

Continuing Medical Education and the Physician as a Learner

Guide to the Evidence

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One faculty member in a professional school referred to continuing education as "shouting out of windows," and an analysis of the programs at his institution shows the aptness of his metaphor: Faculty members who can be persuaded to do so give lectures on subjects of their own choosing to audiences they do not know, who have assembled only because they want to put in enough hours of classroom attendance so that they can meet a relicensure requirement. As a result, every profession now has members who vigorously oppose what they regard as the excessive promotion of continuing education.

Cyril O. Houle, 1980¹

RESEARCHERS OF THE PAST DECADE produced systematic reviews of continuing medical education (CME) and other strategies intended to change physician behavior and improve patient outcomes.²⁻⁷ The subjects of the reviews included such concepts as audit and feedback, chart-based reminders, clinical practice guidelines, and formal lectures. Defined as interventions to change the behavior of physicians, the effects of those strategies were inconsistent across practitioners, settings, and behaviors.³⁻⁸ As a result, in the midst of contemporary discussions about quality improvement and the effects of continuing education, there is no singularly effective method for improving physician performance.^{6,8} Physicians must accept responsibility for their own continuous learning: setting goals and selecting educational activities to achieve those goals. We searched the Research and Development Resource Base in Continuing Medical Education and the Spe-

cialised Register of the Cochrane Effective Practice and Organization of Care group, supplemented by searches of MEDLINE from 1992 to February 2002 for systematic reviews and evidence of CME and its effect on both physicians and CME planners.

A New Definition of CME

In 1992, the traditional definition of CME broadened as a result of a systematic review of 50 randomized controlled trials (BOX).⁷ This review reported that physicians and CME providers were engaged in learning activities extending beyond the conventional lecture hall. Computer-aided instruction on patient-related problems, reading materials, and visits to practice sites from health care professionals who were trained to improve physician performance were described as positive CME interventions because they prepared physicians for change and further learning. Patient education materials, clinical practice guidelines, and flow charts enabled change to occur. Chart audit with feedback, reminders about desired clinical actions, and the opinions of influential local physicians confirmed or reinforced change in the desired direction. Subsequent studies^{4,5,9} identified these activities as more discrete interventions (TABLE), with 3 major consistent findings. The factors identified in these studies that are most effective include assessment of learning needs, a necessary precursor to effective CME⁵⁻⁷; interaction among physician-learners with opportunities to practice the skills learned^{2,3,5}; and sequenced and multifaceted educational activities.³⁻⁵ Continuing medical education strategies that enable and reinforce change are more likely than

other more traditional, passive activities to influence behavior.³⁻⁵ Physician-learners and CME providers should design and select strategies to optimize improvement of both physician performance and health care outcomes.

Needs Assessment: Precursor to Change

Assessment of learning needs is crucial for effective CME.⁵⁻⁷ Regardless of whether physicians are involved in conferences or reading that prepares them for change, workshops or demonstrations enabling change at the practice site, or audit with feedback and reminders to evaluate patients' progress, it is important for physicians to recognize the need to change their behavior, knowledge base, or skills.⁷ Irrespective of hospital- or office-based practice, primary or specialty care, a change in physicians' knowledge or skills was associated with an identified reason for the change prior to its implementation.⁵

Physician performance improved when learning experiences incorporated tests of knowledge and assessments of clinical practice needs.⁷ Physician-learners progress at their own rates, depending upon their motivation, their knowledge of a problem, or the perception of a gap between current knowledge and skills and those that are desired. When gaps are demon-

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See also Patient Page.

Box. Continuing Medical Education Interventions

Educational materials: distribution of published or printed recommendations for clinical care, including clinical practice guidelines, audiovisual materials, and electronic publications

Conferences: participation in conferences, lectures, workshops, or traineeships outside the practice setting

Outreach visits: use of a trained person who meets with providers in their practice settings to provide information for improving the providers' performance

Local opinion leaders: use of providers explicitly nominated by their colleagues as educationally influential

Patient-mediated interventions: interventions for which information was sought from or given directly to patients by others (eg, direct mailings to patients, patient counseling delivered by others, or clinical information collected directly from patients and given to the physician)

Audit and feedback: any summary of clinical performance of health care over a specified period, with or without recommendations for clinical action; the information may have been obtained from medical records, computerized databases, patients, or by observation

Reminders: any intervention (manual or computerized) that prompts the physician to perform a clinical action (eg, concurrent or intervisit reminders to professionals about desired actions such as screening or other preventive services, enhanced laboratory reports, or administrative support [eg, follow-up appointment systems or stickers on charts])

Multifaceted interventions: select combinations of the above 7 interventions (eg, outreach visits followed by clinical information collected directly from patients and a computer reminder to counsel certain patients regarding a specific disorder)

strated and educational resources are extended strategically to help the learner, change occurs more frequently within each type of intervention.⁵

A variety of tools is available to help physicians and CME providers determine learning needs. Most medical specialty boards in the United States offer written or oral examinations, or both, of knowledge.¹⁰ Such tests present excellent opportunities for physicians to assess their knowledge against facts and principles that inform essential clinical decisions. Benchmarking¹¹ is a tool for physicians to compare their personal performance with standards of excellence demonstrated by top performers in a peer group. This approach to assessment has been shown to enhance the effectiveness of physician performance in ambulatory care.¹² Utilization review provides institutional information to make comparisons based upon hospital admission rates, mortality and morbidity rates, and medical error rates. Such data may be used before and after

educational interventions to judge success in promulgating change.¹³ Personal learning portfolios describe significant learning events,¹⁴ enabling physicians to assess—on an ongoing basis—the questions they find important to answer in maintaining competent clinical performance. The Accreditation Council for Graduate Medical Education (ACGME) lists self-assessment tools for use by practicing physicians as they contemplate ethics, professionalism, and practice-based learning and improvement.¹⁵ Physicians can search the ACGME Web site to learn about the validity, feasibility, and psychometric characteristics of selected self-assessment tools. Descriptions of who has used each instrument, how many times, and in what settings also can be found.¹⁶ The Change Readiness Inventory (CRI),¹⁷ developed from analysis of 775 changes described by 340 North American physicians,¹⁸ may be used by CME providers to give physicians a voice in the development of efforts that may facilitate

changes in their clinical performance. Reasons to change, such as regulations or clinical advances, and barriers to change, such as low motivation, lack of time, or lack of proper equipment in systems of health care, can be discovered with the CRI. Continuing medical education providers can improve the prospects for change by helping physicians integrate systematic quality improvement efforts with CME, including the assessment of need and evaluation of progress toward clinical goals.^{11,12}

Interactive Learning and Opportunities to Practice

Two-way communication maintained over time enables the convergence of ideas between CME teachers and physician-learners. Adding enabling strategies such as patient education materials or reminders can help facilitate change at the practice site.^{3,5} While lectures, conferences, and short courses may predispose physicians toward change, didactic lectures by themselves do not play a significant role in immediately affecting physician performance or improving patient health care.^{2,3,5} Educational activities that use interactive techniques such as case discussion or hands-on practice sessions generally are more effective in changing behavior and patient outcomes.³ Interactive workshops can result in changes to knowledge or skills; didactic sessions alone are unlikely to change professional practice.^{2,3,5,7}

Sequenced and Multifaceted Activities

Continuing medical education strategies designed to use 2 or more interventions can lead to change in practice.³⁻⁵ For example, physicians provided with educational material on the measurement of survival probabilities and the cost of intensive care, followed up by a bedside display of probabilities, reduced test ordering.¹⁹ Physicians who received educational material for patients, a reminder to offer them nicotine gum, and a 4-hour training session on counseling for smoking cessation advice experienced higher rates of suc-

cess helping patients to stop smoking at 1 year.²⁰ Mailed materials, follow-up telephone calls, and presentations at primary care meetings caused a significant decrease in inappropriate referrals and increased appropriate referrals to otolaryngologists.^{4,21} Physicians should choose educational activities with clear goals and the opportunity to progress incrementally toward achievement of those goals.

Outcome Evaluation

Apart from specialty certification or recertification, the type of progress measured formally by graduation from undergraduate and graduate medical education does not exist when graduate medical education is completed. Each physician monitors his or her own learning, managing the design of its continuity and effects.

Changes in clinical behavior can be accomplished and measured through chart audit with feedback.^{4,5,7} The strategy is central to continuous quality improvement in health care.¹¹ Constructs of the strategy may be found in the Bi-Cycle Approach to Quality Assurance, described by Brown²² as an outer patient and health care cycle and an inner change or education cycle.

Outcomes may be measured by improved patient compliance with selected regimens^{5,7,23} or reduced numbers of inappropriate hospital stays.^{5,7,24} Two instruments shown to be effective in tracking change in physician behavior and functional outcome improvement for patients include the Karnofsky Performance Status Scale,²⁵ which enables the monitoring of patients whose performance may vary from able to carry on normal activity to unable to work or unable to care for self, and the Short Form-36,²⁶ which enables assessments of physical and emotional well-being.

Questions regarding truth in measurement and methods for assessing outcomes continue to challenge CME and health care professionals. Randomized controlled trials may continue enabling physicians and CME providers to examine the effects of learning and the performance of clinical behaviors, but minor clinical actions often have major consequences remote in space and time.¹¹ There are some who believe that randomized controlled trials take too long and that cohort and case-control designs are more appropriate to the practicalities of quality improvement studies.¹¹ The Cochrane Ef-

fective Practice and Organisation of Care group²⁷ recently accepted a new protocol for a systematic review of the best evidence on continuous quality improvement and its effects on professional practice and patient outcomes.

Conclusions

Traditional CME is a time-based system of credits awarded for attending conferences, workshops, or lectures. The activities are typically teacher-initiated, using passive educational models (eg, lecture). Recent studies^{14,28} suggest that physicians benefit from reflection on their progress and development of their next learning projects or questions. What can physicians do? Physicians should reconsider the perspective of CME consisting solely of lectures, grand rounds, or medical staff meetings. They should participate in educational activities that offer personal involvement in thinking about professional practice and in identifying learning needs. To achieve its greatest potential, CME must be truly continuing, not casual, sporadic, or opportunistic.¹ Physicians must recognize the ongoing opportunities to generate important questions, interpret new knowledge, and judge how to apply that

Table. Findings From Reviews of Continuing Medical Education: What Learners and Providers Can Do to Improve the Effectiveness of Continuing Medical Education (CME)

Study Findings	What Physician-Learners Can Do	What CME Providers Can Do
Effects are inconsistent across practitioners, settings, and behaviors: assessment of need is required ⁵⁻⁷	Set learning goals based on practice performance data Select educational activities needed to achieve your goal or that help you identify what you need	Provide reliable data to enable physician-learners to see present levels of performance compared with optimum performance Provide the physician-learner with an opportunity to reflect upon present levels and desired levels of performance
Interactive learning and opportunities to practice skills can effect change ^{2,3,5}	Select educational activities designed to meet the clinical performance needs of you and those you may work with as members of a health care team Seek seminars, workshops, or other activities with leaders who build your knowledge and skills as resources into the educational sessions Select activities that enable you and others to observe new knowledge and skills and to use them in your practice setting	Offer consultation to help physicians specify goals that are achievable and measurable Enable comfortable communication among individuals or teams involved in the educational activity Enable physicians or teams to try in practice what is learned with limited fear of failure Enable physicians to reflect upon their relative success and to choose what might be learned next
Sequenced and multifaceted activities can effect change in practice and patient outcomes ³⁻⁵	Participate in learning activities with instructional objectives clearly stating what you will know or be able to do as you progress from one level of knowledge or skill to another Choose educational activities that enable you to progress incrementally (eg, over a period of days or weeks in reading, seminars, or skills application sessions)	Design activities with the cumulative goal of helping physicians or teams of learners to adopt change incrementally, assuring there is compatibility with present systems and advantage over present behaviors Measure the results of educational activities intended to improve clinical care Assess the effects of educational and clinical improvements including budgetary performance

knowledge in clinical settings. Essentially, this means that CME must be self-directed by the physician, including management of the content of and context for learning. In turn, the opportunities for self-directed learning must enhance the knowledge and skills required for critical reflection on practice and measurement of improvement.

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First and last, what is demanded of genius is love of truth.

—Johann Wolfgang von Goethe (1749-1832)