

# Evidence-based practice – its origins and future in the podiatry profession

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## ABSTRACT

Evidence-based practice (EBP) is now commonly used in many health care disciplines as a means of making clinical decisions based on a blend of robust research evidence and clinical experience. This paper discusses the origins and spread of EBP, from within medicine to the other professions within health care. Adoption of the evidence-based approach by other disciplines has given rise to many issues which are explored. The final part of this paper reviews the current state of the evidence base for podiatric practice and strategies to take the initiative forward.

## INTRODUCTION

In the past few years there have been major changes within the National Health Service (NHS), involving all professional disciplines. The government's white paper 'The New NHS - Modern and dependable'<sup>1</sup> introduced these changes in an attempt to improve the quality of health care within the UK over the next 10 years. The strategy consisted of many components, including Clinical Effectiveness (CE), which is concerned with ensuring that the delivery of clinical services is driven by evidence of effectiveness and the systematic assessment of health outcomes.<sup>2</sup>

This has put pressure on the health service to demonstrate that the health care it provides is both clinically and cost effective. These new policies utilise the principles of 'evidence-based practice (EBP)' as a means of moving away from decisions based on subjective opinion towards the use of research evidence to inform clinical decision-making. It has been suggested that EBP could produce a higher quality of patient care whilst reducing costs and minimising ineffective or unproven diagnostic techniques and treatments.

The first steps towards an evidence-based health service can be traced back to 1991. The Secretary of State for Health launched a strategy to create a knowledge-based health service in which clinical, managerial and policy decisions were based on sound information about research findings and scientific developments.<sup>3</sup> More recently, the government's commitment to evidence-based health care has been made evident from its investment of a number of programmes including the Cochrane Collaboration and the NHS Centre for reviews and Dissemination.<sup>4</sup> Additionally, in 1999 the National Institute for Clinical Excellence (NICE) was created to undertake various evidence-based health care evaluations of new therapies and technologies, approve guidelines and encourage quality improvements in the NHS.

Within the podiatry profession, there have been government-supported initiatives to promote and develop an evidence base. The Podiatric Research Forum was launched in 1996 in collaboration with the King's Fund to promote and encourage EBP within

the podiatry profession through research and disseminating the evidence to its members.<sup>5</sup>

This paper explores the origins of evidence-based medicine (EBM) and its gradual adoption by health care professionals. Particular attention is paid to the current state of the 'evidence base' for the podiatry profession.

## THE ORIGINS OF EBM

The foundations of EBM are often attributed to the epidemiologist Archie Cochrane.<sup>6</sup> Cochrane observed that only a few of the interventions carried out in medicine and the NHS were validated scientifically. In 1971 he commented that the medical profession had failed to produce summaries of effective health care interventions. His observations, during wartime, led him to conclude that clinical effectiveness and efficiency could be established using the randomised controlled trial to evaluate interventions.<sup>7</sup>

Others have suggested that the principles of EBP dates back further.<sup>8</sup> In 1836, the French physician Louis systematically gathered data and observations from all his patients. This approach allowed him to evaluate the course of particular diseases, along with any response to treatment. He suggested that a therapeutic agent could not be employed unless its general efficacy had been ascertained in consecutive cases. In Ancient Greece, Hippocrates documented the recording of observations from patient case histories to allow a study of the nature and the cause of diseases and generalisations on their nature.<sup>9</sup>

## THE EMERGENCE OF EBM

The term 'evidence based medicine' was first used in Canada in the 1980s,<sup>10</sup> and formally appeared in medical literature around 1991.<sup>11</sup> It was hailed as a new approach to teaching the practice of medicine:

*'EBM de-emphasises intuition, unsystematic clinical experience, and patho-physiological rationale as sufficient grounds for clinical decision making and stresses the examination of evidence from clinical research.'*

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EBM represented a fundamental shift in the way medicine was taught. Until its arrival, medicine was modelled on a paradigm based on a number of assumptions:<sup>12</sup>

1. Individual clinical experience provides the foundation for diagnosis, treatment and prognosis; the measure of authority being proportional to the individual's experience.
2. Pathophysiology provides foundation for clinical experience.
3. Traditional medical training and common sense are sufficient to enable a physician to evaluate new test and treatments.
4. Clinical experience and expertise in a given subject area are a sufficient foundation to enable the physician to develop clinical practice guidelines.

An increasing amount of data from randomised controlled trials and meta-analyses has meant that, rather than relying on expert opinion, doctors had an alternative.<sup>13</sup> Using checklists to assess the validity of published reports, physicians can undertake their own independent assessment of research findings and evaluate it alongside clinical experience.

### CRITICISM OF EBM

The EBM movement has not enjoyed the full support of the medical profession. Batstone describes three attitudes to EBM - 'the cynics, the converts and those in between'.<sup>14</sup> Smith & Taylor stated that at the time of its arrival clinicians had a dichotomy and 'had to declare their allegiance either with the hard science of EBM or with the traditional values of personal, compassionate and patient centred medicine'.<sup>15</sup>

The term EBM has in itself provoked much discussion in the medical literature, as it suggests that some clinicians practice 'non-EBM'.<sup>16</sup> Fowler was frustrated by the implication that, prior to the arrival of EBM, medical knowledge was somehow based on direct communication with God or by tossing a coin.<sup>17</sup>

The move from clinical opinion alone towards a combination of information technology and critical appraisal with clinical experience based on statistical analyses was heavily criticised. Suggestions were made that EBM sidelined the clinician's clinical expertise, claiming that statistical analysis was superior to rather than complementary to other forms of knowledge.<sup>18</sup> Clarke, saw it as a positive step to keep practice up to date but felt that humanism and personal experience should be in balance with the other factors.<sup>6</sup> This view was shared by Charlton, who saw EBM as a loss of the fine balance between the art and science of

- The improvement of patient care.
- The closure of the gap between research and practice.
- The promotion of self directed learning and continuing professional development.
- Improvement of professionals reading habits, IT and critical appraisal skills.
- The promotion of teamwork.
- Improved efficiency of practitioners.
- The cessation of harmful and ineffective practices.
- Improvement of the practitioner's research skills and knowledge.
- More effective use of resources.
- Better information for patients allowing shared decision-making.
- More informed management, policy and priority setting

**Table 1. Perceived benefits of adopting an evidence-based approach to practice.<sup>21</sup>**

medicine.<sup>16</sup> On that basis there was call for a redefinition of EBM. Buetow suggested that other forms of evidence such as practical, theoretical, ethical and expert evidence should also be part of the process.<sup>19</sup>

At its core, the main benefit of EBM is its use as a method for clinical decision making based on the best scientific information. Sackett *et al* highlighted the balance between expertise and research evidence but also emphasised that the predicaments, rights and preferences of the individual patient should be incorporated into the decision-making process.<sup>20</sup>

### EBM AND THE AHPS

EBM has gradually diffused from medicine into other areas of health care. The potential benefits to therapists adopting an evidence-based approach have been outlined by Bury & Mead and are summarised in Table 1.<sup>21</sup>

Upton suggests that the allied health professions (AHPs) have been relatively slow to embrace the concept, possibly because they have been viewed as skill-based rather than research-based professions. This has led to much discussion as to whether EBP can succeed in such a setting.<sup>23,24</sup>

### BARRIERS TO EBP

Nurses and the AHPs have cited particular barriers that may have impeded the development of EBP into their practice, which are summarised in Table 2.<sup>25-29</sup> Appleby suggested that the biggest obstacle to EBP was the attitude of the professionals.<sup>30</sup> Later studies of practitioners' attitudes towards EBP have highlighted other obstacles such as lack of time, funding and opportunities for practitioners to undertake educational EBP activities.<sup>31,32</sup>

1. Gaps in the evidence base<sup>58</sup>
2. Poor quality of evidence<sup>58</sup>
3. Lack of time<sup>26,27,52,62</sup>
4. Inappropriate or inadequate support for EBP<sup>26,55</sup>
5. Lack of skills to undertake EBP<sup>55,63</sup>
6. Perceived threat of EBP<sup>23</sup>
7. Lack of understanding of the process<sup>26,63,64</sup>
8. Economic restraints<sup>59</sup>
9. Access to evidence<sup>59,64</sup>
10. Resistance from colleagues<sup>27,64</sup>

**Table 2. Barriers to EBP amongst other health care workers.**

Type	Strength of Evidence
1	Systematic review in which many well designed, randomised controlled trials feature
2	Randomised controlled trials which are well designed and of appropriate design
3	Trials without randomisation or non-experimental study e.g. Cohort or case-control study
4	Qualitative Studies
5	Opinions of respected authorities, based on clinical evidence, descriptive studies or reports of expert committees

**Table 3. Hierarchy of evidence.<sup>44</sup>**

## EBP AND THE ‘EVIDENCE BASE’

Another concern about the adoption of EBP by health care practitioners has been the size of the evidence base for the individual professions. EBM was born of the medical profession with its own wealth of literature and research to support its practice. Although medicine is often viewed as rich in good quality evidence, criticism has been made that this is far from the case – with much of the research published in journals being poor executed, biased and of little relevance to the clinician.<sup>33</sup>

Kitchen evaluated the status of research in the AHPs in 1997.<sup>34</sup> She concluded that physiotherapy, podiatry, dietetics, and speech and language therapy had a long way to go before they could be considered to be ‘evidence based’. It has been suggested that the extent of the actual research base relevant to AHPs is only 6%, compared with 15% in nursing and 79% in medicine.<sup>30</sup> Others have quoted similar figures for medicine,<sup>35,36</sup> but few data are available for comparison regarding AHPs. Donaghy believed it would be at least 30 years before a suitable evidence base was established in these professions.<sup>37</sup>

The amount of available evidence in a profession is a measure of its age and its level of investment into research. Within nursing, for example, a research culture has been developing for around 40 years.<sup>25</sup> Podiatry, on the other hand, is a relatively young profession and therefore it could be suggested that it lacks any significant knowledge base. In documenting knowledge in the profession in 1989, Dunlop considered that there had been very little change to the knowledge base in 40 years.<sup>38</sup> Since 1990, the gradual introduction of podiatric education into the university sector has increased the level of research awareness and related skills amongst graduates.<sup>39</sup> However, a lack of evidence has been cited by podiatrists, and a number of papers have called for an increase in the amount of research currently being undertaken.<sup>40-43</sup>

## TYPES OF AVAILABLE EVIDENCE

The availability of research evidence from randomised controlled trials and meta-analyses to the medical profession was a major factor in the introduction of EBP. Advocates of EBP subscribe themselves to the ‘hierarchy of evidence’ – a system that is believed to assess the reliability and rigour of research findings based on the methodology adopted for a particular study (Table 3).<sup>44</sup>

### Completed Reviews

Heel pain<sup>65</sup>  
 Topical treatments for fungal skin and nails<sup>66</sup>  
 Interventions for hallux valgus<sup>67</sup>  
 Treatments for cutaneous warts<sup>68</sup>  
 Surgical treatments for ingrowing toenails<sup>69</sup>  
 Pressure relieving devices for preventing and treating diabetic foot ulceration<sup>70</sup>  
 Patient education for preventing diabetic foot ulceration<sup>71</sup>

### Systematic Reviews currently in preparation

Interventions for chronic palmo-plantar psoriasis<sup>72</sup>  
 Oral treatments for onychomycosis<sup>73</sup>  
 Treatments for localised excessive sweating<sup>74</sup>  
 Debridement of diabetic foot ulcers<sup>75</sup>  
 Treatment of Morton’s neuroma<sup>76</sup>

**Table 4: Reviews completed or currently underway directly relevant to podiatry listed in the *Cochrane Library* (Issue 3).**

Concern has been expressed over the lack of systematic reviews and randomised controlled trials (evidence type 1 and 2) outside of medicine.<sup>37</sup> Farrell, in a report to the Department of Health, undertook a literature review to uncover evidence for the treatment of common foot problems. She concluded that, apart from the results available from random controlled trials (RCTs) and systematic reviews of treatments for fungal nail infections, verrucae and some work on heel pain, there was very little evidence on which podiatrists could base their treatment.<sup>45</sup>

Despite such pessimism, since the report was published the number of systematic reviews appearing in the *Cochrane Library*, directly relevant to podiatric practice has increased. Issue 3 of the *Cochrane Library* contains eight completed reviews and documents another five in preparation (see Table 4). Other systematic reviews less directly relevant to podiatry that are available include intermittent claudication, leg ulcers, use of orthoses in injury prevention, Achilles rupture, ankle surgery and calcaneal fracture (See Table 5). From this, it would appear that an evidence base for the profession is being established faster than previously predicted.

Criticism has been levelled at EBP because of its preference for quantitative techniques rather than qualitative research. It has little recognition of the value of qualitative techniques,<sup>23</sup> rating them as low-grade ‘type 4’ in the hierarchy of evidence.<sup>44</sup> Much qualitative research has been undertaken by nurses, and it has been suggested that the lack of recognition for this methodology has alienated nurses rather than encouraged them to become involved in research.<sup>46</sup>

The strengths of quantitative techniques, in particular the randomised controlled trial, have been recognised in establishing effectiveness and efficacy, but they alone cannot prove that the right intervention has been provided to the right patient at the right time.<sup>47</sup> Clinical decisions are complex, multi-dimensional and grounded in individual experience, and may lend themselves to study by more descriptive and qualitative techniques.<sup>48</sup>

One reason why qualitative work has remained overlooked has been due to the slow development of rigorous methods to assess its validity. More recently, interest has been directed towards the evaluation of qualitative research and the inclusion of qualitative components in RCTs of many health interventions. Frameworks have been suggested for examining the rigour of qualitative studies,<sup>49,50</sup> and a number of critical appraisal guidelines are under development. The Critical Appraisal Skills Programme has published a comprehensive set of worksheets to

### Completed Reviews

Exercise for intermittent claudication  
 Orthotic devices for treating patellofemoral pain syndrome  
 Interventions for preventing ankle ligament injuries (comment)  
 Different functional treatments strategies for acute lateral ankle ligament injuries in adults  
 Interventions for preventing lower limb soft tissue injuries in runners  
 Interventions for treating calcaneal fractures  
 Interventions for treating varicosities and leg oedema during pregnancy  
 Ultrasound therapy for acute ankle sprains

### Systematic Reviews currently in preparation

Dressings and topical agents for treating arterial leg ulcers  
 Normal saline versus tap water for wound cleansing

**Table 5: Other Reviews completed or currently underway less directly relevant to podiatry listed in the *Cochrane Library* (Issue 3).**

assist individuals in critically appraising qualitative health-related research.<sup>51</sup>

## EBP AND THE INDIVIDUAL PRACTITIONER

Although evidence for particular interventions may exist for use by health care professionals, many barriers may hamper the implementation of these findings into everyday practice. Research has been undertaken to evaluate the attitudes of doctors,<sup>52-24</sup> nurses<sup>55-57</sup> and AHPs.<sup>26,58,59</sup> Few studies have included podiatrists alone.<sup>32,60</sup>

In a survey of 2000 UK podiatrists, the most commonly cited barrier to pursuing EBP-related activities was lack of time. Many also believed that they were inadequately trained to evaluate published research. On a positive note practitioners felt that the initiative was here to stay and that they would like to become more involved but were hampered due to lack of support and funding. The views of podiatrists appear to be the same those of other healthcare professionals.<sup>31</sup>

Recent research has focused on strategies to overcome barriers. The results of a review from the NHS centre for reviews and dissemination highlighted the main issues that need to be resolved if a change in practice is to occur.<sup>61</sup> In the paper it suggests that change will need a multi-faceted approach, which will require the inclusion of healthcare professionals, policy makers and the public, along with sufficient funding and appropriately trained personnel.

## CONCLUSION

EBM has been in existence for over a decade as a method of informed clinical-decision making, with the result of improving patient outcomes.

EBM in the UK has gradually been introduced into health as a result of policy initiatives and financial investment. This has been strengthened by the political reforms striving to improve the quality of health care through clinical governance. As it has emerged from medicine and spread into other health care professions, the AHPs have taken EBM on board, as part of the clinical governance strategy.

Within the profession, it would appear that practitioners are very supportive of the EBP initiative. To add to this, a number of systematic reviews of various aspects of therapy are being published in the literature. With time it is expected that the number of reviews and RCTs will increase, adding to the professional knowledge base.

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