Best evidence medical education (BEME): a plan for action

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The need for a consensus

Evidence, which has been defined in the American Heritage Dictionary of the English Language as “a thing or things helpful in forming a conclusion or judgment”, is such a simple word. Yet, for many in the health professions, when it is used in the context of ‘evidence-based medicine’ (EBM), it carries a pejorative significance, as if any medical diagnostic or management decision not meeting rigid criteria defined by a critical appraisal process is not up to acceptable standards.

This is a misconception which has led to polarization on the topic of EBM within the medical community and no doubt slowed its acceptance by many in the academic community and by medical practitioners in general. It is a misconception: Sackett et al. (1996) have defined EBM as “the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients”.

This misconceived controversy and its adverse effects on enthusiasm for the adoption of EBM by the medical community has probably slowed the movement on the part of those involved in the medical education community towards an inclusive, more formal and structured evidence-based approach to medical education decision making. Despite calls for a move in this direction, there has been no consensus on what is required to promote such an approach and to provide an infrastructure to allow it to happen.

The patent lack of movement in the general education community, and in some cases antipathy (Larabee, 1998) in that community to the idea that useful evidence can be accumulated as to the generalizability of most educational interventions has also probably deterred movement to an evidence-based culture in the field of medical education. With few good models from general and higher education to go on, establishing a foundation for such a culture in medical education would have to be de novo.

Stimulated by comments at the 1998 AMEE Annual Conference in Prague that the field of medical education was too ‘soft’ to lend itself to a more rigorous evidence-based approach, the term best evidence medical education (BEME) was coined and the decision taken to make this issue a major one at the 1999 AMEE Conference in Linköping (Harden, 1998). This report describes a plan for action formulated at that meeting.

The Linköping meeting

In order to get broad input into what needed to be done to set up a process and infrastructure to facilitate the use of a best evidence medical education approach by medical teachers and teaching planners, a series of events was planned around the Annual AMEE Conference from 29 August to 1 September 1999.

Prior to the meeting, a set of draft papers was prepared by people with interest or expertise in the use of evidence in medical education interventions and circulated to 15 people invited to a Pre-Conference Think Tank Session. A three-hour Think Tank was held to discuss the issue of how the power of evidence of what works could be used to improve the day-to-day decisions made by teachers and planners of medical education interventions. Some models for action were developed. Those contributing to this Think Tank Session are listed in Appendix A.

The opening Plenary Session of the Conference was devoted to four presentations on approaches, models and examples of the use of evidence in making education decisions in the healthcare field. Professor Cees van der Vleuten from the University of Maastricht pointed out the difference in attitude of professionals in relation to their scientific discipline when compared with their teaching. Whereas medical doctors and researchers base decisions on research evidence, teachers frequently rely on tradition and intuition, many such assumptions being proved wrong when subjected to scrutiny. He speculated that educational practice might be quite different if decisions were more evidence-based.

Professor Knut Aspegren from the University of Copenhagen reported on his evidence-based case study of teaching and learning communication skills, which consisted of quality grading of 180 relevant articles. The resulting study of the 81 articles judged to be of an acceptable quality provides useful guidelines for teaching and learning about communication skills, and is published by AMEE as Best Evidence Medical Education Guide No. 2 (Aspegren, 1999).

Dr Philip Davies from the Department for Continuing Education at the University of Oxford called for appropriately designed controlled trials and systematic reviews in the area of problem-based, self-directed learning in medical and healthcare education. He postulated that claims for the superiority of PBL and self-directed learning over didactic learning methods had never been rigorously tested using an evidence-based approach.

Barbara Stilwell from Geneva described the World Health Organisation initiative to create a strategy for implementing an evidence base in order to aid decision making in terms of
the educational work carried out by WHO and to bring about changes in practice within the Organisation.

On the second day of the conference an open workshop was held at which the major recommendations and conclusions from the Think Tank were presented. The participants worked in three groups to address:

(1) the infrastructure that would be required to facilitate the BEME approach;
(2) how the evidence might be judged;
(3) the resistance to a move to BEME and strategies to overcome it.

The conclusions of the small groups were then presented to the workshop group at large for discussion. The list of those participating in this workshop is given as Appendix B.

The final plenary presentation of the conference consisted of a synthesis and summary of the conclusions that came out of the above process, and some recommendations for the way ahead.

Conclusions and recommendations

The main conclusions and recommendations are summarized below.

1. There should be a move towards an ethos and practice of best evidence medical education (BEME). Best evidence medical education is defined as:

   “the implementation, by teachers in their practice, of methods and approaches to education based on the best evidence available” (Harden et al., 1999).

It is hoped that using this terminology will avoid the perceived dichotomy of evidence-based versus non-evidence based medical education.

2. The adoption of a BEME approach should encourage teachers and/or teaching planners when contemplating a new educational intervention to:

   (a) comprehensively critically appraise the literature that already exists in the area, and categorize the power of the evidence available, and
   (b) identify the gaps and flaws in the existing literature and suggest (and if possible carry out) appropriately planned studies to optimize the evidence necessary to make the proposed educational intervention truly evidence based.

3. The functional components of a system for gathering and using evidence for a specific planned educational intervention, based on the EBM paradigm, involves five steps:

   (a) Frame the question: Experience in EBM has shown that the framing of the question is critical in ensuring that the search strategy is as broadly inclusive yet specifically focused as possible. Specific criteria for the formulation of the evidence search questions need to be developed.
   (b) Develop a search strategy: A search strategy requires careful consideration. Guidelines need to be developed for which databases need be included in searches, and librarians and informatics specialists need to be involved at every step of the search and filtering process.

(c) Evaluate the evidence: Once the correct question has been asked and the most effective and efficient search strategy devised and implemented and the raw data filtered, certain criteria must be used to judge the quality of the evidence. A proposed scheme for doing this is described in (4) below.

(d) Implement change: Managing change in educational institutions requires certain principles and strategies, some of which are outlined in AMEE Guide No. 10, Managing Change in a Medical Education Context: Guidelines for Action (Gale & Grant, 1997). Real change towards basing educational planning decisions around the best evidence available will require:

   • external pressure:
   • international, national, public accountability and from accrediting bodies, licensing authorities and other key medical education organizations;
   • institutional championing from authoritative figures and opinion leaders;
   • a supportive network of peers and professional educators;
   • an efficient system of information dissemination and opportunities for collaboration;
   • support and rewards for the application of BEME principles to the educational process.

(e) Evaluate the change: The successes and failures of all educational interventions should be evaluated after they have been implemented. Such an evaluation should be prospective rather than retrospective, and it should involve evaluation of both process and product or outcomes. The evaluation process in most instances will raise more questions regarding possible further interventions to improve the educational process, thus reiterating the evidence search process.

Figure 1 outlines the overall process and the component steps in applying the BEME approach to a planned medical educational intervention. There is great similarity to the process used in practising evidence-based medicine.

(4) Criteria should be agreed which can be used by teachers in the healthcare professions to evaluate the reliability and relevance of evidence to their own teaching situation. The QUESTS criteria have been proposed for this purpose (Harden et al., 1999):

   Quality the type of evidence or research method and the rigour of the study;
   Utility the extent to which the approach described would need to be adapted for use in the teacher’s practice;
   Extent the number of studies described and the size of the studies;
   Strength the clarity and lack of ambiguity of the conclusions;
   Target the extent to which the expectations of the researcher and the teacher are similar;
   Setting the similarity of the setting or context.

Quality, extent and strength are intrinsic to the research study. Utility, target and setting reflect the relevance of the studies to the teacher.
Implementing BEME at the institutional level. For medical education as a whole to move to an ethos of using a best-evidence approach to planning educational programmes and interventions, both inertia and resistance will have to be overcome. These blockades to progress exist both at the level of the institutions involved and at the level of the individual teachers.

Factors encouraging resistance at the individual medical teacher level include:

- inertia towards change—”what’s wrong with what we are doing now?”;
- priority of medical practice and research over teaching activities;
- failure to recognize that education is a science in its own right;
- ignorance of educational principles;
- lack of recognition and rewards for teaching activities;
- lack of educational support and advice services.

At the institutional level impediments to using a more evidence-based approach to planning educational programmes or interventions include:

- tradition;
- autonomy of departments and divisions in educational planning;
- competition for funds and resources from research and clinical services;
- lack of long-term evidence for some new educational approaches;
- lack of an authoritative supportive leader for educational activities.

Any individual teacher wishing to move to a more evidence-based approach to his or her teaching will need some training and support in applying the component steps of the process.

An infrastructure is needed. Even if there is general agreement to move medical education into a BEME mode and even if there is the best will in the world to do so, it will not happen unless a functional model is developed that is inclusive of all the key international, organizational, institutional and individual players. It will also require an infrastructure to support its inception and ongoing practice.

One potential model and infrastructure is illustrated in Figure 2.

Those individuals, institutions and organizations involved in planning and implementing the education of healthcare professionals (A) at all levels, from undergraduate education through graduate training and the maintenance of professional competence, would be the basis of the system. It is they who would provide the triggers and formulate the questions.

It is also they who would judge the value of the available evidence when assessing a potential intervention for their own situation and, even further, their members would constitute the (B) Collaborating Institutions and make up the Review Groups responsible for suggesting and planning research initiatives for major areas where minimal evidence exists.

In the evidence-based medicine model, the Cochrane Collaboration acts as the Data Coordination Centre (C). Recently a similar international initiative to the Cochrane Collaboration has been inaugurated to serve the education and social science communities: the Campbell Collaboration. Developing a partnership with this group is one possible BEME model.

Disseminating the information regarding the evidence available on medical education interventions so that it is available and used by the medical education community (D) would be a joint responsibility of the institutions and organizations involved in medical education (A) and the Data Coordination Centre (C).

The model will also require input from other stakeholders, e.g. Ministries and Departments of Higher Education, universities, the public (E). Funding for this...
infrastructure will have to be sought from a variety of sources. Stable funding will be required for the central Data Coordinating Centre, wherever it is located. Funding for other shared activities and resources would best be sought from international agencies or organizations, whilst funding for the input and activities of local and national groups will most probably come from local, national or regional sources.

(7) The next steps. The concept of best evidence medical education should be explored further and a plan of action developed to establish an international collaborative functional system which could develop and support the use of best evidence medical education. A meeting of those with an interest in the area should be convened to discuss this further.¹

Notes on contributors

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Notes


References


Appendix A

BEME Think Tank participants: 29 August 1999, Linköping, Sweden
Ms Brownell Anderson, Association of American Medical Colleges, Washington, USA
Professor Knut Aspegren, University of Copenhagen, Denmark
Professor Margarita Baron-Maldonado, Spanish Society for Medical Education, Madrid, Spain
Professor Ralph Bloch, IAWF, Berne, Switzerland
Dr L. Thompson Bowles, National Board of Medical Examiners, Philadelphia, USA
Dr Philip Davies, Department for Continuing Education, University of Oxford, UK
Professor Florian Eitel, German Medical Association, Munich, Germany
Professor Miriam Friedman, Philadelphia USA, and Israel
Professor Janet Grant, Open University/Joint Centre for Education in Medicine, London, UK
Professor John Hamilton, University of Newcastle, Australia
Professor Ronald Harden, Association for Medical Education in Europe, Dundee, UK
Professor Ian Hart, Ottawa, Canada
Dr Lewis Miller, Alliance for Continuing Medical Education, USA
Ms Barbara Stilwell, WHO, Geneva, Switzerland
Professor Cees van der Vleuten, University of Maastricht, Netherlands

Appendix B

BEME Open Workshop participants: 31 August 1999, Linköping, Sweden
Dr Kamran Abbasi
Dr Kristina Alexanderson
Dr Basil Al-Shaikh
Dr Bruce Bellande
Dr John Bradfield
Dr Stephen Brigley
Professor Patricia Butler
Dr Jonathan Cartledge
Dr Antonio Vaz Carneiro
Miss Gillian Clack
Mrs Lisbet Clementsen
Dr Janke Cohen-Schotanus
Ms Jill Doan
Professor Florian Eitel
Professor J-G Emond
Dr Folkert Fehr
Dr Tsvi Fischel
Dr Josep Fornells
Dr Anne Garden
Dr Douglas Henderson
Dr André Jacques
Dr Lone W. Jensen
Professor John Hamilton
Ms Cindy Johnson
Ms Sue Kilminster
Dr Lammerding-Koeppel
Professor Iain Ledingham
Dr Ki-Young Lim
Dr Karen Marie Lyng
Ms Lisbeth Ludvigsen
Mr Martin Maleck
Mr Bent Marxen
Dr Bernhard Marschall
Dr Miriam Matlok
Dr Cristina Mattos
Professor William Metheny
Dr Madeleina Folque Patricio
Dr Josep Roma
Professor Stefan Schewe
Dr Michael Scotti
Mr Simon Serbian
Dr John Shatzer
Dr Marianna Shershneva
Professor Shin’ichi Shoji
Mrs Joyce Sihwa
Dr Robin Smith
Dr Annette Plesner Steenstrup
Professor Tomas Svege
Dr Michael Tunbridge
Professor Herman van Rossum
Dr Val Wass
Professor David Wiegman
Dr John Wilson
Dr Mette Worsoc