

Chapter 1

A Critical Social Science of Evidence-Based Healthcare

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Introduction

In many respects evidence-based healthcare is neither new nor are its philosophical underpinnings unique. Getting the best knowledge to the right people in a timely fashion is commonsense. Yet, this basic principle reflects a broader social movement in knowledge production and dissemination that has been emerging for centuries. Scientific inquiry, as it were, has become more systematic, globally connected and protocol driven over the course of the twentieth century. While scientific discoveries in the nineteenth and early twentieth centuries still often occurred in the context of a sole or renegade researcher/practitioner, the latter part of the twentieth century witnessed the global streamlining, enhanced connectivity and dramatic institutionalisation of scientific knowledge production. This fundamentally changed the way both science and medicine were practiced in terms of research priorities and practice guidelines. While changes were occurring within the scientific community more broadly, 'modern' medicine, given its prominence in the community, became centre stage in this broader social movement and philosophical shift toward regulation, abstraction and systematisation in research and clinical practice. As the systematisation of healthcare developed and matured over the last few decades of the twentieth century we saw the institutional emergence of 'evidence-based medicine' (EBM), followed by 'evidence-based practice' (EBP), and then many other evidence-based models in the health and social care professions. This book is about these movements – which we put under the umbrella of 'evidence-based healthcare' (EBHC) – and setting a broad sociological platform from which to understand how these new knowledge technologies impact upon the practice of health care.

While there has been a significant shift in the definitions of, and rhetoric surrounding, the evidence-based social movements, the broad principles have remained relatively stable over time. In a well known maxim, EBM was articulated from an early stage of its development as 'the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients' (Sackett et al. 1996, see also Evidence-Based Medicine

Working Group 1992). Now viewed as a sensible, perhaps uncontroversial, and certainly commonsense, statement, within the sociohistoric context that it was first articulated, it served as a timely warning that, despite the dramatic expansion of medical knowledge making in the twentieth century, methods of disseminating and utilising such knowledge internationally were limited if not non-existent for many areas of medicine. At the time, large numbers of clinicians did not follow the latest and most rigorous evidence, either due to lack of time, lack of expectation to be up-to-date, or lack of access to relevant evidence among other factors. Cochrane (1972) in particular highlighted the problem of a lack of up-to-date and high quality data for practicing clinicians, particularly in maternity care. Change was urgently needed and epidemiology began its rather dramatic ascendancy in the race to shape the form, representation and delivery of ‘good medicine’ in the twentieth and twenty-first centuries. Sackett’s statement, as suggested, is quite simple, and understood within its socio-historic context, quite reasonable. Moreover, it conveys a seemingly benign concept. That is, until one considers the question of what constitutes ‘evidence’ and how the technologies of capture, synthesis and dissemination imbue and exclude certain ideas about the importance of certain types of knowledge (Holmes et al. 2006b).

Such historical calls for action from Cochrane, Guyatt and Sackett among others, have prompted action, evolved and even mutated into a wider complex system of global regulation of medical and health knowledge (Timmermans and Kolker 2004). Initial philosophical positions implicit in the ‘first wave’ EBM movement (Holmes et al. 2006a, Holmes et al. 2006b) were made explicit with the rapid formalisation and institutionalisation of the technologies and practices of knowledge synthesis (Borenstein and Hedges 2009, Higgins and Green 2011). That is, a sophisticated and powerful set of techniques around the production, assessment, and thus representation of medical knowledge – a process based largely on a hierarchy prioritising epidemiological/experimental designs (and often the synthesis of their outputs). Moreover, first wave EBM advocated the development of tools that are epistemologically consistent with the principles of epidemiology; tools that clinicians and clinicians-in-training could use to ‘judge’ the quality of evidence for themselves.

Central to the EBHC social movement has been the development and transcendence of meta-analysis (Borenstein and Hedges 2009, Moreira 2007) and different forms of critical evaluation of study design and trial quality including the Jadad and Pedro scales (see Bhogal et al. 2005, see also Jadad and Enkin 2007). It is worth noting that there was no meaningful debate around whether the development of a global system to collate and disseminate the rapidly expanding mass of health and medical knowledge was needed. It was needed, and urgently. Consider that between five and ten percent of all clinical trials published each year deal with cancer or cancer-related conditions, presenting oncology clinicians with well over 10,000 clinical trials annually (Ioannidis, Schmid and Lau 2000). Filtering even a small proportion of this information – not to mention assessing quality for use in everyday clinical work – is clearly implausible and

unreasonable for oncology clinicians. The production of medical knowledge was (and in many respects still is) outdoing clinicians' capacity to use or make sense of it. Such conditions ensured the enthusiastic uptake amongst many stakeholders of an EBM-type strategy for knowledge filtering and treatment prioritisation. The fact that such 'filtering' and 'layering' was to be based on a very distinct and problematic epistemology (De Vries and Lemmens 2006, Goldenberg 2006, Gordon 2006, Holmes, Peron and O'Bryne 2006, Webb 2001) would present many stakeholders, including patients and clinicians, with a series of difficult questions in day-to-day care settings such as 'what is legitimate knowledge?', 'how important are population studies?' and 'how relevant is my or my patient's subjective experience?' (Broom and Tovey 2007b).

In many respects it is inevitable that the move to systematise expanding medical and health knowledge would lead to a crisis in 'what constitutes knowledge' (Mykhalovskiy and Weir 2004); a question far from clear in an increasingly pluralistic medical landscape (Broom and Tovey 2007a) particularly given the various patient movements supporting non-biomedical and non-evidence-based forms of care (Bakx 1991). Moreover, while there existed collective energy within the medical community focused on containing the growing corpus of research and controlling for quality, resistance and uncertainty persisted within medicine itself (Armstrong 2002, Pope 2003). Evidence-based – *from whose perspective?* – emerged as a key question that has persisted from the beginnings of the social movement to today (Greenhalgh 1999, Sullivan 2003). Evidence, according to what measures, also dominated discontents around EBHC. Yet, despite ongoing disputes within and outside medicine, the original EBM model quickly extended beyond the governance of practices within the medical profession and healthcare services.

Evidence-based paradigms now fundamentally shape the way health service providers, health funding bodies, governments and policy makers view 'effectiveness', and their willingness to fund and support interventions, practices, models of care and practitioner groups (Jackson and Scambler 2007, Webb 2001). EBHC and the various permutations thereof (EB practice, EB nursing practice, EB social work, EB decision making, EB physiotherapy, EB occupational therapy – the list goes on) are now shaping how we are treated, which treatments are funded, the character of illness experiences, quality of life, and ultimately, our survival chances. It is for this reason that it is vital that we explore and reveal the benefits and limitations of EBHC models in clinical context. Here we do not to dismiss the principles of the various forms of EBHC, denigrate key stakeholders, nor pursue an overly constructivist perspective common in the social sciences. Such a perspective would provide little room for acknowledgement of the legitimacy of objectivist or predictive techniques, and thus restrict constructive dialogue. Rather, we seek to examine how the principles, technologies and practices of 'evidence-based approaches' may allow certain things and promote certain understandings of health and illness while silencing others.

The Technologies of Knowledge and Consolidation of a Social Movement

As we shall see in the following chapters, the EBHC social movement has been successful largely due to the development of a sophisticated array of technologies and encoded practices that imbue particular values around the nature and production of knowledge (Broom, Adams and Tovey 2009, Timmermans and Berg 1997). That is, since the lexicon of EBM and EBP began to develop in the 1980s and 1990s we have seen the successful deployment and widespread uptake of formalised EBM technologies, design hierarchies and organisation structures that perpetuate their core principles and values. Meta-analysis, in particular, is one very effective facet of the multi-pronged program of 'knowledge contextualisation' promoted by key entities such as the Cochrane Collaboration, the Campbell Collaboration and the RAND Corporation. The construction of ideologically-infused technologies responsible for sorting the wheat from the chaff, so to speak, consolidated EBM-type models as central to judgements about the worthiness of studies and legitimacy of interventions (Moreira 2007). Various quality scales and systems of delineation emerged concurrently to the development of the aforementioned organisational entities to objectify and validate assessments. These scales – which have in turn been mimicked more recently for interpretive designs (The Joanna Briggs Institute 2011) – rate studies according to various features including randomisation, blinding, power and dropout among other things.

The trajectory towards evidence synthesis was swift in the 1990s with emphasis placed on consolidating an objective basis for synthesis, for example, effect sizes, within meta-analysis (Higgins and Green 2011, Jadad and Enkin 2007). This effectively created an enhanced a culture of polarisation in knowledge legitimacy – an evidence apartheid that many argue is politically driven and epistemologically reductive (Goldenberg 2006, Holmes et al. 2006a, Holmes et al. 2006b, Lambert 2006, Mykhalovskiy and Weir 2004). This positioned analytical/epidemiological design strategies as producing the most legitimate and accurate forms of medical knowledge (Broom, Barnes and Tovey 2004, Jackson and Scambler 2007). While the design priorities inherent in EBHC technologies do not explicitly marginalise interpretive designs, and thus qualitative insights and/or data, they do exclude interpretive designs from being part of the crux of a systematic review. By default, interpretive designs are reduced in their perceived significance for clinical work. In many established reviews of interventions interpretive data is not considered in the data meta-analysis. Descriptive/interpretive design strategies may be present (often in background sections or as 'context') but do not inform the actual outcome. This has been a critical part of the epistemological dominance of analytical design strategies that still dominate medical research and the development of clinical guidelines.

There is no doubt that the original intention of the EBM entrepreneurs was to reduce the influence of bias, poor design and poorly run or analysed studies, so as to improve healthcare delivery (Cochrane 1972, Sackett et al. 1996). Moreover, the institutions that developed were aimed at improving cost-effectiveness by

reducing the use of 'ineffective treatments'. In other words, these evidenced-based approaches were designed to protect patients and communities from being treated or receiving healthcare on the basis of poorly designed studies that may be harmful rather than beneficial. Of course, the problem that emerged was in what constituted 'poor design' and the philosophical conception of validity. Ultimately, a positivist epistemology dominated early EBM models and most EBHC models today, directing funding, governance and practice toward principles around population effects and distanced meta-analysis (Holmes et al. 2006a, Holmes et al. 2006b). Moves to systematise quality assessments and synthesise knowledge were represented as removing politics, poor techniques and human influence from the production and application of medical knowledge. Yet, such objectivities were illusory rather than reflected in the reality of knowledge work in medicine. Systems that rationalise quality and sort through the mass of healthcare information available are understandably appealing for many stakeholders, including managers and policy makers seeking to rationalise the delivery of certain interventions or services over others. As suggested, in the second half of the twentieth century, knowledge production (particularly publication in academic journals) was expanding dramatically and yet methods of information delivery, above and beyond individual clinicians reading studies and informing junior doctors, were lagging behind. The speed of knowledge production greatly outweighed the capacity of clinicians to understand, absorb and utilise knowledge. Moreover, most clinical programs did not, and still do not, provide rigorous training in study design and research methods. As such, a usable system of assessment, delivery and suitably institutionalised 'production houses', was met with significant enthusiasm from many quarters of the medical and healthcare establishment.

Professional Governance, Legitimacy and the Proliferation of EBHC

Politically and socially, the mid to late twentieth century was becoming increasingly risk adverse and market orientated, and there was increasing pressure for 'governance' in health service delivery and within the health and social care professions (Halligan and Donaldson 2001). Such agendas were complex and multifaceted, incorporating wider concerns over localised idiosyncrasies in health practice, cost blowouts, state-driven pressure for enhanced accountability, private sector drives for profit maximisation and a genuine concern for the widespread variations in care. Within 'other' health and social care professions – that is those other than medicine – considerable changes were taking place concurrent to the development and proliferation of EBM. Whilst medicine was the first professional and clinical body to explicitly push for rigorous across-the-board practice guidelines, hierarchies of evidence and a top-down model of managerial control over clinical practice, there have become a wide range of incentives from other health and social care professions to develop their own version of EBM. Being an 'evidence-based' profession has become critical for receiving funding, bolstering

state legitimacy, achieving rhetorical legitimacy, gaining proximal credentialing and so on (Kessenich, Guyatt and DiCenso 1997, Richardson 2002, Webb 2001). Whether evidence-based nursing practice (Kessenich, Guyatt and DiCenso 1997) or evidence-based occupational therapy (Egan et al. 1998), health and social care professionals have come under pressure to replicate and transform EBM to fit their practices and shape processes of enhanced professionalisation and systematisation (Holmes, Perron and O'Byrne 2006). Moreover, such models have spread beyond state-supported and biomedically-credentialised practices to areas such as CAM, with the advent of evidence-based complementary medicine (Richardson 2002). Over the second half of the twentieth century nursing, physiotherapy, midwifery and occupational therapy have each gradually moved towards degree-based, regulated, nationally-credentialised and 'organised' professions with the development of practice guidelines in order to achieve professional credibility. An EBHC-type model has fed into each of these 'health professions' trajectories towards professionalisation and cultural legitimacy. Thus, the technologies developed initially for EBM have been drawn on, co-opted, and at times transformed, within the context of other professional groups. This has ultimately caused significant difficulties due to different ideological positions of the different health professions. Such developments are illustrative of the fact that advocates and proponents of 'first-wave' EBM have facilitated a flow-down effect which has shifted the rhetorical representation, and in many cases everyday practice, of many other health professional groups seeking enhanced credibility through 'consistency' in practice. Access to state resources has in turn become intimately intertwined with the espousal of a form of EBHC. As such, sociologically, EBHC models, including their devices and technologies, have come to dominate the regulation and centrality (or marginality) of different professional groups and thus accepted models of care and health care practices.

In many respects the success of the EBM movement and subsequent EBM-type models has been due to its ability to systematise, formalise and encode a complex value system that has now become the backbone of medical knowledge production (Timmermans and Berg 2003): the production of scales of assessment and hierarchies of evidence – or encoded knowledge. Organisationally and ideologically, proponents of EBHC have developed a coherent and systematised method of knowledge production and dissemination that seems from many positions to improve patient care, to reduce clinician uncertainty, and to provide enhanced evidence without the costs of additional studies (Andrews et al. 2006). Moreover, the principles of EBHC, could, it would seem, be applied to a wide range of health and social care professions. In a neo-liberal cultural shift, evident in many developed and some developing countries during the last two decades (Chomsky 1999), such guidelines provided an effective means of prioritising funding and offered a potential strategy for reducing litigation in increasingly privatised health services (Rosoff 2001). Thus, EBHC was highly attractive to many stakeholders including governments, policy makers, managers and private healthcare corporations. Yet, the discontent surrounding EBHC was evident in

the experiences, reactions and perceptions of the two key players in healthcare delivery: patients and clinicians. Over the last few years there has been an emerging body of work, some from medicine and health and some from the social sciences, exploring a range of discontents regarding EBHC models at a grassroots level. Below, we provide a broad context to such debates.

Evidence-Based Healthcare and the Patient

Any model of knowledge production and dissemination, and clinical regulation has the greatest impact on those being treated and those doing the treating. We begin with the former. It goes without saying that pre-EBHC, many patients were given substandard, if not dangerous, forms of care due to an ineffective system of information delivery. The classic obstetrics case, pointed out by Archie Cochrane, that corticosteroids reduce the risk of babies dying from immaturity 30 to 50 per cent, illustrates the dangers of a lack of an institutionalised, systematic means of reviewing and disseminating evidence (Cochrane 1972). Because no systematic review of these trials had been published until 1989 – a process that would have identified a smaller well designed study showing powerful effect – most obstetricians had not realised that corticosteroids were so effective. As a result, thousands of babies had died unnecessarily. This is but one example of the flaws evident in historical practices of health knowledge production and utilisation that existed prior to the development of principles espoused by proponents of EBHC. In saying this, the current situation is quite distinct from that witnessed in the mid to late twentieth century. We now have a global system of evidence review, synthesis and dissemination and thus the new threat is that the principles of the original movement no longer resonate with patient experiences or perceptions of effectiveness (Broom and Tovey 2007b). Moreover, the reliance on cohort data, epidemiological design strategies and formalised information systems based on historical data, has the potential to remove the person (or aspects of personhood) from the healthcare process. This includes ideas about wellbeing, agency, belief, subjectivity and so on (Goldenberg 2006).

Patient-centred medicine (Bensing 2000) or evidence-based patient choice (Hope 1996) have in some respects been attempts to reconfigure the principles of the EBHC movements to centre more squarely on engaging patient perspectives once an ‘evidence base’ has been identified. To an extent such concepts have addressed some of the problems of the early application of EBM. Because of the push for trial data synthesis – rather than a focus on the meanings of illness and outcomes to different people and cultures – the focus in medicine moved even further away from the person to a focus on the condition or health issue. This mind-body split (the Cartesian dualism) already presented problems in the practice of medicine (Samson 1999). EBHC in many respects enhanced this issue through providing an even greater degree of abstraction – that is, from clinical practice and patient experience – through a focus on epidemiological and experiential designs.

Consumerism has become a powerful force in the mid to late twentieth century and the population-driven principles of EBM have, in some respects, operated counter to prevailing social forces espousing individualism, choice and a market economy (Slater 1997). That is, and particularly in western contexts, healthcare was increasingly viewed as a commodity to be purchased, placing pressure on health providers to adapt to the needs of consumers, rather than follow strictly the guidelines imposed by regulatory bodies or dominant professional organisations (Smith and Lipsky 1992). One example of this was the increasing provision of CAM in the private sector, despite a perceived lack of biomedical evidence for many CAMs, due to demand-based private provision of health services (Pelletier and Astin 2002). In this sense, the more market- and consumer-driven health systems of the US and Australia progressed more quickly than the more publicly orientated health systems of the UK and New Zealand in terms of treatment provisions based on the desires of patients in addition to those validated by 'evidence'. For example, private insurers began offering healing therapies in hospitals post surgery in the US regardless of the 'evidence base' available given the clear advantages in shorter stays in hospital. In this sense, market liberalisation reduced the capacity of the more extreme EBM stakeholders to dominate health rationing, at least in terms of healthcare delivery beyond the State.

This links to the reinsertion of the person in knowledge making and knowledge application in health and social care. Ultimately, private insurers and providers reacted to the strong demand for certain practices and ideas regardless of biomedical 'evidence base'. Simply put, it was not good business to withhold treatments that consumers wanted if such treatments were not overtly 'risky'. This included practices that enhanced everyday health and wellbeing (thus saving insurers money) that were considered by biomedical stakeholders amongst others as untestable in blinded, randomised clinical trials (aromatherapy massage is a good example in terms of private insurance rebates). Consumerism and private healthcare delivery allowed for the provision of practices, techniques and interventions that showed no or limited effect when 'measured' with biomedical study designs. Moreover, the availability of such products was restricted to the wealthy who could afford to purchase their own healthcare. In many respects those who paid the greatest price for the exclusion of non-evidence-based practices through EBHC type models in market capitalism were those at the bottom of the consumer ladder and those reliant on State resources. Thus forms of marginality, deprivation and exclusion interplay with the politics of EBHC, shaping patient experiences of and access to care.

This epistemological bias around knowledge legitimacy – the heavy reliance on abstracted, population-based trends – has and continues to sideline the *person*. Particularly important are the immeasurable features of health and wellbeing including such things as belief, spirituality, hope, intentionality, agency, community and personhood. These aspects may be controlled for (often as placebo) but more often than not remain unexamined as potent in their own right (Zahourek 2004). Moreover, within a cohort-focused model of evidence, aspects

of human agency, subjectivity and self-determination lack meaningful recognition in the therapeutic process of the clinician-patient dynamic (Sullivan 2003). Such epistemological restrictions (the substitute of personhood for objective data) and ontological positions (my path/fate is identifiable by historical data) have been met with considerable resistance from many patients and people increasingly dissatisfied with biomedical interventions, particularly in the context of chronic illness. Communities are increasingly resisting exclusively biomedically-vetted interventions and are substituting and/or complementing them with self-care, preventative and complementary approaches to health and healing. As suggested above, such practices of self-care and resistance to EBHC models are largely in the realm of more affluent populations who can afford to resist dominant practices. While EBHC has provided a way of sorting and layering knowledge, its resonance with the experiences of those who are being treated has often been limited (Sullivan 2003). Questions around 'what works for me' or 'in my life' have been transformed into 'what works for my population of patients' and 'on average over their lives' (Broom and Tovey 2007b). While this has been the case for much longer than the existence of EBHC, this social movement has enhanced the imposition of depersonalisation and its discontents in healthcare delivery. This has impacted on the everyday work of health professionals, shaping their own ability to utilise subjective knowledge and intuition in practicing the art of healthcare.

Evidence-Based Healthcare and the Clinician

An extensive body of work has examined how clinicians view evidence, how EBHC is taught and implemented, and the question of what constitutes evidence in practice (Armstrong 2002, Broom, Adams and Tovey 2009, Broom and Adams 2010, Kessenich, Guyatt and DiCenso 1997, Pope 2003, Timmermans and Berg 1997). Our own research with staff specialists (consultants) and specialist nurses in Australia and in the United Kingdom has illustrated that while 'evidence', in the biomedical sense, is critical to everyday clinical work, EBHC models evade the actual subjectivities of clinical work and have in fact created new forms of clinical uncertainty (Broom, Adams and Tovey 2009, Broom and Tovey 2007a). Moreover, those in different hierarchical positions and professional groupings view the validity and importance of evidence in varied ways. In turn, as patients themselves seek to negotiate with clinicians regarding uncertainty over 'what constitutes evidence?' and 'what does it mean for me?', many clinicians are increasingly focusing on incorporating the 'human factor' into the decision-making and treatment process (Broom and Adams 2010). This points to the problematic of EBHC for clinicians working in many, if not all, sub-specialties of medicine.

Clinicians are faced with a plethora of ideological, epistemological and practical issues. The everyday realities of 'evidence' dissemination and the practice of medicine is that they *both* involve ongoing (but often implicit) value judgements about such things as the quality of evidence, risks, cost and patient

preference (Gordon 2006, Moreira 2007). As Goldenberg suggests (2006), EBHC models often function to obscure such subjectivities and the social embeddedness of medical and healthcare knowledge.

For those working at the grassroots – rather than pushing professional or organisational objectives – there is consistent concern regarding the disconnection between EBHC (and processes of standardisation) and the actual character of contemporary medical work (Broom, Adams and Tovey 2009, De Vries and Lemmens 2006). This is particularly problematic given that the very value judgements and subjectivities that often go unrecognised in an EBHC framework are actually critically important skills in clinical practice with the constant emergence of new ‘experimental’ interventions and clinical data. What emerges, in a context of increased standardisation through EBHC, is a conflict between *res ipsa loquitur* (‘the thing speaks for itself’) and ‘objective’ scientific evidence. As Lambert (2006) emphasises, here lies the incommensurability between abstract epidemiological data and individual patient need and response. This has important implications not only for course of treatment, but what is defined as constituting a legitimate treatment in the first place (Lambert 2006).

The imposition of EBHC is partnered with diminished acceptance (or allowance of) the ‘diagnostic art’ or clinical judgement (Lambert 2006). Enhanced therapeutic rationality through standardisation, as encouraged within EBM models, may thus silence the individual clinician and the patient, by simultaneously suppressing the role of illness narratives and the ‘expert eye’ in medical work (Greenhalgh 1999). As Goldenberg (2006) suggests, an EBM framework tends to ignore the phenomenology of illness; the embodied, experiential facets of ‘being treated’ (the patient’s experience) and ‘treating’ (the doctor’s experience). Giving these philosophical, regulatory and practical concerns, it is perhaps unsurprising that EBHC is not always well received and can be difficult to actualise in clinical contexts (De Vries and Lemmens 2005, Lambert 2006). For example, exactly how differently positioned clinicians manage the practice of EBM; how they utilise forms of expertise in clinical practice; and, how they augment this with clinical intuition is largely unknown.

More recently, there has been a growing interest in the tensions between therapeutic rationality and clinical autonomy (Armstrong 2002). At one level, EBM has provided a specialty-specific method of professional control within medicine whereby research or medical elites strongly influence practitioners through clinical practice guidelines, treatment protocols and organisational information systems. Indeed, it has been argued that EBM represents a strategy for defending collective autonomy through restricting the individual freedoms of practitioners (Armstrong 2002).

The degree to which such trajectories toward therapeutic rationality and regulatory systematisation have been achieved (and the responses of different practitioner groups) has been well-examined by medical sociologists. For example, in his study of primary care physicians’ management of depression and the impact of EBM therein, Armstrong (2002) illustrated a disconnect between formalised

EBM approaches and individual clinical decisions. Whilst EBM, Armstrong posits, is largely dependent on stimulating a critical 'moment of change' whereby one behaviour gives way to the other (that is, new evidence results in use of a different treatment), continuity, stability and subjectivities persist in primary care contexts. Armstrong (2002) argues that the persistence of individual judgement and situated decision-making is rationalised by doctors through the deployment of notions of uniqueness, indeterminacy, and the need for patient centredness. As such, we see the emergence of a counter-balance to EBM (also feeding into contemporary consumerist sentiment), to protect the integrity of individual clinical judgement. Armstrong (2002) characterises EBM and 'patient centredness' as playing concurrent, albeit potentially conflicting, roles in achieving and securing clinical power and autonomy in primary care.

In another key study, Pope (2003) utilises a social movements framework to examine EBM as perceived by urological and gynaecological/pelvic surgeons. In her analysis, Pope identifies the highly instinctual and contingent nature of these surgical sub-specialties, highlighting key sites of resistance to formalised training and established procedure. It was discovered that formalised accounts or evidence were regularly dismissed, and surgeons followed a model of 'experientially-learned practice', focusing on the 'how' (the doing of surgery), rather than the 'what' (the most effective procedure to use) (Pope, 2003).

Both these studies highlight strategies of coping with (and resisting) the increasing regulation and systematisation in medicine including the strategic re-emphasis on the importance of tacit, experiential knowledge as critical to medical work (see also Greenhalgh et al. 2008). These two studies illustrate the deployment of rhetorical and practical strategies to counter the threat of EBM including expositions of surgery as art or experiential and general practice as individualised and patient centred. Such practices are examples of intra-specialty defence against increased therapeutic rationality as promoted by EBM and its various manifestations. However, it should also be emphasised that effects may vary among differently positioned clinicians in the imposition of an EBM model. Highlighted by Friedson (2001) in his work on professions, rather than having linear effects (power reduction/consolidation), regulatory frameworks like EBM may actually create internal status differences within medicine resulting in a reduction of clinical autonomy (or proletarianisation) for some and increased status (including career advancement) for others. Specifically, binary notions of power reduction/proletarianisation through bureaucratic rationality may not hold up in grassroots clinical contexts where clinicians are strategically adapting to organisational and ideological shifts.

However, whilst practicing physicians may engage in forms of resistance in order to retain the perceived integrity of their medical work, the implications of EBHC for the training of doctors and the shaping of expertise remains a critical issue for the medical community, though there has been little sociological work in the area. Drawing on a study of paediatric residents in the US, Timmermans and Angell (2001) found that EBM may actually increase uncertainty in junior

doctors due to an increased reliance on information systems and epidemiology. Furthermore, and extending on the point made above, EBM acted to solidify the hierarchical relationships between consultants and junior doctors, reducing questioning, critical thinking and the process of learning through experience (Timmermans and Angell 2001). What these studies tell us is that EBHC is having unintended consequences. These include potentially increasingly uncertainty, reducing autonomy and limiting a sense of agency within healthcare 'transactions'. While the benefits of systematisation are quite clear, the limitations are often left out of the equation, so to speak. Ultimately, and as shown in each of the following chapters, we argue that EBHC should be critically examined in terms of how it impacts on the day-to-day lives of patients and clinicians. Social science offers the unique methodological tools and the conceptual basis to provide such insight.

A Critical Social Science of Evidence-Based Healthcare?

Establishing a critical sociology of EBHC that speaks to a range of audiences is necessary for a number of reasons. First there has been relatively limited exposure within the health and social care professions to a critical social science approach to evidence and the production of knowledge. Critique has tended to come from those working within philosophy which has been traditionally less focused on exploring clinically-embedded case studies of the complexity of knowledge. EBHC is now a global web of institutions, gurus, technologies, devices, policies and is defining the healthcare we receive (or do not receive, as the case may be) when we seek help. As a social movement, evidence-based models are defining what it is to be a patient and what it is like to be a clinician. It has, and continues to, produce, enhance and perpetuate some of the classic power struggles in the health and wellbeing professions and in the academic community. Nursing-medicine, physiotherapy-chiropractic, complementary medicine-medicine – these relationships are each to some degree being shaped by claims about, and perspectives on, evidence. And, particular kinds of evidence. Age-old tensions between midwife and physician, between complementary practitioner and doctor, are being played out through the politics of study designs, epistemological supremacy and the 'science wars'-type battle between interpretivism and objectivism. Such classic debates between quantitative measurement and the interpretation of subjective experience do little to assist those at the grassroots trying to get better or help people get better. This juggernaut that has entered global discourse is feeding tensions between those in support of ideas about subjective wellbeing rather than quality adjusted life years and those in support of human agency and self-determination rather than epidemiological predictors of survival. It is thus time to move towards a critical sociology of EBHC that can provide a sense of the social embeddedness of knowledge; that is, one that rests in a political and cultural basis of diverse claims to legitimacy. This is not a relativist positioning but a way of reinserting what

already exists in health and social care – the human elements whether patient, practitioner or carer related.

This text is not a criticism of EBHC. Each author – some actively working and researching in clinical contexts, with social science backgrounds, and others operating in academic contexts – value and acknowledge the production and use of multiple forms of knowledge. Rather, this book and each author seek to outline a way of understanding evidence in a particular context. Together, these works assert the need to understand the potencies and limitations of particular forms of knowledge as well as voice clinical and personal discontents with a linear application of knowledge. Ultimately, some form of knowledge production and dissemination is critical and thus our purpose is not to dismantle but instead to contextualise, balance and emphasise some often marginalised voices in the debate about EBHC.

Outline of the Chapters

In Part I of this collection entitled ‘Evidence in Cultural and Theoretical Context’ we present two broad perspectives on the impacts of EBHC for medicine and the health sciences. Chapter 2, co-written by one of the founding sociologists of EBM, Stefan Timmermans, explores uncertainty within the context of the EBM movement and the degree to which forms of systematisation and standardisation actually feed into, shape and problematise medical training. Drawing on interviews with paediatric residents (in newborn units, endocrinology, haematology–oncology, paediatric intensive care, paediatric surgery and an emergency department), the focus here is on the practical problematic of an individual’s ability to absorb EBM into the practice of medicine. Timmermans shows that, contrary to EBM’s quest for certainty, EBM-in-practice unintentionally generates new forms of uncertainty. Moreover, however, Timmermans is careful to point out that the pursuit of disembodied, ‘de-humanised’, forms of knowledge production does not necessarily lead to detached or de-humanised approaches to healthcare delivery among practitioners.

Chapter 3, authored by Dave Holmes and Patrick O’Byrne, provides an engaging critique of EBHC as a political movement that ultimately seeks to dominate (reductively) the production of knowledge. That is, a form of governmentality that does not ‘stop people speaking’ but asks that they ‘speak in particular ways’. They argue that evidence-based medicine has been about epistemological dominance and is flawed in its politicised dependence on epidemiological study designs. The authors provide a sophisticated and engaging call for resistance and a reconfiguration of EBHC. The authors advocate for a form of EBHC that accommodates plural, multi-layered and epistemologically diverse sources of knowledge about the world. Within this chapter, EBM in particular is conceptualised as an imperialistic form of stratification that

produces a polarised culture of evidence legitimacy. The authors utilise Deleuze and Guattari's concept of the war machine as a means of countering EBMs dominance in knowledge making.

In Part II, 'Evidence in the Clinic', we move to an examination of EBHC in the context of three specific (and quite different) clinical contexts. These include abdominal aortic aneurysm, neuro-rehabilitation and medical oncology/haematology respectively in Norway, Britain and Australia. These three cross-cultural settings provide a series of critical examinations of how 'evidence', in the clinic, becomes transformed and reconfigured by different actors and stakeholders – that is, the specificities of what evidence does and becomes when it reaches clinical contexts.

Berit Brattheim, Arild Faxvaag and Aksel Tjora, in Chapter 4, examine, in the context of the surgical treatment of abdominal aortic aneurysm in Norway, how evidence for endovascular repair (EVAR) develops within a particular social, material, technological, and organisational context. The authors highlight the extent to which knowledge is produced within a communal context and thus how the sociality of clinical practice creates evidence. Beyond mere adopters of evidence-based practice, the authors argue that, within the communal context, clinicians are equally knowledge (and evidence) producers.

In Chapter 5, Flynn and colleagues engage in an examination of the dialectic between explicit/encoded knowledge (promoted by EBHC trajectories) and tacit/embedded forms of knowledge in the UK. Taking neurorehabilitation as their case in point, they explore the ways in which 'concrete' measures are subjected to interpretation, individual perspective and contextual circumstances. This chapter illustrates how encoding at a theoretical level (or at a policy level) results in the re-contextualisation in clinical practices and thus how evidence-based guidelines will, necessarily, always constitute a partial rendering of the complete knowledge of clinicians. That is, while standardisation provides an explicit sense of coherence, the ways in which the tools of standardisation are utilised, co-opted and transfigured in different clinical contexts illustrates the inevitability of tacit knowledge and intuitive practice. Such findings remind us of the problematic of attempting to impose a rational system that irrationally excludes human subjectivities and their capacity to utilise intuitive knowledge effectively.

In Chapter 6, we contribute a chapter which focuses on how evidence is viewed, presented and utilised differentially in medical oncology and haematology. We follow the respective rationales of specialists and nurses for what constitutes 'good enough' evidence, illustrating differentiation in perspective, and how the histories of these specialties, institutional hierarchies, and inter-professional dynamics shape their accounts. That is, their perspectives on what constitutes 'enough evidence' to warrant using an intervention on a cancer patient. Our findings illustrate that, in practice, what is presented, talked about, and utilised as evidence, is highly differentiated between specialties, between individual clinicians and according to hierarchy. We draw on and extend the concept of 'localised universality' (see Timmermans and Berg 1997) – the imposition of idiosyncratic standards and

protocols within an individual institution – to illustrate the importance of culture within particular medical specialties and institutional hierarchies as shaping what constitutes ‘good evidence’.

Part III is titled ‘Evidence on the Margins’ and focuses on a critical social science of specific sites of epistemological and actual marginality, in terms of state support and in the context of contested legitimacy. Specifically, this section examines ideas about evidence from the perspectives of complementary and alternative practitioners, midwives, and patients, each of whom remain in peripheral positions in terms of their contribution to, perspectives on, and role in the production of evidence.

Chapter 7, by Kevin Dew, examines the interplay between uncertainty and standardisation, taking a group of New Zealand General Practitioners’ engagement with CAM as a case study. Dew shows how the inevitable uncertainty in GPs everyday work – and the inability of the biomedical model and EBM to capture such uncertainties – may create a point of identity crisis that leads them to engage in CAM models of care. This rupture is transformative, and Dew argues enables a (professional) biographical development of sorts, reflecting the persistent discontent (see also Armstrong 2002) among many GPs with the trajectory of EBM. The search for an approach to care that accommodates multiple forms of knowledge, incorporates patient subjectivities, and accommodates ‘uncertainty’ underpins the GPs accounts examined in this chapter.

In Chapter 8, Alex Broom and Philip Tovey explore how patients engage with and perceive notions of ‘evidence’ and ‘effectiveness’. Drawing on the controversial issue of complementary medicines in cancer care, this chapter explores how patients themselves balance what they ‘know in themselves’ *vis-à-vis* ‘what is known their bodies will do’ (in terms of biomedical evidence). This chapter illustrates the limits of probabilities and statistical predictions in the context of a strong patient focus on hope, agency and self-determination. While it is shown that terminality shapes patient engagement with biomedical evidence, it is also shown that here remains a strong push for reinserting the individual into the ‘evidence equation’. This desire, on the part of cancer patients, is embedded in dialectical tension between individuation and depersonalisation. That is, the desire for an approach to care that is not exclusively about biomedical ‘effectiveness’ *or* the life world of the individual cancer patient. Rather, the study of these patients highlights how intuitive and embodied knowledges should be intertwined with, and presented alongside abstracted, population-based biomedical evidence.

In Chapter 9, by Caroline Homer and Alex Broom, the focus is on the relationship of midwifery to the politics of evidence and therapeutic legitimacy. This chapter examines the homebirth debate in Australia, sketching the historical and contemporary sociopolitical factors that shape the production, use, co-option, or refutation of evidence. This chapter traces the historical struggles between obstetrics and midwifery and shows how the parallel evolution of these disciplines frame current tensions around evidence and risk in the context of maternity care.

The final chapter, written by Evan Willis and Anne-Grete Sandaunet, provides a summary and overview of some potential future research directions for the study of EBHC as well as highlighting the political character of health delivery. Specifically, they draw on three case studies – breast cancer screening, prostate cancer screening and CAM integration – to outline a series of questions in need of further exploration. The cross-national differences in utilisation of screening for breast and prostate cancer are revealing in terms of the shaping of health service delivery according to belief, risk, litigation and political power, rather than actual evidence of effectiveness. Ultimately, these cases are used to illustrate the challenges facing EBHC in relation to issues of power and political influence – challenges that are likely to get more and more significant in a twenty-first century given a broader waning in support for a purely biomedical conception of knowledge production and therapeutic effectiveness.

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