Knowledge Transfer and Mobilisation

Results of the Wales Scoping Study

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List of abbreviations

AHSC - Academic Health Science Collaboration

AHSNs - Academic Health Science Networks

CLAHRCs - Collaborations for Leadership in Applied Health Research and Care

CPD - Continuing Professional Development

HEIs - Higher Education Institutions

IT – Information Technology

KT - Knowledge Transfer

KT&M - Knowledge transfer and mobilisation

KTE - Knowledge transfer/exchange

NHS - National Health Service

NICE - National Institute for Health and Care Excellence

NISCHR - The National Institute for Social Care and Health Research

OD - Organisation Development

PARiHS - Promoting Action on Research Implementation in Health Services

QI – Quality Improvement

R&D – Research and Development

REF - Research Excellence Framework

SEWAHSP - South East Wales Academic Health Science Partnership

UHB - University Health Board

Executive Summary

Purpose

The primary aim of this scoping study was to learn more about how research findings are currently used to inform and advance healthcare practice in Wales so that we can better develop initiatives to improve the transfer and mobilisation of knowledge.

Method

Semi-structured telephone and face-to-face interviews were carried out with senior representatives from Health Boards in Wales and Board members from South East Wales Academic Health Science Partnership (SEWAHSP) (n=28). The interviews were audio-recorded, transcribed verbatim and analysed according a framework informed by the literature, particularly Walker et al's[1] organisation of factors that influence knowledge transfer and mobilisation (KT&M). Their four broad factors are:

- *Context*: factors in the external and internal environment
- *Content*: the changes being implemented
- *Process*: actions taken by the change agents
- *Individual dispositions*: attitudes, behaviours, reactions to change

Selected staff members within Health Boards and SEWAHSP were invited to complete a short, anonymous online questionnaire (n=27 responses). These individuals were identified by interviewees as having influence or involvement in KT&M.

Main findings

The full report presents findings from both components of the data gathering. This summary draws across the data and provides an overview of activity, identifying barriers and enablers of KT&M.

The current status of KT&M in Wales

Interest in KT&M was said to be increasing locally, nationally and within Government policy. However, KT&M was an integral part of personal or organisations' professional practice for only a minority of respondents; around half of all questionnaire respondents spent less than 20% of their work time on KT&M. In most organisations KT&M was thought to be fairly unsystematic, with some exceptions (certain topic areas, professional groups). Some organisations had structures and processes in place (e.g. organisational development programmes, regular information dissemination). Others suggested that the use of guidelines (e.g. NICE), improvement programmes such as 1,000 Lives Plus, and the transmission of evidence via teaching activities and CPD provided some help with KT&M processes.

[1] Walker, HJ, Armenakis, AA and JB Bernerth. 2007. 'Factors influencing organisational change efforts.' *J Organ Change Manage* 20:761-773.

Summary of Factors Influencing KT&M according to respondents

	Barriers	Enablers
Context	Competing priorities/agendas; meeting different demands on a finite budget	Targeted Government policy to create a "push" for change; policy based on meeting areas of patient need; REF encouraging awareness of need to address impact
	Organisational culture which does not recognise the value of new evidence/change	Bottom-up changes in organisational culture to reframe professional role, valuing evidence and innovation; good leadership and management support at all levels – empowering staff and encouraging change
	Unsupportive organisational infrastructure; no clear path of accessing/implementing evidence; reliance on personal interest or motivation	Clearer signposting of opportunities /resources; support from an identified KT&M broker within the organisation
	Lack of cross-professional working (professions, organisations, NHS and HEIs)	Multi-professional networks and face-to-face meetings; communication and discussion to share knowledge and encourage opportunities for innovation; engagement with organisations to make links (e.g. SEWAHSP); communication
Content	Difficult to see relevance to practice in academic papers	KT&M broker with good knowledge of target audiences to synthesise information & recommendations for practice and disseminate to appropriate professionals; involving NHS in research process; involving researchers in dissemination
	Valuing scientific research over organisational services research; "soft" intelligence and experiential knowledge not valued as evidence	Recognising the importance of tacit knowledge/ experience.
Process	Lack of time to reflect on practice/do KT&M activities	Embedding KT&M activities as part of every professional's role; protected time within workload
	Overload of evidence; too much to appraise; generalised dissemination of information; over-reliance on electronic dissemination (emails)	More effective dissemination of information (timely, condensed, clinically relevant, meeting patient needs); central repository of relevant information
	Overload of improvement initiatives	Focussed, targeted interventions/initiatives aligned with local need; outcome measures in implementation programmes to provide guidance and reward achievement, aiding staff motivation and belief in the process of change; management support

	Lack of communication; difficulty getting people together	Collaborations/partnerships and effective research/practice links; greater cooperation between NHS and universities
Individual factors	"Inward-looking" staff members	The presence of "can doers"; outward looking, motivated and open to change; leaders modelling good practice
	Lack of skills to appraise evidence	Embed skills in clinician education; KT broker with knowledge of research skills

See pages 30-32 and 44-45 for a more detailed summary

The KT&M role

It was believed that, as a matter of patient safety, KT&M should be the responsibility of every practitioner as part of their professional role. Such activities are implicit within many job descriptions but the need for KT&M activities should be made explicit and embedded within day-to-day practice.

However, there was also support for the creation of specific knowledge broker roles within organisations. It was noted that many teams already have people who take on these tasks but the role could be optimised and recognised. Providing support to other team members, the role could include collaborating with relevant departments, identifying new research, disseminating and implementing it and observing outcomes. However, their role should be to support the process, rather than risk being seen as solely responsible for KT&M within the organisation.

Conclusions and recommendations

While it was acknowledged that many professionals recognise the need for keeping up to date with new evidence, KT&M as a process was still finding its place within organisations.

Workload pressures, competing organisational priorities and a target-driven rather than innovative culture were said to leave little time for reflection on practice or to seek out new evidence. This coupled with a lack of clearly signposted pathways meant that KT&M activities tended to be individually-driven, rather than embedded within organisations.

KT&M is not just about the transfer of knowledge between professionals but involves the implementation of that knowledge and innovation in practice. Knowledge and evidence should have clear implications for application to practice, with the aim of improving patient healthcare.

Recommended ways of improving KT&M in Wales include:

I. Clear Government policy and coordination linking KT, innovation, R&D and QI.

II. Local, patient-centred, policy should encourage and expect KT&M and address identified areas of local concern with manageable, measurable outcomes.

III. Development of better communication and collaboration within and across organisations and sustained interaction between researchers and practitioners.

IV. The reporting of evidence via accessible, user-friendly communication with clear and relevant recommendations for practice. Linked to this, the creation of an easily accessible repository of such information.

V. Increased visibility and signposting of the KT&M processes within organisational infrastructure.

VI. KT&M activities should be understood as a valued part of every clinician's professional role with time and suitable processes in place to support it. Alongside this, there is value in the broker role, individuals skilled in appraising, synthesising and communicating knowledge and linking professionals and organisations.

1: Background

Transferring and mobilising knowledge from research into healthcare delivery is a long-standing international challenge. The study of knowledge transfer and mobilisation is about looking at how research evidence reaches practitioners and is used to inform or change practice. Research identifies better ways of planning or providing healthcare, or highlights mechanisms or processes that no longer work. Yet this knowledge often fails to reach or influence those responsible for patient care. The Cooksey report[1] identified two gaps in research translation: the translation of basic and clinical research into ideas and products, and between introducing those ideas and products into clinical practice. In our work reported here, we are concerned with the second translation gap - how the disconnect between research and its implementation is being addressed. Although we recognise in this report that KT&M is an issue for all our focus is on how health services and managers and clinicians can be helped to access knowledge that will inform their decisions on service delivery and organisation for health improvement .

This study is necessary because we need to learn more about how research findings are currently used to inform and improve healthcare practice in Wales so that we are in a better position to develop initiatives that can improve knowledge transfer and mobilisation (KT&M). The importance of KT&M is reflected in NISCHR AHSC setting up a Knowledge Transfer Task and Finish Group. This demonstrates the high priority that is being placed on KT&M in policy terms within Wales. We know little about how the issue of KT&M is understood or what measures are used to address the challenge in Wales. Early findings of this study were used to inform the work of this Task and Finish group. Our report should help to shape discussion with key stakeholders in Government, Welsh charities, NHS organisations and universities on priorities related to KT&M and views on factors affecting the transfer of knowledge and innovation and what might constitute an effective intervention to mobilise KT in both primary and secondary care.

Our study began with a review of the literature and we summarise the main messages here. For a full discussion see Bullock, Morris, Warren and Barnes, 2014.[2]

[1] HM Treasury. 2006. A Review of UK Health Research Funding: Sir David Cooksey. HM Treasury: London

[2] Bullock, Morris, Warren and Barnes. 2014. Working Paper: Knowledge & Innovation Transfer in Healthcare. A Literature Summary. Cardiff University: Cardiff ISBN: 978-1-908469-11-3

2: Messages from the Literature

2.1 Terminology

Knowledge

There are different aspects to knowledge and its use. To clarify meaning, it is helpful to consider[3]:

What knowledge?	(e.g. research, evidence, best practice, tacit)
For what purposes?	(e.g. decisions, change, influence, practice, empowerment)
Who's the target?	(e.g. organisations, researchers, practitioners, knowledge brokers)
What techniques?	(e.g. guidelines, training and workshops, facilitation, communities of practice)
With what impact?	(e.g. instrumental, conceptual, changing practice)

Innovation

The Carruthers' report concerned with the adoption and diffusion of innovation in the NHS sets out recommendations to encourage quicker transfer of new practice. Carruthers defined innovation as: "An idea, service or product, new to the NHS or applied in a way that is new to the NHS, which significantly improves the quality of health and care wherever it is applied."

Knowledge Transfer and Mobilisation

The transfer and mobilisation of knowledge is "a dynamic and iterative process that includes the synthesis, dissemination, exchange and ethically sound application of knowledge to improve health, provide more effective health services".[4]

Prefaced by 'knowledge' and (sometimes) 'innovation', terms include: 'transfer', 'exchange', 'mobilisation' 'translation', 'management', 'dissemination', and 'diffusion'. There is both confusion of terms and confusion in the meaning of terms. Knowledge translation, for example, can refer to the job of 'translating' lengthy and complex research reports into digests more suitable for busy practitioners; or it can refer to the translation of knowledge into action or practice arising from collaboration between researchers and practitioners. Likewise, those working in roles to support this activity attract a variety of labels including: 'knowledge brokers', 'translators', 'boundary spanners', 'innovation leads', 'diffusion fellows', 'research navigators', 'research liaison officers', and so forth.

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[3] Ontario Institute for Studies in Education (OISE). 2013. *What is knowledge mobilization?* http://www.oise.utoronto.ca/rspe/KM_Products/Terminology/index.html (accessed 4.11.13; no longer available; now see http://www.kmbtoolkit.ca/planning)

[4] The Canadian Institutes of Health Research (CIHR) http://www.cihr-irsc.gc.ca/e/29418.html

Knowledge Brokers and Knowledge Brokering

The role-holder seeks to create a link between the knowledge or innovation and the managers/practitioners/decision-makers, acting as a linkage agent or mediator. These knowledge brokers facilitate dialogue between research and practice, build relationships, encourage greater involvement of decision-makers in research and researchers in decision-making. They can also help dismantle the cultural and language distance between the two worlds of research and practice by translating research knowledge into appropriate language and highlighting its relevance to practice. Methods used include workshops or other professional development activities, written communication through print and electronic media and personal face-to-face contact, building linkage and exchange.

Knowledge brokering can be conceptualised as a set of complex social activities that are difficult to evaluate. Key questions concern what types of brokering outcomes can and should be measured (e.g. increased evidence use, relationships and interactions between researchers and users, linkages and network, increases in capacity to use evidence, changed practice, impact on patients) and how they be adequately captured (e.g. via survey, interview, observation, documentary analysis).The final test of success is the impact of the broker on knowledge and innovation mobilisation, and resultant patient care improvement. However, there is little in the way of evidence about the impact of this role and especially in the UK.

2.2 Researcher-Practitioner Collaborations

There have been efforts to build bridges between researchers, policy makers and the service providers and there is growing interest in using collaborations to address the research-practice gap. There are now key organisations in Wales, England and Scotland.

Wales

The National Institute for Social Care and Health Research (NISCHR) Academic Health Science Collaboration (AHSC) was formed in 2010. It is a national programme working in collaboration with the seven regional Health Boards and the three NHS Trusts in Wales (Welsh Ambulance Services Trust, Velindre NHS Trust and Public Health Wales). NISCHR AHSC has three regional entities: in the South West, the South East and in North Wales.

Focused on clinical care and research, NISCHR AHSC has identified the transfer and mobilisation of knowledge as a priority and there are plans to create a national committee to progress innovation and best practice. The AHSC convened a national Task and Finish Group which made recommendations to NISCHR on KT&M policy.

Health Boards have organised themselves into regions. Of the three, the South East Wales Academic Health Science Partnership (SEWAHSP) has published a strategy to increase the speed and quality of 'translational' research and promote and support innovation in South East Wales. The other regions have yet to publish their strategies but they are likely to be similar in intent.

England

Academic Health Science Networks (AHSNs) have brought most NHS organisations in England into collaboration with higher education institutions (HEIs). In England, 15 AHSNs were licensed in March 2013. Like their predecessors, Academic Health Science Collaborations, the central aim of these collaborations is "knowledge mobilization, rather than research production".[5] In conjunction with the NHS, the AHSNs are tasked with aligning "education, clinical research, informatics, training and education and healthcare delivery" and improving "patient and population health outcomes by translating research into practice and developing and implementing integrated health care systems".[6,7]

Added input into the workings of AHSNs has come from the Collaborations for Leadership in Applied Health Research and Care (CLAHRCs). Service-led and patient-focused, nine CLAHRCs have been formed to conduct high quality health research, implement findings and increase NHS capacity for all sectors to engage in research. To facilitate knowledge mobilisation, many CLAHRCs used knowledge brokers, variously named. CLAHRCs are the most established and evaluated programme in the UK[8,9,10,11,12,13,14,15,16]

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[5] Walshe, K. and Davies, HT. 2013. Health research, development and innovation in England from 1988 to 2013: from research production to knowledge mobilization. *Journal of Health Services Research & Policy* 18(3 Suppl), pp. 1-12

[6] HSRN Briefing. 2012. Academic Health Science Networks: engaging within innovation and improvement. (Issue 246).

[7] NHS Confederation. 2012a. *Academic Health Science Networks: engaging with innovation and improvement* Health Services Research Network briefing.

[8] Currie, G. et al. 2013. From what we know to what we do: lessons learned from the translational CLAHRC initiative in England. *Journal of Health Services Research & Policy* 18(Suppl. 3), 27-39.

[9] Kislov, R. et al. 2011. Collaborations for Leadership in Applied Health Research and Care: lessons from the theory of communities of practice. *Implementation Science* 6(1), 64-73.

[10] Ling, T. et al. 2011. Delivering the aims of the CLAHRCs: evaluating CLAHRCs' strategies and contributions: *Interim report*: Phase I. Santa Monica, CA: RAND Corporation

[11] Lockett A, et al. 2014. A formative evaluation of Collaboration for Leadership in Applied Health Research and Care (CLAHRC): institutional entrepreneurship for service innovation. *Health Services and Delivery Research* 2(31)

[12] Martin, G. et al. 2013. Towards a new paradigm in health research and practice? Collaborations for Leadership in Applied Health Research and Care. *Journal of Health Organization and Management* 27(2), 193-208.

[13] Rycroft-Malone, J. et al. 2011. Implementing health research through academic and clinical partnerships: a realistic evaluation of the Collaborations for Leadership in Applied Health Research and Care (CLAHRC). *Implementation Science* 6(1), 74-85.

Scotland

In Scotland, the Scottish Executive and NHS Scotland has a team responsible for carrying out a range of brokering activities including consultation and research mapping exercises, developing networks and communities of practice, and facilitating knowledge sharing events.[17] They recommend using knowledge brokers as go-betweens, linking the policy, public sector, industry and academic communities.[18] The overarching knowledge transfer/exchange (KTE) strategy is focused on innovation activities and includes a high level management tool for framing, monitoring and evaluating the KTE activities.

2.3 Factors Affecting KT&M

There is a small but growing body of literature on how collaborative research partnerships work in practice. According to one model the factors that influence knowledge and innovation transfer fall into one of four broad categories[19]:

- *Context*: factors in the external and internal environment
- *Content*: the changes being transferred and implemented
- *Process*: actions taken by the change agents
- *Individual dispositions*: attitudes, behaviours, reactions to change

In an alternative model – the PARiHS (Promoting Action on Research Implementation in Health Services) framework – three elements are presented as affecting the success of research implementation: the quality of the evidence, the

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[14] Rycroft-Malone, J. et al. 2013. Collaborative action around implementation in Collaborations for Leadership in Applied Health Research and Care: towards a programme theory. *Journal of Health Services Research & Policy* 18(Suppl. 3), 13-26.

[15] Scarbrough, H. et al. 2014. Networked Innovation in the Health Sector (NIHS): Comparative Evaluation of the Role of Collaborations for Leadership in Applied Health Research and Care (CLAHRC) http://www2.warwick.ac.uk/fac/soc/wbs/research/ikon/research/clahrc/

[16] Soper, B. et al. 2013. CLAHRCs in practice: combined knowledge transfer and exchange strategies, cultural change, and experimentation. *Journal of Health Services Research & Policy* 18(Suppl. 3), 53-64.

[17] Clark, G. and Kelly, L. 2005. *New Directions for Knowledge Transfer and Knowledge Brokerage in Scotland*. Edinburgh: Scottish Executive Social Research.

[18] Scottish Government Knowledge Exchange Committee. Main Research Providers (MRPs). 2011. *Scottish Government Research Programme 2011-2016. Knowledge Transfer/ Exchange (KTE) Strategy*. Edinburgh: Scottish Government

[19] Walker, H. J. et al. 2007. Factors influencing organisational change efforts: An integrative investigation of change content, context, process and individual differences. *Journal of Organisational Change Management* 20(6), pp. 761-773.

context or setting and facilitation[20]. There is overlap between different frameworks. We have chosen to use Walker et al's headings.[19]

These factors can be associated to the PARiHS framework (Promoting Action on research Implementation in Health Services).[20] In the PARiHS framework, successful implementation is represented as a function of the nature and type of evidence, the qualities of the context in which the evidence is being introduced and the way the process is facilitated. Both frameworks include a context factor; Walker et al.'s 'content' can be mapped to 'evidence' in the PARiHS framework; and 'facilitation' in PARiHS seems to capture Walker et al.'s 'process' and 'individual dispositions'.

Context factors

External context factors relate to the wider environment in which the healthcare service and researchers sit. External context factors can limit the development of effective KT&M relationships. For example:

- The regular and sometimes rapid change in policies, ministers and civil servants.

Major shifts in healthcare and other policy, singly and in combination mean that policy focus shifts regularly.

- Policy makers working with short-time horizons, focused on immediate policy priorities.

The amount of time and resources available for brokering can be limited and short-term funding does not support the development of effective, sustainable partnerships. Insight from longer-term studies may be lost.

Internal context factors are those operating within organisations. One factor is the organisation's "absorptive capacity",[21,22,23] that is its readiness and capability for change.

- This comprises its prior related knowledge, attitude to research, willingness to change and the ability of the organisation to receive and process research information (flexibility and management support).

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[20] Rycroft-Malone J, Harvey G, Seers K, Kitson A, McCormack B, Titchen A.: An exploration of the factors that influence the implementation of evidence into practice. *Journal of Clinical Nursing* 2004, 13(8):913-924

[21] Cohen, WM and Levinthal, DA. 1990. Absorptive capacity: a new perspective on learning and innovation. *Administrative Science Quarterly* 53(1), pp. 128-152.

[22] Inkpen, A. 2000. Learning through joint ventures: A framework of knowledge acquisition. *Journal of Management Studies* 37(7), pp. 1019-1044.

[23] Parent, R. et al. 2007. A systems-based dynamic knowledge transfer capacity model. *Journal of Knowledge Management* 11(6), pp. 81-93.

- An organisation's absorptive capacity can be developed and nurtured by transformative leaders or leadership teams.[24]

Effective, inspiring leadership[25] and a supportive organisational infrastructure can help overcome challenges such as misaligned incentives, professional barriers, competing priorities and inertia.

- Implementing innovations is demanding – cognitively, emotionally, physically, and spiritually.[26]

Content factors

We use the term "content" to refer to the knowledge that is being mobilised and changes being implemented within an organisation. New evidence may be supported or side-lined; may address or be at odds with local needs; require change that is demanding (transformational and rapid) or incremental, fine-tuning.[14,27]

- Clear relevance and benefit to the participants is an important enabler.

Before knowledge or innovation can be implemented, the new evidence needs to be interpreted for the local context, integrated with existing knowledge and discussed. Decision-makers are more likely to engage if the project suits their needs (and there is the recognition of value). Knowledge brokers can help make the content of the research more relevant to practice and to tailor findings to service need.

- Competing agendas and priorities need acknowledging and managing.[28,29,30,31,32]

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[24] Oborn, E. et al. 2012. Knowledge Translation in Healthcare: Incorporating Theories of Learning and Knowledge from the Management Literature. *Journal of Health Organization and Management* 27(4), pp. 1-1.

[25] Antil, T. et al. 2003. Implementation of an innovative grant programme to build partnerships between researchers, decision-makers and practitioners: The experience of the Quebec Social Research Council. *Journal of Health Services Research & Policy* 8(Supplement 2), pp. 35-43.

[26] Shortell, S. et al. 1998. Assessing the impact of continuous quality improvement on clinical practice: what will it take to accelerate progress. *Milbank Quarterly* 76, pp. 593-624.

[27] Ross, S. et al. 2003. Partnership experiences: Involving decision-makers in the research process. *Journal of Health Services Research & Policy* 8(Supplement 2), pp. 26-34

[28] Baker, EA et al. 1999. Principles of practice for academic/practice/community research partnerships. *American Journal of Preventive Medicine* 16(3), pp. 86-93.

[29] Nutley, S. et al. 2003. From Knowing of Doing: A Framework for Understanding the Evidence-into-Practice Agenda. *Evaluation* 9(2), pp. 125-148.

[30] Bowen, S. and Martens, P. 2005. Demystifying knowledge translation: learning from the community. *Journal of Health Services Research & Policy* 10(4), pp. 203-211.

- Different types of knowledge (explicit or tacit) may be more or less readily transferred and exchanged.

Academia typically favours creating new knowledge suitable for publication in high impact journals rather than policy-driven outputs. People differ in their interpretation of what counts as valuable knowledge and evidence, in what circumstance and when.

Process factors

Process factors are the actions undertaken by the change agents and concern all those involved in the process of change, including the knowledge brokers.

- Collaborative partnerships need effective links (brokers) between researchers and practitioners.[33]

Flexibility is important: one-size does not fit all and finding the right person for the particular broker role is key.

- Building successful partnerships takes time and commitment.[27,29,32,34]

Project meetings can be used to feedback emerging findings for practitioners to action, and for practitioners to provide context that assists interpretation of findings. Co-location facilitates not only formal face-to-face meetings but also informal discussion 'at the water cooler'.

- Middle manager support.[35]

Their influence is likely to be bidirectional, working both with top-level managers and frontline staff.

- Agreeing roles and expectations is a common recommendation; a lack of clarity of brokering roles limits success.[27,31,36]

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[31] Garland, AF et al. 2006. Research–practice partnership in mental health: Lessons from participants. *Administration & Policy in Mental Health & Mental Health Services Research* 33(5), pp. 517-528.

[32] Lyons, R. et al. 2006. Piloting knowledge brokers to promote integrated stroke care in Atlantic Canada. *Evidence in action, acting on evidence: A casebook of health services and policy research knowledge translation stories.* Ottawa: Canadian Institutes of Health Research.

[33] Alavi, M. and Leidner, DE. 2001. Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly* 25(1), pp. 107-136.

[34] Denis, JL. and Lomas, J. 2003. Convergent evolution: the academic and policy roots of collaborative research. *Journal of Health Services Research & Policy* 8(Supplement 2), pp. 1-6.

[35] Birken, S. et al. 2012. Uncovering middle managers' role in healthcare innovation implementation. *Implementation Science* 7(1), p. 28.

Frustration can occur if expectations are not openly articulated.[37]

Individual dispositions

Individual dispositions relate to knowledge brokers themselves but they can be limited by the context, character and dispositions of their organisations and colleagues which influences how they are perceived and supported.

- The skills and attitudes of the knowledge broker are important.

They need excellent communication skills; good understanding of both the research evidence and policy issues and able to transform that knowledge into something that is salient to their practitioner collaborators.[32,38]

- Knowledge brokers in hybrid roles (e.g. clinical-managers) have membership of multiple communities.

They may be best placed for mobilising both explicit and tacit knowledge because of their membership of multiple communities.[39]

Mutual trust and respect are enablers.[28,30,31,34,38,40]

- Knowledge *exchange* needs researchers to accept a broad notion of "knowledge".[40]

Concerns about academic rigour and violations to objectivity arising from engagement with policy makers or other potential users of knowledge can be off-putting to academics.[41]

Costs

Collaborative partnerships and knowledge brokers are commonly seen as a means of addressing the research-practice gap. However, the transfer and

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[36] Gagnon, M. L. 2009. Moving knowledge to action through dissemination and exchange. *Journal of Clinical Epidemiology* 64(1), pp. 25-31.

[37] Bullock, A. et al. 2010. *A Formative Evaluation of the NIHR Service Delivery and Organisation (SDO) Management Fellowships. Final Report*. Southampton: NIHR Service Delivery and Organisation Programme.

[38] Baumbusch, JL et al. 2008. Pursuing common agendas: a collaborative model for knowledge translation between research and practice in clinical settings. *Research in Nursing & Health* 31(2), pp. 130-140.

[39] Waring, J. et al. 2013. An exploratory study of knowledge brokering in hospital settings: facilitating knowledge sharing and learning for patient safety? *Social Science & Medicine*.

[40] Bartunek, J. et al. 2003. Sharing and expanding academic and practitioner knowledge in health care. *Journal of Health Services Research & Policy* 8(Supplement 2), pp. 62-68.

[41] Innvaer, S. et al. 2002. Health policy-makers' perceptions of their use of evidence: a systematic review. *Journal of Health Services Research & Policy* 7(4), pp. 239-244.

mobilisation of knowledge and innovation carries costs. For example, the time required to develop the necessary skills and relationships with organisations takes people away from other tasks and therefore imposes financial costs for both employers and decision-makers.[38] Financial contracts can be a barrier to knowledge mobilisation. Employers may view collaboration negatively as they cannot see evidence of immediate "payback".[22] For researchers, there is an additional "opportunity cost" – time lost in working on or writing up research projects which would be suitable to publication.

However, in studies neither researchers nor practitioners thought that the costs outweighed the benefits and in healthcare, these benefits concern improvements to patient care.[27]

3: Aims and Method

3.1 Aims

The main purpose of this scoping study was to discover how findings from research are currently used to inform and improve healthcare practice in Wales in order to inform future knowledge transfer and mobilisation initiatives. The specific research questions were:

1. How should initiatives in Wales be informed by the messages from major KT&M interventions in the UK and overseas?

2. In relation to KT&M, what is the scale of activity at each health organisation level in Wales?

3. What is the position of key stakeholders in Government, Welsh charities, NHS organisations and higher education institutions (HEIs) on priorities related to KT&M?

4. What are the views of key stakeholders on the barriers and enabling factors in achieving the transfer of knowledge and innovation and what could constitute an effective intervention, to mobilise KT targeting both primary and secondary care?

3.2 Data Collection and Analysis

Senior representatives from Health Boards in Wales (typically the Research and Development Director with the remit for KT&M as part of their role or their nominated representative) and Board Members of SEWAHSP were invited to a one-to-one interview, either face-to-face or by telephone, as they preferred.

The interviews were semi-structured and lasted typically for about 30-45 minutes and were audio-recorded, with permission from the respondent. Face-to-face interviews were conducted at the interviewee's workplace. All interviews were carried out by one team member (WW). Prior to the interviews, participants were sent an outline of question areas.

To seek wider opinions on KT&M, individuals were requested to complete a short online questionnaire. The content of the questionnaire was informed by the literature and piloted with our reference group. Questionnaires (n=60) were sent to selected staff within Health Boards and SEWAHSP organisations, identified by interviewees as individuals who have influence or involvement in KT&M. Responses were anonymous and all questions were optional. Reminders were used to encourage a good response rate.

Preliminary findings from the study were discussed at the NISCHR AHSC Task and Finish group event on May 5th 2014 in Cardiff which was attended by SEWAHSP Board members and invited representatives across Wales. These discussions helped clarify actionable findings, and determine a way forward for KT in NHS Wales.

The Interviewees

Twenty-nine interviews were carried out, mainly via telephone. All interviews were conducted between November 2013 and May 2014. The majority of interviewees were based in Health Boards. Four respondents were from universities (two from Cardiff University and two from the University of South Wales). Other interviews included a representative from NISCHR, one from Public Health Wales and one from Velindre NHS Trust.

Analysis Framework

The audio recordings were transcribed and anonymised. A basic coding frame (matrix) of *a priori* themes was developed from the literature. This coding frame was based on Walker et al's[42] organisation of factors that influence KT&M that was used to shape the report of the literature review.

FIGURE 1: FRAMEWORK FOR ANALYSIS

Main theme	Indicative sub-themes
Definition	Agreement; amendments
Systematic?	
Barriers and Enablers	
External Context	Govt policy; 1000 lives; NICE; other factors
Internal Context	Receptiveness; leadership and support; professional silos
Content	Patient benefit; information overload; knowledge type
Processes	Time & resources; management support; partnerships; communications (literature; meetings); knowledge brokers
Individual dispositions	'Right' attitudes; communication skills; knowledge of evidence.

The process of data analysis followed five steps: (1) two team members (AB, EB) independently coded the first ten transcripts using the coding frame and the matrix was populated with extracts from the transcripts. Any discrepancies in coding were discussed and a decision reached; (2) the remaining transcripts were coded by one member of the team (EB). As a check, an independent coding of one interview, selected at random, was undertaken by another team member (SD); (3) identification of further (sub) themes resulted in an expanded coding frame; (4) the coding was discussed first with the interviewer (WW) and then the whole project team, leading to the integration of themes; (5) a validation process was undertaken in which provisional findings were presented and verified at the Wales AHSC Task and Finish group in Cardiff, May 6th 2014 to an audience which included several of the interviewees and other relevant stakeholders.

This approach enabled descriptive analysis of each interview and identification of themes which appeared to cut across the interviewees and sites. In common with thematic analysis of qualitative data, the process entailed the explosion of

[42] Walker, HJ, Armenakis, AA and JB Bernerth. 2007. 'Factors influencing organisational change efforts.' J Organ Change Manage 20:761-773.

themes and the subsequent integration (condensing) of themes. Lessons for practice were distilled from the thematic analysis.

The questionnaire data were extracted from BOS, summarised in SPSS and related to the thematic analysis.

4: Results

4.1 What is KT&M and is it systematic?

Interviewees broadly agreed with the working definition of KT&M that was supplied prior to the interview: the process whereby staff in the NHS (clinicians and managers) find out about new research evidence and put it into practice.

> *I see it as explained in your documentation – I really do. It is about the knowledge that has already been gathered being disseminated amongst other healthcare professionals to change patient care, their outcomes and their experiences. [#20]*

It was however acknowledged that there was confusion around how KT relates to audit, research, innovation, evidence-based practice, NICE guidelines 1000 Lives and quality improvement. One of the interviewees described KT as "a little nebulous… differentiation between R&D, KT, innovation… confusing people" [#4]

Another blurring of lines was between where KT ends and implementation begins. Definitions given by interviewees suggested that there was some overlap.

> *Is also about how you can spread good practice and quickly. [#65]*

> *Basically we're talking about how does research really hit the ground to make a difference to people. [#32]*

These statements suggest that KT was not just seen as being about the transfer of knowledge but also its translation into practice, improved service delivery and patient outcomes. The distinction between KT and other processes was thought to be poorly defined and this was confusing for people. It was felt that more research was needed into how KT works within organisations and a clear definition should be developed. The term 'knowledge transfer and mobilisation' is useful as it encapsulates both the transfer and implementation of knowledge.

Is KT&M systematic?

Interviewees discussed the extent to which KT was embedded into practice within their organisation. While KT was considered to be systematic within certain sectors (topic areas, professional groups) the majority reported that there was a lack of widespread organisation. That said, the use of guidelines and improvement programmes such as 1,000 Lives Plus were thought to help provide some structure to the process. One interviewee provided the following commentary:

> *I actually don't think we have a very systematic approach. We have an approach that relies often on individual clinicians and teams to undertake the research for themselves in terms of trying to draw down what the evidence base is around particular technologies or particular drug treatments etc. I think we do have a fairly systematic way of implementing NICE guidance and we have a fairly systematic way of doing things like the 1000 Lives campaign, the National Flow programme so I can find quite a number of examples where we have got a fairly systematic and well embedded approach but I think in*

> *generalisation, I think we still do rely on individual teams to think about their own particular issues, their own particular services and where they might go to access evidence that supports what they're doing or what they're not doing and what they should be doing for the future. [#6]*

One interviewee who reported that their organisation did have a systematic approach to KT explained that there was an organisational development programme and that KT was a feature of their strategic plan. Structures and processes to support the research agenda and look for patient benefit in research were in place in another organisation. Another interviewee spoke of how their organisation issued regular newsletters and held meetings but acknowledged that these were only taken up by those who were already research-focussed. Others reported that while there were guidelines and processes in place, there were difficulties with implementation and day-to-day work pressures were prioritised over KT&M.

Interviewees shared their experiences of KT&M processes within healthcare. We were informed that some pre-registration training included research training skills and utilised research informed teaching. Another stated that primary care actively engaged with NICE guidance but other clinical information was left to individual or professional group. Doctors, nurses and consultants were reported to receive relevant information via conferences, journals and discussion with colleagues but relevant information was harder to source and transfer and participation in such activities was not currently part of Service Managers' culture. KT&M was said to be more systematic in cancer departments with evidence coming from several sources (pharmaceutical companies, NICE, media, etc.).

Use of guidelines, 1,000 Lives Plus

For some interviewees, guidelines and initiatives like 1,000 Lives Plus were useful for their organisation, forming a systematic process for some specialties. One interviewee gave an account of NICE guidelines being used as the focus for regular meetings where the teams discussed new guidelines and how they could be implemented in their organisation. NICE guidelines were talked of as a good mechanism for picking up new evidence, they are particularly useful as the information within has already been filtered for relevance to practice.

The 1,000 Lives Plus was praised as a technique for introducing discrete service improvement changes in a formalised way.

> *I don't think generally we are set up well to systematically introduce best practice and I think the success that I think pretty much every Health Board had with things like the 1000 Lives Campaign was that it actually introduced a structure by which new, well in some cases old, evidence based practice could be formally considered, discussions about how we can change and implement it. [#36]*

Education and Training

The face-to-face transmission of new information via teaching activities was discussed; one interviewee stated that KT was systematic in patient and staff education. Several interviewees had teaching responsibilities and told us that the need to include up-to-date evidence and best practice provided an opportunity for them to update their knowledge.

> *You want to have the evidence for what you're going to teach them. So you should be continually, you know, if you're going to teach subjects, look it up, but I know that in the past, people tend... have done one set of notes and ten years later they're still giving the same information, you know. So ideally, when you're doing your slides you will base it on information and evidence. [#27]*

Continuing Professional Development (CPD) was seen as a mechanism for updating knowledge across professions but it was noted that how it informed Health Board policy was more or less systematic.

In summary, although there were some processes in place for KT&M, ultimately, responsibility for carrying out KT&M activities fell to the individual/team. KT processes were largely opportunistic, ad hoc across organisations and were not traditionally seen as a high priority.

4.2 External Context

The influence of factors outside the organisation such as government policy, national programmes and other external factors were discussed.

Government policy

Respondents alluded to a ground swell of interest in KT&M, locally, nationally and as part of government policy.

> *I think policy would be a good thing. Policy statement encouraging you and expecting it is an important thing to aid knowledge transfer. (#65]*

Government support for KT was thought to be important but it was noted that a structured programme of support was required. Policy linking social and health care, public health and HEIs was said to be needed. Policy that encouraged and expected KT&M could be helpful in encouraging bottom-up changes, rather than simply changing policy from above.

> *I don't think it will necessarily work. …. I think it has to come from bottom-up rather than top-down, and if you encourage individuals to do it and to use their own skill and common sense to get information I think that's a nicer way of doing it. [#17]*

The need to prioritise programmes and be responsive to local context was highlighted by respondents. Without this, improvement from KT risks becoming unmanageable or inappropriate.

However, one respondent stated that national policy went largely ignored and was only used as a back-up when they encountered uncertainty:

> *I think policies by large get ignored; national policy gets even more ignored. I think people on the ground couldn't care less about a national, regional or local policy. There are some people who will go to it when they have a problem. So I'm not saying that they're superfluous but in terms of really making a difference I think they make very little difference. [#12]*

1,000 Lives Plus/1,000 Lives Wales

The use of 1,000 Lives Wales methodology within healthcare was said to be gaining credibility. The structure was stated to be good for spreading best practice and worked well with discrete actionable and measureable changes. However, it was also noted that one size rarely fits all in healthcare and the approach needed to be adapted to local contexts. Another respondent thought that 1000 Lives would have more coverage if it had been led by the Organisation Development (OD) team. One respondent queried the link between 1,000 Lives and KT but concluded that they did link since knowledge leads to actions for change:

> *Most organisations are utilising 1,000 Lives, aren't they? To help inform change and to monitor change – I suppose that is one semi-formalised mechanism whereby it helps focus the mind on what could be changed and how to change and then what are the consequences of that change – but I'm not sure that is really knowledge transfer. I'm not convinced that it is. I think there have been a couple of good projects – one is probably the bed sores project that was undertaken. …That was a success, they reduced bed sores, pressure sores quite drastically, by following a given care pathway. So at some stage knowledge must have been transferred from the causes of bed sores through to how can we avoid causing bed sores, through to 'well let's do it then – and then let's monitor the outcomes'. That was a good example. [#20]*

Other external factors

The pressure to deliver within a finite budget and extensive service demands were said to have led to a risk-adverse culture:

> *We are working in a culture that is extremely risk-aversive. For all the reasons that we know about, put one foot wrong and you've got ten HIW inspections before you turn around, and so we are risk aversive, cash-strapped, and because of the cash-strapped everybody's busy – so I think these are disincentives. [#15]*

Another respondent described what they saw as a distance between trainers of junior doctors and current research and concluded that because such trainers were not involved in research, they overlook the need and potential opportunities to innovate.

Patient expectations were thought to influence the opportunity for innovation. An example was suggested of knee surgery; while the evidence base suggests that there is little benefit in performing surgery, patient demand is still high.

In universities, the research excellence framework (REF) and its focus on impact was said to be a driver for change and increased awareness of how research feeds into the "bigger picture".

> *I think across the university a vast majority of people just don't quite get it. I think it is changing with REF and the whole impact agenda – it is pushing us in that direction, but I think you've still got some people doing research for research sake and they don't realise it should be part of this bigger picture. [#8]*

4.3 Internal Context

The organisational culture and ethos, *University* Health Board status, leadership and infrastructure (whether linkage was encouraged or whether silo working dominated) were all identified as factors influencing KT&M.

The interviews highlighted the need for a supportive ethos and culture and a collegial approach within organisations. Lack of receptivity to new evidence, absence of an innovation culture and resistance to change were identified as barriers at all levels of the workforce.

> *I think a lot of the time it's a lack of receptivity, it's not a lack of enquiry or intelligence, it's just that there's no system to it and, therefore, you know people don't look for it and I think that's the challenge [#35]*

The need for a culture supportive of change within the organisation was discussed. An ambitious organisational culture with awareness of the need to reflect on practice and space for conversation, with a collaborative and collegial rather than competitive approach was thought to enable KT&M. Conversely, cultures preoccupied with implementing policies and financial issues rather than research and development and service improvement were seen as hindering KT&M. Current internal contexts were complex: some organisations were reported to have an implementation focus but where little consideration was given to KT or innovation; others were thought to have a strong innovation ethos but lacked coordination.

While some of our interviewees saw value in organisations explicitly stating their position on the value of knowledge and change, others pointed out that culture change isn't something that occurs as a result of a declaration of strategic intent - change needs to come from the ground up. According to this position, staff members need to be engaged in the process of change, fostering good professional standards and changing the way they view their role within the organisation. An interviewee emphasised the importance of 'belonging':

> *I think a forward thinking organisation really imbues the spirit in the young people and a collegiate nature, that they belong to a place, that they're encouraged to think and they're encouraged to be part of something, because the other thing is this... what I've … seen is that those that have actually contributed something of change to a system are forever the advocate of the system. [#65]*

In some cases it was suggested that staff members lack the skills to critically appraise and assess the value of new evidence. One of our study's participants was of the view that a change in medical teaching culture, away from didactic teaching methods, would be beneficial as it would begin to normalise searching out new information. Alongside this, s/he thought that staff should be more committed to attending events and be more active on committees.

UHB status

The Health Board's formal links with Universities were discussed by some interviewees. They explained that becoming a *University* Health Board held the promised of significant cultural change with regards to education, systems of

support for communication, accessing research and innovation but this seemed yet to materialise. While there are research and development units within the organisations and conferences held regularly, interviewees thought a more formalised system of KT&M was needed. One interviewee urged that the move to UHB status needed to be more than just a change of name:

> *Now one of the things moving forward as an organisation, it is not only change the terminology, change the name at the bottom of the headed notepaper, but to get the understanding that this is a cultural change at [Health Board] as much as it is an academic change, or an R&D change, or a pure administrative change of the name. [#2]*

Leadership and infrastructure

The importance of leadership featured in the interviews. It was argued that this support needed to come from the highest levels (Government, executive board level) and should be clinician-led rather than financial. Respondents saw the role of leaders as reinforcing the importance of KT, empowering staff to engage in the knowledge mobilisation agenda, encouraging and implementing change.

> *It needs support at the highest level… I think it has to be a culture and an ethos driven model – and it is going to be difficult to change… - it can be done but it's got to be pushed from the highest level. [#4]*

High level support encourages a supportive culture where KT work is valued and appropriate structures are in place for it to be mobilised.

Good leadership was talked of as being about more than just directing staff:

> *We have tried to say to people 'look, if you do this and this and this, it would be much better' but I can't tell people to do that, if they don't want to do it then it's entirely up to them. [#5]*

Leaders with a vision were said to help move things forward and empower staff by acting as an example for modelling good practice in KT&M, working with them in the journey and encouraging a belief in their capacity to change.

> *We need to empower people… The people on the frontline will deliver far more than people like me in an ivory tower, but there is still a job for me as a leader to actually set that vision. [#2]*

It was suggested that a targeted group of individuals in each organisation receive formal training in leadership skills in order to help KT&M.

Infrastructure

The organisational infrastructure could present barriers to KT&M. Interviewees reported how there were no clear paths or systems for KT&M within their organisation.

> *Well it's not just the attitude – it's also the system that you've got – if the system doesn't lend itself. [#5]*

Frontline staff were considered not to have flexibility for communicating successful changes to other departments. IT systems with restricted access or

intranet-only systems, limited staff access specific sites which may support KT such as staff accessing journals, etc.

Suggested enablers within organisational infrastructure included making better use of librarians and R&D departments to access and organise information. Interviewees saw the value of creating a central repository of relevant information that they could access and dedicated personnel who would send out relevant information to staff. Clearer signposting of pathways to cascade information was also highly valued.

Linkage between departments and silo-working

Communication issues were discussed in terms of a lack of linkage between different sectors within and outside the organisation. Termed *"professional tribalism"* by one interviewee, a lack of communication was noted within professions (staff hierarchy, between clinicians and managers), between professions (between Nursing and Medicine) and with outside organisations (between primary and secondary care, NHS and universities).

> *Oh I think if I'm talking nursing, we are a profession that lacks a bit of confidence, if I'm talking medicine we are probably a bit over-confident, but when we are working in a cash-strapped, risk-averse environment – like you need knowledge transfer to happen more than ever. [#15]*

> *There does need to be more joined-up thinking between social care and health-care, because I think if we are all in the game of transferring knowledge – a lot of knowledge goes across the blurred boundaries doesn't it? – and we need to make sure that everybody who is a stakeholder in […] the transfer of any knowledge becomes aware of that, so they can all play their part – so HEIs, the NHS and social care, and public health as well – are the four biggies. [#4]*

Geographical hierarchies were also discussed, with larger UHBs being seen to be favoured within Wales with regards to funding and other opportunities.

Creating networks and holding cross-disciplinary and multi-professional meetings (e.g. clinicians and managers) was viewed as a way to help break down professional barriers, encourage communication between groups with no intrinsic links and facilitate organisations working as a whole.

> *You've got to be able to break down those silos – so many of our problems are due to the fact that we are all divided in what we do and old-fashioned in the way we think. [#1]*

4.4 Content

The content or focus of the evidence being translated impacts on the mobilisation process.

Information relevance

There was widespread recognition amongst our interviewees that research should be driven by patient need, with clear relevance to practice:

> *We've got a problem – is there something already out there that is known about this area [#30]*

Centring research on improving and addressing gaps in patient care was seen as key to appropriate research content. For some, establishing a baseline knowledge and determining the unexplored gaps in patient care were the first stages in improving research content.

> *The real knowledge is the knowledge of what patients need. We don't even ask that! [#50]*

Our interviewees wanted research to be relevant to population need, timely and motivating. As one interviewee explained it:

> *There's three levels of significance, there's statistical significance where it does have a 'p' value; there's clinical significance that is applied in my practice; and there's personal significance - does it apply to this patient? And I think we often just stop at the statistical bit and don't actually look at the other things where significance has a different interpretation and a different meaning. [#16]*

Alongside relevance for patients, having a clear application to clinicians' practice was also talked of as being beneficial.

> *It's about relevance. So I think in terms of practitioners, staff nurses, ward sisters, community nurses, midwives on the ground they've got to see that it is tangible and relevant for them and for their practice and ultimately for their client group and I think that bit sometimes is one of the challenges that people might find reading an academic paper. [#32]*

Disconnect between what academics and funders want and what practitioners and patients want from research was something our interviewees wanted addressing. One suggestion was to engage with clinicians in the research process, drawing upon their understanding.

Knowledge types

As well as from research and policy, knowledge also comes from the workforce. Interviewees discussed the importance of "soft intelligence" in healthcare. One described it as "very often not written down, very often anecdotal and subject to distortion as a consequence" [#10]. Soft intelligence and experiential knowledge were thought to be important areas of knowledge within healthcare but that it was not always considered legitimate by clinicians. Clinicians are trained not to rely on "gut feeling" but some interviewees made the point that the tacit knowledge developed through experience and conversations with colleagues should also be valued and captured. They explained that when faced with limited evidence they used soft intelligence to interpret it and make decisions. One interviewee argued that the privileging of scientific knowledge in research excluded other, softer, types of knowledge and created distance between academic research and clinical practice.

One interviewee drew a contrast between two broad types of research, health services research and pure biological sciences, neither of which transferred easily. It could be difficult to see the application of pure biological science research to practice. However, organisational health sciences research was seen as less

"scientific", too context specific with less defined measures and therefore difficult to translate.

> *A new drug will extend that person's life, so it is clearly a no-brainer and we are all very excited, and we are all signed up to that. A new way of following up patients, which has slightly softer end points … is not quite so much in our training shall we say, so we are not so excited about it [#7]*

4.5 Processes

Barriers and enablers arising during the process of carrying out KT&M were discussed.

Time/resources

Owing to the pressures of day-to-day work, interviewees talked of a lack of time for reflection ('headroom') to consider the what, why, how of their current practice or to pick up new research.

> *I would describe the work as being frenetic – the pace of work is frenetic – so massive emphasis on getting through the work and very little thought about what that work is and what we actually do. I would like to see a more cerebral approach to healthcare; where there's a bit more time to think about stuff. [#1]*

> *So what we haven't got in the NHS at the moment is headroom… which is the quiet space to sit down and think [#3]*

Even though individuals may recognise the importance of KT&M, interviewees suggested that it easily dropped as a priority when faced with the day-to-day work pressures.

> *So we've got a system for dealing with that. As to whether all the right people and whether people connect with the importance of the system that we have in place, I think that's where it can sometimes fall down because I think what happens is people in their busy, busy lives, either as Clinical Directors or as jobbing clinicians, they don't necessarily flag correspondence on these matters as priority number one. It dropped to priority number four or five, and whereas if you sat down with them and have an interview like this they would say, 'well actually this is one of the most important things - to help us keep up to date with most recent practice and make sure we're practicing effectively clinically', and I think the Board would say that as well, but again I think the same thing happens, does it always hit priority number one? It doesn't always. [#22]*

Pressure to keep a service running was said to produce a cycle of responsive rather than proactive practice where it was easy to fall into habit; carrying on doing the same things. Introducing supervision, coaching and feedback activities into routine practice was suggested as one way to tackle this; discussing the service and patient objectives and how they relate to their practice.

Releasing staff to carry out KT&M while keeping services running was also said to challenge funding and resources. Changing patient demographics and financial cuts were argued to limit the funding available to support KT&M. Aside from the time taken to carry out KT&M, it was noted that it takes a long time for research to change practice and that new financial paradigms were needed which recognise this and look at the longer-term and wider system savings that may result rather than the immediate costs of intervention:

> *I struggle with it because I've spent a bit of time looking at it. It's not necessarily the unit cost of the new intervention we need to look at. We need to look at the impact of that unit cost of intervention in the overall episode of care for that patient, because one of the big problems with silo budgeting - drugs is a classic example - why isn't he going to prescribe this expensive drug if it's going to keep you out of hospital? That's the policy budget that's impacted negatively and any savings made on hospital beds aren't realised and given back to pharmacies to actually support that increased pharmacy costs. [#16]*

Interviewees reported that while there was a lack of time or money to attend conferences, and other educational events there was also increased pressure to show evidence of CPD (i.e. for professional registration).

> *I can only talk for doctors, at senior doctor level we get more appraisals now and more feedback where we have to show evidence of self-directive learning and attendance, etc. Then there's a barrier to that now I think with the tightness on the study budgets and a lack of money to go to various conferences, but so despite less time and less money there is more professional people to get these CPD points and to keep... show evidence that they have been. Which is a good thing. [#17]*

Revalidation and appraisal processes require an amount of learning but some of the interviewees commented that budgets and workdays were not adapting to accommodate the new requirements.

Management support

Management support at all levels, from the Board through middle management was said to be an enabler in KT&M.

> *Communication within the given organisation is very important and it needs support at the highest level – doesn't it – at all levels. [#4]*

> *I think that's an absolute prerequisite before you even start fiddling around in this area because you can be as wildly enthusiastic and committed and evangelical as you like but if the head of the monster isn't supportive nothing will happen. [#70]*

Practitioners were said to need a coordinated approach in their work rather than responding to different initiatives from different directions. Having clearly communicated KT&M processes from senior management was thought to be an enabler. Management support was also seen as key in reinforcing knowledge and overseeing changes.

Collaborations/Partnerships

The need for collaborations and effective research/practice links was emphasised as an important enabler. Establishing stronger links between NHS and universities was desired. SEWAHSP was seen as helping make connections with HEIs and industry, identifying what might have patient benefit.

> *Chiefly through making a connection with our HEIs and industry. Helping to develop projects that could benefit patient care outcomes and experiences. [#4]*

If the right knowledge was found though research, researchers could help transfer it as well. HEI executives were said to need a greater understanding of the value of KT.

Communication

Good communication was seen as vital to KT&M. Interviewees shared several examples of research and quality improvement meetings and groups that were held within their organisations that provided opportunities to communicate with other professionals.

> *Probably one of the biggest things is training meetings. So get people together and have discussion or somebody present about new research. It's seems to be a way that people pick up new ideas. So that's one thing that does seem to help. [#7]*

While the importance of discussion was emphasised, it was acknowledged that getting people together can be a challenge. The act of getting people to communicate via meetings wasn't always thought to result in developing relevant contacts and networks. Sometimes such events resulted in surface knowledge of others within the department but it was thought to take more active engagement and structure to develop deeper links.

Literature - Report sizes, knowledge synthesising and information overload

It was acknowledged that there is an overwhelming amount of information produced and a targeted approach is beneficial. Interviewees noted that people don't have time to access, read and appraise all the information that is potentially relevant for their discipline.

> *We are living in the middle of a knowledge explosion… The wrong thing to do is to be beating practitioners up because they haven't read enough papers, because they will never read enough papers. [#3]*

As a result, those who do access research evidence were said to confine their reading to specific journals within their specialty. Even so, this could be excessive. Interviewees made a plea for mechanisms which sort the quality and relevance of the research knowledge.

While the amount and varying relevance of available literature was discussed as a barrier, even relevant information such as reports and guidelines were stated to be problematic for the size and amount of information and recommendations contained within each one. Although NICE guidelines were praised by some for their distilled and agreed information, other guidelines were reported to be harder to read and apply to practice.

Interviewees saw value in synthesising knowledge; good quality research filtered and synthesised to capture the main points relevant to managers'/clinicians' needs.

> *It is about, as I say, the synthesised knowledge. It is important that we teach people the skills of appraising synthesised knowledge, and it is important that we commission synthesised knowledge. [#3]*

The appropriate depth of information needed for different groups/problems was also discussed in the interviews.

> *Doing something rapid, quick and dirty versus something comprehensive. Time is a barrier; time, deadlines. Whilst we'd all like to do a meta-analysis and a full systematic review, on occasions actually what you want is a rapid review which makes sure you capture the main things. [#21]*

Methods of sharing

The main methods of sharing information that interviewees discussed were newsletters and email alerts. Newsletters were acceptable for some but they highlighted the need for information to be personalised with clear relevance to practice. Others reported that they were regularly discarded without reading. While interviewees recognised the benefits of electronic methods for communicating information, such as patient safety alerts, NICE guidelines and other urgent information, some thought that there was an over-reliance on electronic sharing. Interviewees talked of being bombarded with emails and recognised that information was often overlooked. Interviewees wanted a more targeted approach to information sharing.

One more practical concern with over-reliance on electronic methods of communication was discussed: IT systems within the NHS were reported often to be locked-down, slow and unreliable. These difficulties were said to restrict access to knowledge.

Positive used of technology for KT included creating a central repository of information with summaries of evidence explaining how it relates to practice. In this example, email was used to notify staff of new additions to the archive. Another enabler that was discussed was the increasing usage of mobile devices, e.g. clinicians carrying PDAs or smartphones which give on-demand access to information.

Measureable outcomes

Discussions highlighted the need to incorporate outcome measures into planning KT&M work. The reported benefits of considering the outcome measures early on in the process were that they helped to clarify timescales and action which keeps projects on track and motivates staff.

> *As soon as you measure something it becomes finite and almost tangible and so you know what you are doing, and everybody is doing the same. [#4]*

Trying to implement several changes at once was thought to be overwhelming for staff. While an action plan may have several delivery aims, breaking the tasks

down in to a set of smaller prioritised, demonstrable actions makes it explicit, manageable and more tangible for staff members. Such an explicit plan also aids a standardised approach which can be transferred more easily to other departments/organisations.

> *Let's split the year down, see what we can do, and then that clarity for people – if you focus what people need to do and give them clarity, and don't try to judge them on everything, all of a sudden we've seen some turn. Because …, it's manageable, they can see the end point, they can see the benefit that they are receiving, so they are more motivated. [#2]*

Interviewees discussed how clarity of role expectations motivated and rewarded staff. They argued that people enjoy their job more when they know what their role is and what they are expected to deliver. When participants could see the changes resulting from their actions, this is rewarding and helps to reinforce faith in the system being implemented.

> *People enjoy or are engaged at work because they know what they're supposed to do, know what's expected of them and they deliver it, and they go home at night thinking 'I did that, and it worked!' But, if you don't know what's expected of you cos you've not had a conversation with your manager about it you can never feel good. How do you know you've succeeded or failed or delivered? And, therefore, if that's the culture of the organisation, how does the organisation know if they've succeeded or failed. [#50]*

Although establishing whether and/or how research was used to benefit patient care was seen as important, it was noted that healthcare organisations were traditionally not practiced in measuring the process of change and its impact.

An interviewee talked of the difficulty of capturing changes throughout the process, rather than at the end, and highlighted the use of benchmarking.

> *To me the real question that comes out of this is, 'is there a way in terms of real time of actually saying what's going on with our organisation?' So it's quite easy to see things in retrospect and I think prospective is difficult because you're talking about new stuff. You don't always know what the future holds, but can knowledge transfer be evaluated in real time? Benchmarking has got quite a lot to offer this and maybe in terms of a benchmarking we should be looking for evidence of knowledge transfer, but it's something we should do much more. [#26]*

It was suggested that outcomes should include patient and staff feedback in order to gain "real-life" issues and challenges. It was said that feedback on experiences and outcomes could be shared so that others within the field could learn from any barriers encountered or overcome and develop new questions for future changes. This might also serve as a benchmarking process that would enable teams to compare their performance to others.

One interviewee told us that KT&M people should follow the process throughout and measure the outcomes; they have the best knowledge about what was brokered and so are best placed to observe what effects it has had on the patient care.

> *That would fit in with the same people – the same people who facilitate the transfer of knowledge should monitor that and measure the outcomes, because they know what they pushed out there – and because they know what they pushed out there they've got to know what is coming back. It has got to be the same people. [#20]*

4.6 Individual dispositions

The effect of qualities such as a can-do approach, the 'right' attitude which embraces change and the place of motivation were discussed.

Staff members' personal receptivity to KT&M was discussed. Interviewees noted a general lack of curiosity and motivation in individuals to seek out or learn new evidence.

One posited explanation for KT&M failure was that tasks related to the change are not part of day-to-day routine and so are disregarded or seen as something someone else does. Another explanation was that staff have seen other attempts to change fail and have lost faith in the process. Change also was thought to fail when the new activities were seen as additional work or a disruption to their current workload. Age was suggested as a factor with older managers and clinicians were thought to be less likely to seek out new information and be more resistant to change.

Conversely, the presence of "can-doers" within the organisation, championing KT&M was said to be a good enabler.

> *I think if you surround yourself with can-doers, the chances of succeeding in knowledge exploitation and transfer are far greater. [#2]*

The presence of champions at all levels within an organisation was believed to help challenge barriers, such as reluctance to change, by providing credibility and demonstrating investment or belief in furthering the cause.

It was pointed out however, that there was a danger in relying too much on personality without having a sustaining infrastructure. While having positive, engaging personalities leading the changes was seen as an enabler for getting people to "buy in" to the process, it was thought that they shouldn't be relied on too heavily. The process needs to be embedded and stable enough to continue without their presence. They can facilitate engagement and provide leadership but shared ownership is also important:

> *The staff in the areas that are currently delivering will be our evangelists out there, and they will sell it more with their nursing colleagues than having me standing in front of them doing a bit of chalk and talk will ever do. They'll sell the story for us – so it's back to that ownership, and engagement and leadership. [#10]*

Good communication skills

Interviewees felt that generally researchers were poor at explaining their research to other groups. Therefore if research is to be translated for clinicians and managers, the knowledge broker would need the necessary skills to communicate with different groups for different purposes. It was suggested that

for some people, these skills and an outward looking personality were intrinsic but others needed training on the processes and techniques that are needed for KT&M. The strength of networks developed were thought to depend on the communication skills of the knowledge broker.

Knowledge of evidence

An important aspect of the ability to translate research to different audiences was said to depend on a good understanding of the research evidence, their target audience and the KT&M process. It was suggested that KT needs people who were confident in handling and synthesising research evidence, adapting and personalise it to the specific target audience.

> *First of all – one of the enablers is that you have people who are familiar with and confident with analysing synthesised knowledge – systematic reviews, meta-analyses or whatever. If you've done that and you've got an issue now that we need to implement this is our practice. [#15]*

> *I think the people in the areas, who know the areas, are your best deliverers – they can actually deliver a message – they will know the individual that they are trying to sell it, they will know what type of personality they've got, what presses their buttons – so that's important. [#10]*

Alongside routinely updating their research knowledge, having a good understanding of the KT&M process and its importance was also considered an enabler.

> *The staff that are involved need to have an understanding of knowledge transfer. The reasons why it needs to be done, and how does it get done. And then they also need the skills to monitor the outcomes. [#20]*

4.7 Who's responsible?

Interviewees discussed whether KT&M should be the responsibility of every practitioner, as part of their professional role, or whether a specific, explicit role needs to be defined within organisations.

Every Practitioner

Several interviewees stated that very single practitioner has a responsibility for EBP. Maintaining clinical knowledge is an inherent part of a clinician's role, with issues for maintaining patient safety.

> *Each individual in their own scope of practice should keep up to date, for their safety and their record of safety is really important in that. But you can be up to date with your CPD and still, I don't think, be necessarily be fully cognizant of where new research is coming forward. [#11]*

> *Directors and clinicians …have got to keep an eye on the horizon and see what's coming on to develop and to change their algorithms, protocols, guidelines, etc to take into account new advice or new research which comes along. [#17]*

Interviewees recommended that encouraging all staff to keep up to date, not just clinicians, and it should be part of their job description.

> *To me this is core stuff, I think all the doctors should be doing this. And other professions as well. I mean, as you know, the boundaries have broken down – but certainly the senior nurses, the key people, it should be in all of their job descriptions. But in reality how does it actually work, what does it actually look like, that knowledge transfer, well I don't think it works the way we do things at the moment. [#5]*

While such activities are implicit within everyone's job description they may not be framed as KT work. This was thought to lead to some people not seeing KT as part of their role:

> *Generally there isn't really a clear knowledge transfer person. We all do it a bit, and some people are better than others, but there isn't a clear role I think. [#35]*

It was pointed out that HEIs offer protected time for scholarly work; keeping up-to-date with research and writing papers for publishing.

One interview recognised the risk associated with explicitly identifying one or two people as knowledge brokers; the danger is that they become seen as solely responsible for KT&M within that organisation. KT&M needs to be embedded within the organisational culture and seen as part of everyone's role, with the knowledge brokers supporting the process. However, other's favoured having individuals with specific responsibility for knowledge brokering.

Specific Knowledge Brokers

There was support from some interviewees for a specific knowledge broker role within their organisations.

> *I think you do need to give somebody responsibility for the transfer of that knowledge, to ensure that when there is new evidence, or a new evidence-based that it gets out to the right clinicians, and the right healthcare professionals, who can actually look to bring about the change and hopefully improve patient care and their outcomes and their experiences. [#20]*

Someone with specific responsibility, working in collaboration with R&D and audit departments, for identifying new research, disseminating and implementing it and observing the outcomes were thought to be needed. Examples were offered of people within the interviewee's organisations that carried out some of these tasks but not in a clearly defined, systematic way.

It was noted that there were already implicit knowledge brokers in most teams, people who others turn to for knowledge, but their services should be optimised more widely as they are best placed to spread information. Some identified a seam of middle-managers or directors as having potential for the role as they are the ones with responsibility for policy and day-to-day ways of implementing. Others suggested engaging senior nurses or lead consultants.

Various named roles were suggested as examples: innovation and engagement officer, Operation Department staff, patient care & safety team, audit team,

improvement individuals, innovation leads, Public Health Directors. KT work was also identified as part of the remit of the NISCHR registered research groups; engaging with academics, clinicians, multi-disciplinary teams and all health workers.

4.8 Summary of Interview Results

Is KT&M systematic?

Generally KT&M was thought to be unsystematic, with some exceptions (certain topic areas, professional groups).

Organisational development programmes, regular information dissemination and having structures and processes in place were given as examples of systematic research within some organisations. The use of guidelines (e.g. NICE) and improvement programmes such as 1,000 Lives Plus were seen as structures which helped some KT&M processes.

Transmission of evidence via teaching activities was discussed; the need to teach up-to-date information ensured that trainers were accessing new information every time they planned a session. CPD was raised as another method of updating knowledge however it was noted that this was not always systematic either.

External context

Factors such as government policy, national programmes and other factors outside the organisation were discussed.

Interest in KT&M was thought to be increasing locally, nationally and within government policy. It was noted that although policy could encourage bottom-up changes it needed to be seen as part of a structured programme of support and priority given to programmes reflecting local context. It was noted that one size rarely fits all in healthcare so programmes needed to be adaptable to local contexts. 1,000 Lives Plus was praised as a process for spreading best practice and implementing small-scale measurable changes.

Other factors external to the organisation included the pressures of meeting different service demands within a finite budget, the influence of patient expectations on service delivery and the influence of REF in changing awareness of the need to consider impact.

Internal context

The organisational culture was seen to influence KT&M; a lack of receptivity to new evidence and a resistance to change were seen as barriers. Changing culture takes more than a change of strategic intent and needs to involve staff members at all levels, reframing how they view their professional role.

The benefits of leadership and a supportive infrastructure were highlighted. Leadership was desired from all levels of management and clinician-led rather than financial. Good leadership could change the culture by reinforce the KT&M agenda, encouraging and empowering staff and modelling good practice in KT&M.

An organisational infrastructure which obscures or impedes a clear path or process for KT&M was a barrier. Clearer signposting of ways to cascade information, the creation of a central repository of relevant information and dedicated personnel to disseminate information to the relevant target groups were identified as ways of improving KT&M.

Limited cross-professional communication within and outside the organisation could interrupt the flow of potentially relevant information. The creation of multi-professional networks and meetings could be a way to encourage linkages between groups.

Content

The relevance, amount and type of information was also seen as an influence on KT&M. Information driven by patient need and with clear relevance to patients and practice was recognised as enabling KT&M, something which was not always clear in most academic research. Research that is timely and addresses gaps in current patient care were valued and some thought that determining a baseline for current provision was a good first stage.

Interviewees also discussed the importance of "soft intelligence" in healthcare. Tacit knowledge based on experience and "gut feeling" may be valuable in practice but may not be considered legitimate knowledge by clinicians who privilege more "scientific" academic sources.

Processes

Limited time and resources for KT&M were recognised barriers. The day-to-day pressures of their workload was said to leave no time for reflection on practice or accessing new researching, regardless of whether they recognised KT&M as a priority. As a result of this it was easy to fall into a cycle of responsive rather than proactive practice. Protected time to carry out KT&M could be one way of changing this cycle, however it was noted that funding and resources make this difficult. New financial paradigms and ways of calculating costs with a wider, longer-term view would be needed.

Support from managers at all levels, encouraging a coordinated approach and clearly communicating KT&M engendered success.

Communication was viewed as vital to KT&M although it was noted that getting people together can be a challenge. Collaborations/partnerships and effective research/practice links were an important enabler. Greater cooperation between NHS and universities was desired; researchers could help with the transfer of their knowledge.

The amount of information that is continuously emerging was said to be overwhelming. The time needed to access, read and appraise all the potentially relevant information available was not practical for most professionals. A mechanism sorting research by quality and relevance was desired.

Information with clear relevance was also problematic owing to the size and amount of information presented within a single report. Distilled and agreed messages such as NICE guidelines were preferred. The option of creating reports containing filtered and synthesised knowledge was valued. Reports of different depth relevant to different groups/problems were also discussed.

Knowledge was mainly shared via newsletters and email alerts. Messages from both methods were said to be easily overlooked; newsletters may not have clear relevance to their personal practice and emails may be received in such numbers that overwhelm the recipients. Again a central repository of relevant information was suggested as a solution; summarised evidence with clear statements relating to practice could be created and staff notified by email when new additions are made to the archive.

Building in measureable outcomes to plans for KT&M was thought to be important. Outcome measures clarify timescales and expected deliverable actions, making implementation less overwhelming and motivating staff members via clarity of role and reinforcing the process through observable changes. Including the views of patients in any outcome measurement was valued. It was noted that healthcare organisations are not traditionally practiced in measuring the process of change, particularly in "real-time" changes; it was suggested that this could be part of a knowledge broker role.

Individual dispositions

Staff member's personal attitude and receptivity to KT&M was an issue. Tasks not part of day-to-day routine may be disregarded or seen as a disruption. Failure of previous change processes may lead to a negative view of any new programmes introduced. Conversely, "can-doers" championing KT&M within an organisation (at any level) was seen as an enabler. Caution was advised when an organisation becomes too reliant on personality without having a sustaining infrastructure; the process needs to be able to continue without the presence of the KT&M leader.

Good communication skills were needed when carrying out KT. It was felt researchers were generally poor at explaining their research and knowledge brokers would need the necessary skills to communicate with different groups for different purposes. Some people are better at this than others so training on the processes and techniques was suggested.

Who's responsible?

On the one hand, KT&M should be the responsibility of every practitioner. As part of their professional role, practitioners have a responsibility to maintain their knowledge as a matter of patient safety. While these activities are implicit within many job descriptions they may not be framed as KT&M work and therefore some do not recognise it as part of their role. There was support for specific knowledge broker roles within organisations. It was noted that there are often implicit knowledge brokers within most teams, but their role could be optimised and recognised. Tasks would include collaborating with relevant departments, identifying new research, disseminating and implementing it and observing outcomes. Middle managers or directors were suggested as appropriate for the role as it aligns with current responsibilities. Senior nurses or lead consultants were also identified as potential brokers. Having dedicated brokers supporting the process was seen as beneficial but the risk of them being seen as solely responsibility for the work within an organisation was identified as a danger; KT&M needs to be embedded within the organisational culture as part of everyone's role.

4.9 Questionnaire Results

We report data from the 27 responses to the online questionnaire. Respondents were asked where they worked and their role (Table 1).

TABLE 1: DEMOGRAPHICS

SEWAHSP partner organisation	n (% of 26)
Aneurin Bevan Health Board	9 (35)
Cwm Taf Health Board	6 (23)
Cardiff and the Vale Health Board	5 (19)
Powys Teaching Health Board	5 (19)
University of South Wales[43]	1 (4)

Professional role (selected more than one)	n (% of 27)
NHS Managers	13 (48)
Nurse/Midwife	7 (26)
Clinicians in Secondary Care	3 (11)
Allied Health Professionals	3 (11)
Clinicians in Primary Care	2 (7)
Academic Researcher	1 (4)
Other	6 (22)
NHS Clinical Leader	*1 (4)*
Quality Lead and Clinical Director	*1 (4)*
Knowledge Manager	*1 (4)*
Clinical Risk	*1 (4)*
Clinical Manager in Community Services	*1 (4)*
"Other Health Professional"	*1 (4)*

The highest number of respondents were employed by Aneurin Bevan Health Board (35%), with staff from Cwm Taf making up the second largest group (23%). Equal numbers of Cardiff and Vale and Powys Teaching Health Board staff completed the questionnaire (19% each) and the remaining individual was based at the University of South Wales.

Respondents were invited to select all relevant professional roles from a given list. Nearly half of all respondents were employed in an NHS Manager role (48%) and 26% indicated they were working as a Nurse/Midwife. Just one respondent reported working in an academic research role (4%). Seven respondents reported working in more than one professional role (such as NHS Manager and a clinical role – e.g. nurse, doctor).

Respondents were provided with a series of statements regarding the part that KT played in their professional role, within their immediate department, organisation and beyond (Table 2). While 70% of respondents indicated that KT was an integral part of their personal professional practice, fewer stated that it was an integral part of their unit or department (56%) and fewer again for their organisation (22%). Only 11% saw KT as integral for their role at a regional or national level in Wales.

[43] Formerly, University of Wales, Newport and University of Glamorgan

TABLE 2: THE PART THAT KT PLAYS IN THEIR PROFESSIONAL ROLE

KT&M, is currently:	n (% of 27)
…an integral part of your personal professional practice	19 (70)
…an integral part of the practice of your unit or department	15 (56)
…your formal professional role in your organisation	6 (22)
…another part of your role (please specify)	4 (15)
…your formal professional role at a regional or national level in Wales	3 (11)
…not part of your role	3 (11)

For 15% of respondents, KT was another part of their professional role. In the open comments one explained that ensuring *"there is a workable process in place to ensure maximum benefit is derived from learning from research, to enhance service delivery and facilitate safe services"* was within their remit as a senior manager. One Chair explained that their role involved KT to members of their organisation while another stated that it was not a key role but featured within their job description. A respondent with a senior role within clinical education stated that they *"aspire to ensure KT takes place at all levels"*. Another respondent explained that they encouraged and supported KT but have no direct influence over staff *"so KT depends on their engagement in the process and the ability of individual professionals to adopt the transfer of research knowledge into practice."*

Those with a role in KT were asked to identify, on average, what proportion of their time they spent on KT activity (whole time equivalent). (Table 3)

TABLE 3: PROPORTION OF TIME SPENT ON KT&M ACTIVITIES

Proportion of time spent on KT activity	n (% of 24)
1-10%	9 (38)
11-19%	3 (13)
20-29%	2 (8)
30-39%	2 (8)
40-49%	0 (0)
50-59%	3 (13)
60-69%	2 (8)
70-79%	0 (0)
80% or more	0 (0)
Currently KT is not part of my role	3 (13)

Of those with a role in KT, 50% of respondents indicated that less than 20% of their work time is dedicated to KT work, per week. However another 21% stated that around 50-70% of their time was dedicated to KT activity. No-one reported spending more than 70% of their time on KT activity.

Those with a role in KT, either within their organisation or regionally, were asked to specify their target groups (i.e. those they are seeking to influence in the use of research evidence for healthcare improvement) (Table 4).

TABLE 4: GROUPS TARGETED BY KT&M

Target groups for KT	n (% of 15)
Nurses or midwives	10 (67)
Allied health professionals	8 (53)
Clinicians in secondary care	7 (47)
Clinicians in primary care	6 (40)
Medical doctors	5 (33)
NHS managers	5 (33)
Other healthcare professionals	5 (33)
Academics	1 (7)
Currently KT is not part of my role	1 (7)
Clinical academics/lecturers	0 (0)
Other	5 (33)

The most frequently identified target group for KT was nurses or midwives (67%), followed by allied health professionals (53%), clinicians in secondary care (47%) and in primary care[44] (40%). Medical doctors, NHS managers and other healthcare professionals were reported to be target groups for 33% of respondents. Academics were only selected by one respondent and clinical academics/ lecturers was not selected by any.

Of those who had selected "Other", four provided additional information. One stated that they had no formal role while another explained that although they had no formal role they had responsibility to ensure that all staff within their division were able to learn from research. One respondent identified targeting agencies. As well as educational staff one respondent identified targeting parents while another reported focussing on non-professional groups: *"patients, carers, families".*

Of the thirteen respondents with a KT role over half (62%) had been working in a formal KT role for more than five years while others had been in such a role for between 1 and 4 years (15% each). (Table 5)

TABLE 5: LENGTH OF TIME IN KT&M ROLE

Length of time in role	n (% of 13)
<1 year	1 (8)
1 - 2 years	2 (15)
>2 - 3 years	0 (0)
>3 - 4 years	2 (15)
>4 - 5 years	0 (0)
>5 years	8 (62)

Finding out and transferring knowledge

Respondents were asked to indicate how organised their approach was to seeking out new research findings or guidance. Possible options were ranked on a ten-point scale, with 1 indicating an unsystematic (ad hoc) method and 10 indicating a methodical approach (Table 6).

[44] It is worth noting that owing to the wording of these statements there may be some crossover between "medical doctors", "clinicians in primary care" and "clinicians in secondary care".

TABLE 6: ASSESSMENT OF SYSTEMATIC APPROACH

Assessment of systematic approach	n (% of 27)
1-3 (unsystematic)	10 (37)
4-7 (neither)	11 (41)
8-10 (methodical)	6 (22)

The results were distributed across the ratings with 10 people indicating an unsystematic approach with ratings between one and three and 11 reporting that their approach was neither unsystematic nor methodical by rating between four and seven. The mean score for all responses was 5 indicating a neither systematic nor unsystematic overall approach to KT.

Presented with a selection of sources of knowledge, respondents were asked to select all those that they currently used to find out about new research findings or guidance (Table 7).

The most common way these respondents found out about new research findings or guidance was by email alerts and from colleagues (89% each), closely followed by networks (81%), seminars/lectures (81%), journal searching (78%) and professional organisations (74%). The least frequently used sources were librarians/information services (41%) and board reports (26%). Other sources included conducting personal research on topics via the internet, direct contact with academics and through reviewing guidance reports (e.g. NICE). One respondent noted how supporting staff doing Master's degree projects gave them access to new research knowledge and guidance.

TABLE 7: SOURCES OF KNOWLEDGE CURRENTLY USED

Sources of knowledge used	N (% of 27)
Email alerts	24 (89)
From colleagues	24 (89)
From networks	22 (81)
Seminars/lectures	22 (81)
Journal searching	21 (78)
Professional organisations	20 (74)
Audit	13 (48)
Direct contact with research or special interest groups	13 (48)
From librarians/information services	11 (41)
Board reports	7 (26)
Other	5 (19)

This question was followed-up asking respondents to indicate which of the methods they currently relied on *most* (Table 8). Most respondents reported relying on information from other people; colleagues, networks, professional organisations (29% each) and special interest groups (10%). Of non-people resources, journals were most often selected (29%).

TABLE 8: MOST FREQUENTLY USED METHODS

Most frequently used methods	n (% of 21)
From colleagues	6 (29)
From networks	6 (29)
Journals	6 (29)
Professional organisations	6 (29)
Direct contact with research or special interest groups	2 (10)
Email alerts	2 (10)
Seminars/lectures	2 (10)
Social media (Twitter)	1 (5)
All of the above	3 (14)

Respondents were asked to give a reason for their reliance or preference for this method of finding out about new research findings or guidance. Eighteen respondents explained their preference for one or more methods. Two who reported using a variety of methods, with different aspects taking precedent at different times, explained that they want to ensure that they are up to date both personally and as an organisation on latest policies, strategies and best practice and that practical reasons are a deciding factor for different groups (e.g. they don't have any direct contacts with some professional groups but do for others).

People-based sources (colleagues, professional meetings/working groups/ organisations, networks, etc.) were the method of choice for some. For many these were the preferred sources owing to limited time and capacity to use other methods in their workday. People-based sources shared information collated from a range of sources and services, which had often been judged as relevant by peers: *"The shared information is usually topical and relevant for my day to day job, reviewed by known peers."*

Interpersonal methods lightens the burden on the individual, some of whom acknowledged that this compensated for their personal lack of organisation in sourcing evidence, and provided a source of support. One relied on following colleagues on Twitter and other social media as it was *"very time efficient and effective."*

Reading or searching relevant journals was preferred by some respondents as they provide an immediate, regular review of relevant information. It was seen as a flexible way of accessing research as some had journals delivered to their home and they could therefore read it at a convenient time. Journal searches were also seen as easy to fit in around their schedule.

One respondent preferred to source their information via lectures and seminars because it *"allows dedicated time. Day to day pressures cannot get in the way."*

Their role in knowledge transfer

We asked respondents how they communicate new information to others, if at all (Table 9).

TABLE 9: METHODS OF SHARING INFORMATION

Methods of sharing information	n (% of 27)
Email	20 (74)
Presentations	20 (74)
Meetings	19 (70)
Practical demonstrations or training	12 (44)
Newsletters	7 (26)
I do not communicate new information at present	1 (4)
Other	3 (11)

Email (74%), presentations (74%) and meetings (70%) were the most frequently selected methods of sharing information. Newsletters were the least used of the given methods, selected by (26%) of the responders. Other responses included publication of research, on a website and also production of a monthly digest and the running of staff development workshops where staff members present on topics such as evidence based practice approaches to clinical care and service delivery. In combination, people-focused (likely face-to-face) methods were an important means of sharing information.

We asked whether their preferred mode of communication differed by target group. Eighty three per cent of respondents (n=20, out of 24 responses) indicated that their favoured mode of communication was dependent on their intended target audience. Respondents were asked to give examples of criteria that influenced their choice of communication method. Two respondents indicated using different modes of communication for staff members and patients, for example the formats of pathways or guidelines were amended for patients with communication difficulties. Presenting information differently to different staff grades or groupings was also highlighted.

> *Presenting to allied health colleagues would be different to giving practical demonstrations to help staff support individual children for therapy, and would be different again, to explanations of those strategies for parents.*

The information being delivered was listed as a factor and one respondent noted how they adjusted the presentation of material to make it more relevant to the target groups.

> *I adjust the presentation of material to make it relevant and user friendly to the recipient- e.g. finance staff different to clinical staff different to patients.*

Another respondent commented on personal preferences for information delivery: *"Some want information in different formats (e.g. summary, full text, hyperlink)".*

The decision regarding which information is relevant to communicate to others was explored further by asking respondents to select all that applied from a list of given options (Table 10).

TABLE 10: DECISION REGARDING WHICH INFORMATION IS RELEVANT TO COMMUNICATE TO OTHERS

I communicate information if :	n (% of 26)
It has patient benefit	25 (96)
It has clear healthcare improvement outcomes	24 (92)
It is linked to the organisation's priorities	24 (92)
It is linked to the priorities of the unit/department	22 (85)
It is linked to national priorities	22 (85
I think it is important	19 (73)
It is linked to their personal priorities	18 (69)
I think it is interesting	14 (54)
It is linked to local protocols	12 (46)
It has cost saving potential	12 (46)
Advised by seniors	6 (23)
It has no cost implications	2 (8)
Other	1 (4)

Nearly all respondents stated that patient benefit (96%) was a deciding factor, closely followed by clear healthcare improvement outcomes and whether it was linked to organisation's priorities (92% each). How well the information linked with the unit/department's priorities and wider national priorities were also identified by 85% of respondents each. Personal importance (73%), priorities (69%) and interest (54%) also factors. Financial issues such as cost saving potential (46%) and no cost implications (8%) were among the least selected options. Instructions from seniors was selected by 23%. The 'other' comment was: *"NICE Guidance and safety issues."*

Just over half of the respondents reported evaluating the success of their KT activity (54%, n=13); those who evaluated their activity were asked to select from a list of given options all the methods that they use (Table 11[45]).

TABLE 11: METHODS OF EVALUATING KT&M ACTIVITY

How do you evaluate your KT activity	n (% of 15)
Feedback from target groups	11 (73)
Monitoring outcomes	11 (73)
Audit	7 (47)
Analysis of patient data	7 (47)
Through appraisal process	6 (40)
Analysis of costs data	3 (20)
Other	2 (13)

[45] Thirteen reported evaluating their KT activity but 15 respondents answered this question.

Feedback from target groups and monitoring outcomes were the most frequently selected methods of evaluation (73% each). Audit and analysis of patient data were selected by 47% each followed by appraisal processes (40%). Only 20% used analysis of costs data to evaluate their KT activity. Of those who indicated 'other', one stated they carried out service reviews and another indicated that they were currently conducting interviews on how to improve the service provided.

Views on Factors Affecting KT&M

Respondents were asked to indicate their level of agreement with a series of statements provided. They were asked to rate it on a six point scale where 1=strongly disagree and 6=strongly agree.

TABLE 12: OPINIONS ON ENABLERS AND INHIBITORS OF KT&M

Enablers and Inhibitors of KT&M							
	1= Strongly disagree. 6=Strongly agree						
	1	**2**	**3**	**4**	**5**	**6**	**Sum**
KT is greatly increased by sharing examples of where KT has improved practice	0	1	0	1	7	**18**	**149**
Effective KT needs the support of an organisation's leaders	1	0	0	1	9	**15**	**140**
The communication of research needs to be more user-friendly	0	1	1	2	7	**15**	**138**
KT needs mutual trust and respect between the knowledge broker and their audience	1	0	0	5	**12**	9	**135**
Effective KT needs a supporting infrastructure in the organisation	1	0	1	3	10	**11**	**132**
Those in a KT role need a good understanding of different research methodologies and methods	1	0	1	8	6	**11**	**132**
The success of KT is greatly increased by face-to-face contact	0	1	2	5	**11**	8	**131**
The individual practitioner is responsible for keeping his/herself up-to-date with the latest research	0	1	3	4	**10**	9	**131**
Practitioners need someone in a KT role to help them to keep abreast of the latest research	0	1	3	8	6	**9**	**127**
The knowledge that is important for practitioners in my organisation is similar to what is important for others working in similar organisations in Wales	0	3	2	4	**9**	**9**	**127**
The success of KT is greatly increased if the research findings are aligned with practitioners' interests	1	0	2	4	**10**	9	**127**
KT needs sustained interaction between researchers and practitioners	0	2	2	6	**10**	7	**126**
Email alerts are a good way to inform practitioners about new research findings	1	2	0	**11**	**11**	2	**116**
The relevance of knowledge is heavily dependent on local context	0	2	6	**11**	9	0	**111**
KT works best when the knowledge is linked to the organisation's policy priorities	0	2	3	**12**	8	1	**107**
It is easy to distil messages for practice from academic journal articles	0	6	**11**	5	1	3	**88**
It is not essential for those in a KT role to have knowledge and experience of the NHS	5	**12**	4	3	3	0	**68**

Sum scores for each statement were calculated by multiplying the rating by the number who selected it (i.e., for the top statement, the calculation is (0x1)+(1x2)+(0x3)+(1x4)+(7x5)+(18x6) = 149). The statement *KT is greatly increased by sharing examples of where KT has improved practice* stands out as the enabler most recognised with 25 of the 27 respondents indicating agreement.

The next set, with a sum between 131-140, has seven statements. Two are about organisational support (leadership and a supportive infrastructure); two are about trust, respect and value of face to face communication between the broker and their audience. Other important enablers (in this group) relate to user-friendly communication, a good understanding of methodologies and the sense that all are responsible for keeping up-to-date with research.

Important enablers, but slightly less so (as judged by this group; sum=126-127) is a set of four statements which include the need for sustained interaction between researchers and practitioners and with someone performing a specific KT role to help practitioners keep up with new research. What is important in one organisation was felt to be similar to that in other organisations in Wales and that aligning research findings with practitioners' interests increases the success of KT.

In the next three (sum=107-116), local context seems to be less important than other items in the table, as is linking knowledge with the organisations' priorities. *Email alerts* as *a good way to inform practitioners about new research findings* is also in this group.

At the bottom of the table are two items which suggest the most view the difficulty in translating messages from academic journal articles into practice and knowledge brokers who aren't knowledgeable about the NHS as barriers to KT.

In an open question, respondents were asked to state what they thought was the most important ***enabler*** of KT in the NHS. There were 25 responses. Having a supportive infrastructure was mentioned by three respondents while a further four talked of supportive managers and good leadership. For example: "*Senior managers who understand the value of good evidence to inform and improve services".*

The importance of a strong culture of quality improvement was noted by five respondents. This was characterised by having good networks, knowledge and communication. An awareness of the barriers to implementation of new research evidence was highlighted. The freedom to carry out small improvement techniques without such barriers was discussed by another respondent.

Protected time to carry out KT activities within their work schedule was mentioned by five respondents. For example, one noted:

> *I would imagine it would be sufficient time for individual practitioners to keep up with the research literature and then the opportunity to discuss whether there should be changes in practice as a result of these findings.*

Having content with a clear applicability to clinical practice and impact on patient outcomes was reported as a good motivator to KT by four respondents.

Possessing the relevant skills needed for KT was seen as an enabler by two respondents who identified critical appraisal skills and "*The ability to present complex information to practitioners in a patient focused, user friendly way".*

The respondents were then asked to state what they thought was the most important ***inhibitor*** of KT in the NHS. There were 26 responses.

Insufficient time to carry out KT activities was listed by 11 respondents. As practitioners, they felt that they did not have enough time to search and appraise evidence because they were already at capacity with other tasks such as direct patient activity. With increasing workload pressures and not enough staff to carry out support work and facilitation staff prioritise direct care over KT activities. Three respondents reported an information overload as a barrier; too much information and it becomes difficult to determine priorities.

Lack of support or indifference from management or leaders was identified by five respondents as an inhibitor to KT as was lack of coordination in KT (1). One respondent commented:

> *Lack of support within the organisational infrastructure despite an emphasis on research being a core activity.*

Competing agendas or vested interests that delay or derail developments of this type were also identified (2) as were changes made for financial reasons (2).

Disconnect between the academic research community and everyday practitioners was highlighted. The language differences created a barrier but also practitioner reluctance to acknowledge the importance of RCTs as acceptable evidence and academic's failure to recognise the value of practitioner's insight maintained a split between the two professional groups.

Respondents were asked to rate how seriously they thought KT was taken in their organisation as a whole. They were asked to rate it on a ten point scale where 1=not at all seriously and 10=very seriously (Table 13).

TABLE 13: OPINION OF HOW SERIOUSLY KT&M IS TAKEN IN THEIR ORGANISATIONS

How seriously KT is taken in their organisations	n (% of 25)
8-10 (very seriously)	8 (32)
4-7 (neither)	17 (68)
1-3 (not at all seriously)	0 (0)

The most frequently selected ratings fell within 4-7 (68%) and the mean score was 6 out of 10 indicating that overall respondents did not feel that their organisations took KT very seriously.

Examples of evidence that KT is important to their organisation were given to respondents and they were invited to select all that applied (Table 14). Four statements were equally selected as evidence that KT was taken seriously in their organisation. Having a designated person with responsibility for KT, supportive leadership, time to attend seminars/lectures and encouraged membership of professional organisations were all selected by 60% of respondents.

Access and linkage to research and research groups were also seen as indicators of commitment to KT as having access to journals (48%) and supported membership of advisory groups (44%) were selected by almost half of all respondents.

TABLE 14: EXAMPLES OF EVIDENCE THAT KT&M IS IMPORTANT TO THEIR ORGANISATION

Evidence that KT&M is important in their organisation:	n (% of 25)
there are designated people with responsibility for KT&M	15 (60)
the organisation's leaders are supportive	15 (60)
membership of professional organisations is encouraged	15 (60)
time is allowed to attend seminars/lectures	15 (60)
journal access is enabled	12 (48)
support is provided for individuals to link with research groups (e.g. through membership of advisory groups)	11 (44)
healthcare improvement strategies are discussed in appraisal	9 (36)
journal clubs are supported	8 (32)
training implications of KT&M is supported	7 (28)
training in KT&M processes is provided	6 (24)
there is a policy in place	5 (20)
Other	4 (16)

The presence of a policy in place was only recognised as evidence of an organisation's commitment to KT&M by 20% of respondents. This was elaborated on further within the "Other" open section where one respondent stated that they weren't aware of a formal KT&M policy while another told that a policy was in its final draft but that *"library staff are key to KT&M"*. One respondent reported that KT&M is *"A key part of operational plans".* Another respondent explained that while leaders in their organisation were supportive in principle, high patient contact and value for money were more important in their professional role.

Respondents were given open space to list any suggestions they had for *an effective intervention to support KT&M in their organisation.* Respondents mentioned of the benefits of redesigned structures and developing of frameworks within their organisation to create an infrastructure aligned with the KT&M and quality improvement agendas. These structures or frameworks they argued should be disseminated throughout all the professions so that it is fully understood at all levels. More effective use of resources was also suggested.

Stronger support from executives for clinicians and managers to get the work done and to recognise successful KT&M were also listed and more time set aside in their workday to link research to practice were suggested.

Basic training in formulating clinical questions, searching knowledge data bases and critical appraisal were identified. One respondent suggested the creation of a local group for interested people to discuss KT&M.

An open space was provided for respondents to make any additional comments on the topic. Two respondents offered these comments:

> *Central prioritisation and a joined up strategy so that we can focus on a few key themes and issues that fit in with what most needs to be done.*

> *KT needs to be promoted as the Health Board takes on University status. There is so much Knowledge to access and clinical staff have limited time. KT staff need to support teams to continually improve patient outcomes.*

4.10 Summary of Questionnaire Results

KT&M was an integral part of a minority of the respondents' personal or organisational professional practice; around half spent less than 20% of their work time on KT&M. Nearly half reported that their organisations' approach to KT&M was neither especially systematic nor unsystematic and the majority thought that it was not taken very seriously.

Reported evidence that KT&M was important to their organisation included: having a designated person with responsibility for KT&M; supportive leadership; time to attend seminars/lectures and encouraged membership of professional organisations.

Content and processes

The most frequently reported sources of knowledge used were either technology-based (emails), interpersonal (from colleagues, networks, etc.) or formal sessions (seminars, lectures). Methods used when sharing information included emails, presentations and meetings. The choice of method used varied by the intended recipient, the type of knowledge being shared and previously expressed personal preference by the target recipient.

Information with patient benefit, clear healthcare improvement outcomes, information that is linked to their organizations, unit/departments, or national priorities were more likely to be shared.

Just over half monitored outcomes of any KT&M activities. Feedback from target groups and monitoring previously set outcomes were most frequently used.

Enablers of KT&M

Sharing examples of where KT&M has improved practice was an important enabler for the respondents.

Having good organisational support (management, culture, processes) and protected time to carry out KT&M activities was an enabler within the organisation's internal context. A sense that all are responsible for keeping up to date with research were important KT&M responsibility enablers. Suggested ways to improve KT&M in their organisation included redesigning structures and frameworks to create a KT&M-aligned infrastructure.

Good communication was said to aid the KT&M process. Respondents identified the importance of trust, respect and face-to-face communication with brokers. Being able to translate the information into user-friendly communication was also highlighted.

Other important broker dispositions were a good understanding of research methodologies and possessing the necessary critical appraisal skills.

Interestingly, the presence of a policy in place was only recognised as evidence of an organisation's commitment to KT&M by 20% of respondents. Also, local context and linking knowledge with organisational priorities were shown to be less important factors influencing KT&M.

Barriers to KT&M

Barriers identified included insufficient time to carry out KT&M within their work day, a lack of management/organisational support, working within competing agendas and the disconnect between academic research community and everyday practitioners.

4.11 Comparing Interview and Questionnaire Results

The questionnaire and interview data were elicited via different techniques and from different groups in order to gain a broad view of KT&M within Welsh healthcare and so we must be cautious when comparing data. However, it is encouraging that overall there was good agreement between the responses on the current position of KT&M and the way forward. For example, both indicated that, currently, their organisations lacked a fully systematic approach to KT&M. There was strong agreement that insufficient time within the work day, a lack of support (management/organisation), operating within competing agendas and a lack of coordination between different professions (within and outside the organisation) hindered attempts at KT&M.

Having a supportive infrastructure, good leadership and management support at all levels were valued as enablers of KT&M by both interviewee and questionnaire respondents. The view that KT&M was the responsibility of all professionals but that this could be supplemented by the presence of a dedicated knowledge broker role within their organisation was also shared.

The importance of evidence relevant to practitioners' needs was discussed by interviewees and questionnaire respondents reported that this was an important factor in deciding which information they shared with colleagues.

Differences

Interviewees argued against a one-size-fits all approach suggesting that approaches need to be adapted to local context. However, questionnaire respondents indicated that local context was less important and that the issues experienced within their organisation were similar to those in others.

Linking KT&M with organisational priorities was also less valued within the questionnaire responses than in interviews. However, the questionnaire respondents indicated that they were more likely to share information that was linked to their organisation's/unit's/department's priorities, or national priorities.

Interviewees emphasised the importance of having a policy in place for KT&M within an organisation, however only 20% of questionnaire respondents thought that this was evidence that the organisation took KT&M seriously. Nonetheless, interviewees also reported that there needed to be the culture in place to support the policy and questionnaire respondents indicated the need for redesigned structures and frameworks within organisations which would provide some context for understanding the questionnaire result.

5: Key Issues and Way Forward

While it was acknowledged that many professionals recognise the need for keeping up-to-date with new evidence, KT&M as a process was still finding its place within organisations. KT&M is not just about the transfer of knowledge between professionals but involves the implementation of that knowledge and innovation in practice. Knowledge and evidence should have clear implications for application to practice, with the aim of improving patient healthcare.

What is needed?

This study is the first of its kind in Wales and has yielded timely, useful data that points the way forward for KT&M. Recommendations emerging from the data consolidate those in the NISCHR AHSC Knowledge Transfer Task and Finish Group report.[46] Currently much KT&M activity is determined by individual interest and motivation. A systematic approach within and across organisations would enhance the importance of KT&M and embed it as a day-to-day activity. Support for KT&M needs to be apparent at all levels, from government policy through to middle management.

Recommended ways of improving KT&M in Wales include:

I. Clear Government policy and coordination linking KT, innovation, R&D and QI. Policy direction will help HBs to prioritise.

II. National policy should be backed up by local policy that encourages and expects KT&M. The policies should be patient-centred, addressing identified areas of local concern with manageable, measurable outcomes.

III. Developing more collaborations, increasing communication within and across organisations and ensuring sustained interaction between researchers and practitioners. Working together and sharing information across Wales would help overcome professional boundaries and foster trust and respect through face-to-face contact. These new working relationships would create worktime by avoiding duplication and open up organisations to more opportunities for cross-sector innovation.

IV. Reporting evidence via accessible, user-friendly communication – synthesising and distilling large amounts of evidence into clear, relevant information and recommendations for practice. Linked to this, the creation of an easily accessible repository of such information, either centrally-held (accessed electronically) for all to use or within organisations.

V. Increasing the visibility and signposting of the KT&M processes within organisational infrastructure. It will help to have clear and explicit pathways and processes within organisations, inspiring innovation and

[46] NISCHR AHSC. 2014 Mobilising the use of research in practice for impacts on health and wealth – recommendations of the AHSC Knowledge Transfer Task and Finish group to NISCHR, Welsh Government. NISCHR AHSC: Cardiff

opportunities rather than creating barriers. This needs good leadership and support from management, leading by example.

VI. There is potential for the integration of KT&M into professional roles and the consolidation of broker roles (individuals). KT&M activities should be understood as a valued part of every clinician's professional role with time and suitable processes in place to support it. Alongside this, there is value in optimising the roles of a number of team members with good research knowledge, who are skilled in appraising, synthesising and communicating knowledge to different target audiences in order to provide additional KT&M support within that organisation. These brokers can also aid networking, linking people with other professionals and organisations but they should be viewed as an adjunct rather than a replacement for individual actions.

Disclaimer

The views and opinions expressed therein are those of the authors and do not necessarily reflect those of the funders or those of Wales Deanery/Cardiff University.