus (mentioned earlier), this reflection is important for practicing physicians because their learning and subsequent changes are mostly voluntary. They must become convinced of their needs and their patient's needs before they will give up practices that they have become comfortable with. Overcoming inertia—dropping a familiar practice management routine, for example—is a difficult process. The merit of such changes must be shown to physicians before they occur.

❖ Putting It All Together

This section summarizes in stepwise fashion the activities of the successful CME teacher or CPD facilitator. It also outlines a process by which to evaluate successful teaching in this area and acknowledges the barriers to implementing this idealized view of CPD. Finally, it summarizes teaching tips for the new CME teacher.

A Planning Guide

Phase 1: Needs Assessment; Pre-Education Activities

Before embarking on a CME activity, the new CME/CPD facilitator begins to answer most if not all of the following questions: Who are the physicians or other health professionals who make up the audience? What have been their training, background, work settings, regulatory experience, and other expectations? What are their self-identified learning needs? What other needs might exist—based on literature reviews or other data sources? How can I best address these needs, expectations, and objectives?

The successful teacher then begins to craft an educational experience to address these specific learning needs, paying close attention to the flow of content, the overall curriculum, and the use of educational methods and resources. Most important, the successful CME teacher has an idea of what the practitioner will be able to do as a result of the CME activity.

Phase 2: The Educational Activity

In the encounter itself—such as a large-group lecture or workshop small-group activity—the successful clinician-teacher will address issues important to the learner, not just the teacher. These are called the three Fs:

- *Format*: To augment, if not entirely replace, the didactic lecture, the successful CME teacher will consider alternative methods, such as case materials, discussion groups, presentation of audit findings, simulations, audio- or videotaping, and other educational techniques. Chapter 5 of this book provides several suggestions for how this may be accomplished in a workshop format.
- *Facilitation*: The teacher will focus less on communicating innovations or new treatment modes. Instead, the teacher will facilitate learning by engaging participants in interactive discussion (with others or experts), problem-solving exercises, audience responses systems, and other techniques. These efforts move learners from explicit understandings of new knowledge to more tacit, practical, and applied knowledge.
- *Follow-up*: Recognizing that a one-time event or activity may be insufficient to change practice behaviors, the successful CME teacher may provide handouts, such as protocols or patient education materials; encourage further dialogues or case discussion by e-mail or other means; or send reminders or postcourse questionnaires to highlight specific points of learning. Finally, other CPD activities not covered in this chapter, such as reminders at the point of care and Internet-mediated learning, can extend the learning experience beyond the "classroom" setting.

Phase 3: Evaluating the Outcome of CME Activities

Many methods can be used to assess the impact of CME activity. Characterized by Dixon (32), they consist of four simple levels: 1) participants' perception of the activity as detected by postcourse questionnaires, often termed "happiness indexes"; 2) competency assessment measures, such as knowledge or skill tests (for example, multiple-choice examinations and performance on simulated clinical tests); 3) practice performance measures (such as test ordering and prescription writing); and 4) health care outcomes, such as blood pressures, pain scales, or patient satisfaction measures. See chapters 7 and 8 in *Leadership Careers in Medical Education*, another book in the *Teaching Medicine* series, for more information about programmatic and learner evaluation (34).

The Reality: Overcoming Barriers to Changing the CME Paradigm

Many barriers, of course, confront the idealized though more effective formats and construct of CME presented here. First, for most physicians, time

is a formidable barrier to an increased involvement in CME. This applies to the participants as well as the faculty. For the participants, CME, in its several-day, away-from-the-office mode, may be problematic. However, a more practice-embedded view of CME, in which team rounds, small-group case discussions, interactive problem-solving, and other sessions are part of the fabric of work—not a separate entity —will help to resolve this issue.

Second, physicians have been used to a model in which all clinical work contributes to their income; they may see CME as not contributing to—in fact, taking away from—remuneration. However, basing CME activities on reimbursable quality measures will ultimately shift the emphasis toward use of these measures as CME learning objectives. Finally, emphasis is moving away from hours-based CME participation toward credits for meaningful activity. This shift has occurred among the specialty boards, their counterpart specialty societies, the American Medical Association, and many other organizations. By using the strategies for overcoming barriers found in the preceding discussion on societal, government, and regulatory factors, the challenges to participation in the new CME can be overcome.

❖ Conclusion

This chapter has focused on a changing paradigm of CME, moving it from a teacher-centered model to one that pays close attention to learner-clinicians, their needs, and the needs of patients. As the new CME engages the teacher who is invested in this new model and are interested in improving clinical care and health care outcomes, so too does its application engage the internist-learner. This process is enabled by understanding the learner's practice setting, professional demands, and clinical concerns; developing and conducting a comprehensive, engaging educational activity to address perceived and unperceived needs; and assessing the effect of the activity across a continuum of outcomes.

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