

Rethinking the Impact of Single Continuing Educational Activities: Navigating Complexity Through Insights from Real-World Evaluation and Contemporary Literature

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ABSTRACT

Real-world evaluation data strongly suggest that substantial multi-level heterogeneity of continuing education (CE) audiences, though considered highly desirable, poses severe challenges to the assessment of what a single CE activity might have contributed to either improve or maintain achievements or prevent change for the worse. This relates in particular to change in higher levels of outcomes, such as performance, patient health, and/or community health. This sets narrow limits to the design of an objective, reliable and reasonably valid assessment of change in evaluating the effectiveness of a single CE activity. Although CE may be more effective in leading to consistent behaviour in homogeneous groups with regard to background and motivation, trying to reduce the various levels of heterogeneity would be an unrealistic, and also unwanted, approach. Thus, we still have to trust physicians (and other healthcare professionals) to exercise their professionalism in pursuit of individual opinion forming trajectories in the best interests of their patients. However, providers may also choose some more targeted approaches to influence the mindset even in heterogeneous learner groups:

- integrating not only knowledge and competence but also current performance gaps into pre-/post-tests
- increasing opportunities for discussion will allow optimal matching of the individual needs of participants with the CE content. When reported, unprecedented numbers of participants' questions (>50 per webinar) have been processed during and/or after an e-learning activity, and even higher numbers of interactions might be expected in demand use of e-learning material. Thus, e-learning in combination with long-term faculty engagement has promising potential for sustainable competence.

ARTICLE HISTORY

Received 23 December 2024

Revised 9 April 2025

Accepted 19 April 2025

KEYWORDS


Continuing professional development; continuing medical education; continuing education; impact; single activity; real-world data

Medical professionals are committed to finding the best solution for health problems of individual patients [1–3]. They do so on a background of deficits in medicine, e.g. in knowledge about pathophysiology and pathogenesis of diseases, reliability of diagnostic procedures, and effectiveness of treatment. This makes medicine prone to innovations which might have an impact on current approaches in diagnosis and therapy. Continuing education (CE) is considered the place to build consensus on what is here to stay, what should be changed, and whether change has made progress or achievements have been maintained [4–6]. It is thus

not only in the interest of CE providers but also accrediting bodies, regulators, and supporters to assess whether these objectives have been met.

This paper is based on the authors' analysis of CE evaluation data collected in the European Board for Accreditation of Continuing Education for Health Professionals (EBAC®) accreditation system (for more information about EBAC evaluation requirements please visit the EBAC website at https://www.ebac-cme.org/wp-content/uploads/2024/04/Roles-and-Responsibilities-of-Providers-2024-03-25_MP.pdf) and findings in the literature.

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 Supplemental data for this article can be accessed online at <https://doi.org/10.1080/28338073.2025.2498292>

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In a descriptive analysis, it aims to highlight trends in real-world evaluation data and contemporary CE literature to gain insights into the extent to which a single CE activity may drive changes across various levels of outcomes ranging from knowledge to patient and/or community health.

Based on this analysis, we have identified several key challenges below for the CE community to consider when assessing the impact of CE activities.

- A. Many accrediting bodies make it mandatory that all accredited CE is “available to the whole medical community” [7] to ensure optimal accessibility and interdisciplinary and/or interprofessional participation in CE.
- Thus, accessibility or, from the perspective of the provider, **outreach** is an important requirement to inform larger medical communities and has been facilitated substantially by the use of digital technologies in CE. However, in current e-learning activities, participants in a single activity may originate from up to 26 countries (i.e. healthcare systems), and this number will be even higher in global congress events [8,9]. Inhomogeneity in care access, interventions, guidelines, and many other aspects of healthcare systems across regions in which clinicians practice create unique challenges in assessing the effectiveness of CE in driving changes, in particular, those related to performance and/or community health [10–15]. On the other hand, an increase in outreach may result in less **representativeness**: when reported, percentages of invitees ultimately participating in a CE activity may well be below 1%, making it difficult to estimate the impact of an individual CE activity on the target audience population and, consequently, on community health.
- **Interdisciplinarity** is considered an important prerequisite to achieve equal levels of commitment since patient care often involves more than one medical speciality. However, data from CE on highly specialised interventions demonstrate that a substantial portion of the participants (in the range of 40–80%) are not involved at all in performing the interventions covered in the CE activities or their engagements are dependent on decisions taken by their peers.
- In most cases, an **interprofessional team** approach is needed to achieve optimal results in patient-care. However, data from CE on interventional techniques in cardiovascular medicine show that by being more inclusive, this may well lead to

about 20% of participants not being involved in the type of patient care under review. A broad targeting approach may therefore result in variations in both learning experiences and benefits achieved by diverse healthcare professional learners in the same CE activity.

- The concept of broad accessibility also implies, that CE providers give access to their activities independent of the **qualification status** of their participants. Thus, substantial parts of the audience may not (yet) be allowed to independently make decisions on their patients (e.g. trainees) [16].

Taken together, the findings above suggest an **inclusivity paradox**: higher inclusivity leads to more heterogeneity of CE audiences, making it difficult reliably to predict changes that would occur after participation.

- B. This is further complicated by heterogeneities of learning needs, as perceived by the individual participant or as the result of needs assessment performed by the provider:

Knowledge about **individual opinion forming trajectories** of CE participants is scarce, but it seems that many physicians attend more than one CE activity on the same topic before ultimately forming their opinion. When investigated, the vast majority (up to 80%) of participants have already attended a similar activity before and/or have a **predetermined attitude**. About one-third of participants indicate that they will still require further information prior to implementing recommendations given in the CE activity.

This corresponds to findings in the literature and makes it difficult to determine when change in behaviour has started or whether it has been intended at all [16,17]. This is further supported by an analysis of learning behaviour in e-learning, demonstrating that many participants have highly **selective informational needs** [8,9,18]. Our evaluation data indirectly support this notion by demonstrating that percentages of participants engaging in pre-/post-tests as a requirement to get a certificate of attendance rarely exceed 50% and often are in the range of 20% or less. This trend makes it difficult to determine whether the effects measured result from participants' exposure to the entire activity or only specific parts of its contents.

- C. Content-related factors have also to be taken into account:

- Contemporary estimates of **bias** in CE are in the range of 10% [19] or lower and are not only related to commercial bias: When further investigated, up to 50% of participants perceiving some form of bias have indicated that it is related to interpretation of data (e.g. presentation of the opinion of an organisation or other professional group). Commercial bias, if indicated, constitutes a much lower proportion.
 - Attitudes towards **language** used in CE will further modify quantitative outcomes in CE [20].
 - Though ratings for **overall quality** of CE activities are mostly high, there are, on average, some 5% of participants [16], who did not find it helpful. This number is usually considered as acceptably low. However, it is not known what this means with regard to their pre-existing motivation for change.
- D. Medical and/or psychological factors have been shown to impact on the effects of an individual CE activity:
- During the pandemic, healthcare workers impressively demonstrated their commitment to practice CE [21]. However, willingness does not inevitably include **readiness**: significant parts of the healthcare workforce are suffering from burn-out, which has been demonstrated to have a negative impact on the uptake of CE [22].
 - Little is known about factors determining the **pace of change**. More or less immediate decisions have been observed, as described for the prescription of hydroxychloroquine during the Covid pandemic [23]. However, in the US opioid crisis, also a national health emergency, deprescribing of opioids occurred at a rather slow pace even when numbers of deaths were still rising [24–26]. When healthcare follows its usual pace, it may need several years for changes to reach a plateau phase [27]. On the other hand, changes may also occur rapidly, e.g., reimbursement policies change [28].
- E. Other key points to consider:
- There is little consensus on what “**change**” means in **quantitative terms** (e.g. attainment rates in medical therapy [29], neither on the level of the individual physician nor on the community level.
 - Moore et al. [30] have reminded us that CME should be more than knowledge transfer, but should address the whole “theory-to-practice-continuum” from knowledge to competence and

performance and to improvements in patient and/or community health. However, while a more direct link between CE and knowledge and competence may be expected, when it comes to changes in performance and patient health there are many complex factors that are **beyond the control** of the medical professional participating in CE. These should be addressed, but not necessarily resolved in education (e.g. evidence gaps, patient-related factors, ineffective implementation in the workplace, licencing issues, availability and/or cost of therapy, access to healthcare etc.) [10,11,31–34].

Conclusion

Real-world evaluation data strongly suggest that substantial multi-level heterogeneity of CE audiences, though considered highly desirable, poses severe challenges to assessment of what a single CE activity might have contributed to either improve or maintain achievements or prevent change for the worse [4–6,26]. This relates in particular to change in higher levels of outcomes, such as performance, patient health, and/or community health. This sets narrow limits to the design of an objective, reliable and reasonably valid assessment of change in evaluating the effectiveness of a single CE activity [30,35].

Perspective

Though CE may be more effective in leading to consistent behaviour in homogeneous groups with regard to background and motivation [36], trying to reduce the various levels of heterogeneity described above would be an unrealistic, and also unwanted, approach. Furthermore, though assessment of the extent to which the individual participant has changed his/her medical practice might in the future be facilitated by analysis of claim data or electronic health records, we are still lacking a framework for setting the benchmarks. This is largely due to a lack in resources and robust methodologies or even proper understanding and skills in integrating this type of data into current CE. As such, conclusions drawn from the analysis of administrative data, in particular, those related to a causal relationship between a given CE activity and clinical behavioural change observed, could be questionable. Thus, we still have to trust physicians (and other healthcare professionals) to exercise their professionalism in pursuit of individual opinion forming trajectories in the best interests of their patients.

However, providers may also choose some more targeted approaches to influence the mindset even in heterogeneous learner groups:

For instance, integrating not only knowledge and competence but also current performance gaps into pre-/post-tests may be a way to highlight the importance of changes in performance to achieve or maintain better patient and/or community health. In this regard, combined gains in knowledge and competence of 20–50% have consistently been demonstrated in these tests.

In addition to the results of formal needs assessment, individual learner's needs will vary according to the level of heterogeneity encountered in a given group of learners. Thus, increasing opportunities for discussion will allow optimal matching of the individual needs of participants with the CE content. When reported, unprecedented numbers of participants' questions (>50 per webinar) have been processed during and/or after an e-learning activity, and even higher numbers of interactions might be expected in demand use of e-learning material (accreditation of e-learning is valid for 2 years in the EBAC® system). Thus, e-learning in combination with long-term faculty engagement has promising potential for sustainable competence.

Disclosure Statement

Declarations of interests of all authors can be found under "Supplementary material".

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