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Continuing Medical Education And the Competent Family Physician

SUMMARY
Several principles of adult education are explored in terms of how they relate to current practices in developing continuing medical education (CME) programs. The key to effective CME is its link with clinical competence. This entails reviewing how individual learning needs are determined, and how these needs are translated into programs. Ultimately, the success of CME depends on evaluating improvements in areas of physician knowledge, skills, and attitudes which will have a positive impact on health care delivery. (Can Fam Physician 1986; 32:348-351.)

SOMMAIRE
L'article explore plusieurs principes de l'éducation des adultes en termes de leur relation aux pratiques actuelles d'élaborer des programmes de formation médicale continue (FMC). La clé de l'efficacité de la FMC est sa relation à la compétence clinique. Ceci implique de réviser la façon de déterminer les besoins individuels d'apprentissage et comment transposer ces besoins en programmes. Ultimement, le succès de la FMC dépend de la capacité d'évaluer les améliorations dans les domaines des connaissances, des habiletés et des attitudes qui auront un impact positif sur la dispensation des soins.

Key words: Continuing medical education, family physician, health care delivery

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CONTINUING medical education (CME) has several definitions, perhaps the most useful of which is: "any and all ways by which a physician maintains his/her education after the completion of formal undergraduate and postgraduate training". This widely used definition is sufficiently broad to cover many approaches to CME, is chronologically accurate, but does not reflect the vast and complex arena in which the forces that shape CME come into play.

By contrast, undergraduate education is a relatively clean (although enormous) slate, on which the basic skills of medical practice may be etched. Postgraduate education is primarily a hospital-based, skill-oriented, finite experience with defined objectives. CME falls at the end of this continuum of medical education as a relative newcomer, both historically and developmentally. The focus of this article is a set of separate but well defined issues—adult education, CME, and clinical competence. While separate entities, the three are intertwined, with the ultimate aim of improving the quality of health care. The family physician plays a central role in this progression from CME participant, to increased competence, to provider of better health care.

Organized CME developed during the past several decades as a significant professional response to the rapid proliferation in medical knowledge, research, new specialties, and para-medical fields. Its ultimate goal was to achieve optimum patient care. That CME has become a major industry in Canada and the U.S. is borne out by the estimate that over $3 billion is spent annually for such programs in the U.S. alone. With this background, one might ask:

- is there a theoretical basis that underlies adult learning and therefore CME?
- how effective is CME?
- can we improve CME?

The Theoretical Basis Of CME
McCluskey has combined both empiric and theoretical concepts to support the view that adults as well as children have the potential for continuing learning and enquiry. Tough analyzed motivating factors in adult learning projects, including curiosity, enjoyment of the content and the ability to practise a new skill. He felt that long-range goals include imparting knowledge or skills to others and strategies to deal with future events.

Of all the learning theorists, Carl Rogers has provided the most practi-
cal framework for understanding adult learning, through observations made in psychotherapeutic relationships. Just as effective psychotherapy was a process centered on the client rather than on the therapist, so learning had to be learner-centred rather than teacher-dependent. Learning, therefore, can only be facilitated by the teacher, and is maximized when the content area is relevant to the learner, and the climate supportive. Maslow\textsuperscript{7} also recognized this last feature.

Houle\textsuperscript{6} identified subgroups, based on the perceived purposes and values of continuing education, relevant to planning CME programs. He identified three major groups: goal-oriented learners, with very specific objectives, for whom learning may be episodic as new needs or new interests arise (e.g., casualty officers for whom advanced cardiac life support or advanced training in life support programs are prerequisites to practice); activity-oriented professionals who achieve meaning from the learning activity itself, distinct from its content (such people are ‘group joiners’ who derive a great deal from the social content inherent in such events); and learning-oriented students for whom learning is a continuous process, and who seek out knowledge for its own sake.

Knowles\textsuperscript{9} pioneered the term andrology (vs. pedagogy) for adult education and characterized several features of the adult learning process, including the need and the capacity to be self-directed, the use of experience and life problems in learning, and the identification of one’s readiness to learn for personal reasons rather than external ones. He also outlined the final step in the theoretical basis for adult education (i.e., the application of these principles to a learning model useful as a guide to CME planners),\textsuperscript{9} and others. These principles included:

- establishing a climate conducive to learning.
- creating the mechanism for mutual planning.
- diagnosing the needs for learning.
- formulating program objectives (the content) to satisfy these needs.
- designing a pattern of learning experiences.
- conducting these learning experiences with suitable techniques and materials.
- evaluating the learning outcomes and rediagnosing the learning needs.

How Successful is CME?

This broad question has two smaller questions. First, how can the impact of CME be evaluated? Second, does its success relate to the application of adult education principles to CME models?

Wilson states: "Evaluation of the results of education is an art in its infancy: to ask a participant if he has enjoyed a course or if it was relevant . . . is one thing. To find out whether he is . . . applying anything, another".\textsuperscript{10} Methods used in the assessment of learning in the CME arena, perhaps more than in any other, are as yet fragmentary pieces in the larger jigsaw puzzle of clinical competence.

Dixon\textsuperscript{11} has defined four levels of assessment. The first level (type I or the classical ‘happiness index’) determines the physician’s perception of a CME event, and is useful in the sense that program planners may develop a better product. But ‘better’ here is used in the context of the marketplace, rather than of clinical competence.

Type II measures of outcome are based on physicians’ competence, as reflected by changes in knowledge, skills, or attitudes. A recent survey of the literature evaluating CME\textsuperscript{12} located a total of 238 studies, of which 86 or 36\% were of the type II variety. Of these, the majority tested knowledge; fewer analyzed skills or attitude changes. Most of these studies showed positive changes in all three parameters, a fact which has been supported by previous literature reviews by Bertram and Brooks-Berman\textsuperscript{13} and Lloyd and Abrahamson.\textsuperscript{14}

The next level of evaluation (type III) measures change in behavior and is a reflection of physician performance in the practice setting. Such CME studies are becoming increasingly common in the literature. In 1979, Lloyd and Abrahamson\textsuperscript{14} found only 26 such studies, while Davis and co-workers\textsuperscript{12} located 128 five years later. The majority of these studies used medical audit as the methodological tool while others employed laboratory data, account sheets, claim reviews, and pharmacy records.

The last level of evaluation (type IV) assesses health care outcomes. This difficult maneuver, the ultimate test of the worth of a CME intervention, has been reported by only a handful of authors.\textsuperscript{12}

Difficulties in mounting trials of types III and IV have to do with the complexity of assessment methods and the cost of such exercises. They have not been neglected by CME providers through ignorance or disregard for issues of clinical competence or performance. Rather, it is the entrepreneurial system in which CME providers must operate that mitigates against assessing specific results. Herzog\textsuperscript{15} estimated that the ‘happiness index’ costs approximately 2\% of total course cost, pre- and post-test knowledge gains 6\%, mailed survey questionnaires to discern physician change after a course 113\%, and survey plus observation of change 371\%.

It is hardly any wonder that CME providers, who operate in the marketplace, opt for the less expensive, less specific, and less competence-based evaluation tools. Another factor elucidated by Mitsuunaga,\textsuperscript{16} discouraging ‘hard core’ evaluation, is the ‘response of adult learners to evaluation which involves appraisal of their performance’—in other words the basis on which assessments of clinical competence must be made.

Using these outcome measures as markers, and remembering the concepts of adult education, the andrologic teacher, and the optimum atmosphere for learning, can we examine how frequently and how well these principles are applied to actual CME programs?

In a study on the effectiveness of CME, Stein\textsuperscript{17} referred to five major literature reviews of CME research publications, which indicated that the mere transmission of facts about new findings may be insufficient to change practice performance. He cited eight educational studies which he felt fulfilled most of the important educational criteria and from which he culled some common characteristics. All of these programs used, implicitly or explicitly, four essential elements, reflecting Knowle’s seven principles of andrology.

Laxdal\textsuperscript{18} contrasted what he found in the real world with Knowles’\textsuperscript{19} ideal situation. Based on a review of 66 educational publications, Laxdal found that the ‘gross failure to demonstrate effectiveness of CME is chiefly due to failure to identify the learning needs of practitioners, and the health needs of their patients, as well as inadequate evaluation methods’\textsuperscript{19}. Similarly Davis, Putnam, and Gass\textsuperscript{19} found, on
reviewing the effectiveness of short courses, that attention to two de-
tails—needs determination and rein-
forcement of learning—dictated the
success of the intervention.

Given that motivation is an impor-
tant adult education principle, it is
useful to examine why physicians par-
ticipate in CME. Cervero29 surveyed
Illinois physicians participating in
CME, and clustered their reasons for
attending into four main categories.
These were:
• to maintain and improve profes-
sional competence and service to pa-
tients.
• to understand one's self as a profes-
sional and as an individual.
• to interact with colleagues profes-
sionally and socially.
• to enhance personal and profes-
sional status.

The results were corroborated by
Williams et al.'s findings in Ontario.

The variety of rewards which at-
tending physicians anticipate are very
similar to those suggested by the adult
educator, A. Tough.3 He included in-
tellectual and cognitive rewards as
well as personal pleasure, satisfac-
tion, self esteem, impressing others,
and receiving praise.

In summary, some of the reasons
for CME's apparent failure to achieve
its ultimate goals may be grouped
under the following headings:
• Participants are not always involved
in planning programs; planners in
many cases make assumptions about
their audience's learning needs.
• Objectives often are not clearly set
out for the participant.
• Formats for most CME programs
are frequently not conducive to suc-
cessful adult learning. Lectures with
little or no audience participation are
the most common type of CME
course.

Clinical Competence
And CME

There are three major areas in
which CME relates most clearly to
physician competence: assessment of
learning needs; the types of programs
or formats; and evaluation of out-
comes. In essence, each of these is
derived from the theoretical constructs
of adult education.

From a clinical perspective, all
learning needs arise ultimately from
perceptions of competence. Determin-
ing these needs, and subsequently de-
veloping CME objectives, involves
two approaches: the individual or in-
formal, and the organized or formal.
Self-determination of competence is a
highly individualized and personal
ability influenced by several factors:
professional considerations, under-
graduate and postgraduate experi-
ences, and a combination of self-
directedness, motivation, and
self-awareness. The views of some of
the adult learning theorists are not far
removed from these concerns.

Houle41 affirms "that every practic-
ing professional should recognize the
need to: maintain competence, use the
theories and techniques of innovative
practice, understand relevant and new
developments, apply ethical principles
required in a constantly changing
work environment, and preserve an
appropriate perspective on life work
and not be engulfed by it".

Professional considerations which
have an impact on competency or on
the awareness of learning needs have
also mushroomed in the last two de-
cades. Foremost, or at least most vis-
ible, is the growing public concern
about physicians' competence.

Professional associations have at-
ttempted to provide their members
with tools to determine learning
needs. The College of Family Physi-
cians of Canada, for example, has
evolved its own Self-Evaluation Pro-
gram. A variant of this approach
which tests not knowledge but prac-
tice patterns, is the individual physi-
cian profile, pioneered by the Uni-
versity of Wisconsin's CME Depart-
ment.22 Information derived from
multiple patient contacts is then chan-
neled into an appropriate self-assess-
ment program, tailored to the physi-
cian's practice pattern. The CFPC has
adopted a similar approach in its
recertification program.

Awareness of one's competence is
also a by-product of the physician's
own experience, including his or her
undergraduate training. Traditional
medical school curricula, concerned
primarily with imparting knowledge
to students, have gradually begun to
acknowledge the importance of intro-
ducing problem solving and critical
thinking concepts. This has led to an
examination of the complex skills in-
volved in problem solving and clinical
reasoning.23

The determination of learning
needs and objectives for a formal or
organized course requires that deci-
sions be made by one group of physi-
cians (or in many cases, non-physi-
cians) on behalf of others. For the
most part, the methods used to con-
struct such a CME event (e.g., sug-
gestions from physicians, planning
committees) bear little or no relation to
issues of competence, and as a con-
sequence little or no relationship to
practice. Green44 has labelled this
type of program the 'content model'.

Courses built around perceived
needs are not without their difficul-
ties because of frequent lack of con-
gruence between perceived and objec-
tively determined educational needs.

An elegant study by Weinberg25 in-
dicated that physicians are remarkably
inaccurate when identifying deficien-
cies in their own skills. Furthermore,
not all the principles of adult educa-
tion relative to needs determination
apply, since CME is not the equiva-
 lent of adult interest courses; other
professional issues not determined by
the learner must be considered in the
planning process. For example, in
Sibley's randomized controlled trial
of CME, despite statistically signifi-
cant gains in knowledge, study physi-
cians tended to improve in perform-
ance or quality of care only in topics
not identified by study physi-
cians as high priority learning needs.

However effective or ineffective
many CME programs may be—and
their wide use suggests pragmatic
benefits despite a lack of clear out-
comes—future CME direction must
be from what might be termed the
competency-base, first conceptualized
by Brown and Uhl,27 where medical
audit measures were used to elicit ed-
ucational needs or deficits.

Conclusion

Current organized CME events are
still very much the product of the con-
tent model, based on the assumption
that physicians learn best from lec-
tures during blocks of time away from
their practices. Brown and Uhl27 have
aptly described this traditional ap-
proach, conjuring up the image of "a
room full of preoccupied but hopeful
attending physicians . . . anticipating
the learned presentation by the med-
ical school faculty . . . hoping that
such an educational program will
somehow be useful in the care of their
patients".

This format can become compe-
tency-based only if several conditions are met. The physician must recognize a learning deficiency or competency issue, and this program must fit that need; the program must permit the physician to raise and have answered clinical problems and questions; and it must be based on real patient issues, as in the medical audit approach. These are three big ‘ifs’, reflecting adult learning principles.

Despite innovations in CME methodology such as teleconferencing, audio and video tapes, dial-access programs, and computer based methodologies, the most important advance has been the introduction of these adult learning concepts into CME programs, as articulated by Miller. One manner in which this may be accomplished is by presenting and discussing clinical problems, as in traditional hospital rounds.

While the acquisition of new knowledge is an important prerequisite of clinical competence and thus a major component of most CME events, one must not overlook two other major components of competence—skills and attitudes. It is thus incumbent on CME providers to emphasize, in addition to ‘updates’ on medical advances, the refurbishing of ‘old’ skills (for example examination techniques) and the vast array of attitudinal issues, vital to practice.

Finally, the outcomes of CME interventions must be evaluated, partly for the physician’s sake, partly in the hope of improving CME delivery. Such outcomes must go beyond the perceptions of physician participants and their teachers, to involve measures of competence or performance, and even health care. This is indeed the ultimate challenge facing CME.

References
15. Herzog WT. The cost of evaluation. Presented at the University of Kansas Medical Centre, Kansas City, Missouri, August 1970.

Ativan* (lorazepam)

A compatible benzodiazepine

AVAILABLE: Ativan Oral Tablets: White, round, flat tablets containing 0.5 mg lorazepam. White, oblong, scored tablets containing 1 mg lorazepam. White, ovoid, scored tablets containing 2 mg lorazepam. Ativan Subcutaneous Tablets: White, round, flat tablets (engraved with W on one side and 1 on the other side) containing 1 mg lorazepam. Blue, round, flat tablets (engraved with W on one side and 2 on the other side) containing 2 mg lorazepam. Ativan Injection: Ativan Injection is available in 1mL ampules of 0.4 mg per mL. The ampules should be refrigerated and protected from light. Do not use if solution is discolored or contains a precipitate.

INDICATIONS: Ativan is useful for the short-term relief of manifestations of excessive anxiety in patients with anxiety neurosis.

CONTRAINDICATIONS: Ativan is contraindicated in patients with known hypersensitivity to benzodiazepines and in patients with myasthenia gravis or acute narrow angle glaucoma.

USAGE: The dosage of Ativan must be individualized and carefully titrated in order to avoid excessive sedation or mental and motor impairment. Thus, the ultimate dosage is not prescribed in association or administration in individual patients.

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PRECAUTIONS: Use in the Elderly: Elderly and debilitated patients, or those with organic brain syndrome, have been found to be prone to CNS depression even at low doses of benzodiazepines. Therefore, medication should be initiated in these patients with very low initial doses, and increments should be made gradually, depending on the response of the patient, in order to avoid oversedation or neurological impairment.

Dependence Liability: Ativan should not be administered to individuals prone to drug abuse.

Caution should be observed in patients who are considered to have potential for psychological dependence. It is suggested that the drug should be withdrawn gradually if it has been used in high dosage.

Use in Mental and Emotional Disorders: Ativan is recommended for short-term use in psychotic or depressed patients. Since excitation and other paradoxical reactions can result from the use of these drugs in psychotic patients, they should not be used in ambulatory patients suspected of having psychotic tendencies.

ADVERSE EFFECTS: The side effect most frequently reported was drowsiness. Other reported side effects were dizziness, weakness, fatigue and drowsiness, ataxia, amnesia, anxiety, change in appetite, change in weight, depression, blurred vision and diplopia, paraesthesia, anxiety, insomnia, sexual disturbance, headache, skin rash, gastrointestinal, ear, nose and throat, musculoskeletal and respiratory disturbances.

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