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Planning for knowledge translation: a researchers' guide

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Abstract

Researchers are being strongly encouraged to incorporate knowledge translation strategies into their research applications, but there is relatively little clear guidance for them about precisely what this means or how they can achieve it. A previous article published in this journal addressed those assessing research applications, but there is still a need for guidance aimed at researchers themselves. This paper sets out a proposed guide which could help to fill this gap. The guide is based on a coherent and empirically-based conceptualisation of the knowledge translation process. It encourages researchers to embed knowledge translation early in their research planning process rather than adding it on later. Because the framework sets out a number of considerations rather than 'rules,' it affords researchers the flexibility, autonomy and creativity to produce a personally-useful, coherent and workable knowledge translation strategy.

Introduction

Knowledge translation is a concept which has gained significant currency in the worlds of research and policymaking over recent years. Research councils are beginning to mandate activities designed to link research outputs to policy and practice (Tetroe et al., 2008) whilst organisations such as the UK's National Health Service (NHS) are making significant investments in projects designed to do the same (Baker et al., 2009). In a previous issue of this journal, Goering et al highlighted the way in which this changing landscape has brought new challenges to researchers and funding agencies through the introduction of knowledge translation components into the grant application process (Goering et al., 2010). In this article they suggest that whilst researchers are being encouraged to incorporate knowledge translation activities and strategies into their research applications, many are without any clear idea about precisely what this means or how it should be assessed. To address this, they produced a ~~checklist~~guide for reviewers which included a series of questions to consider when assessing health research knowledge translation plans.

For researchers with limited experience of translating evidence into practice the questions included within this ~~checklist~~guide provide limited information on how to formulate

appropriate approaches to knowledge translation. Goering et al. recognise that there is still a need for guidance aimed at researchers themselves which would help them to incorporate knowledge translation plans within their proposals and research designs. We suggest that, ideally, such guidance should be firmly grounded in an empirical understanding of the processes and activities involved in knowledge translation.

In this paper we respond to Goering et al's call for more guidance by setting out a proposed guide for researchers on how to undertake the knowledge translation process within a research project. We begin by outlining the current situation in more detail by exploring the policy imperatives and incentives for UK researchers to engage in knowledge translation and the guidance issued them by UK funding agencies. Next we introduce our guide and explain how it could be used in practice. In doing so, we have aimed to provide practical advice which can help researchers consider how a broad range of issues might apply to their particular context. Finally, we discuss some of the outstanding challenges and suggest how these might be addressed. Throughout the paper we draw upon and make comparisons with the previous paper by Goering et al.

Policy imperatives and incentives to engage in knowledge translation
In the UK the increasing importance of knowledge translation has been reflected in a range of policy developments. For instance, in 1997 the UK Government (in the wake of the Bovine Spongiform Encephalopathy crisis) published a set of guidelines which urged the use of scientific analysis in policy making and demonstrated a clear rationale for linking evidence with policy and practice (HM Government, 2005). Over 10 years later, the UK Council for Science and Technology outlined the achievements brought about by the Government's policies on and commitments to using evidence more systematically in the policymaking process (Council for Science and Technology, 2008). However, they also found that both academics and policymakers still had a considerable way to go and that the engagement between academia and policy needed to be based on better mutual understanding. Key recommendations for improving the relationship included the creation of a set of personnel exchange mechanisms (such as secondments and internships) and introducing mechanisms for assessing and rewarding the policy impact of academics' work. In the research arena, several policy developments reflected the rise of knowledge translation. In 2004 the UK Research Councils were heavily criticised for emphasising scholarship over impact and a range of objectives and actions were set to ensure that scientific knowledge contributed to

economic and social life in the UK (HM Treasury, 2004). In 2006 the Warry report showed that although the research councils had instigated a range of policies and frameworks designed to increase the economic impact of their research, they still needed to place more emphasis on knowledge translation by assuming an agenda-setting role, influencing knowledge translation initiatives within universities and increasing engagement with user organisations (Warry, 2006). By 2008 this idea had been extended to individual researchers themselves, and knowledge translation had been elevated to one of the basic responsibilities of UK researchers (Research Councils UK/Universities UK, 2008).

Alongside this broad policy context, there are two specific drivers for researchers to engage in knowledge translation activities, particularly in the UK. The first comes from the application processes and procedures of UK and international research councils which require researchers to make explicit plans for knowledge translation (Tetroe et al., 2008, Goering et al., 2010). In the US and Canada the approaches of research councils and researchers to knowledge translation are relatively well-advanced (or at least, well disseminated) (Kerner, 2006; Cousins, 1996; Ross et al., 2003). In the UK all of the state-funded research councils (except the Medical Research Council) have recently begun to require an impact summary and two page impact plan as part of all funding applications. This impact plan ~~is the UK research councils' equivalent of the knowledge translation plan outlined by Goering et al. since it~~ requires researchers to outline the processes they will use to <u>increase the likelihood of</u> their research <u>having</u> an impact on <u>the real world, where this is appropriate. Impact is defined as a contribution to economic and social life, meaning that it could range from the direct application of findings into new policies and procedures through to the influence of a body of research on ways of thinking about a problem. Importantly, it is also recognised that not every piece of research will or should have a direct impact on non-academic audiences. Because impact plans focus on the process of impact-creation, it seems reasonable to view them as being similar to the knowledge translation plans which are required by other international funding councils, such as those in Canada.</u>

Within the UK the second driver for researchers to engage in knowledge translation comes from the assessment and subsequent allocation of funding through the Research Excellence Framework (previously the Research Assessment Exercise). To date, traditional measures of research excellence, such as prestigious journal publications, have been given much more

prominence than other measures, such as the extent to which research has influenced policy. To address this, future iterations of the assessment exercise are likely to include detailed assessments of the economic and social impact of research (HEFCE, 2009). This represents the greatest change thus far in the way that university research is assessed and funded (Bekhradnia 2009). The new assessment criteria for 'impact' are likely to focus both on the reach and significance or transformative effects of the research, and on the process of impact creation and knowledge translation including collaboration with users, team working and production of knowledge which is relevant to users' communities (HEFCE, 2009). Although assessing the non-academic impact of research could contribute to a changing culture in terms of user engagement and knowledge translation, it is unclear at present if and when this driver will come into play for individual researchers, since the assessment exercise is intended to be a retrospective, aggregated view of a research unit's impact. There has also been considerable resistance within the research community to the assessment of non-academic impact, not least because there are likely to be theoretical and practical problems with measuring it (Grant et al., 2010; Nolan et al., 2008). These issues mean that the proposed template for documenting impact has limited transferability to the business of research planning. Since research planning is the focus of this paper and Goering's earlier paper, it does not seem appropriate to go into more depth about the ongoing debates about impact assessment, beyond noting this could provide further incentives for researchers to engage in and plan for knowledge translation.

Current guidance issued to researchers by research councils

In their earlier paper, Goering et al. point out that there is an internationally recognised paucity of guidance about how to design and assess knowledge translation plans (Goering et al., 2010). Whilst this is an issue for those assessing knowledge translation plans, it is also a challenge for researchers themselves, especially since they appear to be the subject of very limited guidance. To illustrate this, we will use examples drawn from the major research funding councils in the UK. Whilst we recognise that there are other funding sources, such as charitable foundations and, in the UK, the Department of Health, our focus is on the major state-funded research councils since these exercise a great deal of influence on the overall research culture in the UK.

The primary source of guidance about the production of knowledge translation or impact plans in the UK is to be found alongside the online electronic application system used by all

of the state-funded research councils (the Je-S). Individual research councils issue relatively little guidance on their own websites about what they expect these impact plans to include, although the onus appears to be on affording flexibility and autonomy to researchers (Biotechnology and Biological Sciences Research Council, 2009, Engineering and Physical Sciences Research Council, 2010) whilst encouraging innovative and creative approaches (Arts and Humanities Research Council, 2009). What these approaches might entail is not addressed.

Within the centralised application system researchers are asked to consider three questions relating to their impact plan – who will benefit from this research, how will they benefit from this research, and what will be done to ensure that they benefit from this research? (Je-S, 2009a) The final question is expected to be the main focus of the impact plan and applicants are prompted to consider:

- how planned activities build on existing links with users/beneficiaries
- how responsibilities are to be divided among collaborators
- how collaboration is to be managed
- what type of engagement or linking interventions are proposed (examples given are secondments, targeted public events, workshops, publications and publicity, websites, media relations and public affairs activities)
- how the most relevant outputs will be identified and exploited during and after the research process (Je-S, 2009b)

A further layer of advice is provided by one or two of the individual research councils, most notably the Natural Environment Research Council. They offer a template which seems designed to stimulate researchers into using the impact planning process as a way of developing a closer relationship with potential users and beneficiaries. The template includes the following headings:

- Specific users this work might be of interest to and how they will benefit
- Techniques, methods or activities with which you will engage with this group
- Wider user interest (users who may benefit without needing to engage so strongly)
- Methods of disseminating information to this group
- Milestones and measures of success
- Summary of resources (Natural Environment Research Council, 2009).

They also provide two fictional impact plans on their website to demonstrate good and bad practice. The highly graded plan clearly identifies several types of user, and proposes putting in place a close collaborative relationship with a specific organisation (by means of a secondment) that will enable the researchers to gain a good understanding of the context for eventual implementation of their findings, and to tailor them to user needs by proceeding through an iterative process of problem definition and revision. The poorly graded plan, according to the annotated comments, demonstrates a lack of engagement with user needs, little attempt to find out what users need, a lack of awareness of potential user groups and no consideration to how information should be packaged. In addition to this overall guidance about the impact planning process, NERC also offer specific guidance on how to create impact through communicating scientific findings in an appropriate and accessible way to a wide range of stakeholders (Natural Environment Research Council, 2009). This type of guidance could provide a valuable resource for researchers when planning knowledge translation strategies, yet this research council is relatively unusual in offering this level of guidance, and it is unlikely to be accessed by researchers applying to other research councils.

In addition to the information issued by the main state-funded research councils, some UK universities have issued advice to their researchers on the completion of impact plans. Much of this, however, focuses on the identification of specific beneficiary groups and/or listing a range of knowledge translation activities. Generally, the focus of university guidance is on increasing the chances of getting external funding rather than embedding knowledge translation in research design. There is a risk that this may encourage a 'checklist' approach to planning activities – driven by the notion that the more boxes ticked, the stronger the impact plan is (see, for example, Imperial College, 2009). Goering et al. describe this as the 'cookie cutter' approach which demonstrates a lack of coherence, limited critical reflection on the complexities of knowledge translation and lack of adaptation to the specific context within which the project is to be conducted (Goering et al., 2010). In other words, this type of approach represents a 'context free' rather than 'context sensitive' approach to knowledge translation. A checklist approach which focuses on a set of predetermined knowledge translation activities can also encourage researchers to slot these into a pre-existing research design. Ironically, this could serve to undermine the impact of their research, since it essentially works against the iterative and dynamic nature of the knowledge translation process (Graham et al., 2006; Ward et a., 2009a).

The type of guidance which has been offered to researchers by Research Councils and universities appears unlikely to encourage them to develop a deeper understanding of how their research is embedded in wider processes of knowledge translation, and how the knowledge generated by the research is transformed as it leaves the academic field and interacts with other types of knowledge to which users are exposed. This is partly because guidance does not seem to be informed by an adequate conceptualisation of the knowledge translation process such as that espoused in the knowledge translation literature (Graham et al., 2006, Mitton et al., 2007, Kerner, 2006). Instead, the current guidance for UK researchers appears more appropriate for planning 'end-of-grant' knowledge translation or dissemination than ongoing linking and exchange, which represents a major challenge to the future development of knowledge translation approaches.

Developing a useful guide for researchers

One of the main challenges of offering knowledge translation guidance to researchers involves coming to an adequate conceptualisation of the knowledge translation process itself. This issue is raised by Goering et al. when they discuss the difference between good research practice and strategic knowledge translation (Goering et al., 2010). It is widely recognised that knowledge translation is an inherently social process (Kitson et al., 2008, McWilliam et al., 2009) and although there is a multitude of knowledge translation frameworks they all represent the shape of this process in one of three ways. First as a linear progression with an identifiable start and end-point (i.e. from problem identification to knowledge use); second as a cyclical process involving a linear progression that is repeated rather than reaching an endpoint; and third as a dynamic, interactive and multidirectional process where elements of the process can occur simultaneously or in different sequences (Ward et al., 2009a). Similarly to Goering et al., we judged the shape of the knowledge translation process to be akin to the third description. Our judgement was primarily based on our experience of knowledge translation literature from the fields of healthcare, education and management and, as in Goering's work, was also influenced by the widely-used CIHR and CHSRF definitions of knowledge translation. The popular 'linkage and exchange' model of knowledge translation which focuses on interactions between the producers and users of research and highlights the contingency and complexity of research use is an example of the perceived dynamism and multi-directionality of the knowledge translation process (Huberman, 1994). A further example of this conceptualisation comes from the participatory researchers interviewed by

Goering et al., who saw knowledge exchange as an evolving, integral component of a research project (Goering et al., 2010). Our involvement in a Medical Research Council funded project which sought to uncover the processes involved in knowledge translation in a health context has added further weight to this conceptualisation (Ward et al., 2009b). In particular we found that knowledge translation did not involve a series of discrete steps, but that it evolved over time and involved the consideration of several elements (listed below) at once. The results of this project will be reported elsewhere but more information can be found on our website (http://www.leeds.ac.uk/lihs/psychiatry/research/knowledgebrokering.htm) or by contacting the authors.

Another challenge in offering knowledge translation guidance to researchers involves coming to a consensus about the essential elements involved in the process. Again, the literature contains a wide range of elements and describes these using an array of different terminology. This ranges from 'building a case for action' (Swinburn et al., 2005) to the adaptation of research for different users (Lavis, 2006). Using literature from healthcare, education and management, we have identified five essential elements involved in the knowledge translation process (Ward et al., 2009a). The first element involves identifying, clarifying, focusing, reviewing and evolving the problem which the research needs to address. Within the literature the responsibility for problem definition is usually assigned to the research user, since ensuring that the research meets the needs of the user is widely believed to be the best way of making sure that research is used (Lavis, 2006). The second element involves exploring and identifying the context which surrounds the research producers and users. The third element involves developing and selecting the research knowledge which is to be translated, part of which involves considering how the intrinsic characteristics of research are likely to influence its uptake. The fourth element involves clarifying and choosing specific knowledge translation activities or interventions. The literature showed that these activities fell into three broad categories - distribution which included targeted dissemination, marketing and the use of local champions, linkage which included interaction, dialogue and the use of intermediaries, and capacity building which included educational workshops and programmes. The final element involves considering the ways that the research is likely to be used in practice and how it can be spread and sustained. Further definitions of the five essential elements and the activities involved can be seen in

Table 1 below. A full list of the sources from which the elements were extracted can be found in our earlier paper (Ward et al., 2009).

Component	Definition	Activities
Problem	The problem or issue to be addressed by the research/knowledge.	Identifying the problem, issue, aim or user needs Communicating and negotiating about the nature of the problem/issue to be addressed by the knowledge translation process between users and researchers
Context	The circumstances surrounding the user and researcher	Assessing and prioritising barriers and supports for knowledge translation Analysing and taking account of individual, organisational and environmental / structural dimensions of user or researcher context
Knowledge	Properties of the pre-existing knowledge/evidence about the problem or the generation of new knowledge/evidence	Developing, producing, scoping and selecting knowledge/research Taking account of/assessing the knowledge properties (e.g. complexity, trialability, observability, compatibility, credibility)
Interventions	The specific activities designed to translate knowledge/research into action	Selecting the most appropriate form of intervention (i.e. dissemination activities, linkage and exchange activities, capacity building activities) Selecting, tailoring, implementing and evaluating activities
Use	The ways in which the knowledge/research is or might be used	Identifying/accounting for the ways in which the knowledge will be used (i.e. Direct use of knowledge for problem-solving, conceptual use of knowledge for perception-shifting or understanding, political use of knowledge for supporting or challenging policies) Monitoring and sustaining knowledge/research use

Table 1
Definitions of the 5 essential elements of knowledge translation

Our conceptualisation of the knowledge translation process as a dynamic, multidirectional and interactive process moved us away from the need to pose a specific series of activities or interventions which researchers should carry out. As we have discussed above, this approach has been taken by some of the UK research councils and appears to have resulted in a relatively stilted 'tick box' approach to knowledge translation. Instead, we have proposed a framework for thinking, based on the five essential elements of the knowledge translation

process. This has several advantages. First, encouraging researchers to think through a range of issues and questions could avoid making knowledge translation what Goering has termed a 'cookie cutting' exercise where researchers use the right words but fail to understand the complexities of knowledge translation or plan knowledge translation activities which are inappropriate for the level of uncertainty which surrounds the research. This type of thinking could also aid the process of learning about and becoming familiar with the processes involved in knowledge translation, increasing the ability of researchers to 'get it' (Goering et al., 2010). Second, basing the framework on a clear conceptualisation of the knowledge translation process drawn from a range of evidence adds credibility and ensures that knowledge translation becomes an intellectual as much as a practical exercise, which improves the prospects for knowledge translation being accepted as a legitimate requirement by scientific researchers and peer reviewers. Third, conceptualising knowledge translation as a process rather than a set of activities increases the chances of it becoming embedded as part of the research design and practised as a generic research skill. This was also recognised as one of the clear strengths of the assessment guide developed by Goering et al. Finally, a framework (rather than a prescriptive guideline) allows researchers the flexibility, autonomy and creativity to produce a personally-usable, coherent and workable knowledge translation strategy. This could avoid the problem of researchers feeling compelled to do it all, rather than focusing on the most appropriate and workable knowledge translation activities (Goering et al., 2010).

To make the framework useful for researchers, we have operationalized it into a guide, which can be seen in abbreviated form in table 2 below. Our guide is in the form of issues and questions for researchers to consider when planning for and undertaking the knowledge translation process. The questions are drawn from the knowledge translation literature and from our observations of the knowledge translation process in the context of the research project outlined above. A complete (non-abbreviated) version of our guide and more information about our research project can be found on our project website (http://www.leeds.ac.uk/lihs/psychiatry/research/knowledgebrokering.htm) or by contacting the authors. We are aware that the guide may appear to be a 'checklist' for knowledge translation, particularly in the way that it is presented. The distinction is that our guide is not intended to be exhaustive, but is designed to be interactive and flexible. In particular, the questions are intended to assist researchers in thinking about the issues associated with knowledge translation rather than with prescribing or leading towards a set of specific

solutions. As such, we suggest that our guide is as much a tool for learning about knowledge translation as a tool for carrying it out.

Element	Sample Questions
Problem Involving: Identifying the source/location of the problem Clarifying user needs Focusing, reviewing and evolving the problem	• What is the nature or origin of the problem that needs to be addressed? • What are the needs of the potential users and are they aware of a need for any support, training or knowledge? • When and how will the problem be reviewed and, if necessary, re-scoped? • What are the parameters within which the problem can or might evolve? Is there sufficient time and space in the research design to allow this to occur?
Context Involving: Exploring, discovering and revealing context which includes the personal, interpersonal, organisational, and institutional characteristics relevant to knowledge translation. Assessing the enablers or barriers to knowledge translation in the academic environment	• Which beliefs, skills, experiences, practices, interests, attitudes and motives of individual users influence the way they use knowledge and might affect how they respond to the research? • Where and how are the decisions made in this organisation? Who has the power to act on the research findings? • What are the policy objectives and priorities of the organisation and how might these influence the way it uses knowledge and responds to the research? • What are the wider economic, legislative, regulatory and professional contexts within which the individual or organisation works and how might this influence the way they use knowledge and respond to the research? • How will the users' perceptions of academia and academia's perceptions of users affect collaboration? • How uncertain/contestable are the findings from this research likely to be?
Knowledge Involving: Producing the research Classifying the research Assessing the research Tailoring the research Accessibility of research to wider users	• How will the research methods be aligned with what the proposed user needs? • To what extent is the knowledge generated by this research likely to be compatible with the users' norms and values? • How will knowledge be assessed for relevance to different users? • Are there any alternatives to this knowledge available to the user? How will they be compared/combined? • Will interpreting or implementing knowledge generated by this research require special skills, resources or systems? • How will the research be made accessible to users, both in content and format? What alternative dissemination routes have been considered (e.g. professional magazines, websites)
Intervention Involving: Negotiating the researcher's role in knowledge translation Type of intervention to be used Timing of the intervention Intensity of the intervention Integration of the intervention	• Is it appropriate and feasible to directly distribute research findings to users and if so, in what format? • Is it appropriate and feasible to link researchers with users and if so, how? (e.g. networks, workshops, placements, professional intermediaries, project advisory committee) • Is it appropriate and feasible to provide decision or implementation support, e.g. to advise users on implementation and timing? • Is it appropriate and feasible to provide capacity development support to help users use this and other knowledge in the future? • How closely aligned can and should the knowledge translation activities be with other user tasks, service development or planning processes? • Does the research design allow for iteration: time for review and revision of knowledge translation activities?
Use Involving: Identifying the research users Considering the practicalities of use Types of knowledge use Spreading knowledge to others Sustaining knowledge use	• Can the potential users of this research be identified in advance? • To what extent can knowledge generated by this research be directly used, i.e. applied directly with little modification? • To what extent can knowledge generated by this research change the way an issue or problem is perceived? • To what extent can knowledge generated by this research be used to support a particular argument or stance? • What steps can be taken to build the capacity of users to make continued use of knowledge generated by this research? • What steps can be taken to institutionalise the knowledge generated within

	the user environment, where there may be competing alternatives?

Table 2

Knowledge translation planning guide

Using guidance in practice: outstanding challenges

Like Goering and her colleagues (Goering et al., 2010), we have recognised that there is a considerable need for clear, coherent guidance which can be used to underpin the knowledge translation component of the grant application process, particularly for the researchers who are submitting such applications. We also recognise that there are a number of outstanding challenges associated with such guidance, including our own version.

The first set of challenges is related to the relationship between knowledge translation planning and assessment procedures. We have explicitly acknowledged that knowledge translation is a requirement of research funders both in the UK and internationally. This is based on the widespread recognition that knowledge translation ~~translating knowledge into action~~ is a vital part of the research process itself. However, as we have highlighted, researchers and research funders have sometimes suffered from a 'tickbox' mentality when it comes to knowledge translation. This is driven by the need to demonstrate that knowledge translation has been included in research proposals, rather than by a desire to incorporate knowledge translation into the research design. There are two problems associated with the relationship between knowledge translation planning and assessment procedures which would need to be addressed by any future iteration or implementation of knowledge translation guidance.

~~First, whilst the production of guidance for assessing knowledge translation could help to drive more appropriate planning procedures, this could merely increase the cookie-cutter approach by forcing researchers to conform to a set of standardised procedures and approaches. The guidance proposed by Goering et al. could avoid this to a certain extent, since it is based on a broad definition of research and knowledge translation, but it is unclear what effect such guidance would have on researchers. An alternative approach could involve focusing on the planning procedure and using this to inform the development of knowledge translation assessment procedures and outcome indicators. A further approach could involve uncoupling the planning and assessment procedures and using separate, but related guidance for each process. This idea, put forward by Goering elsewhere (Ross et al., 2007), could be achieved through the parallel use of our own and Goering et al's guidance.~~

~~Second~~First, by its very nature, guidance such as that proposed by Goering and her colleagues would only be considered by researchers during the research application stage. Instead, researchers need to consider the issues associated with knowledge translation early in the research planning process. An alternative approach would involve embedding guidance in research planning processes. This approach is endorsed by funding agencies such as the UK's National Institute of Health Research and the Health Foundation, both of whom explicitly recognise the need to embed 'linkage and exchange' activities more consistently across the research pathway and to more directly link research proposals to the needs of the end-user. It is unclear at present precisely how this embedded approach to knowledge translation could be achieved, although Goering et al. suggest the development of specific training modules for researchers.

Second, making knowledge translation a prerequisite for research funding does not necessarily help researchers to clearly understand the purpose and processes involved in knowledge translation. Although Goering et al's guidance attempts to communicate the breadth of knowledge translation, they point out that less experienced researchers may not fully understand why they are undertaking knowledge translation or the most appropriate means for doing so. In the previous section, we suggested that our guidance could help researchers to learn more about the knowledge translation, since it is based on a coherent and consistent conceptualisation of the process. However, both we and Goering et al. recognise the limitations of guidance as an educational tool, especially given the multifaceted and complex nature of knowledge translation, but we also recognise the necessity of researchers understanding this process.

The second set of challenges concerns the wider context within which researchers operate. Much has been written about the incentives which drive researchers and how these are misaligned with the knowledge translation agenda (Jacobson et al., 2004; Landry et al., 2007). For example, traditional approaches to assessing research excellence have hinged on the quantity of rigorous, peer-reviewed research outputs. This means that rewards, in terms of core funding and career progression are also defined in these terms. Although there have been concerted efforts to change this landscape, knowledge translation will remain a marginalised activity for many researchers until it forms part of the reward system. Alongside this, there is an argument that many researchers lack the appropriate skill set to lead knowledge

translation, since they frequently speak a specialised, technical language which is at odds with the needs and expectations of policymakers (Caplan, 1979). They may also be unaware of the complexities involved in decision making, which include weighing up and responding to a broad range of influences and evidence, of which research is only one (Nutley et al., 2007). Goering et al. also recognise this issue in their earlier paper, highlighting the need for research funders and institutions to free researcher's time to engage in knowledge translation activities and reward them accordingly. They propose that these challenges should not inhibit researcher's engagement in knowledge translation, since guidance could serve to lessen the burden by enabling them to prioritise different knowledge translation activities within a coherent approach. We would generally agree with this point, but remain aware of the challenges of implementing guidance within a landscape of variable acceptance and ability. An associated point is that the research is itself complex and rarely generates information which is uncontested or completely certain. This can be difficult for both users and researchers to accept, especially against the rhetoric of 'impact' in the UK and it is difficult to see how this inherent uncertainty interacts with a wider agenda of knowledge translation. Finding ways of effectively building this into knowledge translation guidance therefore remains an outstanding issue.

The third set of challenges relates to the practical utility of knowledge translation guidance. Any guidance which is based on the complex reality of knowledge translation needs to cover a very broad range of issues and ideas. This is the case with the guidance proposed by ourselves and Goering et al. However, such a broad range of issues can seem overwhelming, especially if researchers view the guidance as a knowledge translation 'checklist' which necessitates the consideration of every issue which is listed. Addressing this is firstly a communication issue involving presenting guidance so to encourage researchers to consider the issues which are most pertinent rather than all of the issues listed. In the case of our guidance, we suggest that this could involve providing a template which focuses on the five broader elements of knowledge translation and using examples to demonstrate how each of them has been considered within a series of fictional research designs. This approach has also been taken by Goering et al. in their guidance, which suggests that it may be an appropriate response to this issue. Addressing the practical utility of guidance also involves making it acceptable to researchers. In our experience, an often-used criticism of knowledge translation guides and tools is that they are not themselves based on any knowledge translation evidence. Although this criticism often stems from researchers' frustrations about the lack of evidence

for the effectiveness of alternative methods, future guidance should nonetheless take this criticism on board and make explicit links between knowledge translation evidence and advice. Other issues of acceptability relate to the usability, the perceived benefits and the relevance of guidance for researchers, including the need to provide further advice about how to answer each of the questions and what to do once the answers have been obtained. To this end, some of the materials developed by the Canadian Institutes of Health Research may show the way, particularly the recently developed online tutorials (see http://www.learning.cihr-irsc.gc.ca/course/view.php?id=3). However, both we and Goering et al. recognise the need for further development of our respective guides to address these issues.

Conclusion

This paper has set out a proposed guide for researchers on how to plan for knowledge translation. We have shown how current guidance is closely aligned to the research funding application process and have revealed several problems and issues which this has created. Whilst it may not be feasible to completely uncouple the knowledge translation planning and assessment process, we have suggested that conceptually robust guidance could help to move researchers away from a checklist approach to knowledge translation towards one which is more aligned to its complex realities. We have also suggested that this type of guidance could act as a learning tool for researchers if used at a local level, making knowledge translation more meaningful to those who are tasked with carrying it out.

Our guide recognises that there is unlikely to be a one size fits all approach to knowledge translation. Instead, it will involve a complex series of questions and considerations in different settings. Although the set of questions within our guide is not exhaustive, the guide is nonetheless based on a conceptual framework which encourages researchers to consider key dimensions of the knowledge translation process. As such, both our own and the guidance developed by Goering et al. could provide a starting point for further development work. This work would need to focus on the acceptability of the guide to researchers, the applicability of the guide to fields other than applied health research and the practical utility of the guide, particularly when research evidence is uncertain or contested. Further development would also involve providing further details about how these questions can be answered in a way that will ensure more effective knowledge translation. We will also ultimately need to focus on the relative merits of this and other guidance as tools to increase

researchers' ability to confidently and successfully plan for and carry out knowledge translation in both the development and conduct of their research.

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