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Chapter 3 Health and advocacy: what are the barriers to the use of evidence in policy?

> The tools and programs of evidence-based medicine - critical appraisal, Cochrane-style systematic reviews, practice guidelines, audit and feedback, computer reminders, and so on - are of little relevance to civil servants trying to incorporate evidence in policy advice (Lomas and Brown, 2009: 906).

Chapter 2 identifies a *general* problem with naïve accounts of EBPM based on minimal knowledge of the policy process. In health policy, there is often a *specific* problem: a greater expectation that the evidence-policy link is direct and linear; and, far greater potential to be disappointed with the real world. Although I trace EBPM debates back to older post-war discussions of rationality, medicine has its own, more recent, history and an alternative source of lessons and expectations (Oliver et al, 2014b). The evidence based medicine (EBM) agenda is to: (a) gather the best evidence on health interventions, based on a hierarchy of methods which favours, for example, the systematic reviews of randomised control trials; and, (b) make sure that this evidence has a direct impact on healthcare practice, to exhort practitioners to replace bad interventions with good, as quickly as possible (2014b: 1; Dobrow et al, 2006: 1815-6; Kok et al, 2012b: 715; Mitton et al, 2007: 757).

One should not exaggerate the top-down nature of EBM, since key proponents describe it as 'integrating individual clinical expertise and the best external evidence' to encourage the 'conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients' rather than an attempt to remove clinical discretion: 'it requires a bottom up approach that integrates the best external evidence with individual clinical expertise and patients' choice' (Sackett et al, 1996: 71; see also Greenhalgh et al, 2014). In many ways, it simply provides a condensed form of information for doctors unable to keep up with the literature. Further, different practitioners will have different expectations about the exact nature of evidence gathering, and speed of likely behavioural change.

However, they also share the same EBM ideal – that we can produce the best evidence on which practitioners should draw. Further, healthcare practitioners have increasingly developed, or are subject to, centralised decision-making and performance management mechanisms to further that agenda (Lomas and Brown, 2009: 905; albeit, the centralisation may come from government bodies – Chalkidou et al, 2009).

In turn, these expectations provide a lens through which to view dissatisfaction with EBPM: practitioners may compare their *EBM ideal* with *EBPM in the real world.* The EBM agenda underpins three unrealistic expectations for the policy process: that policymakers adhere to the same hierarchy of scientific evidence; that 'the evidence' has a direct effect on policy and practice; and, that the scientific profession, which identifies problems, is in the best place to identify the most appropriate solutions, based on scientific and professionally driven criteria.

A focus on EBM suggests that, even if there is a long way to go, we know where we want to travel. For example, people may point to the widely-known story – that 'it takes an average of 17 years for research evidence to reach clinical practice' (Morris et al, 2011: 510) – and respond by seeking to minimise the time-lag by generating the best evidence and providing ways for like-minded practitioners to act on it more quickly. As in the 'pure problem-solving model', the assumption may be that we can generate 'a clear and shared definition of the problem, timely and appropriate research answers, political actors willing to listen, and the absence of strong opposing forces' (Stoker, 2010: 53; Elliott and Popay, 2000: 467).

Instead, a focus on EBPM, viewed through the lens of policy theory, shows us what we can reasonably expect to happen to evidence when every part of the process – including defining the problem, deciding how to generate the best evidence, and identifying solutions – is contested. Policymakers draw on many forms of evidence; evidence informs debates, rather than acting as a way to resolve them, and the evaluation of policy solutions is a political exercise (McConnell, 2010) even if governments aim to make them 'technocratic' (Marston and Watts, 2003: 148). People seeking solutions to the time-lag between scientific evidence and policy face a different context, in which they compete for attention rather than dominate the supply of information.

Perhaps the most illuminative example is the role of the randomised control trial, often described as the 'gold standard' in EBM but not in Canadian policymaking circles, where: 'fairly high levels of policy analysts report never having heard of RCTs' (Bédard and Ouimet, 2012: 625; see also Stoker, 2010; Green and Gerber, 2003; Ferlie et al, 2012: 1300; Marston and Watts, 2003: 146-7). This knowledge may also vary markedly, with most government departments showing relatively low awareness compared to health or other departments linked to medicine (2012: 634). Similarly, in Norway, the process to generate evidence-based government reports differs markedly from the processes of systematic review that we associate with EBM (Innvær, 2009: 8).

This context underpins the study of EBPM by scholars without a professional background in policy studies and/ or scholars examining the perceptions of practitioners in fields such as healthcare and public health. There is now a large literature, on the barriers to the use of research evidence in policy and practice, from a practitioner perspective. Only a small proportion makes reference to theories of the policy process. For example, Embrett and Randall's (2014) systematic review of the literature on the social determinants of health/health equity, and the barriers to encouraging governments to adopt 'healthy public policies', identified 6200 peer review articles published since 2002, of which *seven* 'explicitly used a commonly recognized policy analysis theory to inform their analysis' (2014: 147). Further, all of those seven articles 'misused' policy studies by only focusing one one aspect of a theory. This problem is reinforced by a more general lack of awareness of policy scholarship, in which practitioners draw on older concepts such as the policy cycle and stages approach (Oliver et al, 2014b: 4), largely rejected by policy scholars (chapter 2; Cairney, 2014a), and seen by civil servants as 'a description of an "ideal type," useful largely as a baseline from which to document deviations' (Lomas and Brown, 2009: 914; see also Cameron et al, 2011: 443; Hanney et al, 2003: 23).

Many of these studies are based on the perceptions of scientists trying to influence the policy process (Oliver et al, 2014a: 9; Lomas and Brown, 2009: 914). They are largely descriptive or inductive, without giving the sense that respondents are in a knowledgeable position, and without a serious attempt to construct a theory driven research question. This seems incongruent with the image of medical-scientific practice, as a process of theory driven hypothesis testing, and with social scientific policy scholarship, which has generated a wide range of theory-driven studies. Consequently, there is a missed opportunity in two ways: by the researchers producing narrow studies on EBPM; and, by the policy scholars who could have made a contribution to research design and benefited from the access to respondents.

From this literature, it is not clear what to do about the barriers that scientists identify, or if the alleged solution would improve the use of evidence. If we do not draw on theories which tell us how the policy process works, we do not know how the partial 'removal' of one or more barriers will improve the links between evidence, policymaking and policy. Or, the barrier may be too amorphous to remove in any meaningful way – as, for example, an evidence-policy gap based on the division between scientist and policymaker cultures (Oliver et al, 2014b: 6) which, in any case, is at odds with most policy theories which identify regular interaction through networks (Smith and Joyce, 2012: 58). Nor is it clear just how realistic the respondents are; if they compare the real world EBPM with an EBM ideal that has no direct comparator in the policy process. Perhaps most importantly, scientists may simply not know how, and to what extent, policymakers use scientific evidence (2014b: 6).

On the other hand, like the policy cycle discussed in chapter 2, these studies are relatively clear and simple. They are relatively easy to turn into a hypothesis to be tested; or to link to an initiative or intervention. The identification of the problem often implies a simple solution. In contrast, policy studies often identify messy policy processes that often seem to be unpredictable or to defy logic. It is not always clear how to make sense of the policy process in a practical sense; to conceptualise EBPM barriers in a way that practitioners can understand and act upon. Consequently, there is great potential for a combination of approaches, to supplement empirical studies with theory, and to develop the practical potential of the policy sciences, most of which is not designed specifically to guide practitioners.

To this end, the chapter initially provides a critical analysis of the 'barriers' literature, building on the work of Oliver et al (2014a; 2014b) to show, in greater depth, where the gaps in our understanding are and how policy theories can help fill them. It presents a comparison with policy studies to help develop a more theoretically informed set of explanations for the gaps between evidence and policymaking.

The second part of the chapter shows how these links have been, or can be, developed, in quite different ways. First, a focus on tobacco control shows us the difference between the evidence on the nature of the problem (for example, the number of smokers and the link between smoking and ill health) and the effectiveness of the solution (for example, the effect of higher taxes and health warnings on consumption). I discuss a relatively mature advocacy project, in which attention has shifted largely from establishing the size of the problem

towards gathering evidence on the effectiveness and implementation of solutions. Tobacco has become a model for policy change in several other areas, partly because it shows what it takes to turn evidence into major policy change.

Second, a focus on implementation science and improvement science raises important issues regarding where scientists should seek influence: from central policymakers ostensibly in charge of policy, to the organisations influencing policy as it is implemented. In improvement science, there is an important emphasis on 'bottom up' implementation, to generate local 'ownership' of policy solutions tailored to specific populations. This approach challenges the idea that evidence generated at the 'top' should filter down to practice at the bottom.

The common theme to both case studies is that they address the links between evidence, policymaking, solutions and policy outcomes in a pragmatic way. In particular, the tobacco experience demonstrates that major evidence based policy change may require a sustained period of advocacy that goes far beyond the solutions provided in barriers research.

The barriers to EBPM: insights from health studies and policy theory

Oliver et al's (2014a) systematic review draws insights from 145 studies, on the 'barriers to and facilitators of the use of evidence by policymakers', published from 2000-12 (including 13 other systematic reviews going back further). 126 studies examine health related policymaking and 35 examine other policy areas (the overlap is caused by a small number of comparative studies). About three-quarters are studies of the UK, Canada, US, and Australia. From this analysis, they identify the five most frequently identified barriers and facilitators. I supplement this body of work by zooming in on key articles (identified by Kathryn Oliver) and using a snowballing technique to trace the key texts on which these studies are often based.

Systematic reviews suggest that there is often a stated or implied solution to specific barriers. These solutions are limited in value, since the research is often based on practitioner perspectives (often through surveys), and interviewees may not be in a good position to know what the most important barriers are. Imagine, for example, that many focus their efforts on the point of central government decision rather than the longer term process: overcoming one barrier to that small part of the process may not be the solution (Oliver et al, 2014a: 10). In broader terms, there is often a general reference to differences in 'culture' between scientific and policymaker communities (at least in the UK), without these studies or respondents being in the position to provide a good understanding of policymaking culture (Oliver et al, 2014b: 2-4). Only a small proportion refer to barriers in relation to the properties of the policy process, such as Ettelt and Mays' (2011: 57) comparative study of health services research which points to the fragmented/ decentralised nature of government, the competition between political parties and interest groups to use evidence to their ends, and the lack of incentives for scientists and policymakers to engage with each other, alongside more traditional explanations related to a lack of funding and support for research.

In table 3.1, I list these barriers and solutions in the left hand column. Although there are five categories, three are really part of one problem: the supply of evidence. The further three

columns take insights from policy theory to: help explain the problem; note the further problems that empirical practitioner studies may not identify routinely, and consider what solutions can be identified from policy studies (I expand on this discussion in chapter 5).

In most cases, the solutions derived from policy theory are general and often relatively abstract; it would be unrealistic to expect one detailed blueprint to apply to 'the policy process' when processes and events vary markedly from issue to issue, place to place, and over time. The cost of general and more realistic analysis is a drop in simplicity, to reflect the complex and often unpredictable nature of policymaking. Therefore, the hope for an engagement blueprint is as unrealistic as the hope for comprehensive EBPM, and cannot be found in any of the literature: Lomas and Brown (2009: 917) [i] and Oliver et al (2014b: 2) identify similar problems in the barriers literature; Lavis et al (2003) provide a very broad 'toolkit' to measure research impact; and Mitton et al (2007: 756) present a similar conclusion on knowledge transfer & exchange – there is a large literature recommending it, but 'actually very little evidence that can adequately inform what KTE strategies work in what contexts', and with little appreciation of the vagaries of the policy process.

Further, some terms that are becoming increasingly common to practitioner and policy studies are not clear. For example the identification of a 'knowledge broker' in practitioner studies[ii] is as problematic as the widely used but little understood term 'policy entrepreneur' in policy studies (Cairney, 2012a: 271-2). So, an ostensibly simple recommendation (for example, use a knowledge broker, or 'co-produce' knowledge with policymakers, practitioners and service users) may, on its own, have little practical value.

Table 3.1: Barriers to the use of evidence, and their solutions

Top barriers (number reported) and solution	Possible explanation(s)	Problems to note	Practical advice
3 problems with demand and supply: *Availability and access to research* (63) - improve dissemination strategies *Clarity/ relevance/ reliability of research findings* (54) - improve dissemination strategies *Costs* (25) – provide more resources for dissemination	Scientists produce evidence, but not in a form that is known about, read, or understood by (or persuasive to) policymakers. The quality of the supply of evidence is important. Quality can refer to the format of the information, the extent to which any recommendations are seen as non-partisan/ unbiased, their source (trusted experts), and informed by knowledge of political and policy process constraints.	It is difficult to know why policymakers may be unaware of, or uninterested in, the research. Effective 'dissemination' is about more than plain and 'punchy' language or shorter reports across many formats. Other actors are more experienced at responding to government agendas at the right time, paying more attention to language and persuasion.	Adopt framing strategies Recognise complexity Become part of advocacy coalitions Be clear on: (a) why actors should pay attention to the problem raised by the evidence; (b) how feasible is the solution.

Timing and opportunity (42) - develop better contacts and relationships, or collaborate, with other practitioners and policymakers	The system is unpredictable. Advocates could not exploit a 'window of opportunity' for policy change, often because they were not aware of it.	It can take years/ decades for feasible solutions to develop and be coupled to problems and politics – but the window of opportunity can open and close in weeks.	Adopt a long term strategy, producing solutions in anticipation of attention to problems Identify policy entrepreneurs with the skills to use evidence and influence policymakers
Policymaker research skills (26) – encourage policymakers to be more aware of the need for robust evidence	Policymakers are flawed – they are unaware of, or choose to ignore, evidence. Practitioners may be describing bounded rationality without a clear sense of the shortcuts that policymakers use.	It is difficult to disentangle the specific idea of 'skills' from the broader reasons why policymakers pay attention to some information and ignore others. It is not clear who are the policymakers – are they elected?	Engage in subsystems which feed evidence up to elected policymakers Identify policy entrepreneurs Identify who makes decisions throughout the political system, and recognise the need to 'co-produce' solutions

Source: column 1 adapted from Oliver et al's (2004: 6) 'Table 1 Most frequently reported barriers and facilitators of the use of evidence'.

Problems with demand and supply

Three categories - availability/ access to research, clarity/ relevance/ reliability of research findings, costs - overlap considerably, since they refer to the relationship between the supply of, and demand for, evidence. The need to disseminate high quality information effectively is the most reported source of barriers and solutions to the use of evidence (2014a: 6; see also Bédard and Ouimet, 2012: 629; Lewig et al, 2010: 477; Mitton et al, 2007: 737). Practical barriers relate to the lack of time, managerial support, resources and incentives for scientists to engage in dissemination work, combined with a lack of appropriate support from professional bodies more engaged in politics. In some cases, studies report good results following their use of a well-developed dissemination strategy – including, in some cases, the use of 'tailored, targeted messages' and the use of 'knowledge brokers' who specialise in the translation of evidence to policymakers (Dobbins et al, 2009: 1; Oliver et al, 2014a: 6). In others, specialists work with policymakers or commissioners to help clarify aims and make decisions in areas with a lack of information on the effectiveness of solutions to identified problems (Chambers et al, 2012: 142; Chalkidou et al, 2009: 352).

Yet, we should not form the impression that, if scientists had more time and money to spend explaining their evidence, or could pay someone to publicise it, it would necessarily feed into the policy process. This would be to ignore the importance of demand for information, at a certain time and in a particular form – to solve a very specific problem (that may not be covered in depth by existing studies). Dissemination strategies could help some policymakers become more familiar with the work, but not more interested in it, or more able to understand it enough to know why it would be relevant to their aims.

Rather, the focus of policy studies is on the links between evidence and framing: to combine facts with emotional appeals, or tell stories which manipulate people's biases to apportion

praise and blame (True et al., 2007: 161; McBeth et al, 2014); and, to understand evidence through the lens of the pre-existing beliefs of actors within coalitions, some of which dominate policy 'subsystems' (Sabatier and Jenkins-Smith, 1993; Smith and Joyce, 2012: 58), and which are often based on gut reaction and emotional assessments of policy problems (Schneider et al, 2014). This takes place in a complex system, or unpredictable policy environment, in which many actors are involved at many levels of government, in which different 'frames' may dominate, and the uptake and use of evidence varies.

The value of long term political strategies

In that context, scientists face a potentially major choice between short and long term strategies: to rely, *if possible*, on a 'knowledge broker', who is able to translate 'raw' evidence into information that will attract the attention of policymakers; or, to engage directly in policymaking on a major scale, to form alliances with policy advocates in the long term, and to build up relationships and trust within government (Mitton et al, 2007: 754). Only with the latter strategy will practitioners get a sense of how policymakers such as civil servants seek to gather and use evidence and, therefore, how practitioners can adapt (Stoker, 2010: 57). Scientists may also have to cultivate trust within government - to become a *credible* source of expertise, with credibility relating as much to behaviour as knowledge – to ensure that policymakers come to experts when they need information quickly. In some cases, civil servants form close networks, based on mutual trust and a shared understanding of the policy problem, with the people or groups providing regular information and advice (Jordan and Cairney, 2013; Haynes et al, 2011: 583; de Goede et al, 2010: 7-8; Hanney et al, 2003: 8 – although such relationships can be undermined by the turnover of policymakers or lack of government capacity - Haynes et al, 2011: 593; Lewig et al, 2010: 478). Further, by engaging with other participants, such as like-minded interest groups, scientists can generate a better sense of who to speak to, when to engage, and how to attract attention for evidence by framing it to fit with policymaker priorities and beliefs.

Some frames can be identified quickly. For example, in countries such as the UK, a story about a policy solution is generally more powerful if framed in terms of its demonstrable value for money (Petticrew et al, 2004: 813; Cameron et al, 2011: 440), particularly since groups will compete for attention with (or compete with others when lobbying) powerful government funded bodies, such as NICE, which measure the effectiveness of healthcare interventions in relation to cost (Chalkidou et al, 2009: 353-4; compare with the *lack* of focus on cost-effectiveness regarding HIV in Tanzania – Hunsmann, 2012: 1479).

Other frames take time to understand, such as the agenda-setting 'scientific policy facts' described by van Egmond et al (2011: 34): the standardised measures, arising from regular discussions between policymakers and scientists, which 'incorporate all kinds of (invisible) normative assumptions' (see also Elliott and Popay, 2000: 466). Or, it may simply take time to know who you are up against; how, for example, the injection of evidence to encourage policy change will affect the balance of power within organisations (Ferlie et al, 2012: 1302; Hobin et al, 2012: 109) and often be resisted by key players (Smith and Joyce, 2012: 58-9). A successful framing strategy won't stop politicians making policy quickly, or solve the

problem of constrained budgets, but it could influence *how* policymakers think quickly and respond to constraint.

Perhaps most importantly, a long term strategy is important because it takes a long time to identify the most important policymakers (at multiple levels of government) and influence them enough to (a) shift their beliefs underpinning policy priorities and (b) become motivated enough to make major policy changes.

For example, scholars identifying health inequalities and/ or the need for long term public health measures will generally be trying to influence policymakers who are: sympathetic to 'biomedical solutions' to health problems (Embrett and Randall, 2014: 151; Smith and Joyce, 2012: 63); and, reluctant to make major changes, such as redistributive taxation or shifting resources from acute to primary services. They will struggle to present feasible solutions to policymakers, because health inequalities have multiple causes, there is great uncertainty about the effectiveness of solutions, solutions require major coordination across government departments in a notoriously fragmented system (Exworthy, 2008: 319-20; Hobin et al, 2012: 102; Smith and Joyce, 2012: 65), containing a series of government 'silos', and it is relatively difficult to demonstrate the cost-effectiveness of many interventions (Petticrew et al, 2004: 813).

This contrasts with healthcare in which policymakers face unpredictable crises that often prompt them to adopt simple solutions - invest resources in healthcare, promise to reform organisations, use performance measures to demonstrate success - at short notice (and based on very patchy evidence on healthcare effectiveness – Chalkidou et al, 2009: 352). Inequalities may only receive sufficient elected policymaker attention when those politically-driven healthcare reforms are complete or seem to be working, and health inequalities policies receive less practitioner attention since they are less well linked to important government targets or local budgets (Blackman et al, 2012: 52-5; 58; 60). Long term policy solutions will also span multiple terms of government, and advocates need to persuade policymakers to produce cross-party solutions that will not be undermined after each election.

Further, health inequalities policies involve moral choices about who should benefit from public policy, and the use of evidence may be ineffective unless combined with well-coordinated advocacy involving a wide range of groups (Embrett and Randall, 2014: 153; van Egmond et al, 2011: 31; Lewig et al, 2010). In this context, it takes time to get to know how to influence the ways of thinking of policymakers; to know how to address the lack of direct 'policy relevance' in much health inequalities research (Petticrew et al, 2004: 815). This investment of time is not the norm in health inequalities scholarship (Hunter, 2009: 283).

The appropriate strategy will also vary considerably, depending on the kind of evidence under consideration. For example, the supply of evidence on the nature of a problem – such as the relatively straightforward links between smoking and ill health, or complex links between socioeconomic factors and health inequalities – may be fairly routine, and picked up episodically by policymakers. The evidence on policy solutions is generally more complicated, since knowledge of the likely effectiveness of an intervention becomes tied up

in wider political or practitioner knowledge about how appropriate and feasible it may be (Hanney et al, 2003: 10; Hobin et al, 2012: 107), as well as more fundamental questions about who should decide what to do (2012: 108).

Consequently, the quality of evidence can be evaluated in numerous ways, including: the ways in which scientists may value evidence (based on the clarity of the research question, method, rigour, reception during peer review, and publication/ dissemination in high status venues); the format of the information (can it be understood and appreciated by policymakers and the public?); and, the ways in which policymakers may value evidence, such as the extent to which any recommendations are seen as non-partisan or otherwise unbiased and weighty (to allow policymakers to depoliticise issues with reference to scientific evidence), and informed by actors with enough knowledge of political constraints or the policy process to propose feasible solutions.

Timing and opportunity

Many studies describe the sense that evidence is not presented at the correct time. An intuitive response to this problem is to develop good political contacts, so that practitioners can be notified as soon as possible when issues come up unexpectedly, and be in a position to have a meaningful input (Oliver et al, 2014: 4; Lomas and Brown, 2009: 920). This presupposes that an issue will indeed come up when, in fact, problems may never arise on the policy agenda without a successful campaign, crisis, or 'focusing event' (Birkland, 1997). The attention of policymakers to problems has an indirect relationship to the available evidence on their size; some problems can be ignored despite pressing evidence, while attention may lurch to problems without much evidence of a shift in severity. In that context, Kingdon's multiple streams analysis (MSA) is used in some practitioner-focused policy theory articles (e.g. Avery, 2004; Howie, 2009; Pralle, 2009), because it captures the idea that policymaking seems to be serendipitous and unpredictable (it is also easy for a non-specialist to understand – Cairney and Jones, 2015[iii]).

MSA identifies three main problems for the advocates who have a pressing desire to make quick and radical change based on new evidence on the effectiveness of a policy solution: (1) agenda setting takes time - they are competing with many groups to get policymakers to pay attention to the problem they raise; (2) the solutions they present have to be 'softened', to make them feasible within policy networks - which can take years or decades; and, (3) it may not be obvious how best to exploit a window of opportunity in which to propose that solution, and ensure that policymakers have the motive and opportunity to select it.

In those circumstances, the general advice may be to: (a) work with like-minded groups to generate interest in the problem to which the evidence relates (and be ready to act quickly when policymakers suddenly become interested and demand information); (b) adopt a realistic, long term strategy, to work with a wide range of practitioners and policymakers to turn an initial idea into a workable policy solution; and, (c) identify the 'policy entrepreneurs' with enough knowledge of the political system to know how and when to exploit the opportunity to have it adopted (Hinchcliff et al, 2011). Entrepreneurs tend to be the people

who know when to act, rather than people who can manipulate policy processes to make things happen.

This recommendation contrasts markedly with the idea of short term knowledge transfer, in which scientists pass on the knowledge and expect policymakers to act quickly. Instead, a quick turnaround would only happen in the other direction, when elected policymakers suddenly demand evidence on problems and solutions and expect the information in a few days (Lomas and Brown, 2009: 912), and/ or when policymakers seem determined to act in the face of uncertainty (Hobin et al, 2012: 105; Lewig et al, 2010: 475), which further reinforces the idea that solutions have to exist long before problems arise on the policy agenda.

Policymaker research skills

In this category, policymakers are allegedly at fault for having insufficient skills to recognise the importance of, or understand, the research. They are unaware of, or choose to ignore, key evidence. In this case, practitioners may be describing specific needs: for a more scientifically trained civil service analytical team, to build up 'receptive capacity' in government (Bédard and Ouimet, 2012: 640; Lewig et al, 2010: 474); for measures to respond to instability, and the loss of institutional memory, when civil servants or ministers move around government; or, for policymakers to generate a clearer research question when they commission or seek evidence (Cameron et al, 2011: 440-2). In one case, Flitcroft et al (2001: 1040) suggest, rather problematically, that the elected government produced a 'not evidence-based' version of policy when it rolled out a more modest screening programme compared to the proposal generated by expert committees. In that case, the use of evidence seems all or nothing, which is a perspective also betrayed by some of Smith and Joyce's (2012: 62) interviewees, who express disappointment that, although they may engage regularly with policymakers, not all of their ideas are taken on board (see also Lewig et al, 2010: 479). This position is to reject the idea that other forms of knowledge or evidence are as relevant to policymaking – and criticised by Marston and Watts (2003: 145; 157), who argue that scientific evidence, and experts, generally enjoy a privileged position within policy networks, which often allows them to pursue their values while enjoying the status of detached observer.

It also contrasts somewhat with the perspective from policymakers that they use research, and expert researchers, *routinely*, to generate ideas within government departments, clarify research, give advice, act as intermediaries between science and policy, give weight to policy decisions (since the public tends to trust scientists more than politicians), help reject bad policies, sell good policies and persuade actors in government (and the media) of their merit, and inform public debate (Haynes et al, 2011: 572-83). This often takes place when the evidence base is patchy and hard to access (and sometimes contradictory - Lewig et al, 2010: 472) and there is a greater reliance by policymakers on politically aware experts. They describe this relationship as generally mutually beneficial, particularly when experts are 'political accomplices' rather than 'disinterested technical advisers' (2011: 591). The

comparison suggests, to some extent, that the problem is with the metaphor of evidence *based* which, for some, suggests that scientific evidence is the sole determinant of policy.

Or, practitioners may be describing the broader problem of bounded rationality - policymakers have to ignore the majority of the information 'signals' that they receive because they can only process a small proportion (Lewig et al, 2010: 471) – and a frustration that *their* evidence is ignored. As an aggregated 'barriers' category, it is difficult to disentangle the specific idea of 'skills' from the broader reasons why policymakers pay attention to some information and ignore others. In such cases, we need more information on how and why policymakers take particular shortcuts when processing information, since one can easily address a policymaker's temporary ignorance of certain information, but find it harder to change the shortcuts they use to dismiss certain sources or types of information routinely.

In this category, we need to identify the knowledge scientists have of the policy process when they criticise its failings. For example, they may be bemoaning the relatively limited attention and skills of senior elected policymakers – producing at least two relevant gaps in their knowledge. First, the policy studies literature suggests that policy is made routinely within networks of civil servants and participants such as interest groups. If they can access the right networks, they may be less dissatisfied with the more routine process of policymaking that underpins elected policymaker decisions. In this case, they can engage independently, as part of a profession, or as part of an advocacy coalition. A coalition may be made up of actors which engage at multiple levels of government, or multiple influential 'venues'. If so, a key part of an evidence dissemination strategy is to influence one's allies - to reinforce their cause with robust evidence and give them further motivation to pursue it - as much as policymakers.

Second, policy is made, or at least influenced, as it is being delivered. Or, governments delegate policymaking responsibilities to other levels of government, public bodies, local commissioning bodies and, in some cases, networks of bodies charged with working together in cross-cutting areas. In such cases, it may be more valuable to share evidence directly with practitioners, even if this produces a large amount of duplication, far more work (Learmouth, 2000; Gkeredakis et al, 2011; Nilsen et al, 2014), very uncertain outcomes, and some difficulties in taking general conclusions from local experiences. For example: Chambers et al (2012: 145) describe a pragmatic, and often 'intuitive', process to help local funding bodies commission specialist services, by clarifying their aims and making sense of incomplete evidence; Elliott and Popay (2000: 466) describe the need for regular dialogue when research alone 'won't provide answers' and is supplemented by local consultation and value judgement; Lewig et al (2010: 470) argue that the evidence from the literature is more likely to be taken up if it chimes with the 'tacit knowledge' of practitioners; Gkeredakis et al (2011: 301) highlight the need to 'co-produce' knowledge between scientists, policymakers and practitioners, to turn it into something to be used in the latter's professional practice; although Kothari et al (2005: 123) report that co-production does not necessarily increase the uptake of knowledge by practitioners; while Dobrow et al (2006: 1821) explore the obstacles to combining a focus on evidence with the generation of local consensus.

The conclusion, each time, may be 'this worked, this time, in this area'. If the underpinning assumption is local variation, the general, concrete implications will be difficult to identify in systematic review. This is particularly true in case studies of 'co-produced' policies which blur the dividing line between an intervention and the context in which it is implemented (Kok et al, 2012b: 716-8). Policy becomes a mixture of transferable solutions, policymaking processes, and, unless the same combination of solution and process are used each time (which seems counter to the spirit of co-production), it also becomes something that is difficult to describe, compare and transfer.

Case study: lessons from tobacco control

Tobacco control demonstrates the important interplay between evidence and four main 'stages': to identify a problem, propose a solution, implement the solution, and evaluate its effectiveness. However, it also exposes the limitations to a focus on stages, either because the gap between certain stages has been 20-30 years, or, in some countries, the stages take place in a different order. There is not a linear progression from problem identification to evaluation, and the history of tobacco control highlights major lags between the acceptance of a problem in government and the motivation to introduce a proportionate solution. This is not a problem that could have been solved simply by removing 'barriers', such as to improve the supply of evidence or 'skills' of policymakers.

In countries such as the UK there is now a 'comprehensive' tobacco control policy which seeks to minimise smoking, combined with a new 'endgame' agenda to end smoking completely (Cairney and Mamudu, 2014). At the global level is the World Health Organisation (WHO) Framework Convention on Tobacco Control (FCTC), ratified by 178 states (and the EU), and signalling a major commitment to comprehensive controls by combining a series of measures:

- price and tax measures to reduce demand for tobacco
- protection from exposure to secondhand smoke in enclosed public places
- regulation of product ingredients and disclosure on ingredients
- health warning labels
- measures to improve health education and public awareness
- banning tobacco advertising, promotion and sponsorship
- providing smoking cessation services
- prohibiting the illicit trade in tobacco products
- banning tobacco sales to under 18s
- litigation against tobacco companies in some countries (Mamudu et al, 2015: 5).

Tobacco control is an exemplar for the study of EBPM because it demonstrates positive and negative aspects of the link between evidence and policy. On the plus side, the identification

of a policy problem, through scientific evidence linking smoking and then passive smoking to severe ill health, produced a government response, followed by a series of evidence-based solutions which have been evaluated and their lessons spread to other countries. In 'leading' countries this was largely an incremental process, in which governments adopted new policies or strengthened old policies over time. The evidence of solution effectiveness has been disseminated globally (a process led increasingly by the WHO), culminating in a major global policy.

However, *the process has taken several decades*. It remains a useful model, largely to introduce a sense of perspective about how long it takes to go from the publication of evidence on a problem to what epidemiologists, medics and public health advocates may feel is a proportionate response. Initially, we can break this process down into familiar 'stages'.

Agenda setting and problem definition. The first acceptable studies of smoking and health were published from the 1950s (Doll and Hill, 1950; Doll, 1998), but it took at least a decade for the science to become accepted meaningfully in the medical profession, before key UK and US publications – most notably by the (UK) Royal College of Physicians in 1962 and the US Surgeon General in 1964 - began to set the agenda for policy intervention (Studlar and Cairney, 2014: 520). During this period, the push for tobacco control was not straightforward, because this 'framing' of tobacco, as primarily a health problem, competed with several others: tobacco began as a glamorous product used by a large proportion of the population, with minimal relevance to government; it continued as an economically valuable product, providing jobs, exports and major taxation revenue; and, as the health framing became more prominent, it competed with a civil liberties argument focusing on the right of people to engage in unhealthy behaviour.

Even in 'leading' countries, these images took decades to challenge successfully, with advocates focusing increasingly on passive smoking, addiction at an early age (to challenge the image of smoking as a choice), and the economic harms associated with ill health, expensive healthcare and low productivity (Cairney, 2007a: 80; Petticrew et al, 2004: 813). Advocates would also draw on country-relevant frames, such as 'secular morality' in the US (Cairney et al, 2012: 133) and, in the UK, smoking as the biggest cause of health inequalities (HM Treasury and Department of Health, 2002). In many countries, this project was only successful because groups engaged in 'venue shopping', seeking more sympathetic audiences (such as the courts, different government agencies, new congressional committees, or even supranational bodies) when frustrated by their lack of progress in some parts of government. The quantification of the US process by Baumgartner and Jones (1993: 114) is instructive, since they chart a major shift in public, media and policymaker attention to tobacco, from low and positive to high and negative, *over four decades*. Further, this process has only happened in a relatively small number of countries. In many others, tobacco is still viewed within government as an important economic product (Mamudu et al, 2015).

In other words, there has perhaps been a major scientific consensus for five decades that tobacco represents one of the major causes of preventable illness and death in the globe, but this evidence can take decades to produce an effect in some countries, and have a relatively

small effect in others. Further, the evidence did not speak for itself. Major change from the 1980s, in 'leading' countries, also relied on supportive developments, such as a major shift in the capacity, campaigning and persuasion strategies of medical and public health groups, and a major reduction in smoking prevalence.

Solutions. Studlar and Cairney (2014: 520) identify a series of phases through which post-war policy has progressed, including the rise of health concerns from the 1950s, 'regulatory hesitancy' from the 1960s and more meaningful tobacco control from the 1980s, culminating in a 'comprehensive' approach in some countries. For example, in the UK, early policy was characterised by a series of measures that would now be described by public health groups as ridiculously limited: adding filters to cigarettes to give the impression that toxic ingredients would be filtered out; introducing 'low tar' brands; and maintaining a range of voluntary schemes with the industry to (ostensibly) reduce advertising and smoking in certain places. Only from the 1980s did we see a major strengthening of policy instruments to, for example, provide stark health education messages and raise taxes for public health reasons. Even then, it took decades to produce a modern control regime with legislation to ban advertising and smoking in public places.

This slow development is reminiscent of Kingdon's idea of 'softening' policy solutions to increase their technical and political feasibility (see also Smith, 2013 on the 'chameleon like' nature of ideas). Even today, policymakers describe the need for incremental strategies, to introduce tobacco controls in a series of steps, to gather evidence on less restrictive measures and lay the groundwork for greater control (Cairney, 2007b: 49-51). This is as much to do with how conducive political environments are to change as evidence of the effectiveness of certain solutions, particularly since there is still uncertainty about the effect of tobacco controls in the countries which adopt them first. Indeed, one driver for a 'comprehensive' approach is the uncertainty about which instruments work most effectively and the extent to which they work in combination with other instruments. This is, to a large extent, a trial and error process.

We can see this process of softening, to some extent, in the initial adoption of bans in smoking in public places. Until countries such as Ireland decided to legislate to introduce a comprehensive ban in 2004 (after experimenting with voluntary policies to regulate smoking in some areas - Studlar, 2015; Currie and Clancy, 2010), the most common approach was to introduce restrictions incrementally, beginning with public buildings and ending with restaurants, bars and clubs (Cairney, 2007a: 83). Now, after a major push in many countries, the agenda is moving slowly to areas, such as in private cars and the grounds of public spaces, that governments would not have considered before. A mainstream discussion of a tobacco 'endgame' would have been unthinkable even 10 years ago.

We can also witness this need to adapt to political feasibility when examining the introduction of solutions in countries which traditionally had more limited controls. For example, in 2014, the South Korean government introduced a combination of solutions – backed up by evidence generated in leading countries, disseminated by the WHO, and included in the FCTC – and, while they don't go as far as policy in the UK (for example, the

cost of cigarettes doubled, but to a level well below costs in the UK), they are currently more controversial. In such cases, the evidence on the size of the global problem, and the effectiveness of solutions, is largely the same, but it is used in a remarkably different way; the political feasibility differs markedly over time and place. So, countries learn and transfer policies from other countries, but have to adapt the same solution to different circumstances.

Implementation and evaluation. At the global level, the FCTC is based on current knowledge about the effectiveness of tobacco control instruments, following evaluation in a small number of countries. It is now at the implementation stage, which demonstrates marked variations in the speed and substance of policy instrument adoption. Put simply, the countries already 'leading' tobacco control have implemented the FCTC most quickly, while progress is relatively slow in countries that did not have extensive tobacco control regimes.

This experience shows that, although this is ostensibly a process of policy implementation, it resembles, to all intents and purposes, the process we see in agenda setting and policy formulation. The adoption *and* implementation of policy choices takes place in policy environments that are more or less conducive to meaningful policy change. In leading countries, and at the global level, actors pursuing strong tobacco control policies have a favourable policy environment: the government accepts the scientific evidence on smoking and passive smoking; health departments take the lead; their operating procedures favour a public health framing of tobacco and consultation with public health groups at the expense of the industry; and, the socioeconomic context is conducive to control (tobacco is not seen as a crucial economic product, prevalence is low, and opposition to control has diminished). In others, the environment is less supportive: the evidence, on the scale of the problem and the effectiveness of solutions, is still contested; health departments compete with finance, agriculture and trade; public health groups compete with the tobacco companies for influence; and the socioeconomic context may be an obstacle (tobacco may be seen as an aid to economic growth, prevalence may be rising, and opposition to control may still be significant) (Mamudu et al, 2015: 15).

The order of stages. In other words, the same evidence regarding the problem and effectiveness of solutions is held and promoted by the WHO, but its uptake and use varies dramatically across the globe. If we follow the policy cycle image, implementation may look like an advanced stage of the process. Yet, if we focus instead on the role of policy environments, we may identify a series of stages that blend into each other. In many countries, the agenda setting debate on the size of the problem may still be taking place at the 'implementation' stage, and the adoption of solutions may be slow or non-existent, even though the country's leaders have agreed to ratify and implement the FCTC.

Tobacco policy as a model

One emphasis in the public health literature is on the possibility that our experience of tobacco control in some countries can accelerate the evidence-policy process, to close the gap between the identification of a problem and the implementation of a solution. This was certainly one aim of the FCTC, to address tobacco in many countries before they faced the

'epidemic'. It is also a feature of the wider public health field: tobacco control is now often described as the model for further action, at least to address, more quickly and effectively, other 'non-communicable diseases' (NCDs) in alcohol and obesity policy (Cairney and Studlar, 2014).

Yet, our analysis suggests that the evidence-policy gaps are not solely based on gaps in knowledge and experience, or on the absence of an evidence-driven identification of a major problem and plan of action to solve it. Rather, the use of evidence in policy is linked inextricably to the environment in which policy choices are made. The reduction of 'barriers' to EBPM represents one small piece of the puzzle.

The tobacco experience suggests that the scientific evidence was a resource used by public health advocates during a *decades-long struggle* to form alliances, challenge vested interests, engage in a 'battle of ideas', encourage major social change, shift policymaking responsibility to a more sympathetic department, and persuade governments to completely rethink the ways in which they understood the tobacco issue. This is a long distance from the idea that, to close the evidence-policy gap, you need to produce shorter reports in plain language, employ a knowledge broker, and encourage policymakers to think more like scientists.

Case study: implementation and improvement science

Imagine two extremes of the evidence gathering process: at one is the EBM approach with a hierarchy of methods, focused on precise scientific measurement of problems and the effectiveness of solutions; at the other is practice-based evidence-gathering based, for example, on individual service user feedback and professional anecdotes about good practice, in a field where professionals may seek long term outcomes which are difficult to measure with precision. It may be too much to argue that they represent two distinct cultures, but the identification of this spectrum shows that exponents of EBM may face a different policymaking context when they engage in social policy.

In EBM, RCTs and systematic review may represent the 'gold standard' but, in communities of civil servants seeking research, or professions focused more on everyday practice, they may have only a limited influence, because, for example: the research does not relate directly to the *problem as defined by policymakers*; and, it is perceived by the organisations and practitioners delivering policy to relate only indirectly to the specific circumstances of their local areas (Bédard and Ouimet, 2012: 625; Petticrew et al, 2004: 813; see also Morris et al, 2011: 510). Green and Gerber (2003: 96; 101) identify several barriers to the greater use of RCTs in politics, including: their tendency to 'speak to causal questions a few variables at a time', rather than 'complete explanation'; our inability to manipulate or control the real-world settings in which policy experiments might take place; and, the sense that a trial, focused on a small number of causal factors most conducive to controls, and conducted in one place and time, would not be generalizable to wider experience (see also Bédard and Ouimet, 2012: 628; Dobrow et al, 2006: 1817).[iv]

Perhaps more importantly, the people responsible for making or delivering policy in local areas may *think* that such RCT evidence does not apply to their area. It is this *perception* that undermines the spread and uptake of evidence without a concurrent focus on the development of local 'ownership'. In some cases, this problem might be addressed by the design of RCTs specific to those areas, in partnership with practitioners – although the practical barriers are huge, partly because an RCT would require cooperation across many levels and types of government and randomisation is a 'hard political sell', at least to elected policymakers who rely on an image of certainty when they propose policies (Stoker, 2010: 51-2). There is also much scepticism, within some practitioner circles, about RCTs representing the 'gold standard' – perhaps expressed through shared narratives to undermine their status, such as the '17 years' claim to highlight the gaps between evidence and implementation, and the famous spoof publication on RCTs to gauge the benefits of parachutes (Smith and Pell, 2003).

Yet, one does not need to be sceptical of RCTs or a hierarchy of evidence to pursue local-level EBPM. For example, the Cochrane Collaboration (in Dobrow et al, 2006: 1812) highlights the need to take into account local policy conditions and decision-making practices rather than treat international evidence as universally applicable, and there has been a recent shift of emphasis to generate insights from the evidence of diverse policy implementation experiences (Hobin et al, 2012: 101). Further, Dobrow et al (2006: 1811) explore a global standard and set of methods 'for identifying, interpreting, and applying evidence in different decision-making contexts', recognising two different fields: international EBM, in which there is a hierarchy of methods to generate best practice; and local decision-making processes, in which the aim may be to generate a range of perspectives from specialists, policymakers and stakeholders, often based on an unclear evidence base, a greater focus on economic and political feasibility, and/or far less adherence to the hierarchy as the basis for decisions (2006: 1816-8; see also Ferlie et al, 2012: 1300). In more straightforward terms, we need to make sure that the evidence produced by scientists, and the consequent strategies produced by governments, can be turned into something that makes sense to, and can be incorporated into the practices of, the practitioners delivering policy (Gkeredakis et al, 2011: 309). This may have to happen before the evidence is clear; evidence may be gathered while an intervention, tailored to a local area, takes place (Hobin et al, 2012: 105-6).

In that context, practitioners may promote a pragmatic response, to: draw on what they consider to be the best available evidence at that time; and, to experiment with ways to take it forward in local areas. This allows them to act more quickly and adapt to evidence as it becomes available and, perhaps more importantly, generate a sense of 'ownership' among local areas in which policy is being delivered. This approach may be broadly described as 'improvement science' (Cairney, 2015; King's Improvement Science, 2015).

For example, this basic approach has some traction within the Scottish Government, and it has been used in a select group of issues, including patient safety and the 'Early Years Collaborative' (EYC). The EYC is coordinated by the Scottish Government, which presents some basic evidence-based insights – such as that educational attainment rises if parents read stories to their children before bed – and encourages nursery/ school staff to work out how best to relay the information to parents and encourage behavioural change. The simple rule of

thumb is that if it works, continue (and 'scale up', or extend the programme to more people), and if it doesn't, try something else. This 'something else' may be provided by the experience of other groups trying out similar policies in different ways, and relaying the results through the EYC network. This is an experiential form of local evidence gathering by practitioners, combined with a hands-off approach from the 'top', that seems to contrast with the image of top-down RCT adoption and 'fidelity' to programmes (Cairney, 2015c; Hobin et al, 2012: 106). The gathering of evidence at a larger scale then takes place, to generate a sense of which programmes work best when the results can be compared in a reasonably systematic way (although there is a clear tension between encouraging local actions and measures of success, and central coordination to share best practice and measure overall success). At this stage, *the practice often comes before the evidence is clear*, and practitioners adapt their programmes when new evidence becomes available. This is also a contrast to RCTs, since there are generally no control groups and there is little sense of an experiment in which we can demonstrate clear cause and effect. Rather, the focus is on a pragmatic use of available evidence and the generation of local 'ownership'.

The links between policy theory and policy in practice

The links to chapter 2 are clear: advocates of this approach argue that we need to move away from the idea that policy is made from the top down; that the best evidence, derived from 'gold standard' methods, feeds directly into the top, and its insights are used in a straightforward implementation process at the bottom. If policy is a messier process, involving multiple actors and levels of government, and it seems to 'emerge' from the interaction between actors at local levels, we need some way to inject evidence into *that* process. This is likely to involve the participation from a large number of people who may not know what an RCT is or what the results of a systematic review are. However, they are able to take the basic insights and apply them to their local areas, considering the specific problems they face and their resources at hand. In such cases, practitioners value trial-and-error, respond to problems quickly and adapt solutions as they are implemented locally, and recognise an alleged tendency for local policymakers to be sceptical about evidence gathered in other areas.

This focus on a mix of approaches can also be linked to insights from the policy literature (see chapter 2), such as the emphasis in some policy transfer studies on the potential risks to transferring the policy to another region without local 'ownership', and the different cultures and expectations in each policy field that ward against the assumption of a one-size-fits-all approach.

It is perhaps most apparent in the study of complexity, which advises policymakers to learn from experience, use trial and error, and give local actors the power to adapt to their environment (Cairney 2012a: 128; Sanderson 2009: 708; Haynes 2008: 326; Quirk 2007: 369; Little 2012: 7-8; see also Gkeredakis et al, 2011: 302). In contrast to the caricature of EBM as a rather rigid approach, in which the best evidence is generated and policy solutions require fidelity to the original model (Lomas and Brown, 2009: 906), complexity theory often suggests that top-down control can be an unrealistic and damaging aim. The task of policy

implementation is more complicated and less hierarchical than the aim, in *implementation* (not improvement) *science*, to translate health evidence to practice (Nilsen et al, 2013). Further, policies implemented in the real world, to address complex problems, will inevitably produce unintended consequences, and will be subject to the effects of action elsewhere, with no way for the centre to control the process from beginning to end. In some cases, interventions will have no effect for long periods (years or even decades), followed by a major and unpredictable effect (Hobin et al, 2012: 110; Smith and Joyce, 2012: 72). In that context, we do not know exactly how any policy measure will make a difference (Sanderson, 2009: 706). This insight tends to produce two recommendations:

1. Move away from the idea of major evidence-based policy changes towards the use of "'trial and error' policy making" and learning from pilot projects (Sanderson, 2009: 707).
2. Reject the use of 'blunt traditional hierarchical hard management methods' (Geyer and Rihani, 2010: 32-4), which will only produce the perception of failure, in favour of more flexible approaches which build error and adaptation into policy design (Little, 2012: 16; Geyer, 2012: 32).

Overall, this focus on complexity represents a rejection of the idea of a single policymaker at the centre of government, able to make important changes to the world with the aid of science and policy analysis. Instead, we have a range of policymakers in multiple venues seeking to adapt to, and influence, their policy environments using limited information (Cairney, 2014a: 11; albeit, often as part of a process driven and evaluated by central government - Cameron et al, 2011: 435-6).

Conclusion

Policy theories can help re-frame health policy analysis, to separate the 'pathologies' of policymaking systems from specific problems that can be addressed to reduce the evidence-policy gap. It is impossible to provide a blueprint for action, but we can draw attention to the limits to the 'barriers' literature when it focuses largely on improving the supply of information, the lack of opportunity to be influential, and the limited research skills of policymakers. This type of analysis can be supplemented by a focus, in policy theory, on: the need to present evidence-based messages which tell a story or frame the problem in the right way; the importance of long term strategies and relationships with policymakers and coalitions with like-minded groups; the time it takes for major policy change to occur, even when the evidence seems unequivocal; and, the need to engage at the 'street level' to ensure that evidence is incorporated within the everyday practices of professionals.

We can use these insights to generate four further tenets of evidence based policy making:

1. *Dissemination strategies should combine simple messages with persuasion*. The use of knowledge brokers or other services to translate complicated evidence into a simple action-based message is necessary but insufficient. Policymaking is about the use of evidence to help frame issues, combining information with an appeal to the emotional

or other biased shortcuts that policymakers use when choosing which problems and solutions to pay attention to.

2. *Evidence-based strategies may only pay off in the long term*. Scientific advocates need to invest the time to develop trust within government, based on a reputation for providing reliable information and following the 'rules of the game' within policymaking circles (which may regard, for example, how people conduct themselves with policymakers). This degree of trust may be crucial when policymakers seek information at short notice. It takes time to understand how policymakers think in particular departments, and which frames or arguments will be the most persuasive – particularly when the policy problem is complex and there is no clear solution. It also takes time to find the right allies, to form coalitions with like-minded actors willing to promote the implications of evidence within government.

3. *Effective strategies may focus more on 'where the action is'*. Most policy is processed by civil servants at a relatively low level of government, and delivered by professions and public bodies outside of central government. A strategy focused on elected policymakers at the centre may be doubly frustrating, when their attention seems to lurch unpredictably and they do not control the outcomes of their decisions. A more effective strategy may be to become part of the more routine process of central government, and to engage with local policymakers to inform practice.

4. *EBPM is a highly charged political process*. The case study of tobacco shows what it often takes to secure major evidence-based change: a campaign over several decades to persuade policymakers to treat tobacco as a major epidemic and to put in place the conditions to produce and implement a comprehensive response. Tobacco represents a model for other campaigns, but partly to generate a sense of realism when we seek evidence-based policy change.

5. *Engage with professionals who see the world through different eyes*. One way to understand improvement science is as an attempt to marry two very different philosophies about the nature of evidence: the EBM focus on a hierarchy of methods and gold standard; and, the focus in some professions on the evidence from everyday practice. It involves taking what people consider to be the best available evidence, and experimenting in local areas with ways to make sense of that evidence on the ground. The former approach may be based on the collection of quantitative evidence in controlled settings; the latter may be more qualitative, in complex settings.

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[i] Take the example of health policymaking initiatives in Ontario. Lomas and Brown (2009: 912) describe the decision by funded academic centres to balance their own research interests with those of government, and to give some reports to government 60 days before they are released to the public. This describes the compromises of which scientists should be aware, but not what to do or if these actions are appropriate or effective. See also van Egmond et al (2011: 31) on the oxymoronic need for 'close distance'; for scientific public bodies to be near enough to government departments to know their agenda, but far enough away to look impartial (as in the tale of Goldilocks, this may involve trial-and-error rather than a blueprint).

[ii] Systematic reviews identify the word 'broker' but the individual studies to which they refer do not add up to a coherent account of who they are or what their role is (Dobbins et al, 2009: 2; Ritter; 2009: 72; Lewig et al, 2010: 476; El-Jahardi et al, 2012: 9; Jack et al, 2010; Jönsson et al, 2007: 8; Ettelt and Mays, 2011: 58; Hanney et al, 2003: 15-6; Chambers et al, 2012: 144; van Egmond et al, 2011: 34).

[iii] This is a problem to note when articles make casual reference to policy theories (e.g. van Egmond et al, 2011: 29 on the ACF) and with insufficient focus on the theory to make the analysis useful to people unfamiliar with it (e.g. Blackman et al, 2012: 49, Haynes et al, 2011: 567, Hinchcliff et al, 2011 and Hunsmann, 2011on multiple streams). Even the more thorough studies devote a short paragraph to each approach (Hanney et al, 2003: 5-6).

[iv] This is not to say that RCTs have no place in policymaking - indeed, UK policy scholars such as John et al (2013) explore their value in multiple interventions, while the UK's Behavioural Insights Team extols their virtue in more general terms (Haynes et al, 2012).