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Continuing medical education for general practitioners: a practice format

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ABSTRACT

Introduction Our current knowledge-based society and the many actualisations within the medical profession require a great responsibility of physicians to continuously develop and refine their skills. In this article, we reflect on some recent findings in the field of continuing education for professional doctors (continuing medical education, CME). Second, we describe the development of a CME from the Academic Center for General Practice (ACHG) of the KU Leuven.

Methods First, we performed a literature study and we used unpublished data of a need assessment performed (2013) in a selected group of general practitioners. Second, we describe the development of a proposal to establish a CME programme for general practitioners.

Results CME should go beyond the sheer acquisition of knowledge, and also seek changes in practice, attitudes and behaviours of physicians. The continuing education offerings are subject to the goals of the organising institution, but even more to the needs and desires of the end user.

Conclusions Integrated education is crucial to meet the conditions for efficient and effective continuing education. The ACHG KU Leuven decided to offer a postgraduate programme consisting of a combination of teaching methods: online courses (self-study), contact courses (traditional method) and a materials database.

INTRODUCTION

Our current knowledge-based society and the many actualisations within the medical profession require a great responsibility of physicians to continuously develop and refine their skills. Professionalism is a key component to this end. A prerequisite for this aim is lifelong learning so that own practice performance will improve.[1 2] Indeed, it turns out it is not enough to solely rely on experience. Although it is generally assumed that an increase of professional experience, knowledge and skills through the years of practical exercise leads to a higher quality of care, research demonstrated an inverse relationship.[3–5]

Educational institutes can provide the opportunity for lifelong learning by including the programme of continuing medical education (CME).[6] In the manual of the International Association for Medical Education (the AMEE guide), CME is defined as 'any activity that is intended to maintain, develop or increase the knowledge, skills, and professional performance and relationships that a physician uses to provide services for patients, the public, or the profession'.[7]

Because of the major changes that CME has undergone in recent years—in terms of the underlying theories, in terms of teaching methods, in the expectations for results and in the learning objectives—continuing education received increasing attention.[3 8 9] Within the context of quality education and the importance of accreditation, the question of the effectiveness of CME in changing the behaviour of physicians plays a key role.[10]

In this article, we reflect on recent findings in the field of continuing education for professional physicians, the requirements for an effective, efficient and high-quality CME offer and formulate recommendations to develop this course offering. Second, we describe the creation of a postgraduate programme originated and implemented at the Academic Center for General Practice (ACHG) of the KU Leuven.

METHODS

Definition

We continue to use the generic term 'continuing medical education', even though our programme was only addressing general practitioners. Findings from research on effective teaching methods in the field of general practice largely correspond to the findings of research into the broader field of CME.

Literature study

We searched through different databases (PubMed/MEDLINE, Lirias, LibriSource+, Libis, Embase, Google Scholar, Google Books, education resource information center (ERIC)) with the following keywords: continuing medical education, postgraduate continuing medical education (for general practitioners), postgraduate medical interventions (for general practitioners), online continuing (medical) education, (online) physician learning and continuing medical education methods. The keywords were repeated in Dutch. In addition, we explored references from articles that emerged from this first selection.

Second, we used unpublished data of a need assessment performed (2013) in a group of general practitioners (performed by the own research group of ACHG).

Proposal

Based upon the literature study, upon vision and policy strategies of the department (Public Health and Primary Care) on CME and upon discussion with experts, we developed a proposal to establish a CME programme for general practitioners.

RESULTS OF THE LITERATURE STUDY

Expectations and goals of qualitative continuing education

The primary purpose of CME was described by Levine[11 12] as 'maintaining and improving clinical performance'. Davis *et al*[1] showed that the learning

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objectives are wide and range from acquiring knowledge to deepening the matter, to attitudinal change. Increasing academic knowledge should not be the main goal of continued (medical) education. Only when the acquired knowledge actually offers an opportunity for changes in practice, it is meaningful.[13–15] Academic knowledge that successfully bridges to the everyday world and practice should, therefore, not be formal and abstract. Sufficient interaction between the person who learns and everyday reality is an essential characteristic of a successful learning process.[16–18] In organising CME, sufficient space should be given to (connections with) clinical practice.[19]

How do adults learn?

When organising quality CME, attention also should be paid to the fact that professionals have different learning styles and learning objectives.[9 20]

Over time, the theoretical base for CME was highly influenced by the views of educators and researchers on the concept of 'learning'. The learning theory for adults, the andragogy, become the standard against which CME finally was measured and assessed.[21 22]

The andragogy suggests that adults have very different learning needs and learning styles as compared with children and adolescents. Knowles identified six principles in the theory of learning for adults which were also integrated into other learning theories.[3 17 19 20]

- Adults are *results-oriented* and show a great need to know: why is it important to learn something, what must one do to learn and what will they have been taught?
- Adults are *autonomous and self-directed*: adults like to be able to exercise control over the techniques and goals within the learning.
- Adults have a lot of *life experiences and knowledge as a basis*, and they have a need to connect this basis with the learning content. Previous experiences of the adult learner also have an impact on the learning process by providing individual differences, creating prejudices and give an identity to the adult.
- Adults are *relevancy oriented*. They must have a motive to learn, for example, because their life situation creates a certain learning need. This is linked to the willingness to learn.
- Adults are generally *practical*. They learn best when knowledge is presented in a realistic (real-life) context.
- Adults show a high *motivation to learn* when they can get new information that can help them to solve significant problems in their lives/work.

Motivation versus resistance to learn

Confronted with the reality of (the combination of) work and family, professional doctors usually need an extra or particular motivation to commit to continuing education as compared with students in (under) graduate training. Professional physicians typically experience more barriers to learning.[10 20 23–27]

For physicians, who often spend a lot of time in practice, it is not easy to find the time and opportunity to engage in a structured continuing education programme. Physicians, therefore, often revert to self-assessment of (deficiencies in) their own skills and knowledge. In order to meet their self-assessed learning needs, physicians tend to use rather unstructured strategies to improve themselves[25 28]: randomly searching for literature, consulting the Internet, reading the free and sponsored non-scientific medical journals. Furthermore, professionals differ in the time spent on learning new things and that the confrontation with new learning situations often brings fear or uncertainty with it. This appears to be reflected in research findings that showed a preference for physicians to opt for educational experiences in accordance with what sounds familiar rather than with objective learning needs.[20 26]

The best way to motivate physicians to participate in continuing education is to clearly define the learning objectives and the practice profits and to keep the logistical thresholds as low as possible (eg, by offering the possibility of distance learning/e-learning).

Conditions for (the establishment of) an effective and efficient CME

The continuing education offering is subject to the goals of the organising institute, but even more to the needs and desires of the end user.[3 29] The development and evaluation of a continuing education programme should be a strategic objective of each educational institute. To be efficient and accessible, continuing education should meet a number of conditions that relate to the needs of the 'student', to the learning objectives, to the content, to the format and to the learning outcomes at the micro, meso and macro levels.[14 15 30] Therefore, it is important to carefully define (to know) the target population and the subject (addressing the learning needs), to clearly define the learning objectives and to align with the format and the programme structure.

Learning needs

Initially, a potential gap between needs and demand should be disclosed.[31] First, uncertainty in every day clinic appeared to be an important motivation to learn and to induce changes into practice.[2 26 32] Second, the inventory of needs is essential to control and to steer the learning process and finally to evaluate the education offerings. Gillam and Murray made a classification in felt needs (what do physicians say they need?), expressed needs (through actions/behaviour), normative needs (defined by experts) and comparative needs (based on a comparison between groups).[33] Other authors mentioned individual versus organisational or group needs, clinical versus administrative needs and subjectively versus objectively measured needs. The aim of a needs assessment should address the method and the application of the findings.[28 34] There are different methods to perform a needs assessment. The '*Good CPD Guide*' listed 46 formal and informal methods for self-evaluation (table 1).

To determine the learning needs of physicians both self-evaluations by the doctors and an estimate by the organising institution are useful.[2 17] Indeed, previous research reported a low correlation between the self-evaluation of physicians and their performance on objective knowledge tests. In addition, physicians tend to choose educational experiences in accordance to what they feel comfortable with. But there is a higher gain in care quality when physicians are encouraged to choose learning topics that lie beyond their comfort zone.[25 35]

Interaction

Interaction appears to be an essential element of a successful learning process and it is also a key feature of the teaching methods employed in CME.[24 31 36]

Several learning theories and empirical studies showed that physicians develop their practical skills by learning from their mistakes.[20] When only using this learning strategy, the improvement of a physicians' practice is likely to be limited. Feedback from others and contact with practice (errors)—and also with the particular competencies of other physicians—ensures that

Table 1 Good CPD guide's classification of resources[20 36]

Clinician's own experiences in direct patient care	▶ 'Blind spots' ▶ Clinically generated unknowns ▶ Competence standards ▶ Diaries ▶ Difficulties arising in practice ▶ Innovations in practice ▶ Knowledgeable patients ▶ Mistakes ▶ Other disciplines ▶ Patients' complaints and feedback ▶ Necropsies and the clinicopathological conference ▶ PUNs and DENs ▶ Reflection on practical experience
Interactions within the clinical team and department	▶ Clinical meetings—department and grand rounds ▶ Department business plan ▶ Department educational meetings ▶ External recruitment ▶ Junior staff ▶ Management roles ▶ Mentoring
Formal approaches to quality management and risk assessment	▶ Audit ▶ Morbidity patterns ▶ Patient adverse events ▶ Patient satisfaction surveys ▶ Risk assessment
Specific activities directed at needs assessment	▶ Clinical incident surveys ▶ Gap analysis ▶ Objective tests of knowledge and skill ▶ Observation ▶ Revalidation systems ▶ Self-assessment ▶ Video assessment of performance
Peer review	▶ External ▶ Informal—of the individual doctor ▶ Internal ▶ Multidisciplinary ▶ Physician assessment
Nonclinical activities	▶ Academic activities ▶ Conferences ▶ International visits ▶ Journal articles ▶ Medicolegal cases ▶ Press and media ▶ Professional conversations ▶ Research ▶ Teaching

CPD, continuing professional development; DENs, doctor's educational needs; PUNs, patient unmet needs.

problems inherent to self-regulation and self-assessment (eg, incorrect assessment of learning needs) are countered.

Education format

Previous findings implied that learning and not (only) 'educating', stimulates physicians to change their common clinical actions.[20 26 36] Here, the observation that the least effective teaching methods are those that are most commonly practiced in CME is alarming. These frequently used methods include lectures and (spreading) unsolicited printed material such as courses and clinical guidelines. Learning related to clinical practice, interactive educational meetings and outreach events are acknowledged as most effective as well as strategies that combine several educational interventions.

Besides the importance of content, the format of seminars brings its own advantages and disadvantages.

- *Online courses*. When choosing an online course, physicians attach most importance to the quality of content, followed by the (degree of) online accessibility, ease of use and ease of obtaining a credit for attending the course. The least valued characteristics of an online course are the requirement to download extra software, followed by the lack of interaction.[37 38] Cook indicated that interactivity, practical exercises, repetition and feedback within an online course seem to be associated with better learning outcomes. The use of case studies also appeared to be meaningful. Interactivity, the opportunity of online discussion and audio materials increase the satisfaction of professionals with the online course. The question when to address to an online course (instead of other learning formats) to fulfil specific learning need is unclear. However, Cook recommended education institutes to avoid developing an online course merely to present one and participate in the 'trend'. Benefits of an online course (eg, flexible schedule, individualised learning, alternative learning method, etc) have to outweigh the disadvantages (eg, social isolation, cost, technical problems, etc). Second, the content of an online learning course should not be limited to the electronic publication of (existing) traditional lectures, presentations or syllabi.[39 40]
- *Contact courses (traditional methods)*. The effectiveness of traditional teaching methods can (like the online tutorials) be improved by increasing interaction and practice relevance through the use of explaining materials based upon cases.[17 26 32 41] Offering full guidelines without practice reflection generally appeared to have a limited impact on clinical practice and knowledge. Guidelines are generally presented as densely written monographs offering little opportunity to overview and absorb the content at a glance. In contrast, shorter, less comprehensive texts that proved to have more learning impact on clinical practice.
- Traditional lectures can contribute to increased knowledge, skills or attitudinal changes, but turned out to have little success in terms of actually (directly) changing the clinical performance of physicians or improving patient care. More interactive methods such as peer review, role-play or practice sessions appeared more effective with respect to clinical performance and care quality. A series of sessions also demonstrated a higher impact than a single session. This is explained by the immediate application and practicing of the acquired knowledge and skills into practice followed by assessment, discussion or confirmation in a later session.

PROPOSAL OF A CONTINUING EDUCATION PROGRAMME FOR GENERAL PRACTITIONERS

Based on the above findings, we designed a programme for CME with an emphasis on effective and efficient learning and teaching strategies and with respect to the barriers intervening with the learning process. We proposed this as a stepped plan.

Strategy

Needs assessment

The purpose of the needs assessment was to gain insight in the learning needs of (Flemish) general practitioners before developing a CME programme. To perform the needs assessment, we used several methods. First, the personal experiences and unmet education needs of physicians in direct patient care are important sources (see table 1). Second, a more formal approach through strategies of quality management is elaborated to detect learning needs. For example, audits on specific topics and registrations are performed by trainees by means of the electronic

health record (EHR), insight in sickness patterns and epidemiology is acquired via Intego (a Flemish database that records and analyses the prevalence of disease as it occurs in the Flemish general practice) and analysis if the patient satisfaction surveys, performed by the National Institute for Health and Disability Insurance. The third strategy to collect information on learning needs is carried out through peer review in the local quality groups of General Practitioners (GPs) (Lokale Kwaliteitsgroep, Local Peer Review groups). Fourth, we collected additional input on learning needs via non-clinical activities such as journal articles, case studies, research and education.

Learning goals

We formulated multiple learning objectives, which focus on the impact on clinical practice and behavioural changes. Concretely, the learning outcomes addressing each learning objective were defined depending on the course content (table 2). Additionally, it is essential to measure the end points of the learning objectives. This measurement can be done shortly after the training or course but preferably also at a later time, to identify the impact of education on performance.

Choice of format

The determination of the format, which depends on the specific target group (in this case GPs) and on the prerequisites for effective and efficient education for professionals, is an important issue.

Continuing education can be divided into two formats: continuing education with contact (conferences, lectures, seminars, workshops, classroom activities, etc) and self-study (online learning programmes, reading, etc). Each format has its advantages and disadvantages.

Particularly, because learning and not (only) 'teaching' stimulates doctors to change clinical practice and actions, contact sessions should be given a more active character. This can be achieved by considering a presentation as an intervention: the listener is encouraged to think, act and work along. In most forms of self-study, this strategy can be applied as well (eg, online programmes).

Implementation

The ACHG disposes of a wealth of educational and research material that—if adjusted to the correct format—can be used to create an offering of high-quality CME that meets the real needs in the professional field.

Table 2 Learning goals

Learning goal	Action
Information gathering: new knowledge or remediation	Enumerate, identify and reproduce
To understand	Declare and explain to eventually be able to apply
To apply	Applying the knowledge acquired
To analyse	Problem solving, thinking and justifying
To synthesise	Generalise and apply knowledge in daily practice
To evaluate	Evaluating and reviewing one's own medical practice
To acquire skills	Performing skills into practice
Attitude	Implementing a change in the everyday activities

Furthermore, a combination of different teaching methods is offered: online courses (self-study), contact courses (traditional method) and a materials database. In view of the effectiveness, the learning material is (formally) modifiable and adjustable with respect to the specific characteristics and conditions of the teaching format.

In concrete, the CME of the ACHG is offered through a separate interface on the ACHG website (http://www.achg.be). Clicking on an event in the calendar must connect the learner to the right page referring to the continuing education activity. When logging in, news flashes—which are specific with regard to the continuing education offerings—become visible. In the near future, a direct link from an EHR will connect registrations of anonymous medical data to a learning activity. Entering the diagnosis 'prostatitis' will be, on demand, linked to a course in this area.

The CME interface provides access through a welcome screen where three buttons are available: (1) online courses, (2) contact courses and (3) a materials database (subdivided into the material with or without a speaker, PowerPoints and for local peer review groups). Each button takes the user to a new screen where he will get an overview of the various topics on which courses/materials are offered (eg, dermatology). Each theme consists of subthemes (eg, acne, benign lesions, basic surgery in dermatology, etc).

In the next section, we discuss the design of the online learning programme (without a teacher) and the contact courses (with teacher):

Online learning programme

To meet the requirements for an effective online learning, existing (PowerPoint) presentations were edited, made interactive and supplemented with clinical (case) material by theme (course module). For ease of use, no additional software needs to be installed in order to navigate through the content of the learning programme and to subscribe to a course module.

Each module was conceptualised as an electronic 'book' with chapters, which can be browsed both linear and parallel between chapters, parts, bibliography, discussion for personal notes and even between the different course modules. The progress in the learning process is at any time visible to the learner.

At the beginning of each course module, the learning objectives are clearly defined. The design of the online learning programme and the related modules is intuitive and accessible without instructions (even for doctors who have little computer experience or technical feeling).

To guarantee the aspect of interactivity, a variety of functional applications was implemented: video and audio materials, multiple choice and open-ended questions (with feedback), flip cards, a discussion forum, match assignments (where the right content must be dragged into the appropriate column), recorded presentations/lectures and role-plays.

Texts, articles and questionnaires (tools and instruments) are downloadable. References to background information or to websites (eg, in the context of a 'social map') are linked in the web page or in the bibliography.

On each page of the e-course, the learner can add his own notes which remain consultable any time. Comments and/or book suggestions made by the author of the module are available for the learner. At any time, the learner can change between the different chapters and components creating the opportunity for sufficient repetition.

Contact courses

Contact courses are offered in accordance with the areas of research expertise within the ACHG and in accordance with the graduate education programme in general practice. These course modules and research reports are adjusted and transformed into learning materials for professionals with respect to the above strategy and vision on CME. This programme is offered in several forms: symposia, courses (one or more days) with or without workshops, separate workshops, summer courses, cycles and with or without preparation. A fixed programme is created (continuing education calendar), supplemented by further training courses that meet specific further educational needs. This programme is the result of an intensive cooperation between all partners involved in CME: University Hospital of Leuven, Regional Hospital Heilig Hart, Medisch Centrum voor Huisartsten (polyclinic for ambulatory specialised care).

Pitfalls and barriers

The most threatening pitfall in this comprehensive and complex CME programme is financial.[29 42] Keeping the course modules up to date, managing the subscriptions, providing a help desk function, organising contact course, contacting speakers and providing a help desk function put a high burden on all involved partners (teachers) including office assistants. Therefore, a coordinator is appointed and provided with clear constructions and an instructive manual to manage the organisation and follow-up. The coordinator reminds authors to update their course modules on a regular basis and when new guidelines appear. Subscriptions and help desk functions are implemented in the electronic interface and maintenance of these functions is partially outsourced. The organisation of contact courses and the contact with speakers is supported by the coordinator consultation with the CME responsible.

Another threat of this CME programme is the risk on loosing the overview. Therefore, regular quality checks need to be performed. Indicators of high quality are: appreciation of the learners and teachers, increasing competence and knowledge in learners screened by self-assessment, average time spent of an individual user on e-platform, both grow and stabilisation of number of participants, subscription of participants to different course modules (in different formats) and improvement of healthcare on practice and on population level on a long-term.[43–45]

CONCLUSION

CME should go beyond the sheer acquisition of knowledge and also pursue changes in practice, attitude and professional behaviour of physicians. The continuing education offerings are subject to the goals of the organising institution, but even more to the needs and desires of the end user. The programme must be built up strategically. The existing learning needs must be determined (both through self-assessments of physicians and through assessment by the organising institution of the objective needs), learning objectives should be formulated in concrete and the course format should be adjustable and modifiable to meet the educational requirements.

Integrated education is crucial to meet the conditions for efficient and effective continuing education. Interaction appears to be a key concept that must be taken into account within each method offered (contact courses and online learning programmes). Based on research findings and the needs physicians indicated within a small-scale study (unpublished), the ACHG KU Leuven decided to offer a postgraduate programme consisting of a combination of teaching methods: online courses (self-study), contact courses (traditional method) and a materials database. In view of the effectiveness, the learning material was each time (formally) modified to the specific characteristics and conditions of the given method, which were suggested by the literature and research as important for the effectiveness and user satisfaction.

Main messages

- Continuing medical education should go beyond the sheer acquisition of knowledge.
- The continuing education offerings are subject to the goals of the organising institution, but even more to the needs and desires of the end user.
- The programme must be built up strategically.

Current research questions

- Should focus on new learning strategies in terms of educational outcome measures.
- Should focus on outcome of learning on healthcare quality.
- Should focus on metacognition or the self-awareness of knowledge and skills.

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