



Working Paper # 4

Knowledge Transfer and Exchange

A look at the literature in relation to research and policy

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GETTING RESEARCH INTO HEALTH POLICY AND PRACTICE

GRIPHEALTH

1 Introduction

Within the field of health policy, there have been widespread calls for the increased or improved use of evidence within policymaking. This reflects an ambition to deliver better policy in terms of outcomes, resource efficiency and effectiveness, and a belief that this can be achieved through utilising the available evidence to inform and guide decision making. For those tasked with improving the uptake of a piece or body of evidence, for policy makers aiming to improve their evidence use, or for researches investigating this question, a number of conceptual questions remain on how to actually achieve this, such as:

- What should count as evidence for policy making?
- Who should govern (or steer) the use of research evidence for policy?
- What is 'good evidence' for decision making?
- What is the 'good use' of evidence from a governance perspective?
- How is research knowledge typically translated into policy?
- How can one 'improve' the use or uptake of evidence in policy making?

The GRIP-Health Project is a 5 year, European Research Council supported programme of work that aims to improve the use of research evidence in health policy through undertaking research on the political aspects of health policy making and evidence use. The project has developed a number of working papers that engage with some of these topics.¹ This current paper is concerned with the last two of the questions listed above, specifically reviewing key aspects of Knowledge Transfer and Exchange (KTE) related to getting research into policy and practice.

While the health sector is increasingly motivated by a desire to get research evidence into policy, outside the field of health there is a much broader body of work that is specifically concerned with how evidence and knowledge are transferred, translated, or taken up by different policy actors. Various theories attempt to establish how KTE works, the contextual factors that influence the process, and how to achieve maximum impact for relevant bodies of evidence. Acronyms and terminology used in this field vary accordingly, and can include knowledge *transfer*, knowledge *translation*, knowledge *management*, and knowledge *brokering*. These various terms have been grouped together under the rubric 'K*' by some authors to reflect the multiple overlapping terms

¹ Prior working papers in this series deal with aspects of: Stewardship of health evidence; hierarchies and appropriateness of evidence; and institutional approaches to evidence uptake research. Working papers and other outputs of the programme are available at the GRIP-Health website <http://www.lshtm.ac.uk/groups/griphealth/resources/index.html>

(c.f. Shaxson et al., 2012). However, in this paper, we use the term KTE to refer to the general body of literature focused on issues of knowledge production, dissemination, uptake and use in policymaking.

As the body of work on KTE is extensive, it was decided not to attempt a complete or systematic review of the literature. There are, however, several papers which attempt to synthesise the existing literature or systematically review elements of the KTE field. These reviews provide a starting point for mapping the field to help inform efforts to improve the use of research evidence in policy. The current paper therefore has two objectives. First, it summarises and synthesises a set of identified KTE review papers in order to undertake a comparison of their similarities and their differences on the main areas they cover, to provide a basic mapping of key KTE concepts. After this, it then explores some key themes that emerge from the KTE literature which are of particular relevance to the GRIP-Health programme and other researchers or stakeholders who are tasked with improving evidence uptake.

2 Existing KTE review papers

Table 1, below provides a summary of the papers included for the first component of this Working Paper.

Table 1 - List of KTE papers reviewed

Author and Year	Title	Aim	Method
Court and Young, 2003	Bridging Research and Policy: Insights from 50 Case Studies	Examined link or lack of link between research and relevant policy, and the key factors that influenced it, in development policy.	Analysis of 50 case studies commissioned from those involved with KTE processes in various countries, after tendering process.
Estabrooks et al., 2006	A Guide to Knowledge Translation Theory	To clarify the terms and theories in the field, and clarify adjuvant theory.	Review paper
Mitton et al., 2007	Knowledge Transfer and Exchange: Review and Synthesis of the Literature	To examine and summarise existing literature around KTE to establish the evidence for various methods in relation to health, to develop an evidence based resource for planning KTE.	Literature Review Abstract search, review for relevance, classifying and rating quality, and then synthesising and validating papers.
Jones et al., 2009	Knowledge, Policy and Power - Six dimensions of the knowledge–development policy interface	To investigate how various types of knowledge are used across contexts, sectors and with different actors – and thus what can be deduced about the knowledge translation process. Produced by the same institution as Court and Young (2003).	Discussion paper drawing on the literature and case studies.
Ottoson, 2009	Knowledge-for-Action Theories in Evaluation: Knowledge Utilization, Diffusion, Implementation, Transfer, and Translation	To summarise and compare the predominant theories of knowledge-for-action, and consider how they can be effectively evaluated.	Literature review
Contandriopoulos et al., 2010	Organizations and Policy Arenas: A Narrative Systematic Review of the Literature	To examine policy making at the organisational and collective level, building on the prior work by Mitton et al. (2007)	Literature review: A snowballing method was used, utilising references from key papers in the field – as it was felt that a systematic approach would generate too many papers for inclusion. This paper considered the political science literature, which had previously remained autonomous to the KTE literature – uniting the two aspects.

Murphy and Fafard, 2012	Taking Power, Politics, and Policy Problems Seriously	To analyse the conventional methods of knowledge translation to establish how they could be applied to improving urban health.	Literature review and discussion paper
Shaxson et al., 2012	Expanding our understanding of K* (Kt, KE, Ktt, KMb, KB, KM, etc.)	To establish a common terminology within the field, to better facilitate discussion, sharing, learning and collaboration in this area.	Concept paper with embedded case studies
Davison and Antigonish, 2013	Critical Examination of Knowledge to action models and implications for promoting Health Equity	To critically examine the usefulness of knowledge to action models in promoting health equity.	Literature review to identify relevant models, and rating on features important to health equity.

2.1 Key terms and concepts

The first area of comparison between the papers was to develop a better appreciation of the related terminology and how it is used. On reviewing the papers selected, we noted a lack of consensus around terminology and an acknowledged recognition of the limitations this brings about. In part the variety of terms used in the field reflects the fact that KTE is not a single process at the organisational level, but a multitude of parallel and successive processes. Also, it is a concept that has been engaged with and considered from a range of disciplinary, academic, and pragmatic fields. It was evident that the heterogeneity of actors involved in knowledge translation activities Court and Young (2003) and the complexity of translation process (Ottoson, 2009; Contandriopoulos et al., 2010) necessitate an adaptable or context specific approach to the translation of knowledge, which the literature struggles to conceptualise. Synthesis papers tend to recognise that KTE is a process involving a set of activities or ongoing strategies, not a single replicable set of actions. Yet these reviews note that the existing literature regularly attempts to simplify the process to a few measurable or actionable things, or looks for single interventions or strategies that might be seen as effective to try to replicate in different settings.

There is also debate as to which term (*knowledge transfer*, *knowledge translation*, *knowledge brokering*, etc.) encompasses the field as a whole. Ottoson (2009) argued that 'knowledge utilisation' provided an umbrella term capturing the field, while Mitton (2007) notes the influence of the Canadian Health Services Research Foundation in establishing the term 'Knowledge Transfer and Exchange' (which we have chosen to use here). For Shaxson et al. (2012), however, KTE defined only one process within a knowledge use hierarchy, preferring the term K* to reflect the even broader variety. However, Shaxson and colleagues are fairly limited in their definition of KTE as a two way exchange of knowledge and the term could be legitimately extended to encompass the entire range of processes and mechanisms they collated were it not used to label one of the sub-categories they identify.

With such a volume of terms, it is also a challenge that there are often no clear or absolute definition of those various terms or the broader concept of KTE. Shaxson et al.'s (2012) paper was generated from a conference established to address this single issue, with the aspiration of fostering greater collaboration through the establishment of shared terminology. Given the complexity of the KTE process and the variations which exist between policy issues and decision making environments, it is

unlikely that a single term will adequately capture the field to the satisfaction of all involved. We have chosen to use the term KTE to cover the range of theories in this area, as it was seen to usefully capture how there are a range of activities involved within a dynamic processes, rather than a single action or event.

The idea of 'knowledge' is one of the difficult to define concepts within this field. The papers synthesised struggle to establish what they mean by knowledge, in part because they too noted ambiguity in the literature they reviewed. Knowledge is, thus, an elastic concept. Contandriopoulos et al. (2010) argued that the terms 'evaluation' and 'evidence' were used interchangeably with knowledge, implying a technocratic approach to the concept, while Shaxson and colleagues (2012) took a more holistic approach to knowledge, defining it as explicit information or tacit understandings. The Overseas Development Institute (ODI) considers the importance of defining the scope of 'knowledge', changing their preferred terminology from 'Research-Policy' in Court and Young's (2003) paper to 'Knowledge-Policy' in Jones et al. (2009) in recognition of a more holistic approach to KTE.

Jones and colleagues (2009) focuses on various types of knowledge, how they are used, and their relative importance, categorising three types of knowledge:

- Participatory (civil society)
- Research
- Project and program

Within this, they describe participatory knowledge as encompassing the voice of the people through the civil society organisations, distinguishing this from research and academic output. Project and program knowledge is described as a broad field, which appears to encompass experiential knowledge as well as feedback and evaluation processes. Jones et al. conclude that the best approach to knowledge use is to employ multiple forms of knowledge. However, Davison and Antigonish (2013) found that the greater value placed on certain types of information means that some groups, often those from lower socioeconomic backgrounds, are marginalised within the policy making process, inhibiting a holistic approach. They argue that this is due to system design and social norms.

How precisely different types of knowledge, in particular civil society and expert knowledge, are used is a question that remains to be addressed. The failure to address this aspect of KTE is particularly interesting given the emphasis and importance that many papers place on experiential and expert knowledge. Much of the literature in this field appears to consider these forms of knowledge to be important, and often make the case for their importance in addition to more commonly accepted or recognised bodies of research evidence as policy relevant knowledge. The diversity of knowledge forms included in the KTE discussions, however, makes it difficult to distil lessons for those specifically tasked with improving the uptake of research evidence, as many lessons or ideas on KTE might not apply to this form of knowledge.

2.2 The KTE Process and Goals

The second consideration when looking across this range of papers was to look at the variety of ways the KTE process itself and the goals of that process are understood. In the health policy field, there is often a feeling that research evidence must somehow make its way into policy, but beyond this it may not be clear what the goals of getting research into policy actually should be. The concept of ‘success,’ and definitions of this, is in fact central to the many works on KTE. The reviewed papers discuss the challenges encountered in comparing the KTE literature, which result from the lack of a definitive measure of successful knowledge translation, or clear end point. Mitton et al. (2007) suggest that success measures ought to focus on *how* the information was used rather than *whether* it was used, recognising that that definitive markers of use were difficult to identify. Ottoson (2009) questions what success in KTE is, asking whether the aim is to shape policy and existing knowledge, or a direct translation of research output into policy? Ottoson argues that a fidelity to knowledge in its original form cannot be achieved within policy, given the complexities of policymaking processes, and measures of success must therefore reflect this. In effect, there may not be simple or obvious ‘uses’ for pieces of research evidence, so it is erroneous to define ‘use’ with an assumption that a single way to use evidence exists.

Despite not establishing the overall aim of KTE, there is often an unchallenged assumption of the desirability of greater evidence use in decision making. The key messages of the papers synthesised included recommendations for maximising the impact of research output and identifying those factors which could help facilitate KTE (even if the actual aim or process was not well defined). Of particular relevance with those tasked with improving the use of evidence, the papers tended to discuss factors affecting KTE in some way – often described as barriers or facilitators of knowledge or

evidence use. Typically two sets of factors were noted – those which could be controlled (or influenced) by those undertaking research or KTE activities, and those factors which were seen as outside the control of these actors.

2.3 Facilitating effective KTE (controllable factors)

The papers discussed numerous methods for increasing KTE, with conclusions that there was more to be done by all stakeholders in the process, including both policy makers and knowledge producers. One of the most common themes was to call for knowledge outputs to be relevant to policy maker needs: fitting outputs to policy makers' timescales and agendas, and ensuring that the information output was relevant to the problem being solved (Contandriopoulos et al., 2010, Court and Young, 2003). Other controllable factors for the producers of knowledge outputs to consider could be classified under headings of *accessibility and understanding, and relationship building*.

Accessibility was discussed in a number of ways. Court and Young (2003) discussed the importance of capacity building to ensure that there were people able to engage with the research community and their output. All the papers discussed the importance of presenting information in an accessible and understandable way, and Court and Young highlighted the need to develop clear narratives in particular to help people engage with knowledge outputs (Court and Young, 2003, Mitton et al., 2007, Jones et al., 2009, Contandriopoulos et al., 2010). Murphy and Fafard (2012) noted that the vehicle for sharing knowledge impacted its use and, in particular, highlighted that peer reviewed journals were not the best way to reach policy makers.

All the papers also considered the *relationship* between the key stakeholders in the KTE process. Both Mitton and colleagues (2007) and Court and Young (2003) reported that involving the intended knowledge user from an early stage, including in research design processes, increased engagement in the process and the likelihood that outputs would be incorporated into policy. Other papers pointed instead to the importance of knowledge brokers, rather than necessarily the original producers of research findings, to facilitate knowledge use (Contandriopoulos et al., 2010, Shaxson et al., 2012, Jones et al., 2009, Davison and Antigonish, 2013). Shaxson and colleagues (2012) construct a set of functions or roles that individuals can take within a system of KTE (or K* in their terminology), including: *Infomediaries* – who compile information; *knowledge translators* – who disseminate and translate ideas; *knowledge brokers* – who link, network and facilitate; and *Innovation brokers* – who collaborate and manage relationships and processes. The model seeks to

highlight multiple needed roles, but also emphasises the importance of facilitation activities and mutual buy-in as part of knowledge brokering processes.

While the reviewed works noted these range of factors potentially within the control of producers of knowledge, there was no obvious consensus on responsibility to take them forward.

Constandiopolous et al. (2010) and Court and Young (2003) argue that the responsibility for funding KTE initiatives should be shared by both knowledge users, producers and funding bodies alike, in order to ensure that they are invested in the process, for example through hiring experts internally, or through dedicated groups within departments. In development policy, for example, funding institutions and international donors could build in requirements of aid stating that policy must be evidence based, or allocate ring-fenced research funding for KTE activity. However Shaxson et al. (2012) raises the question of whether the process of selecting and compiling information and deciding priorities for research investigation is intrinsically a value laden process which does not provide the objectivity that is typically sought by the academic community

2.4 External influences on KTE (uncontrollable factors)

The review of papers also discussed a range of factors influencing KTE which were considered broader factors outside the control of those actors involved in KT processes, and which could hinder the uptake or transfer of knowledge. These included *the complexity of decision making institutions* and *characteristics of the knowledge* being transferred:

2.4.1 Complexity and history of decision making institutions

Contandriopoulos et al. (2010) highlighted that a key difference between KTE at the individual and organisation level was that at the individual level only one person has to be persuaded to take action, whereas in organisations no one person has the ability to change policy in isolation. Instead, multiple people had to be engaged, through coalition building and persuasion. Effects in organisational KTE are not summative of individual transfer processes, but rather systemic, emerging from networks of exchanges. Estabrooks et al. (2006) develops some of these ideas further, looking at the way in which organisational change occurs. Examples of this include 'bandwagon' change, whereby fear that other organisations are already benefitting (i.e. using knowledge) stimulates change in a given organisation. Estabrooks et al. reports that a decentralised structure, with low formalisation and high structural complexity, was more likely to achieve

innovation (used here to mean organisational change but which can reflect new knowledge adoption). However, the opposite characteristics (centralised and simple structures) were conducive to effective implementation of decisions.

Court and Young (2003) and Jones et al. (2009) identified that in times of crisis, 'policy windows' open, in which policy makers are more open to the uptake of knowledge, especially if it offers them specific solutions to highly salient problems. Jones et al. (2009) examines the policy opportunities in post-conflict states, and note that the knowledge gap creates a 'blank state' in policy making which policy makers are often keen to fill with think tanks and 'problem-solving' research, although they acknowledged that this approach may end up prioritising short-term gains and entrenching vested interests. These findings fit with Estabrooks et al. (2006) 'desperation' model of organisational change, whereby change in those situations is implemented with far less scrutiny and greater speed than at other times.

2.4.2 Knowledge characteristics

Several papers also discuss the nature of the knowledge itself, recognising that the polarisation or contestation of a body of knowledge can be key factors influencing its use. Contandriopoulos et al. (2010) considers issue polarisation to be based upon three key principles:

- The problematisation of an issue (the level of consensus that a situation requires change, or is not the normal or desirable state of affairs)
- Prioritisation and salience of the issue (over and above other issues)
- Agreement of criteria against which solutions should be measured.

As the level of consensus on these three factors diminishes, the degree of contestation increases and the issue is more polarised. Contandriopoulos et al. found that the level of polarisation was important to how knowledge around the issues was used. In technically focused decision making, there was a perceived low level of issue polarisation. In such cases, technically focused debate could be resolved through rational dialogues and arguments, based upon a similar worldview amongst actors. High issue polarisation was found to lead to political debates and a strategic approach towards knowledge use. The authors highlighted that the broader literature did not reach any consensus on how to adapt knowledge use to the appropriate level of issue contestation, but found there was a bias towards approaches focussing on instrumental as opposed to symbolic uses of

knowledge – that is to say literature expected knowledge to be taken up without political debate, rather than recognising how knowledge is used symbolically as part of debates. However, it was argued that instrumental use could only realistically be effective in a low-polarisation situation. It was noted that desirable social outcomes may be achieved through symbolic evidence use, but that the literature tends to present the idea that a high degree of issue polarisation is incompatible with successful knowledge exchange interventions.

The alignment of new knowledge with existing knowledge frames was also seen as important in the studies we reviewed. Court and Young (2003) and Contandriopoulos et al. (2010) note that whether the issue fitted with perceived logic and pre-established ideas affected the weight that the knowledge was likely to be afforded, and this in turn affected whether or not it would be used in policy. Contandriopoulos concludes that the external validity (generalizability), and perceived alignment with existing knowledge, was awarded far greater weight than internal validity and scientific rigour when considering which information was likely to be used in policy making. Indeed, their review found that internal validity concerns played little role in whether information was used. This final finding is particularly relevant to the debates in the field of evidence-informed health policy. Another working paper in the GRIP-Health series (Abeyasinghe and Parkhurst, 2013) has discussed how there are debates around the calls for evidence use which rank evidence according to ‘hierarches’ of evidence. Such hierarches typically place randomised controlled trials at the top, for instance, based on consideration of internal validity – the ability of the method to show intervention effect with certainty. That working paper discusses how these hierarchies may be inappropriately applied in calls for policy influence, because internal validity and methodological rigour do not on their own tell us anything about the generalizability of the findings or the applicability to the given policy concerns. Contradriopoulos et al.’s (2010) finding seems to show that policy makers may think very differently from public health researchers in how they approach these issues.

3 Key KTE themes relevant to getting evidence into policy

The preceding section described, compared and contrasted the findings from the nine identified reviews of KTE issues. In doing so, it raised several key challenges that these works pointed to for those tasked with guiding or improving the uptake or use of evidence in policy making. This section attempts to further synthesise key ideas from the broader field of literature (in addition to the original 9 summary papers), and critically discusses some of the concepts raised by the field.

It is possible to identify three strands to KTE literature that are important to understand when thinking about ways to improve evidence use within policy making. The first strand looks to *theorise the policy process*, describing the role of evidence within that process. The second strand *problematizes the concept of evidence itself* (or of EBP: Evidence-Based Policy), by critically reflecting on the production of evidence and the types of evidence which inform policy making processes (or which *ought to* inform this process). Finally, the third strand to the literature *examines the strategies which may be employed to improve the use of evidence in policy making*. Inevitably there is some degree of overlap between the issues covered in the studies, especially in the first and third groups. Attempts to explain the nature of evidence-based policy making necessarily engage with the factors impeding and facilitating the use of evidence. Equally, attempts at improving evidence use draw on theoretical accounts of that process.

3.1 Theorising the Knowledge for Action Processes

The first strand of literature consists of works which attempt to describe the use of evidence within the policy process. These works do not necessarily make claims about how evidence *should* be used, nor do they discuss how to influence the process itself. Rather, they serve to map out and define the various ways knowledge may impact on policy. In a seminal article of this kind, Carol Weiss (1979) presented a 6 models to describe the various ways in which research can influence policy making: the knowledge driven, problem solving, interactive, political, tactical and enlightenment models. These models note that research may be used in a range of deliberate ways, for example to find a solution to a technical problem, or for strategic or political ends. However, the influence of research, for example under the enlightenment model, may also be indirect, resulting from the diffusion of knowledge through society. A number of other authors have also attempted to describe or model the knowledge utilisation process drawing on Weiss' original work on this subject.

Harry Jones (2009), for example, identifies three 'paradigms' (defined as sets of basic ideas) which engage with the link between knowledge and policy. He terms these the rational, pluralism/opportunism and politics/legitimation paradigms. Within the rational paradigm 'knowledge is seen as providing instrumentally useful and essentially 'neutral' inputs that serve to improve policy, and policy-making works in "problem-solving" mode, according to logic and reason.' The pluralism/opportunism paradigm 'challenges assumptions about the rationality of the policy process, seeing it as involving pragmatic decisions taken based on multiple factors in the face of uncertainty.' Knowledge use is often erratic and opportunistic, resulting from the explicit efforts of

various actors. The politics/legitimation paradigm focuses on the role of power in the policy process, analysing the impact of actors, institutions and discourse. The focus on discourse attempts to capture the interconnection between knowledge and power. Considerable power is seen to be embodied in the concepts that are taken to be crucial to policy debates. Cognitive paradigms may limit the range of policy options open to consideration at a particular point in time, while policy narratives are seen to simplify complex issues and drive policy agendas. For H. Jones, work on the role of knowledge focuses both on production of knowledge and on the processes mediating between the generation and use of knowledge (communication, interaction and exchange, intermediaries/credibility, demand for 'knowledge' amongst policy makers).

Ottoson (2009) sets out a range of knowledge for action theories which she terms: knowledge utilization, diffusion, implementation, transfer and translation. Each of these has different intellectual and disciplinary roots and has given rise to a discrete literature, emphasising different components of the knowledge/ action interface. Specifically focussing on the health policy field, Dobrow et al. (2004) draw parallels between the practises of evidence based medicine (EBM) and evidence based policy (EBP). They highlight the importance of issues relating both to the production of knowledge/evidence and its use by decision makers. This is similar to work of Lin (2003) who describes the process of health policy making as one of balancing 'competing rationalities', whereby decision makers must consider arguments of *technical rationality* (including technical evidence) alongside competing *political rationality* (what is politically expedient) and *cultural rationality* (broader social values and understanding). Dobrow et al. (2004) further question what constitutes evidence and point to the development of hierarchies of evidence to resolve these issues. They then identify a number of decision making models which focus on how evidence is used by policy makers, highlighting the importance of the decision making context and individual agency (the 'personal factors' which decision makers bring with them to their jobs). They provide a model of evidence-based decision making, which proceeds through 3 phases: introduction of evidence, interpretation of evidence and application of evidence.

Finally, the political nature of decision making, and its relevance to evidence use, is also specifically emphasised by Parsons (2002) (drawing on Schön (1983)) in another attempt to describe the role of evidence in the policy process. Parsons equates policy making as a swamp through which decision makers must chart a course, navigating the hindrances to their progress and engaging not just with facts but values and politics. Evidence-Based Policy Making (EBPM) is seen as a means of controlling the mess or 'draining the swamp.' Questions of evidence use are portrayed as technocratic issues of

how evidence may be obtained, utilised and managed. Policy makers are presented with two kinds of evidence: academic/research evidence (episteme) and professional/institutional experience (techne) which they must evaluate and respond to. The issue for policy makers is not the volume of evidence available but how they can learn from it. There is seen to be an inherent bias towards certain types of evidence (i.e. that which can be counted, measured, codified and systematised), which is seen to lead to something which may more accurately be referred to as 'Evidence Controlled, Managed and Legitimised Policy' (ECMLP) rather than evidence *based* policy. ECMLP is seen as a manifestation of a desire to use knowledge which fails to acknowledge Schön's political swamp (which instead requires acknowledgement the fundamentally political nature of evidence). The question for policy makers is often not simply 'what works', but 'what works for whom, when and how'; or 'what evidence works for which problems in which context'?

3.2 Politics of Knowledge Production and Use

The second identified theme in the literature focuses on the question of knowledge production. In particular these works problematise what is considered relevant evidence to inform policy, or critique the simplifications and problematic assumptions in many of the calls for evidence use or uptake. A key example is Worrall (2010), who offers a robust critique of the primacy provided to Randomised Controlled Trials (RCTs) within the field of Evidence-Based Medicine (EBM) from the perspective of the philosophy of science. Worrall highlights the ineffectiveness of randomization for many needs and questions the status afforded to RCT based studies in the hierarchies of evidence, an issue at the heart of both academic debate and policy implementation practises.

Most literature in this stream, however, talks more to questions around the way evidence has been promoted to justify policy decisions, not specifically for medical practice embodied in EBM. In particular, these works re-emphasise the political nature of decision making and the ways that evidence itself cannot address political issues. La Caze and Colyvan (Undated), for example argue that while a commitment to EBP is tantamount to a commitment to 'good' policy, there are problems in how evidence has been promoted to inform policy. RCTs, and the 'hierarchy of evidence' that has developed out of the EBM movement, is seen to provide guidelines for the effective use of evidence in policy, but this type of approach to evidence is more suited to the types of issues and questions which arise in EBM around the effectiveness of particular clinical interventions. Barnes and Parkhurst (In press) make similar points to explain that simply appealing to rigorous evidence (typically in the form of RCTs) to guide policy is a de facto political position,

because it biases policy decisions to align with those issues conducive to RCT design (such as treatment effectiveness), and away from complex social issues harder to evaluate in such methods (such as efforts to address the social determinants of health). The authors further note that the body of existing research is not developed in a vacuum, and that actors will spend resources to generate bodies of evidence in the areas of interest to them. Two recent papers support this point by illustrating the how medical trial research is highly skewed to be conducted in high income countries and focus on health issues affecting high income countries (often with low burdens of disease) (Røttingen et al., 2013; Viergever et al. 2013) . As such, calling for policy to follow established bodies of evidence serves a de-facto political position, as it aligns policy decisions with those issues that actors have decided to fund.

La Case and Colyvan (undated) also argue that the conditions necessary for a successful RCT are frequently absent in the policy domain. In addition, policy debates turn not just on questions of fact, but on normative and political issues. Empirical evidence is therefore not the only relevant data source. In policy making, the authors argue, ‘we want the right tool for the right job, not the best tool for some other job’ (see also Cartwright, 2011). These points have also been discussed in another working paper in this GRIP-Health series by Abeyasinghe and Parkhurst (2013)² which questions what is considered ‘good’ evidence for policy making. It is argued that hierarchies of evidence in the evidence-based medicine movement are designed to evaluate the effectiveness of interventions (particularly clinical interventions with direct casuse-effect relationships), and as such they do not talk to the political importance of those interventions. Similar points that health policy decisions are based on more than just evaluations of effectiveness have also been made by Petticrew and Roberts (Petticrew and Roberts, 2003). Abeyasinghe and Parkhurst (2013) instead argue that evidence should be judged according to its *appropriateness* to the question at hand, including if is the correct methodology to evaluate the different decision criteria of importance to the policy maker, and also according to quality criteria relevant to that methodology (rather than imposing a quality criteria specific to one type of method – e.g. experimental trials).

Cookson (2005) argues that the mounting pressure for transparency, accountability and efficiency in public policy leads to demands for evidence (describing evidence use, in line with the first stream). Cookson further notes, however, that policy making is a fundamentally different type of activity to clinical practice, and there are differences both in the types of evidence it is appropriate to use and its impact. He goes on to argue that the term EBPM should simply imply that the use of evidence in

²http://www.lshtm.ac.uk/groups/griphealth/resources/better_evidence_for_policy:_from_hierarchies_to_appropriateness.pdf

done in a transparent and balanced manner. Evidence can be seen as a weapon in political battlefield in which a crucial role is played by values and constraints in political decision making, as well as evidence. The ultimate goal of EBPM, it is therefore argued, is to *optimise*, not *maximise*, evidence use.

Harrison (1998) offers another critique of the calls for EBM to guide health policy directly, identifying 3 underlying naiveties in terms of i) its implementation, ii) its political appeal, and iii) its scientific basis. Hierarchies of evidence and the conception of validity on which they are based are questioned. In summary, EBM is criticised as a solution to resource allocation issues (including those justified by evidence) because it cannot be devoid of the political question such as who benefits; noting that there are rival criteria to EBM for rationing finite medical resources.

Finally, Greenhalgh and Russell (2006) focus on what they term ‘the Cochrane inspired myth’ that the judgements needed for evidence synthesis are fundamentally technical and can be achieved through the correct application of the appropriate methodological and evaluative toolkit. They argue that the world of policy making is not one of enduring scientific truths and is not simply (or even predominantly) concerned with ‘what works’. Policy making is rather ‘an authoritative exposition of values’ which aim to pursue the right course of action in a given context, at a particular time, for a certain group of people and with a particular allocation of resources. It is about making and implementing collective ethical judgements. Indeed, Abeysinghe and Parkhurst (2013) note that policy decisions typically involve choices between a range of social concerns relevant to the issue. Each of these concerns may have its own body of evidence to consider. While it is still important to consider the quality and rigour of evidence, no single piece of evidence or body of evidence can say what the policy *should be* when there are multiple social concerns at stake.

Greenhalgh and Russell (2006) further argue that evidence is constructed through human interaction in policy making processes (*qua* social drama). The term ‘Evidence-based policy making’ is criticised for suggesting that there are technical solutions to what are, essentially, political problems. This technocratic understanding of policy making practise is seen as associated with the new public management. Rather than a narrow focus on what works, the alternative is to consider what is appropriate in the circumstances, and given the overall policy objectives. Stone’s (1997) comment about policy debates, that values masquerade as debates about facts, is apposite. With this understanding, there is a need to shift from a scientific-rationalist frame to a rhetorical-discursive frame (in which evidence is necessarily politically charged and value laden). The crucial role of ideas

and ideology in EBPM is echoed by Prinja (2010) who highlights also the role of (cognitive) frames (as developed by Lakoff, 2004) in uptake of evidence. In recognition of the discursive nature of argumentation around evidence in policy debates, there is arguably a need for greater reflexivity and self-awareness by policy makers, as much as there is a need for greater mastery of systematic review methodologies. This calls for something akin to Schoen's (1990) frame reflective awareness. Many of these discussions, however, are set within a deeper political science literature that is rarely cited or engaged with within health policy making or within broader sectors calling for greater research utilisation.

3.3 Improving the Uptake of Evidence

The third and final strand of literature identified is concerned with the deployment and uptake of evidence, and the interaction between researchers and policymakers, a theme covered by many of the nine review articles discussed in the first part of this working paper. Many of the broader works discussing this theme would have been included in the above review articles, but in this section the discussion shifts to more critically reflect on the use or limitations of these works from the perspective of those tasked with improving the use of research in the policy process. Of note, most works discussing evidence uptake fail to engage with the political nature of decision making, or to critically assess the relevance of a given body of evidence. Instead, the importance of a piece of research is often taken for granted, and as such, these works are typically concerned with strategies improve or increase the use of evidence in policy or practice (which, as noted in the first part of this working paper, are often seen to be the core activities of KTE efforts).

Straus et al. (2011), for example highlight the importance of knowledge translation in the health field for clinical researchers aiming to influence policy and practise. It is insufficient, they argue, for clinical researchers to expect the findings they produce to speak for themselves. Rather, medical research knowledge must be translated into forms conducive to policy maker engagement, so the outcomes of the research can be utilised. To facilitate this they set forward a model of the knowledge translation process set out in Fig 1 below, which highlights the potential barriers and challenges to successful knowledge translation, and is intended to act as a guide to medical researcher practice to improve uptake of their findings.

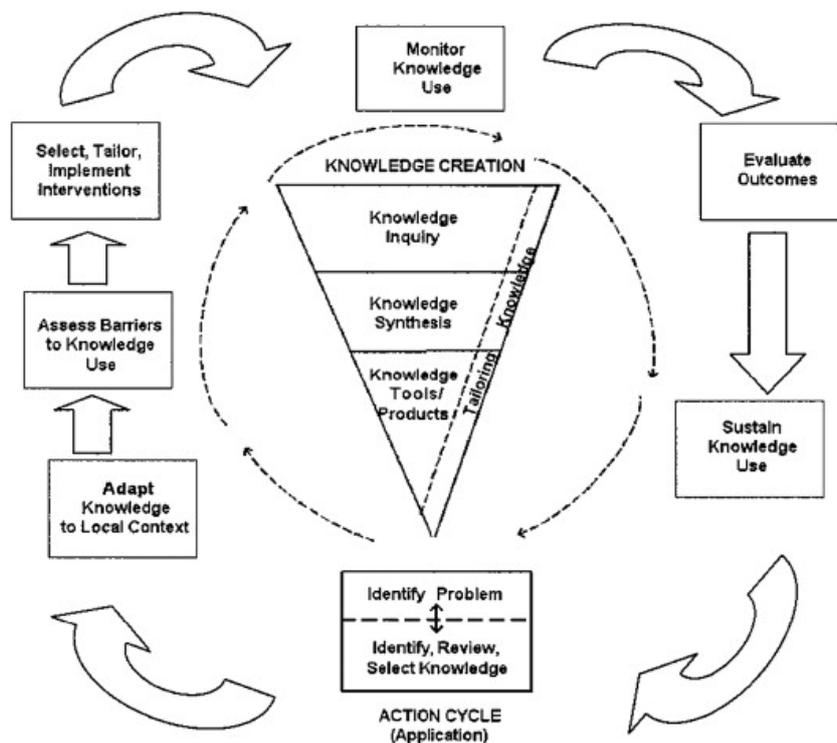


Figure 1. Straus (2011) Knowledge to Action Framework

Innvaer et al. (2002) review a range of studies on the use of evidence by health policy makers. They highlight the widely held view of two separate ‘communities’ (or ‘two worlds’) of researchers and policy makers, noting the frustrations of both researchers and policy practitioners with their counterparts in the other camp. Their review also discusses a range of different forms of evidence uses: e.g. instrumental, symbolic and conceptual uses of evidence. In looking to identify what might better predict or influence evidence use, they conclude that the most commonly identified facilitator of evidence use is personal contact between researchers and policy makers.

Lavis et al. (2003a) argue that to facilitate knowledge use in policy making, researchers should transfer actionable messages (i.e. policy ideas derived from research, not raw data). They highlight again that evidence is just one influence on policy makers among many. Other factors impacting on decision making include orientation of governing party/supporters, stakeholders, public opinion, who wins/loses from policy, decision making rules, past policy (institutions/path dependency). As such, those responsible for KTE activities must be credible messengers. Interaction between experts and policy makers is crucial (websites/newsletters may help). Performance measures for KTE with public policy makers are hard to gauge with certainty. This is because KTE may be instrumental, conceptual or symbolic and can occur at different stages of research or policy process. Building on

this, Lavis et al (2008) argue that successful KTE on the part of researchers requires collaboration and links with policy makers, independence (i.e. no conflicts of interest), sound/transparent methods, a clear focus on important issues, and a clear consideration of implementation issues (see also: Lavis, 2009, Lavis et al., 2003b, Lavis et al., 2002, Lavis et al., 2009). They specifically propose that a researcher's KTE strategy should be tailored to answers to 5 key questions: What should be transferred to decision makers? To whom should it be transferred? By whom should it be delivered? How should it be transferred? And with what effect should it have (Lavis et al. 2002, p222)? The study then provides results of a survey of Canadian health and economic/social research organisations to examine which existing strategies are in place in that context.

Significant work on KTE has also emerged from the field of International Development. Court and Young (2003), looking more broadly at the development sector, identify 4 key factors determining the likelihood of evidence being used in policy making: political context (freedom, institutions, vested interests etc); the credibility of evidence and the effectiveness with which it is communicated; the links between the policy and research communities (e.g. levels of trust, shared networks); and the external (or international) context. This is reiterated by Court and Maxwell (2005) who present the same factors as crucial for effective EBPM in development. In addition, networks are seen as an important means of forging links between scientific and policy making communities. This draws on Maxwell (2005) who identifies the role of the researcher as a storyteller, a networker, an engineer, or a fixer in order to influence policy.

Several studies have also reviewed specific strategies or projects looking to transfer knowledge or increase research uptake. Boaz et al (2002), for instance, review the use and appropriateness of systematic reviews to guide or inform policy. Ward et al. (2009) also reviewed a wide body of literature on KTE strategies in order to identify common components of these strategies to try to build a model of effective KTE processes. They found that there are a number of methods of brokering reported in the literature, including: information management, capacity building, and linkage and exchange. The authors found that typically several methodologies are used concurrently without any clear plan or fixed structure in place, making evaluation difficult. While Ward et al. felt that brokering might have a positive impact on knowledge translation efforts, they were unable to find conclusive evidence of how exactly it works - acknowledging that brokering is not an independent process.

Dobbins et al. (2009) are one of the only groups to have attempted to conduct a randomised trial to evaluate three different KTE strategies used in an effort to increase evidence use in Canadian health departments: access to systematic review material, targeted messaging for public health problems, and knowledge brokering. The authors found that there was no significant difference between the three KTE activities in terms of their primary outcome area of decision making, but in a secondary outcome, 'public health policies and programmes' (seen to encompass a larger array of decisions and actions, not just a policy decision), they found that specifically tailoring and targeting information to recipients increased its use. Dobbins et al. attribute the lack of measurable impact of the interventions on the ambiguity of the outcome measures, in particular a focus on the final policy rather than the process, identifying a need to understand organisational contexts to guide KTE. The study is also limited in using self-reported levels of evidence use, which may not be accurate. Indeed, the reflections on the findings in this trial point to challenges that any experimental trial of KTE might face in terms of external validity of its findings. The mechanisms of effect may differ across settings/contexts, and as the nature of policy issues may vary considerably thereby influencing how a specific strategy functions. In addition, questions arise about the possibility of capturing impact from a process as complex as knowledge uptake with a trial design which tends to require a focus on only limited number of clearly defined and easily measurable variables. The insights above noting the broad process of evidence use, and the need to approach research uptake as fitting within a complex process, precludes many attempts to identify single efforts evaluable in an experimental trial with any external validity.

The paper by Mitton et al. (2007) (which was described in the first part of this paper) reviewed 5 different frameworks developed to guide the process of KTE: the work of Dobbins et al. (2002); Hanney et al. (2003); Ebner et al. (2006); Lavis et al. (2003a) and Jacobson et al. (2003). In so doing, Mitton et al. aim to draw some general conclusions about the most effective KTE practises. They focus initially on the barriers and facilitators for KTE, highlighting the importance of links and face to face encounters between researchers and policy makers. The quality of relationships and level of trust developed are noted as important as well. The authors highlight that different types of information and communication styles are needed for different audiences. For policy makers, research in summary format, using simple language, is seen to be preferable and more likely to be taken up. They advise researchers to include decision makers/opinion leaders in the design and conduct of the research. Research focusing on, or incorporating short term objectives are also seen to help meet policymakers' needs for instant impact. The authors argue that seminar series with stakeholders may facilitate exchanges, educational outreach visits and interactive meetings are also

effective, but printed material and didactic meetings less so. As recognised by many authors, the importance of knowledge brokers and connectors to help bridge the gap between researchers and policy makers is highlighted. As such, in their review, the most important determinants of research utilisation were the mechanisms linking researchers and research users, although they do note that it is important to examine *how* evidence used as well as *if* it is used.

3.4 The importance of knowledge brokering

As noted, the importance of knowledge brokering was considered in the comparison of the nine review papers discussed above, and many papers across the three streams of work described above also make relevant points about this topic from specific case studies. As noted, Shaxson et al. (2012) placed knowledge brokering at the top of their KTE hierarchy. Within the UK, analyses have particularly highlighted the importance of civil servants as well as the role of independent ‘evidence institutions’ (such as NICE- the National Institute for Health and Care Excellence - for health policy) in playing brokering roles, although the analysis tends to see policy making as a combination of politics and evidence-informed analysis (Hallsworth et al., 2011, Rutter, 2012). The influence of international/global institutions is also widely discussed in the context of development policy, and included international donors/funders, multilateral agencies such as the World Health Organization and the World Bank, international governments, and non-governmental organisations. Court and Young (2003) emphasised the role that funders could play in increasing evidence based policy making, by establishing rules to make funding allocations for a policy decision dependent on the use of evidence in that policy development. Research funders could also ear-mark resources specifically for engaging with KTE activities.

Think tanks can often play an important knowledge brokering role (Jones et al, 2009). However, there can be a tension between those who see think tanks as ‘successful’ or ‘effective’ at getting evidence into policy, and those who see this form of knowledge transfer as a strategic or political use of evidence for political goal, rather than an impartial or unbiased review of relevant information. Indeed, think tanks can take a wide range of forms, from explicitly political, essentially working as lobbyists, to explicitly non-political, established or funded to provide independent advice (c.f. Shaxson et al 2012).

4 Discussion: assumptions and limitations

4.1 Complex processes, oversimplified language?

The literature on Knowledge Transfer and Exchange is nothing if not diverse. A number of the papers reviewed for this working paper note the heterogeneity of the actors in the policy making community, which complicates the idea of KTE as a single activity that can easily be described or evaluated (Contandriopoulos et al., 2010, Ottoson, 2009). Estabrooks et al. (2006) examines complexity of organisational policy making, and Contandriopoulos et al. (2010) notes organisational policy making involves persuasion and compromise. Court and Young (2003) consider a wide variety of differing case studies of KTE, and to some extent Shaxson et al. (2012) also draws upon case studies to illustrate concepts. Case studies tend to be complex, locally and issue specific, and involve a range of actors including national, international and non-governmental organisations or actors with competing priorities. From these, it is hard to identify a single ‘thing’ or set of activities that constitute KTE.

It is clear that the KTE process is remarkably complex, as it can involve idea transfer, translation, provision, consideration, or utilisation by any or all of the actors involved in decision making. As a result, KTE is largely considered within the reviewed papers at a theoretical level. While challenges and facilitating factors are often discussed, the way in which KTE operates in reality, possibly with multiple parallel processes, is not evaluated in depth. This provides a fundamental challenge to those tasked with improving the uptake or utilisation of research evidence in policy and planning. To systematically undertake such activities requires thinking about what KTE is, what it should be, what different actors should aim to do as part of KTE, and how to evaluate KTE efforts. The language of KTE itself, as noted earlier, tends to gloss over many complexities by using the simple language of ‘use’ or ‘uptake’ of evidence. As soon as one questions what the uptake of evidence actually looks like, or how use can be defined or measured, the challenges immediately arise.

4.2 Identifying impact and success

Perhaps due to the definitional issues identified throughout many of the papers synthesised, the intended objective of KTE often remained unclear. Ottoson (2009) perhaps provides the most comprehensive discussion of the subject, as the specific aim of her article is to consider the evaluation of KTE efforts. As noted, she defines five approaches (or ‘theories’) to knowledge

management: knowledge utilization, diffusion, implementation, transfer and translation. She notes that evaluation of each of these might involve different measures or issues. For example, questions of transfer or diffusion raise the issue of movement of knowledge between groups or agencies, while questions of utilisation raise issues of use, each of which can have its own questions for evaluation purposes. Lavis et al. (2003) also address this issue by calling on researchers to consider which impacts or results they are hoping to achieve in order to guide their KTE efforts. Ottoson (2009) similarly asks if the objective is to directly take a research finding and translate it to policy; or, rather, for the policy maker to read the research output (regardless of whether they 'take up' the research findings). Ottoson considers that the aim can either be considered as top down change, where the knowledge dictates the policy, or bottom up change, where the knowledge shapes the policy within the wider process.

Often, however, it is cases where policy makers did take up or implement a research finding that are seen as 'successful' examples of KTE. For example, in Court and Young's (2003) review of 50 cases of evidence use, all the case reports included showed some impact on policy or practice. They explain that sometimes this impact was immediate, while at other times it required 'strenuous advocacy efforts' (p. vii). Narrowing the focus of KTE to such cases at least implicitly appears to equate the success of KTE with the ability to enact change in policy and practice, rather than cases which involve the consideration of a piece of evidence, but where policy-makers decide against its use.

While this objective appears popular among researchers and research funding agencies alike (who increasingly are looking for evidenced of 'research impact'), this seems to raise a fundamental contradiction when considering the underlying objectives and goals of evidence informed policy-making. Many authors argue that KTE is an exchange of knowledge and a two way process, often to stimulate shared learning (Shaxson et al., 2012). This mutually beneficial process is not reflected in papers which equate success with 'uptake', as these can exclude by definition cases where knowledge users had good reason not to form or implement a policy. As was argued in section 3.2, policy decisions typically consider a range of different concerns, each of which may have its own body of relevant evidence on which it draws. To judge the 'success' of KTE in terms of shaping policy, appears to blur the lines between knowledge translation and policy advocacy. Ottoson (2009) questions whether the reading, deliberation and rejection of research may, in some circumstances, be considered a successful form of KTE. As Cookson's (2005) points out, we should be concerned with optimisation, not maximisation, of evidence use. Similarly, Abeyasinghe and Parkhurst's (2013)

argue that we can work towards more *appropriate* uses of evidence for policy decisions, rather than simply call for the increased uptake of particular forms of evidence.

4.3 Issue prioritisation and politicisation

Ultimately, the use of evidence in policy making requires consideration of the policy process itself, and how issues become subjects of policy action. The importance of agenda setting was noted by Murphy and Fafard (2012), stating that unless something is considered an issue of importance there is little traction to generate momentum for change. This is also reflected in Contandriopoulos and colleagues' (2010) finding that level of agreement on the definition of the problem at hand (the specific problematisation of an issue) was important in determining the level of polarisation and debate around the appropriate intervention to address that issue. They state that where there is low agreement around problem definition the issue is more politicised, with implications for knowledge use. In issues of low politicisation (defined as the level of disagreement or spread of opinion about the issue), it was found that there was more likely to be neutral debate with rational argument in which evidence was likely to be utilised. However, whether this evidence was acted upon depended on the degree of problematisation (i.e. the level to which people agree it's an issue worth addressing). Conversely, high politicisation was seen to drive 'political' uses of evidence (selecting pieces that reinforce a position), coalition building and tactical argument.

Contandriopoulos and colleagues' (2010) literature review found that much of the KTE literature presented high polarisation of an issue as precluding effective KTE. This is in contrast to the political science literature which tends to conceptualise political decisions as choices between competing sets of outcomes, requiring consideration of multiple social values (Stone, 2002, Lasswell, 1990(1936)). While there may be different bodies of evidence to provide decision makers with information about each decision criterion, bodies of evidence do not speak to questions of what is 'right' for a given society to do, nor do they typically say anything about how important a given intervention (or its consequences) is to that society. The idea that politicisation is a 'problem', and that KTE is effective or successful when politicisation is removed, appears anathema to the very concept of politics from this perspective. Both perspectives allow a recognition that incorrect or misleading uses of evidence should be avoided (c.f. Abesinghye and Parkhurst 2013), but a politically informed perspective recognises that even when evidence is reviewed systematically and rigorously, no single body of evidence about a given intervention impact can speak for itself in terms of the

social desirability of the outcomes it indicates. Whether the evidence 'should' be used remains a question of social values and political argumentation.

Despite this, the majority of the papers reviewed focused on methods of maximising the impact of knowledge (primarily in the form of research output) on policymaking (Jones et al., 2009, Mitton et al., 2007, Contandriopoulos et al., 2010, Court and Young, 2003). The often unstated assumption is that pieces of evidence or knowledge are inherently 'good' things that should be taken up and used. Failure to do so often is often framed in terms of the 'barriers' to evidence use which must be overcome. Contandriopoulos and colleagues (2010) highlight lessons that authors have learnt from lobbyists, and notes that the political science literature suggests that engaging in a more political and strategic use of knowledge may generate 'desirable' outcomes in some peoples' minds, '[a]s long as the information is scientifically sound' (p. 466). Jones (2009) does recognise some potential drawbacks to such strategic approaches, noting, for example, that the greater receptiveness to ideas during 'policy-windows' may equate to a lower level of scrutiny, which is not necessarily desirable.

5 Discussion

This paper attempts to engage with the broad body of work on knowledge transfer and exchange to help inform those tasked with improving the uptake of research evidence in policy and practice. It approached this in two ways. First, it undertook a synthesis of nine papers which themselves undertook summaries or reviews of literature in the field of knowledge transfer and exchange. This was done to compare and contrast their main features and approaches, to get a basic map of the state of the field. This was then followed by a deeper exploration of a set of key themes in the literature of relevance to those tasked with improving evidence use.

Indeed, a great deal of the literature is targeted at research producers, and as such limits itself to an instructive approach aimed at improving 'successful' KTE. Yet as the analysis has shown, there are a number of difficulties with this approach. First, the concept of KTE appears to be oversimplifying a vastly complex process. What it means to transfer, translate, diffuse, use, or take up, a piece of evidence (or a body of knowledge) does not have a single answer. It can mean any number of things. Some literature does try to unpack these differences, particularly the review articles included in our initial discussion, but much of the broader literature relies on discussions that do not permit sufficient consideration of all these differences. Much of the literature, including several of the review papers, rely on implicit assumptions which are prevalent throughout the broader KTE

literature. These include: 1) the existence of a 'hierarchy of evidence' (with randomised trials given particular prominence); 2) that politicisation is an undesirable feature of the process which must be overcome in order to facilitate evidence based policy making; and 3) that knowledge/evidence *should* influence policy (the degree of influence a the key metric of successful KTE).

All three of these are problematic. First, in regards to hierarchies of evidence and RCTs, RCTs are often given priority because of their rigour in ensuring internal validity (to guarantee that the outcome seen was due to the intervention). Yet the method of randomised experimentation tells us nothing about whether the same results would be seen elsewhere, or would work in a different policy environment. Internal and external validity are confused in these assumptions, as for most social and politically relevant questions, there is a need for additional information to understand whether an intervention tested in an RCT (which tells us if something worked where it was done) will produce similar results for a policy maker (whether it will work elsewhere) (Cartwright and Hardie, 2012). RCTs are also only useful to answer a subset of questions that a policy maker may be considering on a given issue. As such, promoting RCTs as the best form of evidence to guide policy in effect biases policies towards those issues conducive to RCTs (often immediate short term treatments, rather than long term structural or social changes)(Barnes and Parkhurst, (in press), Abeyasinghe and Parkhurst, 2013).

Second, the conceptualisation of politicisation as a problem rests on a reductionist and inaccurate view of the purposes and goals of policy making. Rarely is a policy simply based on a technical assessment of a single question. In most cases policies are debated because they impinge on multiple contested social values and issues. One might consider different evidence bases for each of those issues, but to criticise the existence of multiple social values and issues seems to ignore the realities of decision making, or bias KTE strategies to focus only on those policies for which there is already nearly universal agreement, for which all that is remaining is a simple review of technical evidence. There may be agreement that evidence should not be used in biased ways for political ends, perhaps, but this does not mean that evidence can independently talk to questions of what a 'good society' looks like.

This is then closely linked to the third problematic assumption in much KTE literature, that evidence/knowledge *should* be taken up into policy, implying that the success of KTE is based on whether the evidence was taken up in policy or practice. This concept has been criticised for placing researcher's findings above local values, taking a de-facto position that the outcomes of research are

more important to act upon than other social concerns (e.g. cost-savings, fairness, human rights, or anything else that might affect whether a policy maker wants to use a piece of evidence). As such, there has been increasing use of the language of 'evidence informed' policy used to replace that of 'evidence based' policy. In part, this language shift serves to avoid this deterministic view that policy should be based on single pieces of evidence, recognising that decision makers have multiple social values to consider. However, a shift to evidence informed policy also allows more nuanced consideration of what improved KTE would look like. Use of the language of evidence informed policy does not require the final decision to go in one direction or another (or that a piece of evidence is used or not), rather that evidence is used correctly or appropriately as decisions are being made. This allows a way forward from many of the problems existing in the KTE literature. It permits a concern for quality of evidence and the importance of systematic and unbiased evidence review to be integrated within the policy process. Better informed policy draws on rigorous, systematic, and un-biased evidence, rather than allowing strategic, cherry-picked, and biased evidence to be used. Similarly, however, it allows policy decisions to remain ultimately in the hands of representatives of local populations rather than forcing decisions to follow a research result. Democratically representative decision makers can be informed by multiple bodies of evidence, yet they still can apply social values to judge between the different outcomes that acting on various evidence bases will achieve.

This review has identified a number of gaps and challenges in the KTE field, both for researchers as well as those tasked with knowledge transfer, research communication, or evidence uptake. Many of these challenges derive from the political nature of policy making. However, greater appreciation of the political nature of decision making does not mean that the concerns with quality of evidence and unbiased reviews of evidence become irrelevant. Indeed, a focus on the *appropriate use* of evidence (instead of simply *use*) could potentially allow the KTE field to move forward, considering ways to ensure evidence is considered, but in ways that ensure it is considered appropriately to the policy question at hand, and in ways that allow the final policy action to be decided by those actors representative of their populations.

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