

# **EPEC**

Education for Physicians on End-of-life Care

## **Trainer's Guide**

# **Evaluation of the Outcomes of EPEC**

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Emanuel LL, von Gunten CF, Ferris FD. The Education for Physicians on End-of-life Care (EPEC) curriculum, 1999.

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## Objectives

The objectives of this section are to:

- describe possible levels of educational evaluation
- describe the use of evaluation tools included with the EPEC curriculum
- consider the use of other evaluation methodologies and tools for complex evaluation of the effectiveness of the EPEC curriculum

## Purpose of evaluation

Evaluation is a measurement process intended to establish the effect of an intervention. From the outset, the goals of the intervention, including the immediate, indirect, and ultimate goals, and the target population must be clear. Only then can the intervention, and the evaluation appropriate for that intervention, be designed and implemented.

Some 20 years ago, Dixon described the different levels of evaluation for an educational intervention. These include (1) the profile of conference participants; (2) the participants' perceptions and opinions about the educational intervention; (3) the change in the participants' knowledge, skills, and attitudes; (4) the change in the participants' provision of care; (5) the change in the experience of patients and families at the end of their lives; and (6) the economic impact of the educational intervention. Unfortunately, most of these approaches to evaluation have not been widely applied, and the effectiveness of most medical educational interventions remains unknown.

EPEC is a broad educational intervention intended to improve all physicians' knowledge, skills, and attitudes in palliative care and, in turn, patients' and families' experience of the end of life across the US. It is a multi-interventional process based on a standardized curriculum that involves many different educational venues, formats, and trainers across the country. Inherent in the process is the desire to establish the effectiveness of EPEC as an educational intervention and provide direction for its modification. To measure its effectiveness will require a broad understanding of the process of evaluation by all trainers and consistent application of a minimum evaluation process at all presentations. For trainers with more skill and resources, a more in-depth evaluation of EPEC's impact may be possible.

## Levels of evaluation

The 6 possible levels of evaluation of an educational intervention are discussed in detail in the sections that follow, starting with the easiest and ending with the most complex. Typically, the most difficult evaluations are the ones that yield the most helpful information. Level 1 to 3 evaluations are part of the minimum evaluation suggested for all EPEC presentations. EPEC trainers are encouraged to consider how they might design and implement level 4 to 6 evaluations in their settings.

## **1. Participant profiles**

To describe the participants at each EPEC training session, collect demographic data on each learner. Include each participant's discipline (eg MD, DO, RN), age, gender, race, ethnicity, culture, place of work (eg hospital, community office, palliative care unit, hospice), medical specialty, practice setting (urban, suburban, rural), the percent effort in end-of-life care, etc. (see Appendix).

Analysis of these demographic data will provide a description of the participants you are reaching. The summary will permit you to see how successful you are at reaching your target population and potentially redesign your training format or "marketing" strategy for future sessions (eg, if you are trying to reach physicians and only nurses come to your sessions, you will want to reconsider what you are doing).

Linking these demographic data with other evaluation data, or other data sets, also permits a more in-depth analysis. For example, if some participants were dissatisfied with the training received, an analysis linked to the demographic data will permit the organizers to develop a better understanding of who was dissatisfied and potentially adjust the intervention (eg, whether these were mostly older or younger people, specialists or generalists, experienced in end-of-life care or not, etc).

## **2. Perceptions, opinions about the presentation**

Ask each of the participants for his or her self-report of the effectiveness of the educational intervention. These data are commonly collected by using a questionnaire that is handed out at the end of each educational presentation (eg, each module), and at the end of multisession program's such as EPEC (eg, at the end of the conference). Questions are usually included to ask whether the learner felt his or her educational needs were met, whether the objectives of the session were clear, whether the presenter and his or her audiovisual and written materials were clear and understandable, etc. Other questions might ask about the learner's level of interest in the subject, what he or she hoped to get out of the session, whether the learner felt that the educational intervention was worthwhile, whether it will change his or her day-to-day practice, his or her confidence to use the information, whether the new information "fits" with his or her current knowledge, or whether the learner would recommend it to others (see Appendix).

## **3. Change in knowledge, skills, attitudes**

The knowledge gained during an educational intervention has generally been evaluated by using objective measures, eg, through a test administered both before and after the educational intervention. The same test can also be readministered a third time at a late date to see if the material that was learned was retained.

The standard format used for testing knowledge is a multiple-choice questionnaire (MCQ). Suitable for testing factual recall, the MCQ format has limitations for evaluating critical thinking and judgment (see Appendix).

While some evaluation of skills and attitudes is possible with MCQs, critical thinking and judgment are better evaluated by objective standardized clinical encounters (OSCEs). A learner is either observed, videotaped, or audio taped breaking the bad news of a diagnosis of cancer to a standardized patient. The interaction is then evaluated by experts using specified criteria, eg, whether the clinician sat down, showed empathy, allowed use of silence, etc.

#### **4. Change in professional behavior**

It is usually the goal of education to influence the learner to change his or her behaviors and incorporate the new knowledge, attitudes, and skills into his or her day-to-day activities. While this is an important outcome to measure, the qualitative and quantitative data required to demonstrate a change in behavior is more time and resource intensive to collect.

Qualitative data are often derived from an array of expert focus group interviews (eg, physicians, nurses, patients, families, etc) that can provide different perspectives on the behaviors both before and after the educational intervention. Quantitative data can be acquired through controlled studies such as a review or audit of charts, observation of clinicians at work, and analysis of prescribing data. (see Appendix).

While all of these data may be instructive, outcome measures that correlate with the desired outcomes of care must be carefully chosen from the outset. Erroneous data can result if correlations are not valid. For example, while it might be assumed that having few requests by patients for pain medication is synonymous with good pain control, since too many patients suffer pain without requesting more medication, this assumption is false and the resulting data would be misleading.

#### **5. Impact on patient and family status/experience**

The ultimate goal of education on end-of-life care is to ensure that patients and families get optimal care. The change in the patient and family status/experience that results from the educational interventions using the EPEC curriculum can be evaluated by assessing defined clinical outcome measures that are reflective of optimal care (eg, location of death, whether the patient was cared for in a hospice program, pain intensity, etc).

Outcome measurement data are initially collected on individual patients and families either retrospectively (eg, through chart audit, extraction from databases, etc) or prospectively through questionnaires or standardized interviews. The outcome measurement data are then combined and analyzed to assess the overall change in the experience of a defined population of patients and families. Finally, the summary data are compared with control data to assess the change over time. They can also be compared with similar data from other programs, or minimum or ideal “gold” standards of practice, to compare interprovider efficacy.

Outcome measures require rigorous evaluation and validation to ensure that they measure what they are supposed to, in a reliable fashion. Validation usually requires that measures have:

- face validity--they measure what seems to be important and of interest
- content validity--the measures cover the full scope of the subject matter
- criterion-related validity--different criteria within the measure relate to one another in a sensible fashion
- generalizability--can be used in a different population
- test-retest reliability--if you use the measure again at a later date with the same subjects, then similar information would accrue

While time and resource intensive to complete, outcome measurement studies to assess for change in the patient and family status/experience provide considerable data to support the effectiveness of an educational intervention such as EPEC.

## 6. Cost-benefit analysis

This final level of evaluation uses one of a number of economic analysis techniques (eg, cost minimization, cost-effectiveness, cost-benefit (utility) analysis) to evaluate the impact of an educational intervention on either a health care system or a defined population. It is intended to answer the question, "Was the educational intervention worth it?" While technically complex to complete, if the appropriate data are available, cost analyses can be completed through individual case studies, a meta-analysis of many studies, or controlled comparisons.

## Evaluation methodology

Two overall methodologies can be used to create comparisons for any of the levels of evaluation described above.

### CQI

The methodology developed for continuous quality improvement (CQI) provides the fastest way to collect data and quickly check the effectiveness of an educational intervention. Reliable data are collected over consecutive short intervals. Summaries for each data collection period are compared to see if change is going in the desired direction. The information can then be used to plan additional interventions and assess needs.

While the data are not analyzed in a scientifically or methodologically rigorous way, CQI can nonetheless be a rigorous and helpful methodology to design an evaluation. Assistance from a methodologist to design the intervention and evaluation can be very helpful and avoid later problems.

## Clinical trials

If there is a desire to measure changes resulting from an educational intervention in a rigorous and scientifically sound manner, then both the intervention and its evaluation need to be designed with those goals in mind.

The key feature of clinical trials is that there is a control group, whether prospective or retrospective, against which the efficacy of an intervention can be assessed. The intervention should be definable and unaffected by other changes. Particularly in the changing milieu of end-of-life care, it can be very challenging to isolate the effects of the educational intervention of EPEC from other confounding effects, such as other educational opportunities, the effects of changes in the ambient culture, concurrent changes in systems of care delivery, products, equipment, supplies, etc. If it is your aim to design a clinical trial to assess the effectiveness of EPEC, it is important to consult with an educational methodologist to design both the intervention and control groups correctly from the inception of your plan.

## EPEC evaluation tools

For those who participated in the original cohort of trainers at the regional conferences in the first quarter of 1999, there is an expectation that the first 3 levels of evaluation will be conducted at each presentation you make. Appended to this discussion are tools that you can use, including: (1) forms (which can be reproduced) to ascertain the profile of your participants; (2) questionnaires to evaluate the trainee's perceptions about the overall conference as well as individual sessions; and (3) MCQ tests to evaluate the knowledge, attitudes, and skills of your participants before and after each of your educational interventions.

Also appended are samples of level 4 and 5 evaluation tools that can be reproduced and used in your evaluations as long as appropriate attribution is given. To assess change in physician behavior (level 4) related to pain management, hospice referral, and advance directive use, 4 chart audit tools to evaluate the outcomes of house staff training in internal medicine have been included.

To assess changes in the patient/family experience (level 5), a questionnaire for families has been included.

Other outcome measurement tools can be found in the medical literature, or at the following websites:

- The Toolkit Website  
[www.chcr.brown.edu/pcoc/toolkit.htm](http://www.chcr.brown.edu/pcoc/toolkit.htm)
- Edmonton Palliative Care Program  
[www.palliative.org](http://www.palliative.org)

These can be used to develop more detailed evaluations in consultation with a methodologist.

## Tracking the use and effectiveness of EPEC

To assist in the overall monitoring of the use of EPEC, a “Tracking Sheet” has been included in the Appendix (or it is available on the AMA EPEC web site) so that you can send us a summary of each of the educational events where you use EPEC. Please complete and forward this form soon after every educational event that uses any part of EPEC.

To track the effectiveness of the curriculum, the EPEC team is also asking you to send us copies of your participant profiles, evaluation and pre- and post-test data so that we can create a amalgomated summary of participants’ experience with the curriculum. Forms for collecting this data have been included in the Appendix.

For those who carry out level 4-6 evaluations based on EPEC, we would also be interested in having your data. (At no time will any data be used with identifiers, and only aggregated results will be considered for publication.)

The EPEC team would like to thank you in advance for your assistance with collecting this data. Together we will gain greater understanding of the effectiveness of this educational tool.