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Respecting science, respecting tradition: evidence-based care in the integrative medicine professions

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Abstract

Evidence-based medicine (EBM) is seen as integral to modern medical science and practice, yet perceptions persist that there is a direct conflict between evidence-based and complementary and integrative medicine (CIM) models of patient care. Many practitioners fear that application of evidence-based philosophies to clinical practice may encourage therapeutic approaches that are reductionist (rather than holistic) and allopathic (rather than e.g. naturopathic), as well as eroding clinical autonomy by promoting 'cookbook' medicine over individualised care. These fears may be unfounded, as scientific inquiry has always been a core part of CIM practice. Founders of CIM professions highly valued the development and dissemination of research, as well as the development of higher clinical and education standards that evolved the professions. Although this has led to increasing research into CIM, the development of an evidence base for CIM needs to be appropriate, and respectful of the philosophy in which CIM is practiced. Such research suggests it is the traditional elements of practice that demonstrate the most benefit to patients when critically evaluated. Whilst new therapies are not without value, and the incorporation of these remain critical to the development of CIM professions, CIM may work best in an EBM model of healthcare when practice is focused upon tradition and philosophy. This discussion paper draws from a large body of work to highlight that only by truly respecting, valuing and incorporating tradition and philosophy can CIM be EBM, and the full promise of CIM realised.

Keywords: Evidence-based medicine, evidence-based practice, naturopathy, complementary medicine, integrative medicine, holism

BACKGROUND

A senior resident, a junior attending physician, a senior attending physician, and an emeritus professor were discussing evidence-based medicine over lunch in a hospital cafeteria. "EBM," announced the resident with some passion, "is a revolutionary development in medical practice." She went on to describe EBM's fundamental innovations in solving patient problems. "A compelling exposition," remarked the emeritus professor. "Wait a minute," the junior attending exclaimed with some heat, and then proceeded to present an alternative position: that EBM has merely provided a set of additional tools for traditional approaches to patient care. "You make a strong and convincing case," the emeritus professor commented. "Something's wrong here," the senior attending exclaimed to her older colleague, "their positions are diametrically opposed. They can't both be right." The emeritus professor looked thoughtfully at the puzzled doctor and, with the barest hint of a smile, replied, "Come to think of it, you're right too." [1]

Evidence-based medicine (EBM) is an often poorly understood and maligned concept. Although only recently formalised, the concepts and principles of evidence-based medicine have a long history, with the documented espousal of evidence-based medicine principles (including the first documented description of a clinical trial) dating back at least to the writings of noted 10th century Islamic physician *Avicenna*, writings which went on to dominate Western medical training for over 650 years.[2] In medicine, placebo controls were used in research as early as 1784, when a control was employed to explore (and later disprove) the medical effects of magnetism, a popular therapeutic system of the time,[3] but their political use predates their clinical use, being used by progressive Catholics in the 16th century to discredit right-wing exorcisms.[4]

Complementary and integrative medicine has often been held to have long had a turbulent and tumultuous relationship with EBM. Internal critics have posited that EBM cannot co-exist with the philosophical and methodological underpinnings of CIM,[5] whereas external critics have used similar arguments to suggest that CIM has little validity in contemporary health practice.[6] Both arguments are incongruent with the reality of EBM. In truth, EBM aligns with the safe, effective and competent practice of any health practice, be it CIM or conventional medicine, and the notion that traditional knowledge and scientific process cannot co-exist is absurd. EBM is neither the bogeyman many detractors would paint it out to be, nor is it the rigid, inflexible system that many EBM 'proponents' (who, in reality, are not supporting *real* EBM at all) hold it to be. This article will highlight the importance of EBM in modern CIM practice, and

discuss how science and tradition can align to achieve ultimate patient outcomes.

What is evidence-based medicine?

The concept of EBM simply focuses on ensuring that clinical decisions about individual patients are made on the basis of the most up-to-date, solid, reliable, scientific evidence. Sackett's long-standing simple definition – employed by many – is that "EBM is the conscientious explicit and judicious use of the current best evidence in making decisions about the care of individual patients" .[7] *All* parts of this sentence are important. "Current best evidence" is just that – not perfect evidence, but simply the best up-to-date current evidence, not evidence that is out of date. And evidence extends not only to that found in academic journals, but also that observed through clinical practice, uncovered through clinical expertise and even that found in long-standing traditions of safe and effective practice. This evidence must be applied in a "conscientious" (i.e. being careful and thorough in all aspects of care), "explicit" (i.e. clinicians must be open, clear, 'up-front' and transparent with patients in all aspects of their care) and "judicious" (i.e. good judgement and common sense must be used in all clinical decision-making processes). And of course, it must be applied to "individual" patients – including being respective of individual patient beliefs and preferences.

Figure 1: The EBM 'Triad'

The 'father' of evidence-based medicine (David Sackett) warned against the dogmatic application of evidence-based medicine, noting that "good doctors use both individual clinical expertise and the best available external evidence, and neither alone is enough. Without clinical expertise, practice risks becoming tyrannised by evidence, for even excellent external evidence may be inapplicable to or inappropriate for an individual patient. Without current best evidence, practice risks becoming rapidly out of date, to the detriment of patients".[7] At a clinical level, the defining features of *real* EBM are: making *ethical care* of the patient the top clinician priority; demanding *individualised evidence* in a form that both the clinician and patient can understand; being characterised by *expert judgement* rather than the following of mechanical rules; and *sharing clinical decision-making* with patients via meaningful conversations.[8]

Evidence-based medicine in practice: key concepts

The key concepts of EBM in practice are not dissimilar to the concepts of good clinical practice in CIM. Indeed, many practitioners will recognise many of the following concepts from their own practice. In practice, EBM requires that treatment be individualised:

Individualised treatment

One of the principal tenets of EBM is the encouragement of individualised treatment. Although EBM is often decried as encouraging "cookbook" medicine, this arises from the discredited 'mechanical-rule' interpretation of EBM, *real* EBM actually encourages an individualised approach.[8] The confusion possibly stems from EBM's use of protocols and clinical algorithms, which are often erroneously conflated as being "cookbook" medicine. However, while "cookbook" medicine provides a recipe of individual treatments that all patients within a sub-population must be prescribed (for example, every patient with dysmenorrhoea must be prescribed *Vitex agnus castus*), "protocols" simply provide a standardised roadmap to treatment (for example, ensuring that relevant differential diagnostic considerations are undertaken by performing relevant physical and diagnostic examinations, that social and physical factors are considered, and that all treatment groups have been considered).

Similarly, EBM eschews the use of "shotgun" approaches to treatment, whereby a prescription is provided that is so broad that it covers all possible bases, without differentiating what the patient actually *needs*. "Shotgun" approaches to care not only needlessly expose patients to unnecessary clinical (i.e. potential interactions) and financial risk (which can result in resource constraints which make patients deter other necessary care), [9] they compromise quality continuity of care by making it difficult to ascertain which individual aspects of their treatment are actually working, making ongoing patient management problematic. They are also – to put it bluntly – an affront to the expertise of the clinician, as they ignore the clinician's important role in tailoring an individualised prescription for the patient that is most likely to result in improved outcomes. They are also rarely as effective as individualised approaches to care.[10]

These "shotgun" approaches are also worryingly present in many 'wellness' prescriptions – not true wellness prescriptions, but those commercialised programs advising unnecessary use of a multitude of supplements without clinical justification, with prescriptions that vary little between individual patients. In some cases, provision of even seemingly benign unnecessary treatment can even result in side-effects that may mimic clinical symptoms – for example, a British woman had been unsuccessfully

been seeking treatment for unexplained peripheral neuropathy for 10 years as a result of a preventive 'shotgun' prescription approach to wellness prescribed by a health food store employee.[11] Her symptoms immediately ceased on cessation of pyridoxine-containing supplements, but not after considerable resources had been expended on finding a cure for her symptoms. Similarly, recent meta-analyses suggesting risks from preventative one-size-fits-all approaches to supplements should not be surprising - there is evidence suggesting that both under- and over-methylation can pose health risks, for example, as can continuous anti-oxidant supplementation in those who don't need it. However, it is the "shotgun" approach to supplementation that often poses the health problems. When viewed in the totality of evidence for individualised anti-oxidant or vitamin prescription, meta-analyses such as these suggest a problem not with supplements themselves, but rather their injudicious use by clinicians who are not adequately trained to apply the existing evidence to individual patient concerns.

Clinical justification for treatments

An obvious extension to individualised treatment is clinical justification of all treatments. Whilst the importance of using individualised evidence has been discussed in the previous point, the clinical justification for treatment extends beyond clinical reasoning to ensuring that practice is also ethical. This principle is based on ensuring that treatments are derived in a "conscientious, explicit and judicious" manner, not merely those based on personal preferences or interests. In CIM practice, practice dispensaries and the preponderance of availability of new diagnostic tests offer two case studies in how this may apply to clinical practice:

Practice dispensaries and in-clinic sales

As enthusiasm for (and possible pecuniary interest in) particular products can potentially cloud clinical judgement,[12] CIM practitioners also need to be aware of how this may affect their own practice. Good EBM practice requires critical reflection on (and documentation of) the clinical justification of all treatments. The reason most conventional medicine physicians who are required to reimburse the government for incorrect claiming, have to do so is because they have failed to clinically justify their treatment (in their notes), not because the treatments they used were non-evidence-based. . This means that any prescription must be based entirely on what best serves the patient's *needs* for their treatment, not merely the best of what is *available* in your personal dispensary. There may be advantages for both practitioner and patient in being able to dispense at the same site of the clinical consultation, but there are ethical and EBM obligations to explain to patients about how the practitioner's available treatments compare to treatments available elsewhere, and to offer them the choice of procuring their prescription elsewhere if the best products are not available in your dispensary.[12]

Diagnostic tests

This requirement for clinical justification includes diagnostic tests. CIM practitioners now, more than ever, have unbridled access to a range of conventional and CIM-specific diagnostic tests more than ever before.[13] However, these need to be used judiciously. The use of expensive pathology "test panels" on every patient, sometimes as a requirement before the patient is even seen for the first consultation, is incongruent with EBM. Whilst *very* occasionally this 'shotgun' approach to pathology panels may pick up something that could not be elicited via good case-taking technique or physical examination, they are not an efficient use of patient time or money, or of the broader health system's resources. No diagnostic test can replace a good case-taking technique or physical examination. In EBM, pathology tests should only be ordered to confirm clinical suspicions based on these foundational techniques, not in place of them. For example, if you are ordering a test, the obvious question to ask is "will the result make a difference to my treatment?" If not, there is no legitimate reason to order it, and all you are doing is exposing the patient to unnecessary cost, time wasting and discomfort.

Proper procedures

Although "mechanical rule following" is discouraged in *real* EBM, this does not mean that proper procedures and protocols should be discarded.[8] EBM even acknowledges that the procedures and processes may differ according to levels of expertise. Whilst novice clinicians may work methodically and slowly through a long and standardised history, exhaustive physical examination and diagnostic tests, the expert clinician may make a rapid initial differential diagnosis through intuition, and then use more a selective history, examination and set of tests to rule in or rule out particular possibilities.[8] The key similarity is that neither clinician relies on their knowledge or intuition alone, and has strategies that confirm or deny their initial assumptions in a conscientious, explicit and judicious manner.

The importance of proper procedures and processes in EBM extends to the escalation of care. In clinical practice, more invasive, expensive or risky procedures and treatments should never be considered first, where less invasive, cheaper or safer procedures and treatments exist. In naturopathy, the therapeutic hierarchy[14] offers guidance to treatment, and is itself an example of the sort of protocol encouraged by EBM. Similarly, no pathology test can replace a good case-taking technique or physical examination. Pathology tests should only ever be ordered once the information gathering ability from these other sources has been exhausted.

Proper procedures must also be adhered to in relation to assessing evidence. Whilst most people assume 'evidence' in EBM relates to the evidence supporting individual treatments, real EBM requires a risk-benefit

assessment for all treatments. This necessitates not only a critical evaluation of the potential therapeutic benefits of the treatments proposed, but also an assessment of the evidence for their *risks*. This risk-benefit assessment may change depending on individual patient circumstances. For example, a patient on a drug with a narrow therapeutic dose range (such as Warfarin) may be exposed to far more risk from potentially interactive treatments than a patient on a drug with a broader dose therapeutic range. Warfarin, for example, may necessitate additional investigation or monitoring even in patients being recommended ordinarily benign therapies such as onion or green tea.[15] The spectrum of patient risk means that appropriate procedures concerning 'red flag' scenarios need to be incorporated into clinical practice.

The use of St John's Wort (*Hypericum perforatum*) offers another example of how these procedures work in clinical practice. The potential interactions of this useful herb are well known, and should be obvious to any qualified and competent practitioner. Additionally, qualified and competent practitioners should know that the major clinical indication of the herb (depression) and its pharmacology (essentially a herbal selective serotonin reuptake inhibitor) make it increasingly likely to potentially duplicate a patient's existing medications (conventional anti-depressants), a scenario which could result in a potentially serious adverse event (serotonin syndrome). EBM – and competent clinical practice – demand that, given the significant evidence at hand for potential risk, all patients with depression should be asked about conventional anti-depressant use, and warned about the duplication of St John's Wort and conventional anti-depressants.

Proper EBM procedures extend to using the evidence observed in patients themselves, particularly the results the patient exhibits in clinical practice, to inform continuing treatment. In 2008 the *Australian Family Physician* published a notable case where a naturopath had provided dangerous treatment to a patient, due to failure to observe this EBM procedure.[16] The patient – a 72 year old male – had fallen off a horse while mustering cattle and injured his head four years earlier. Whilst he had sought medical treatment, none was necessary until he split his head open again. Although not concerned, it had been slow to heal, so he consulted a naturopath who packed the sore with Comfrey leaves and advised the patient to eat curry to aid with healing. This treatment progressed over 6 weeks, with weekly practitioner consults, during which time the wound got progressively worse. Eventually, the patient presented to hospital, where it was discovered that he had a massive 10x11cm erosive lesion with pulsatile areas percolating frank blood, which had eroded through skull, soft tissue and down to the meninges. From an EBM perspective, the key issue here is not the initial treatment itself (as long as clinical judgement was made that this was an appropriate treatment for the patient, and was not likely to cause harm), but the fact that the practitioner *ignored evidence at hand* that the treatment was not working and that the condition was getting progressively worse, and *continued* a treatment that was clearly ineffective in this individual patient.

Patient-centred outcomes

Real EBM is patient-centred. This, rather intuitively, simply means that outcomes from medical care are those that are important to patients, and is clearly apparent from 'patient values and expectations' forming an entire section of the EBM triad. Clinicians of all persuasions can be focused on what they see as clinically important outcomes, and real patient priorities may not always be apparent. Rheumatoid arthritis offers an insight into this disparity. Whilst most clinical attention, and research focus, had been on reducing and managing the pain associated with this condition, patients are generally more concerned with the crippling fatigue associated with the condition.[17] Until qualitative work had uncovered this priority, most studies, and most treatment, had focused on what clinicians had thought was the obvious priority – pain.

Real EBM requires that the patient be heard, and that the clinician treats *actual* patient priorities as identified by the patient, not just those the clinician *believes* are the most pertinent. The holistic and preventive focus of CIM offers a further interesting example of patient priorities that can often be overlooked. Some CIM clinicians may overlook immediate, acute or symptomatic treatment in favour of searching for the underlying cause that needs addressing. Whilst identifying the underlying cause remains essential, it is unlikely to be able to occur if the patient's immediate concerns are not also met. A patient presenting with acute upper respiratory tract infection which is the result of reduced vitality caused by poor dietary and lifestyle behaviours is unlikely to comply with the dietary and lifestyle changes prescribed, if their acute symptoms are not adequately treated. Pain (for example dysmenorrhoea, migraine or rheumatoid arthritis) may have underlying triggers and exacerbating factors that can reduce the incidence, severity and impact on the patient long-term, but also require symptomatic relief during acute episodes.

In some cases CIM can even be no better than conventional medicine at overlooking the patient in the application of care. In my lectures on this topic I often use a case from my own practice to illustrate this point. The patient was a shift-working nurse who for over 12 years had sought treatment from almost every type of CIM and conventional care practitioner available for what she described as 'horrific' dysmenorrhoea. All previous practitioners had categorised her as a 'reproductive' patient, and had treated her accordingly – ignoring the previous failures of all other practitioners taking this approach. However, upon consultation it became

apparent that the patient had digestive issues as well, and was only defecating every four days. This had been voluntary, and was the result of a mental and emotional response the patient had to defecation, which she viewed as a disgusting act. Her sessions were amended to provide counselling on the importance of elimination, the 'natural-ness' of the process and to educate her on the physiological processes of how this may affect her dysmenorrhoea. Once the patient had developed a more healthy attitude towards defecation, her symptoms resolved completely within two cycles. However, she had been seeking treatment unsuccessfully for over a decade simply because all previous practitioners had chosen to categorise the patient according to her condition (or, more accurately in this case, her symptom), rather than listen to her as an individual.

In the area of reproductive medicine alone there are numerous other examples of CIM practitioners categorising patients into treatment categories (or even into individual treatments): too often CIM practitioners treat 'endometriosis' with the various 'condition-specific' treatments without exploring whether the underlying cause is hormonal, immune, genetic or related to some other condition;[8] practitioners may ignore the potential differential diagnoses of anxiety or depression in premenstrual syndrome presentations, which can represent up to 30% of all presentations;[19] or practitioners may ignore dietary and lifestyle modification in poly-cystic ovarian syndrome, which is far more effective than *any* drug – natural or otherwise.[20] Whilst some commentators may suggest that this is a result of CIM being 'medicalised' and ignoring philosophical tenets in favour of medical diagnosis and categorisation,[5] I would wholeheartedly disagree. Even 'traditional'- or 'philosophically'-based texts (such as *King's Dispensatory* or the *British Herbal Pharmacopeia* in herbal medicine) categorise treatments by symptoms, not by patients. The error comes from individual clinicians ignoring the patient in their contextualisation and interpretation of evidence and information, not the method or 'school' by which they choose to treat the patient.

What isn't EBM?

There is no room in EBM practice of CIM for dogmatic opposition to conventional medicine. Iatrogenesis may be a major cause of disease burden, but this does not mean that the entirety of medicine is not without merit. Nor is iatrogenesis a concept limited to conventional medicine – it is also (relatively) common in CIM use, albeit at a lower level than observed in conventional medicine.[21] Nonetheless, many therapies – including invasive therapies such as chemotherapeutic oncological treatment – are unequivocally successful in many conditions, and combine well with CIM treatment (particular to address potential side effects). Opposing potentially effective conventional treatment simply because it is not 'natural' is not only potentially dangerous, it is also incongruent with EBM. An extension of this is the conspiracy theories that abound in CIM. There usually is no great conspiracy against CIM, and focusing on these as the cause of problems within the CIM and patient communities rather than the actual causes, not only hampers the CIM professions,[22] but does not align with EBM.

Other major common issues observed in some CIM professions that are inconsistent with EBM include a belief that CIM can fix everything. Every medicine has its limitations, and CIM is no exception. Similarly, there are no panaceas or miracle treatments that all patients need to be prescribed. EBM patient prescriptions need to be based on evidence applied to individual circumstances, not the latest product or therapy being promoted as the cure-all everyone needs. Last, but not least, is the tendency of a minority of practitioners to focus on their professional rights as a practitioner over their obligations to patients. Being a practitioner is not a right, but a privilege. The 'right' in regards to CIM belongs to patients, who have the right to a competent and qualified practitioner of their choice. With this privilege come substantial obligations and responsibilities, which include placing the patient at the centre of all clinical decision-making. This may include an often misplaced loyalty among the CIM professions to gather around those CIM practitioners or supporters who are under attack from 'common' enemies. Sometimes these attacks are justified, sometimes they are not. However, to support CIM practitioners who have ignored their obligations to patients, or have practised in an unsafe or incompetent manner, neither helps the profession nor represents EBM in practice. EBM requires that we support those being attacked when it is not justified, but that we do not defend unsafe, incompetent or unethical care simply because it is portrayed as 'an attack against CIM'.

Is traditional medicine recognised as evidence?

Traditional knowledge, although often viewed as 'lower' on the evidence hierarchy, is not discounted by EBM entirely. Traditional evidence, based on empirical observation over hundreds, sometimes thousands of years, can also be logically viewed as an extension of the 'clinician's experience' part of the EBM triad. However, there is growing international recognition of traditional medical knowledge as a source of evidence, as indicated in the World Health Organization's most recent Traditional Medicine Strategy document.[23] There are international efforts underway to codify this traditional knowledge for greater recognition. For example, both traditional Chinese medicine and chiropractic diagnoses are being standardised for incorporation into the upcoming version of the International Classification of Diseases which will give diagnoses from these medical traditions the same weight as 'Western' medical diagnoses.[24] In the Australian courts, traditional use and practice is already recognised

as a form of admissible evidence, albeit at a lower level than scientific evidence.[25] Similarly, traditional evidence is also accepted by the Therapeutic Goods Administration, with protections against its fraudulent use (such as a requirement that multiple generations of use be documented before allowing it to be used, so that traditions cannot be invented).[26]

There are numerous reasons for such recognition. Even among unrelated cultures with little history of interaction (such as China and indigenous Australia) there appears to be significant concordance of the therapeutic use of plant medicines native to both areas.[27] Linguistic analysis suggests that Chinese medicine terminology often describes similar concepts to Western medicine, only in a different way and that Chinese medicine concepts have much in common with the syndromes and mnemonics used in Western medicine.[28] Sometimes the wisdom of tradition, even when technically incorrect, can still proffer useful advice. The etymology of malaria is 'bad air' in medieval Italian, so named because of the belief in many traditions that the cause was due to the fetid air associated with swamplands (its old English name was 'marsh fever').[29] Whilst it is now known that mosquitos are the vector, avoidance of mosquito-ridden swamps, for whatever reason, was nonetheless an effective method of minimising exposure to the disease.

Traditional knowledge is, in many ways, starting to be 'validated' by science: For example, whilst attention to the importance of growing conditions on the medicinal quality of plants is being increasingly recognised, this was long a part of herbal practice. In his 17th century treatise Culpeper wrote of the conditions required for herbs to have optimal therapeutic qualities, noting in Colewort's (*Geum urbanum*) case that "they rather delight to grow in shadowy than sunny place".[30] Modern science is only now confirming centuries of traditional knowledge, in demonstrating why Brahmi (*Bacopa monnieri*) displays different therapeutic qualities depending on when it is harvested in relation to annual monsoons.[31] There are also practically important reasons for recognition of tradition. The recent ban on Kava (*Piper mythesticum*) in many countries was a response to the hepatotoxicity of a solvent-extracted German preparation. The traditional aqueous extraction does not extract these hepatotoxic compounds.[32] Whilst the implementation within different countries varies considerably, for reasons such as these, groups such as the World Health Organization are recommending *greater* recognition of traditional medical knowledge, not less.[23]

However, a reliance on traditional evidence *alone* is *not* enough in EBM. Just as an over-reliance on scientific evidence alone can result in practice being 'tyrannised by evidence', or an over-reliance on clinical expertise alone can result in practice becoming 'rapidly out of date'.[7] Relying solely or too much on traditional evidence can present its own problems. Real EBM requires the totality of all forms of evidence to be considered in every clinical encounter.

What went wrong? Why perceived tensions exists between CIM and EBM

Limitations and problems in EBM

There are noted limitations in the application of EBM. Clinicians may denounce that in many cases, the highest form of empirical study, the clinical trial, may not accurately reflect the true practice of therapies. There is a valid criticism that clinical trials too often measure the effects of therapies in a way that they are never going to be used (many trials require the intervention be used exclusively, or be applied to strictly controlled criteria rather than individual clinical judgement), in patients that are never going to be seen in a clinic (many trials exclude multi-morbidity and patients with numerous health risk factors unrelated to the clinical condition being investigated), by physicians who will never actually practise (many trials are carried out by researchers, not grassroots practitioners), in settings that don't actually exist (many trials take place in research centres, rather than functioning clinics). Such criticisms are particularly pertinent to the CIM community, where the variation between research setting and 'real-world' practising environment may be particularly pronounced.[33]

Such criticisms, however, do not stem solely from the CIM community. Whilst CIM often attracts enough criticism and controversy to promptly highlight issues of concern – serving somewhat as an 'EBM canary in the coal mine' – few therapies are found to be effective using narrow, dogmatic, reductionist approaches to EBM. For example, orthopaedic and sports medicine seems to have an even lower evidence-base than the CIM therapies recently included in the Australian private health insurance natural therapies review.[34] Even primary care itself cannot survive this bastardised approach to EBM. Stange and colleagues draw attention to what they term the "primary care paradox", noting that the complexities of primary care itself mean that its benefits can be obscured by dogmatic application of EBM, such as studies that focus on narrow controlled interventions (as opposed to the complex multiple individualised treatment approach of primary care) in patients that do not have 'complexities' such as multiple morbidities, are not taking other medications, and do not have confounders that may be considered problematic for clinical trials such as old age, young age, pregnancy or substance abuse .[10] As such, the benefits of primary care can differ depending on which evidence is being interpreted: trial evidence fairly consistently shows that primary care clinicians deliver poorer quality care than specialists; evidence from the Medical Outcomes Study shows similar outcomes for specialists and generalists, but at lower cost for generalists (representing higher value); in studies of patients with chronic somatic and/or mental

illness, shared care between specialists and generalists is optimal; ecological studies find that a greater supply of generalists and a lower supply of specialists is associated with greater quality of care on multiple disease-specific quality measures; ecological studies show that more primary care is associated with better population health with lower cost and greater equity.[10]

In many cases, however, EBM is incorrectly perceived to align only with the first form of evidence (trials), potentially obscuring the value of primary care. However, the other forms of evidence listed are becoming increasingly important in clinical and policy decision-making, and have also been suggested to more accurately reflect the true value of CIM therapies.[35] However, it should be noted that such developments may not – yet – be fully embraced by the conventional medical community (the well-publicised methodological flaws in recent NHMRC reviews of CIM being an obvious example), though they are likely to be so in the coming years (for example, the US government now mandates this broader evidence perspective be considered when assessing research proposals in federally funded schemes – with new schemes such as PCORI specifically aimed at developing these new evidence forms). There have also, undoubtedly, been problems with misappropriation of EBM by various vested interests, from fervent proponents pushing narrow interpretations of EBM to drug companies influencing the research process (via development of new research tools, publication bias and invention of new 'conditions' requiring treatment) to better push their own products via the EBM model.[8] These problems, however, aren't due to EBM but rather its misappropriation and distortion by a vocal and influential minority.

The perceived conflict between CIM and EBM – is it really reflective?

The perceived conflict between CIM and EBM appears to be a side-effect of the political tensions between CIM and conventional medicine, rather than a true conflict or inability for CIM and EBM to align. The use of narrow (and false) interpretations of both EBM and science as blunt weapons against CIM by ideological opponents (for example, by labelling them pseudoscientific and incompatible with conventional medical principles) have probably led credence to this perceived conflict.[36] As have CIM commentators, who have suggested that any move to embrace EBM by Australian naturopathy, for example, is driven solely by political factors, and that the idea of evidence-based medicine bypasses or minimises the philosophical and methodological foundations of naturopathy.[5] Some commentators have attempted to further dissociate EBM and CIM as two distinct, separate and opposite entities – suggesting, for example, that the upsurge in the use of integrative therapies by conventional medical practitioners is linked to their defence of clinical autonomy in the face of pressures to practice an 'approved' version of evidence-based medicine.[37]

However, the notion that the underlying beliefs of CIM practitioners are too philosophically divergent to engage with EBM does not fit the reality of perceptions of grass-roots CIM practitioners and students. Australian studies of naturopathic students[38] and practitioners [39] have suggested that CIM practitioners do in fact critically engage with both traditional and scientific forms of evidence, and modern CIM practitioners want information that both supports and is critical of traditional naturopathic practices. This aligns with Boon's early Canadian work which suggested that CIM practitioners viewed treatment through a spectrum of scientific and holistic world-views, and were able and willing to be more holistic or more scientific depending on patient needs,[40] as well as international studies of the naturopathic profession's attitudes towards EBM.[41] It also aligns with data that suggests CIM professions in Australia – particularly Chinese medicine and naturopathy – are becoming more actively engaged and successful in health and medical research funding streams such as those of the National Health and Medical Research Council.[42]

A lesson from naturopathic history

Additionally, the notion that CIM and EBM are incompatible does not reflect true tradition of CIMs. For example, the first article in the first journal of naturopathy in Australia not only celebrated the potential for scientific advancement to advance naturopathy practice, it also called upon scientists and practitioners to build an evidence base to inform safe and effective naturopathic care.[43] This philosophy defined naturopathic practice until the late 1960s, when the counter-cultural movement began to appropriate naturopathy as a tool to reject conventional medical and scientific thought, and began to re-orient naturopathy as an 'alternative' modality focusing on 'natural' treatments rather than the 'healing force of nature' – defined by Baer as when "straight-backed nature cure met the flower children".[44] The linking of naturopathy with the counter-cultural movement led to a growing popularisation of naturopathy, but also its establishment as a discipline defined as much by its opposition to the conventional medical and scientific models as it was by any coherent philosophy, and eventually became indistinguishable from the 'natural treatment' movement.

However, whereas naturopathy had an underlying philosophical basis, 'natural treatment' was a negative, oppositional discipline with little philosophical base beyond a stated (though little realised in practice) belief in holism and a rejection of scientific and conventional medical principles. Gort and Coburn describe this also in relation to the Canadian naturopathic profession, noting that disconnection with philosophy and association with the counter-cultural movement had meant "naturopathy itself has been shaped by its status

as a marginal profession and has assumed oppositional postures irrelevant to its core doctrine and that has contributed to its marginal status".[45] Rejection of science and EBM is not a core doctrine of naturopathy, but rather a philosophical stance thrust upon the profession by vested interests that chose to co-opt the profession to push forward their own counter-cultural movement. Commentators may be right, in that there is distinct political advantage in naturopathy adopting EBM, but this is not at the expense of naturopathy's philosophical or methodological foundations. Rather, it could be argued that adoption of *real* EBM by the naturopathic profession is one way in which those philosophical and methodological foundations can be restored, and that opposition to EBM does not reflect alignment with naturopathic philosophy at all.

Where is the evidence?

The largest problem facing CIM is not the negative evidence suggesting that CIM does not work, but rather the paucity of evidence at all. Even more pressing is the need for research around the practice of CIM, which can highlight the valuable role of the CIM clinician in delivering care, rather than placing emphasis on the role of the therapy (e.g. herbal medicine, acupuncture, nutritional supplement) itself.[35] However, it is not the role of the scientific community to build CIM's evidence-base, but rather it is the CIM community's obligation to build research capacity among its own clinicians, to build the evidence-base itself.[46, 47] After all, no-one else can be expected to do it for us. Not only does this ensure that CIM has a foundation upon which to base EBM, but it also ensures that the evidence-base is truly reflective of CIM practice and respectful of CIM traditions.[48] This does not necessarily mean that clinicians should necessarily conduct their own projects, though this should be encouraged, but a culture of involvement in ongoing projects should be encouraged, whether that be involvement in surveys, focus groups, trials or initiatives such as practice-based research networks (e.g. PRACI[49]). If the CIM community does not establish its own evidence base, the vacuum will be filled by the misinformed assumptions on CIM of groups like Friends of Science in Medicine, whose views will be lent more legitimacy than they deserve solely due to the fact that no opposing point of view has been established. This does not support the CIM professions, and it does not support good patient care.

Conclusion:

EBM, though often cast as a CIM 'bogeyman', is simply an extension of good clinical practice. The fear of embracing EBM in CIM appears to be related more to an over-simplified and dogmatic interpretation of EBM by both CIM proponents and opponents, but an interpretation that bears little resemblance to the true principles of EBM. EBM is a far more complex concept than we tend to give it credit for: 'evidence' is not synonymous with 'RCT' – many other forms exist; scientific knowledge is not a substitute for traditional knowledge *and vice versa*, and traditional knowledge is not an 'inferior' or 'undeveloped' form of knowledge. Science and tradition can co-exist in EBM. They have different aims and structures, and make different contributions to knowledge. Professional opposition to EBM in the CIM professions has no philosophical or traditional base. In fact, it could be argued that only by embracing EBM, can CIM professions truly embrace their own philosophies and traditions.

Competing Interests:

The author declares that he has no competing interests.

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