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Title	Evidence-based practice education for healthcare professions: an expert view
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Publication date	2018-11-15
Original Citation	Lehane, E., Leahy-Warren, P., O'Riordan, C., Savage, E., Drennan, J., O'Tuathaigh, C., O'Connor, M., Corrigan, M., Burke, F., Hayes, M. and Lynch, H., 2018. Evidence-based practice education for healthcare professions: an expert view. BMJ evidence-based medicine. 24(3), pp.103-108. DOI: 10.1136/bmjebm-2018-111019
Type of publication	Article (peer-reviewed)
Link to publisher's version	https://ebm.bmj.com/content/early/2018/11/15/bmjebm-2018-111019 - 10.1136/bmjebm-2018-111019
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Download date	2026-11-04 00:08:59
Item downloaded from	https://hdl.handle.net/10468/8175



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Evidence-based practice education for healthcare professions: an expert view

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10.1136/bmjebm-2018-111019

► Additional material is published online only. To view please visit the journal online (http://dx.doi.org/10.1136/bmjebm-2018-111019).

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To cite: Lehane E, Leahy-Warren P, O'Riordan C, *et al*. *BMJ Evidence-Based Medicine* Epub ahead of print: [please include Day Month Year]. doi:10.1136/bmjebm-2018-111019

Abstract

Internationally, evidence-based practice (EBP) is recognised as a foundational element of healthcare professional education. Achieving competency in this area is a complex undertaking that is reflected in disparities between 'best EBP' and actual clinical care. The effective development and implementation of professional education to facilitate EBP remains a major and immediate challenge. To ascertain nuanced perspectives on the provision of EBP education internationally, interviews were conducted with five EBP education experts from the UK, Canada, Australia and New Zealand. Definitive advice was provided in relation to (1) EBP curriculum considerations, (2) teaching EBP and (3) stakeholder engagement in EBP education. While a considerable amount of EBP activity throughout health profession education is apparent, effectively embedding EBP throughout curricula requires further development, with a 'real-world' pragmatic approach that engenders dialogue and engagement with all stakeholders required.

Introduction

To highlight and advance clinical effectiveness and evidence-based practice (EBP) agendas, the Institute of Medicine set a goal that by 2020, 90% of clinical decisions will be supported by accurate, timely and up-to-date clinical information and will reflect the best available evidence to achieve the best patient outcomes.[1] To ensure that future healthcare users can be assured of receiving such care, healthcare professions must effectively incorporate the necessary knowledge, skills and attitudes required for EBP into education programmes.

The promotion of EBP requires a healthcare infrastructure committed to supporting organisations to deliver EBP and an education system efficient in supporting healthcare professionals in acquiring EBP competencies.[2] To this end, healthcare education programmes must effectively implement curricula that target these competencies.[3] To facilitate this, the Sicily consensus statement on EBP provides a description of core knowledge and skills required to practise in an evidence-based manner and a curriculum that outlines the minimum requirements for educating health professionals in EBP.[2] Initiatives such as the European Union Evidence-Based Medicine project[4] and EBP teaching programmes for educators facilitated by Oxford (Centre for Evidence-Based Medicine) and McMaster Universities provide support in advancing the EBP agenda within healthcare education. Over the past two decades, more than 300 articles have been published on teaching evidence-based *medicine* alone and in excess of 30 experiments have been conducted to measure its effects.[5] Recent reviews[3 6] evaluating the adoption of evidence-based recommendations for teaching EBP however point to poor uptake of existing resources available to guide EBP education.

The application of EBP continues to be observed irregularly at the point of patient contact.[2 5 7] The effective development and implementation of professional education to facilitate EBP remains a major and immediate challenge.[2 3 6 8] Momentum for continued improvement in EBP education in the form of investigations which can provide direction and structure to developments in this field is recommended.[6]

As part of a larger national project looking at current practice and provision of EBP education across healthcare professions at undergraduate, postgraduate and continuing professional development programme levels, we sought key perspectives from international EBP education experts on the provision of EBP education for healthcare professionals. The two other components of this study, namely a rapid review synthesis of EBP literature and a descriptive, cross-sectional, national, online survey relating to the current provision and practice of EBP education to healthcare professionals at third-level institutions and professional training/regulatory bodies in Ireland, will be described in later publications.

Methods

EBP expert interviews were conducted to ascertain current and nuanced information on EBP education from an international perspective. Experts from the UK, Canada, New Zealand and Australia were invited by email to participate based on their

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Table 1 EBP education expert profile

EBP expert	Title	Affiliation	Country
Professor Leanne Togher	Professor of Communication Disorders Following Traumatic Brain Injury	Faculty of Health Sciences, University of Sydney	Australia
Professor Gordon Guyatt	Distinguished Professor	Department of Health Research Methods, Evidence, and Impact, McMaster University	Canada
Professor Rodney Jackson	Professor of Epidemiology	School of Population Health, Faculty of Medical and Health Sciences, University of Auckland	New Zealand
Professor Bruce Arroll	Professor of General Practice	General Practice and Primary Healthcare, Faculty of Medical and Health Sciences, University of Auckland	New Zealand
Professor Carl Heneghan	Professor of Evidence-Based Medicine and Director, Centre for Evidence-Based Medicine	Department of Primary Care Health Sciences, University of Oxford	UK

EBP, evidence-based practice.

contribution to peer-reviewed literature on the subject area and recognised innovation in EBP education. Over a 2-month period, individual 'Skype' interviews were conducted and recorded. The interview guide (online supplementary appendix A) focused on current practice and provision of EBP education with specific attention given to EBP curricula, core EBP competencies, assessment methods, teaching initiatives and key challenges to EBP education within respective countries. Qualitative content analysis techniques as advised by Bogner *et al*[9] for examination of expert interviews were used. Specifically, a six-step process was applied, namely transcription, reading through/paraphrasing, coding, thematic comparison, sociological conceptualisation and theoretical generalisation. To ensure trustworthiness, a number of practices were undertaken, including explicit description of the methods undertaken, participant profile, extensive use of interview transcripts by way of representative quotations, peer review (PL-W) of the data analysis process and invited interviewees to feedback in relation to the overall findings.

Results

Five EBP experts participated in the interviews (table 1). All experts waived their right to anonymity.

Three main categories emerged, namely (1) 'EBP curriculum considerations', (2) 'Teaching EBP' and (3) 'Stakeholder engagement in EBP education'. These categories informed the overarching theme of 'Improving healthcare through enhanced teaching and application of EBP' (figure 1).

EBP curriculum considerations

Definitive advice in relation to curriculum considerations was provided with a clear emphasis on the need for EBP principles to be integrated throughout all elements of healthcare professions curricula. Educators, regardless of teaching setting, need to be able to *'draw out evidence-based components'* from any and all aspects of curriculum content, including its incorporation into assessments and examinations. Integration of EBP into clinical curricula in particular was considered essential to successful learning and practice outcomes. If students perceive a dichotomy between EBP and actual clinical care, then *"never the twain shall meet"* (GG) requiring integration in such a way that it is *"seen as part of the basics of optimal clinical care"* (GG). Situating EBP as a core element within the professional curriculum and linking it to professional accreditation processes places further emphasis on the necessity of teaching EBP:

> ...it is also core in residency programmes. So every residency programme has a curriculum on evidence-based practice where again, the residency programmes are accredited... They have to show that they're teaching evidence-based practice. (GG)

In terms of the focus of curriculum content, all experts emphasised the oft-cited steps of asking questions, acquiring, appraising and applying evidence to patient care decisions. With regard to identifying and retrieving information, the following in particular was noted:

> ...the key competencies would be to identify evidence-based sources of information, and one of the key things is there should be no expectation that clinicians are going to go to primary research and evaluate primary research. That is simply not a realistic expectation. In teaching it...they have to be able to identify the pre-processed sources and they have to be able to understand the evidence and they have to be able to use it... (GG)

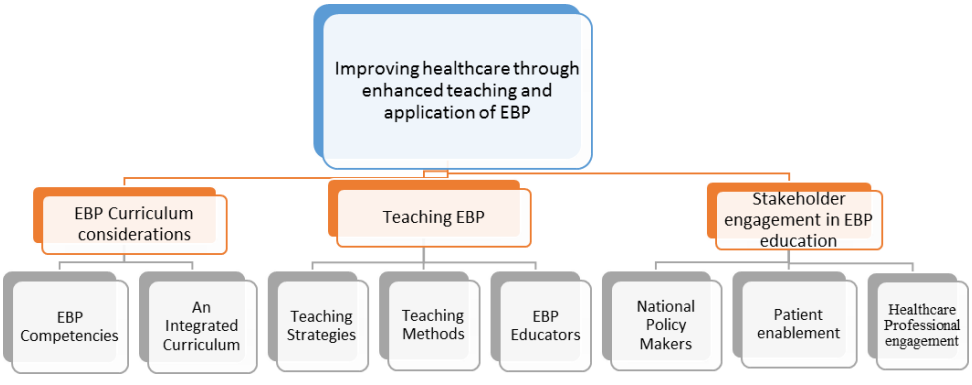


Figure 1 Summary of data analysis findings from evidence-based practice (EBP) expert interviews—theme, categories and subcategories.

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In addition to attaining proficiency in the fundamental EBP steps, developing competence in communicating evidence to others, including the patient, and facilitating shared decision-making were also highlighted:

> ...So our ability to communicate risks, benefits, understand uncertainty is so poor...that's a key area we could improve... (CH)
> ...and a big emphasis [is needed] on the applicability of that information on patient care, how do you use and share the decision making, which is becoming a bigger and bigger deal. (GG)

It was suggested that these EBP 'basics' can be taught *"from the start in very similar ways"* (GG), regardless of whether the student is at an undergraduate or postgraduate level. The concept of '*developmental milestones'* was raised by one expert. This related to different levels of expectations in learning and assessing EBP skills and knowledge throughout a programme of study with an incremental approach to teaching and learning advocated over a course of study:

> ...in terms of developmental milestones. So for the novice... it's really trying to get them aware of what the structure of evidence-based practice is and knowing what the process of asking a question and the PICO process and learning about that...in their final year...they're asked to do critically appraised topics and relate it to clinical cases...It's a developmental process... (LT)

Teaching EBP

Adoption of effective strategies and practical methods to realise successful student learning and understanding was emphasised. Of particular note was the grounding of teaching strategy and associated methods from a clinically relevant perspective with student exposure to EBP facilitated in a dynamic and interesting manner. The use of patient examples and clinical scenarios was repeatedly expressed as one of the most effective instructional practices:

> ...ultimately trying to get people to teach in a way where they go, "Look, this is really relevant, dynamic and interesting"...so we teach them in loads of different ways...you're teaching and feeding the ideas as opposed to ""Here's a definitive course in this way". (CH)
> ...It's pretty obscure stuff, but then I get them to do three examples...when they have done that they have pretty well got their heads around it...I build them lots of practical examples...clinical examples otherwise they think it's all didactic garbage... (BA)

EBP role models were emphasised as being integral to demonstrating the application of EBP in clinical decision-making and facilitating the contextualisation of EBP within a specific setting/organisation.

> ...where we've seen success is where organisations have said, "There's going to be two or three people who are going to be the champions and lead where we're going"...the issue about evidence, it's complex, it needs to be contextualised and it's different for each setting... (CH)

It was further suggested that these healthcare professionals have the 'X-factor' required of EBP. The acquisition of such expertise which enables a practitioner to integrate individual EBP components culminating in evidence-based decisions was proposed as a definitive target for all healthcare professionals.

> And we call it the X factor...the idea is that the clinician who has the X factor is the good clinician. It's actually integrating the evidence, the patient values, the patient's pathophysiology, etc. It could be behavioural issues, systems issues...Those are the four quadrants and the clinical expertise is about integrating those together...You're not actually adding clinical expertise. It seems to me that the clinical expertise is the ability to integrate those four quadrants. (RJ)

The provision of training for educators to aid the further development of skills and use of resources necessary for effective EBP teaching was recommended:

> ...so we choose the option to train people as really good teachers and give them really high level skills so that they can then seed it across their organisation... (CH)

Attaining a critical mass of people who are 'trained' was also deemed important in making a sustained change:

> ...and it requires getting the teachers trained and getting enough of them. You don't need everybody to be doing it to make an impression, but you need enough of them really doing it. (GG)

Stakeholder engagement in EBP education

Engagement of national policy makers, healthcare professionals and patients with EBP was considered to have significant potential to advance its teaching and application in clinical care. The lack of a coherent government and national policy to EBP teaching was cited as a barrier to the implementation of the EBP agenda resulting in a somewhat 'ad-hoc' approach, dependent on individual educational or research institutions:

> ...there's no cohesive or coherent policy that exists...It's not been a consistent approach. What we've tended to see is that people have started going around particular initiatives...but there's never been any coordinated approach even from a college perspective, to say we are about improving the uptake and use of evidence in practice and/or generating evidence in practice. And so largely, it's been left to research institutions... (CH)

To further ingrain EBP within healthcare professional practice, it was suggested that EBP processes, whether related to developing, disseminating or implementing evidence, be embedded in a more structured way into everyday clinical care to promote active and consistent engagement with EBP on a continuous basis:

> ...we think it should be embedded into care...we've got to have people being active in developing, disseminating and implementing evidence...developing can come in a number of formats. It can be an audit. It can be about a practice improvement. It can be about doing some aspect like a systematic review, but it's very clearly close to healthcare. (CH)

Enabling patients to engage with evidence with a view to informing healthcare professional/patient interactions and care decisions was also advocated:

> ...I think we really need to put some energy into...this whole idea of patient-driven care, patient-led care and putting some of these tools in the hands of the consumers so that

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> they're enabled to be able to ask the right questions and to go into an interaction with some background knowledge about what treatments they should be expecting. (LT)

If patients are considered as recipients of EBP rather than key stakeholders, the premise of shared decision-making for care cannot be achieved.

The implementation of a successful EBP education is necessary so that learners not only understand the importance of EBP and be competent in the fundamental steps, but it ultimately serves to influence behaviour in terms of decision-making, through application of EBP in their professional practice. In essence, it serves the function of developing practitioners who value EBP and have the knowledge and skills to implement such practice. The ultimate goal of this agenda is to enhance the delivery of healthcare for improved patient outcomes. The overarching theme of 'Improving healthcare through enhanced teaching and application of EBP' represents the focus and purpose of the effort required to optimally structure healthcare professional (HCP) curricula, promote effective EBP teaching and learning strategies, and engage with key stakeholders for the overall advancement of EBP education as noted:

> ...we think that everyone in training should be in the game of improving healthcare...It's not just saying I want to do some evidence-based practice...it's ultimately about...improving healthcare. (CH)

Discussion and recommendations

Education programmes and associated curricula act as a key medium for shaping healthcare professional knowledge, skills and attitudes, and therefore play an essential role in determining the quality of care provided.[10] Unequivocal recommendations were made in relation to the pervasive integration of EBP throughout the academic and clinical curricula. Such integration is facilitated by the explicit inclusion of EBP as a core competency within professional standards and requirements in addition to accreditation processes.[11]

Further emphasis on communication skills was also noted as being key to enhancing EBP competency, particularly in relation to realising shared decision-making between patients and healthcare practitioners in making evidence-based decisions. A systematic review by Galbraith *et al*,[12] which examined a 'real-world' approach to evidence-based medicine in general practice, corroborates this recommendation by calling for further attention to be given to communication skills of healthcare practitioners within the context of being an evidence-based practitioner. This resonates with recommendations by Gorgon *et al*[13] for the need to expose students to the intricacies of 'real world' contexts in which EBP is applied.

Experts in EBP, together with trends throughout empirical research and recognised educational theory repeatedly, make a number of recommendations for enhancing EBP teaching and learning strategies. These include (1) clinical integration of EBP teaching and learning, (2) a conscious effort on behalf of educators to embed EBP throughout all elements of healthcare professional programmes, (3) the use of multifaceted, dynamic teaching and assessment strategies which are context-specific and relevant to the individual learner/professional cohort, and (4) 'scaffolding' of learning.

At a practical level this requires a more concerted effort to move away from a predominant reliance on stand-alone didactic teaching towards clinically integrative and interactive teaching.[10 14–17] An example provided by one of the EBP experts represents such integrated teaching and experiential learning through the performance of GATE/CATs (Graphic Appraisal Tool for Epidemiological studies/Critically Appraised Topics) while on clinical rotation, with assessment conducted by a clinician in practice. Such an activity fulfils the criteria of being reflective of practice, facilitating the identification of gaps between current and desired levels of competence, identifying solutions for clinical issues and allowing re-evaluation and opportunity for reflection of decisions made with a practitioner. This level of interactivity facilitates 'deeper' learning, which is essential for knowledge transfer.[8] Such practices are also essential to bridge the gap between academic and clinical worlds, enabling students to experience 'real' translation of EBP in the clinical context.[6] 'Scaffolding' of learning, whereby EBP concepts and their application increase in complexity and are reinforced throughout a programme, was also highlighted as an essential instructional approach which is in keeping with recent literature specific both to EBP education and from a broader curriculum development perspective.[3 6 18 19]

In addition to addressing challenges such as curriculum organisation and programme content/structure, identifying salient barriers to implementing optimal EBP education is recommended as an expedient approach to effecting positive change.[20] Highlighted strategies to overcome such barriers included (1) 'Training the trainers', (2) development of and investment in a national coherent approach to EBP education, and (3) structural incorporation of EBP learning into workplace settings.

National surveys of EBP education delivery[21 22] found that a lack of academic and clinical staff knowledgeable in teaching EBP was a barrier to effective and efficient student learning. This was echoed by findings from EBP expert interviews, which correspond with assertions by Hitch and Nicola-Richmond[6] that while recommended educational practices and resources are available, their uptake is somewhat limited. Effective teacher/leader education is required to improve EBP teaching quality.[10 16 23 24] Such formal training should extend to academic and clinical educators. Supporting staff to have confidence and competence in teaching EBP and providing opportunities for learning throughout education programmes is necessary to facilitate tangible change in this area.

A national and coherent plan with associated investment in healthcare education specific to the integration of EBP was highlighted as having an important impact on educational outcomes. The lack of a coordinated and cohesive approach and perceived value of EBP in the midst of competing interests, particularly within the context of the healthcare agenda, was suggested to lead to an 'ad-hoc' approach to the implementation of and investment in EBP education and related core EBP resources. Findings from a systematic scoping review of recommendations for the implementation of EBP[16] draw attention to a number of interventions at a national level that have potential to further promote and facilitate EBP education. Such interventions include government-level policy direction in relation to EBP education requirements across health profession programmes and the instalment and financing of a national institute for the development of evidence-based guidelines.

Incorporating EBP activities into routine clinical practice has potential to promote the consistent participation and implementation of EBP. Such incorporation can be facilitated at various different levels and settings. At a health service level, the provision of computer and internet facilities at the point of care with associated content management/decision support systems allowing

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access to guidelines, protocols, critically appraised topics and condensed recommendations was endorsed. At a local workplace level, access to EBP mentors, implementation of consistent and regular journal clubs, grand rounds, audit and regular research meetings are important to embed EBP within the healthcare and education environments. This in turn can nurture a culture which practically supports the observation and actualisation of EBP in day-to-day practice[16] and could in theory allow the coherent development of cohorts of EBP leaders.

There are study limitations which must be acknowledged. Four of the five interviewees were medical professionals. Further inclusion of allied healthcare professionals may have increased the representativeness of the findings. However, the primary selection criteria for participants were extensive and recognised expertise in relation to EBP education, the fundamental premises of which traverse specific professional boundaries.

Conclusion

Despite positive attitudes towards EBP and a predominant recognition of its necessity for the delivery of quality and safe healthcare, its consistent translation at the point of care remains elusive. To this end, continued investigations which seek to provide further direction and structure to developments in EBP education are recommended.[6] Although the quality of evidence has remained variable regarding the efficacy of individual EBP teaching interventions, consistent trends in relation to valuable andragogically sound educational approaches, fundamental curricular content and preferential instructional practices are evident within the literature in the past decade. The adoption of such trends is far from prevalent, which brings into question the extent of awareness that exists in relation to such recommendations and accompanying resources. There is a need to translate EBP into an active clinical resolution, which will have a positive impact on the delivery of patient care. In particular, an examination of current discourse between academic and clinical educators across healthcare professions is required to progress a 'real world' pragmatic approach to the integration of EBP education which has meaningful relevance to students and engenders active engagement from educators, clinicians and policy makers alike. Further attention is needed on strategies that not only focus on issues such as curricula structure, content and programme delivery but which support educators, education institutions, health services and clinicians to have the capacity and competence to meet the challenge of providing such EBP education.

Summary Box

What is already known?

- Evidence-based practice (EBP) is established as a fundamental element and key indicator of high-quality patient care.
- Both achieving competency and delivering instruction in EBP are complex processes requiring a multimodal approach.
- Currently there exists only a modest utilisation of existing resources available to further develop EBP education.

What are the new findings?

- In addition to developing competence in the fundamental EBP steps of 'Ask', 'Acquire', 'Appraise', 'Apply' and 'Assess', developing competence in effectively communicating evidence to others, in particular patients/service users, is an area newly emphasised as requiring additional attention by healthcare educators.
- The successful expansion of the assessment and evaluation of EBP requires a pragmatic amplification of the discourse between academic and clinical educators.

How might it impact on clinical practice in the foreseeable future?

- Quality of care is improved through the integration of the best available evidence into decision-making as routine practice and not in the extemporised manner often currently practised.

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Acknowledgements Special thanks to Professor Leanne Togher, Professor Carl Heneghan, Professor Bruce Arroll, Professor Rodney Jackson and Professor Gordon Guyatt, who provided key insights on EBP education from an international perspective. Thank you to Dr Niamh O'Rourke, Dr Eve O'Toole, Dr Sarah Condell and Professor Dermot Malone for their helpful direction throughout the project.

Contributors This project formed part of a national project on EBP education in Ireland of which all named authors are members. The authors named on this paper made substantial contributions to both the acquisition and analysis of data, in addition to reviewing the report and paper for submission.

Funding This research was funded by the Clinical Effectiveness Unit of the National Patient Safety Office (NPSO), Department of Health, Ireland.

Competing interests None declared.

Patient consent Not required.

Ethics approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional ethical committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Ethical approval was granted by the Social Research Ethics Committee, University College Cork (Log 2016–140).

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Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement The full report entitled 'Research on Teaching EBP in Ireland to healthcare professionals and healthcare students' is available on the National Clinical Effectiveness, Department of Health website.

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