Leadership for Knowledge Translation: The case of CLAHRCs

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Bios

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Much of James' research and practice has been on the development and introduction of complex healthcare technologies, as well as organizational and financial innovations such as public-private partnerships. He has published widely and has been a member of many expert panels on healthcare innovation, both in the UK and internationally.

Abstract

Calls for successful knowledge translation (KT) in healthcare have multiplied over recent years. The NIHR Collaboration for Leadership in Applied Health Research and Care (CLAHRC) program is a policy initiative in the UK aimed at speeding-up the translation of research into healthcare practice. Using multiple qualitative research methods and drawing on the ongoing processes used by individuals to interpret and contextualize information, we explore how new organizational forms for KT bridge the gap between research and practice. We pay particular attention to the relationship between the organization and practices of KT and leadership. Our empirical data demonstrate how the relationship between leadership and KT shifted over time from a push model where the authoritarian top-down leadership team set outcome measures by which to judge KT performance to one which aimed to distribute leadership capacity across a wide range of stakeholders in a health and social care systems. The relationship between the organization and practices of KT and leadership is affected by local contextual influences on policies directed at increasing the uptake of research in clinical practice. Policy-makers and service leaders need to recognize that more dispersed type of leadership are needed to accommodate the idiosyncratic nature of collective action.

Keywords

Knowledge Translation, Distributed Leadership, CLAHRC

Knowledge translation (KT) stems from the recognition that a gap has historically existed between the findings of promising clinical research and their translation into clinical practice (Davies et al., 2008; Graham et al., 2006). This translation process is ever more important today as healthcare provision becomes more complex and clinicians adopt new managerial roles (Spyridonidis et al., 2014). Within this landscape complex cross-sector collaborations for KT offer the promise of helping clinicians adopt best practice to improve health outcomes and better quality care (Estabrooks et al., 2006; Rycroft-Malone et al., 2011). However, although we know such collaborations at a national (macro) level often provide a grounding for KT, these activities also require strong leadership at the micro level to navigate complex and uncertain working relationships (Spyridonidis and Calnan, 2011). How leadership best contributes to KT and can best be utilised to facilitate knowledge uptake is less clear (Greenhalgh & Wieringa, 2011).

The wider objective of our work is to understand how new organizational forms for KT bridge the gap between research and practice, paying particular attention to the relationship between the organization and practices of KT and leadership. Our specific focus is the extent to which different KT models, which we describe below, are best suited to different types of leadership. Drawing from the organizational studies literature, we show that KT is a highly social and complex process involving collective interpretations within which different leadership practices are iteratively developed and negotiated.

Our article is organized as follows. First, we outline our conceptual framework. Second, we discuss how leadership practices mediate a social constructed 'reality'. We then describe and explain our research, and our data gathering techniques and data analysis. Third, we present our findings, structured around three leadership themes. Finally, we summarize new insights about the types of leadership best suited to KT.

Knowledge translation models and associated types of leadership

Knowledge translation models bridge the knowledge-practice gap through 'push,' 'pull,' and 'exchange' efforts (Lomas, 2000). Push models posit that researchers produce rigorous research which then needs to be brought into clinical practice to improve healthcare, with service leaders and policy makers actively searching for and obtaining this knowledge or research evidence (knowledge push). User pull is similar to producer push but places more emphasis on the active involvement of researchers themselves in terms of driving knowledge onwards (knowledge push). From this early framework Lavis et al. (2003) developed a strategic framework which leaders could use, based on five questions concerning elements of the knowledge translation process: the message, the target audience, the messenger, the infrastructure and the evaluation. In exchange models the translation of knowledge is seen as dynamic and reciprocal, with an emphasis on the process of social interaction and exchange between research producers and users (Lomas, 2000). The research explores how new knowledge is spread by deliberately planned, specified activities involving cooperation and coordination between epistemic groups or organizations. The assumption is that knowledge can be translated or exchanged (Berwick, 2002), and that translation can be managed and controlled (by organizational leaders) and a sequence of activities amenable to planning, according to pre-defined criteria and monitoring against pre-defined targets (Wallace et al., 2007). This rationale assumes key stakeholders are capable of controlling these activities – one of the factors posited as key to successful KT.

This rationale is much simplified. In actuality knowledge translation is unlikely to be such a rationally managed linear process (Greenhalgh et al., 2004). Nutley et al. (2007) suggest that knowledge is not simply assimilated but rather interpreted in context and so interaction between parties and the negotiation of shared meaning is required for the

knowledge to be utilised successfully. From this perspective, KT is often an ambiguous and contested process (Williams, 2007) with individuals and leaders negotiating ambiguity, reaching consensus and interpreting new strategic directions. The nature of this diversity, the interactions between these members and the institutional environment make effective leadership crucial but perhaps hard to achieve (King's Fund, 2011). We are interested in the relationship between organizational practices of KT and leadership. We posit that different approaches to KT might require different types of leadership; that a shift is needed away from individual leadership to a more team based approach that encourages clinicians to part in KT activities (Shortell 2002). In understanding the link between leadership and KT current empirical studies lack convincing theoretical explanations, an issue we seek to address.

Evolving interpretations as key leadership capabilities

Our starting point is that how leaders construe key organizational issues provides a useful framework to guide the development of leadership capabilities required to bring about KT. The interpretation of organizational issues and events has long been used in organizational management literature for understanding the ambiguities present in everyday work life in general and leading organizational change (Bartunek 1984; Isabella 1990; Balogun & Johnson, 2004; Weick et al., 2005). These theories allows us to develop much deeper understanding of leadership and its relationship with KT by focusing on the process of reaching organizationally shared consensus; how leaders can manage uncertainty, confusion and ambiguity. Such an approach contrasts markedly with the unidirectional emphasis evident in KT push and pull models.

Interpretations of organizational issues and events are a largely narrative process through which mental models of the world are created, shared and maintained. From this

perspective, communicating and making meaning about KT is more complex than simple communication, the sending and receiving of information between individuals. Instead, when confronted with the need to enact a change, leaders need to alter the interpretive scheme with which organizational members make sense of the world, and replace this with new ways of working (Weick, 1995).

These new interpretive schemes are clusters of knowledge or experiences which act as reference frameworks, allowing leaders to make sense of information (e.g. new evidence) in relation to knowledge they already have (Balogun & Johnson, 2004). Essentially, this involves leaders using interpretive schemes strategically to understand how new knowledge and established frameworks of knowledge interact. They help to explain the complex processes used by leaders to construct meaning and turn initially ambiguous new information into knowledge that can be made sense of, integrated into existing schema and then shared with others.

From an interpretative perspective (Weick, 1995), leaders can convince and include others in KT activities through daily exchanges, and everyday group activities and conversations. Through shared narratives and storytelling, new knowledge is collectively shared and then translated onwards to others (Weick et al., 2005). This interaction between leaders and other organizational members allows members to clarify, test and confirm what the organization is trying to communicate. In this way overarching organizational stories emerge that serve to glue together often confused or contradictory information surrounding new knowledge. However, the vagaries of this process can also lead to a competing or hegemonic power base, with a lack of shared consensus emerging regarding ways forward (Gioia & Chittipeddi, 1991). Hence, organizational stories might need to be redrawn to maintain the credibility and legitimacy of certain organizational roles or identities (i.e. as a 'manager' or as a 'physician'). Particular types of leadership

might be needed to effect these complex processes, supporting how people enact change related to KT. Traditionally, leadership within the English National Health Service (NHS) is understood from a largely individualistic approach, with heroic and authoritarian leader, that is the type of leader that is appearing to dictate policies and procedures and controlling organizational activities without any strong relationship to followers (Shortell 2002). More recently, distributed forms of leadership have arisen. These forms of leadership contrast with traditional authoritarian roles by emphasizing widespread responsibility for leadership that spans across an organization's environment (NHS Leadership Academy, 2015).

In this article, we explore the relationship between KT and leadership by illuminating both the challenges that confront complex cross-sector collaborations for KT within the NHS and the types of leadership needed to mediate such organizational change, through a case study of a major KT initiative as it unfolded over five years.

Research context

The empirical setting for this research was one of the nine English Collaborations for Leadership in Applied Health Research and Care (CLAHRCs), established in 2007 with funding from the National Institute for Health Research (NIHR). These were designed to be a new organizational form through which higher education Institutions and surrounding NHS organizations collaborate to translate evidence of cost and clinical effectiveness into everyday healthcare (Cooksey, 2006; Department of Health, 2006; NIHR, 2007). The initiative was part of the response to calls for new ways of organizing healthcare to overcome traditional difficulties in KT in healthcare at different levels, such as the clinician, patient, organizational context and wider system (Bartunek, 2011). A

specific remit for the CLAHRCs is to conduct high quality clinical and implementation research focused on the needs of patients.

The NIHR North West London Collaboration for Leadership in Applied Health and Research Care – from now on 'CLAHRC' – describes itself as a 'partnership between world class academic and clinician institutions in North West London working to build system-level translational capacity'. This involves bringing together 25 local NHS organizations (mainly primary, secondary and associated healthcare providers) and local universities to form a knowledge-based network to radically transform the way clinically innovative interventions are introduced and sustained. To achieve these aims an organizational structure was established to support knowledge exchange across different social and professional boundaries within the local healthcare communities.

CLAHRC leadership consisted of two delineated groups. The first group called themselves the CORE group – this group was initially more concerned with top down leadership – in that these were staff responsible for setting CLAHRCS strategic vision. The CORE leadership group consisted primarily of academics with a reputation in health services research, innovation and policy. The CORE group was responsible for putting in place new structures, people and clinical initiatives to encourage the translation of research findings into improved practice, and thereby improve patient outcomes. The CORE group also worked with academics (organizational theorists, social scientists, health economists and statisticians) locally, more widely in the UK and internationally to develop and introduce quality and performance improvement methods into the local healthcare partners.

The second group of leaders were PROJECT leaders. CLAHRC decided early on to adopt a project-focused approach, whereby a series of innovation and improvement projects addressing specific agreed areas of healthcare quality improvement such as improving

access to care, reducing readmission rates, increasing patient satisfaction, assessing the benefits of HIV-testing in community settings and improved medicines management. In total, 18 projects were implemented over the five-year duration of CLAHRC phase 1 (the period of our research). These all involved collaboration between patients, academics, the NHS front-line staff and NHS managers (Gerrish, 2010). In each project there was an emphasis on training and developing health professionals' skills in project and change management.

Projects were provided with funding and support for an initial 18 months to build translational capacity and implement evidence-based research. Each PROJECT leader was a senior doctor assigned to lead on and manage the project work, in charge of a multi-disciplinary team, who together ensured the project was successfully implemented. Three rounds of projects were established between 2009 and 2012. All were expected to draw on existing evidence (either from local or national clinical guidelines, trials or peer-reviewed publications) or were clinical innovations that added quality to patient care but were as yet not routinely implemented. They were expected to regularly evaluate and report the impact of the intervention or service improvements.

The CORE group met quarterly with its partners in 'Partnership Forum' meetings, to carry out strategic, operational and communication planning, and report back on KT activities. The Partnership Forum aimed to ensure that engagement across the local health economy was maintained and project funds were distributed transparently. All project members and other partners were brought together in 'Collaborative Learning and Delivery' (CLD) events, also held quarterly. The aim of these was to support front line staff and project teams overcome difficulties they faced in implementing research findings in practice. The CLD events acted as a channel for project teams to share research

evidence and best practice in a way that was responsive to the needs of the project team. Bespoke training sessions were also provided where necessary.

Methods

This research used multiple research methods - qualitative interviews, ethnography, and document analysis - to investigate the relationship between the organization and practices of KT and leadership. In so doing, we sought to strengthen our ideas by triangulating our sources of evidence. We investigated the relationship between KT and leadership practices in the CLAHRC in three ways. First, organizational structures, processes and accomplishments were examined in relation to a series of stakeholder perspectives (e.g. across time and across professional groups). This approach allowed us to transcend linear, cause-effect relations to examine the effects of CLAHRC's CORE and PROJECT leaders in relation to stakeholders who had a direct and indirect link to CLAHRC. This provided crucial information about how CLAHRC was accounted for by those on the receiving end of CLAHRC's KT efforts, whilst making visible the total sum of leadership practices of CLAHRC through its effects on other agencies, clinicians, academics or patients.

Secondly, we developed a detailed understanding of the way in which the total sum of CLAHRC leadership engaged with the community it served. This provided a key vantage point from which to examine the leadership practices for KT. We used semi-structured interviews with both the CORE group and PROJECT leaders. The research objective was to understand how these actors experienced leadership practices for KT. We focused on the 'cognitive shift' of these actors as the programme evolved, exemplifying how the CORE group tried to facilitate collaboration PROJECT leaders. We also paid attention to the strategies CLAHRC used to legitimate these shifts.

Finally, we observed how the CLAHRC operated in practice - as distinct from how it stated it operated in practice - in the Partnership Forum and CLD events. Field notes were written during or shortly after the periods of observation and analysed on return to the office. Periods of observation lasted for 2-8 hours at any time (total of 226 hours of non-participant observations) and included discussion with those in the field (i.e. informal interviews) to clarify aspects of KT practices. In addition to formal meetings, we observed informal conversations during breaks. During observations of formal and informal conversations, we paid attention to the nature and content of messages about KT that the CORE group espoused and PROJECT leaders came into contact with, the content of their conversations with one another and the nature of their interactions. This enabled us to explore the language the CORE team and PROJECT leaders used to introduce its work, and how the CORE team set about engaging and sustaining their relationships with both existing and potentially new PROJECT leaders (as the phases of project development evolved over time).

We examined the perspectives of the CORE group, PROJECT leaders and those stakeholders whom CLAHRC impacted on. Through this we generated a broad understanding of how CLAHRC KT models operated from an internal (leadership) and external (clinician, patient, external stakeholder) perspective. Such an approach ensured that not only were the stated aims of the CLAHRC organization examined, but such aims could also be examined in relation to their effects (i.e. social practices) on the community that CLAHRC served.

All members of the CORE group and PROJECT leaders were interviewed annually across the 5 year lifespan of the research. We wanted to explore how the relationship between different types of leadership and KT activities changed, developed and were resolved over time so we adopted a prospective, longitudinal design which included all relevant

organizational members over the life span of the initial funding stage of CLAHRC. Informants were a multi-stakeholder theoretical sample, including senior and middle managers from the CORE group and individual PROJECT leaders, including project managers, doctors, nurses and other allied health care professionals from 25 NHS organizations across primary and secondary care. Participants had a diverse understanding of knowledge and evidence based practice.

Our main data source in this article is from interviews with PROJECT leaders (n= 36) in CLAHRC projects. These leaders were interviewed twice, at the beginning of their project and at the end over an 18-month time period (total n= 64 interviews). The article also draws on interviews with the CLAHRC CORE team conducted as part of the larger study. In total we conducted 210 interviews. Transcripts of each interview were anonymised and a code number was assigned to each for identification purposes.

Loose topic guides linked to KT and the interpretation of translation activities and were developed to give some structure to the interviews. Different topic guides were developed for managers and for health professionals. Our interest lay in exploring the motivations of different actors to get involved with the CLAHRC programme, how they made sense of it, what they were seeking to achieve, how and why, and to what extent they thought that they were be able to achieve their aims. The focus of interviews was broad, but encompassed questions about lead actors' backgrounds, disposition towards KT, and vision for CLAHRCs during bid development.

Insert table 1 here – see appendix.

Each interview was transcribed and coded in the course of the fieldwork. This method provided mid-course guidance for subsequent interviews. Themes that emerged in preceding interviews were explored in-depth in subsequent interviews, as suggested by

Strauss and Corbin (1990). Each interview transcript, set of observational notes, and archival document was read several times, generating and coding themes according to both issues identified in the literature, and features of the data that emerged inductively. Our data analysis involved three stages. During data collection and before we commenced with analysis we grouped all of the documents, interview transcripts and field notes into a single shared data file. This enabled us to share data across the research team. We began by analysing the data collected in stage one with a focus on the initial founding conditions of the CLAHRC and its model for closing the second translation gap. We then analysed the projects in depth, where we focused on how the CLAHRC was introduced over time. The interview material was analysed across and within projects, and across time, under a constant comparative method. Additionally, the interview material was analysed in relation to the field notes. Each individual interview was analysed separately, and cross-case analysis of all interviews was carried out at the end of the fieldwork. We began our analysis with a fine-grained reading of the data. After inductively creating a list of first order codes from the case evidence, we consolidated all our codes and progressed with axial coding, structuring the data into second-order concepts and more general aggregate dimensions (Gioia et al., 2012). In doing so, we engaged in deductive reasoning whereby we linked our inductive codes with types of leadership and sense making. We purposely searched for evidence of shifts in how our informants understood CLAHRC and their work within it.

A documentary analysis of the key policies that gave the impetus to CLAHRC as well as CLAHRC internal reports was conducted (n= 37). This provided insight into the organizational accomplishments of CLAHRC as part of a wider health policy agenda. The data allowed an examination of CLAHRC's development across time that reflected the iterative, dynamic nature of KT and evolving interpretations of this activity.

Our data collection and analysis were informed by our initial theoretical framework with both inductive and deductive approaches used rather than a pure grounded theory approach (Glaser & Strauss, 1980). We analysed our data by drawing from a KT framework combining various approaches, including 'pull' and 'push' and linkage and exchange efforts, with more interpersonal factors such as the individual and collective interpretations and the leadership enacted by different organizational members.
One key outcome of more inductive analysis at this stage was the realisation that our informants empirically engaged in 'reflection' activities to mediate these complex processes, supporting how people enacted change related to KT. Consequently, we drew upon the notion of reflection to inform more theoretical coding. We used inter-coder triangulation, that is, coding of the same content by more than one coder so as to check whether the same codes get produced to assess the reliability of the coding (Seale, 2004). Inter-coder triangulation was carried out on approximately one third of all interview transcripts (n=70) taken across a range of samples and phases, with coding done by two and sometimes three different researchers. Members of the research (n=3) team met to discuss interpretations of the findings, compared analysis and discussed any inconsistencies. There was broad agreement in interpretations throughout the process but any inconsistencies were addressed by referring back to the original transcripts.

In the 'conceptual blending' (Cornelissen & Durand, 2012) of these approaches we aim to provide new insights to both KT literature and applied KT implementation by better understanding the reciprocal and complex relationship between these different domains. This study was performed according to the established ethical guidelines of the Declaration of Helsinki. The study was approved by Central London Research Ethics

Committee 1 (REC approval number 09/H0718/35) and the participating NHS organizations[1].

Findings

Three major themes emerged from the analysis, each of which linked to CLAHRC's strategic approach to create and scale-up collaborative translational research initiatives. The first theme emphasised the creation of a new organizational form, which accounted for the development and enactment of the push model through top down leadership, i.e. the design and deployment of KT tools and methods. The second is mobilizing leadership across boundaries to increase capacity at the program and the project level (pull model), which accounted for resistance to top down leadership, leadership capacity development and iterative cycles of action, feedback and learning for collaborative translational research at the project level. The third refers to leadership as a more collective process for the development of new social relations between academia and practice in the local health economy, which represented the creation of an ambiguous strategy to facilitate interaction and exchange between academia and the NHS (a knowledge 'exchange' model).

The creation of a new organizational form for knowledge translation

Developing a technical infrastructure for knowledge translation (push model)

[1] The project was funded via the NIHR CLAHRC NWL (phase 1) grant, however the research was conducted independently of the NIHR CLAHRC NWL programme team.

The CORE group emphasized the importance of CLARHC's technical infrastructure to facilitate applied clinical research, implementation and dissemination throughout the local health economy. This technical infrastructure referred to specific KT tools, i.e. existing decision support tools such as the NIHR's sustainability tool (Doyle et al., 2013), statistical process control, process mapping, 'plan-do-study-act' (PDSA) cycles – and locally developed web-based methods that project leaders had to use to monitor and share applied research, local implementation and dissemination of research outputs. The CORE group emphasized the importance of measuring processes to monitor and understand what happened during project delivery; this was a fundamental element of CLAHRC's approach to KT. The group exhibited coherence about how to implement the KT push model by recognizing the need to define appropriate outcome measures:

> We have a pre and a post period and then we implement a discrete intervention, usually in a top-down way and then we measure the effects on the outcome measures. (CORE Group member).

Defining appropriate process and outcome measures were seen as essential to judge the success of translation efforts at a project level, as well as to create codified knowledge to support healthcare professionals. To facilitate this at the project level, CLAHRC developed a data collection and reporting toolkit in partnership with the Department of Computing at Imperial College London (Curcin et al., 2012). This allowed project teams to design the desired process model, define quantitative improvement measures, and automatically generate a web application for the PROJECT leaders to enter measurement data at regular (typically weekly) intervals, and monitor their progress in real-time.

During the early day of the programme the CORE group paid greater attention to robust evaluation of service improvement. Major quality improvement gains were perceived to result partly from the careful performance management of clinical practice. Developing an authoritarian leadership approach to service delivery improvements via performance management and evaluation was therefore seen as a priority:

> Our overall aim is to develop a systematic approach to support the implementation of evidence-based improvement tools that can offer better care for patients through performance management. If your focus is not on performance management at the beginning, at the end of the day you don't know how you got there. (PROJECT leader)

Enacting the push model through top down leadership

As the program progressed to its second year, this knowledge push model was operationalized through top down leadership from the CORE team, the business contract agreements between CLAHRC as an organization and its individual project partners:

> There is leadership in the CLAHRC but it's a top down, this is what you are doing, you need to do this in A and E. (PROJECT leader)

> I mean, in the sense that leaders make change, leadership is about change, about making things change. If you take a junior person in the organisation, the chances that they can actually make change is quite difficult, a big change (PROJECT leader)

The operationalization rationale of the push model, as expressed by the CORE group, hinged on a single concept that the group considered vital for KT, top down performance measurement of projects. The CORE group constantly reiterated that in return for financial support PROJECT leaders and their teams should fully embrace the rules,

responsibilities and timeframes to introduce improvement processes and deliver measurable outcomes. Achieving these targets in turn allowed the CORE group to produce evidence of success in delivering quality improvement to its funders, the NIHR.

The CORE group leadership of the CLAHRC emphasized the desire to create a systematic and scientific approach to translate research into practice by merging elements from social sciences and health services research, change management and improvement science (Reed & Bell, 2014). These narratives tended to reproduce a specific kind of scientific tradition of thought. Hence, for the CORE group, KT should be 'scientifically valid' and 'evidenced-based'; it should be simplified and codified:

> We're really embracing the complexity of KT by working scientifically – not that other people aren't maybe doing it a little bit. But I don't think they have embraced it as wholeheartedly as we have. (CORE group)

Thus the leadership group of the CLAHRC focused on ensuring that KT was understood and correctly applied by PROJECT leaders in a carefully formulated implementation plan, supported by their top down leadership. In particular, it was frequently stated that among the PROJECT leadership responsibilities included in the scope of the CLAHRC was responsibility for overseeing implementation of 'scientifically' defined best practice at the point of care:

> We believe that every healthcare organization needs to develop KT capacity, by using scientific methods to empower staff to improve local services (….) to make a sustainable difference, there needs to be relentless focus on real-world research that helps underpin improvement science. (CORE group)

Consequently, the CORE group's official communications concentrated on shaping how PROJECT leaders understood the scientific rationality that underlined CLAHRC's approach to KT. For example, annual reports focused on issues such as the appointment of the right people, including specialized academics in charge of developing scientific approaches to translating best practice across boundaries. In internal communications (e.g. official plans, emails and slideshows) the emphasis was on the inevitability of a scientific oriented outlook to KT. The enthusiastic way in which these plans and decisions were communicated conveyed an image of a CLAHRC scientifically equipped to succeed in translating knowledge into every day practice.

Mobilising leadership across contrasting boundaries

Resistance towards top-down leadership

PROJECT leaders, who differentiated themselves from the CORE group and the CLAHRC more generally, were more uncertain about scientific approach to improvement. We observed that PROJECT leaders were happy to take CLAHRC funding, but there was less consensus in what was required in return for this financial support. Moreover, we observed that PROJECT leaders' narratives were not focused on 'science'. Many did not buy in to the 'science' and 'measurement' of the tasks set and argued it was difficult for them to understand how the CORE group could simply identify best practices in KT, tell everyone what they 'should' be doing, and expect someone else to make it happen.

> And when they're describing having to adhere to the rigour of the CLAHRC way, why does it have to be this way, and not understanding why do I have to do the CLAHRC way. Why can I not choose a different way that gets me to the same point? (PROJECT leader)

Moreover, it was felt that using the same scientific approach to measure best practices in KT across different projects was not feasible, because different stakeholders needed different information to be delivered in different ways:

> CLAHRC gives you this money to do a good project and you want to take the money to do a good project. You're extremely aligned, but as time progresses you both still want to do the project; the difference is CLAHRC keep going on about generic methodology where sometimes you want to say, actually I agree with that, but it won't work here. (PROJECT leader)

It became clear to us that PROJECT leaders perceived the CORE team's approach to KT as being 'generic' and 'challenging to fit [into] their local context', as expressed in the previous quote. Many PROJECT leaders emphasised that some of CORE groups' demands were unrealistic:

> We're trying to find how to adapt the CLAHRC approach within this hospital, and roll it out with the NHS. But some of the tasks that we get asked to do, are difficult for a project like ours, to fit into our day-to-day schedule. And when it doesn't fit in, and we raise a question, saying, this isn't part of our scope of our project, this it makes it very difficult. (PROJECT leader).

Significant differences in their understanding of constructs such as the 'leadership of CLAHRC' were apparent, with PROJECT leaders expressing frustration about the tension between them and the CORE team. Overall the idea that CLAHRC as an entity could define and measure scientific best practice, and that this could be universally applied was

rejected. PROJECT leaders emphasized the importance of clinical autonomy as part of their leadership of the CLAHRC and how it would be managed:

> Sometimes it can be frustrating having to do 'things' for CLAHRC, which actually you cannot see how it's going to be relevant. Most of the cases we neglect these 'things'. We have to do what make sense to us. (PROJECT leader)

Developing leadership capability

At this time, although the CORE group maintained a consistent vision of CLAHRC's KT push model (being focused on driving KT and measuring and collecting evidence about quality improvement), the meanings associated with these labels evolved to accommodate PROJECT leaders' dissent . During this period the CORE group modified their interpretations of the approach to KT, by making new decisions about how to drive KT and quality improvement forward, as they came into contact with new project leaders. Overall the experiential (rather than scientific) knowledge that was collaboratively constructed or developed through the interactions with project leaders was more strongly emphasised:

> Our approach to KT is completely changing, based on the feedback we receive from projects ….. We have changed the way that we communicate externally, completely changed the way we communicate internally, completely changed the way that we support our fellows, making systems and processes for communication marketing professional. (CORE group).

> Because I think CLAHRC have learned a lot from different projects so I think they constantly change their approach (PROJECT leader)

Developing leadership capacity across the CLAHRC was now presented as enabling PROJECT leaders to make resource decisions that would be perceived as more clinically legitimate and credible to their peers. These mainly consisted of new narratives aimed at incorporating PROJECT leaders views more fully, by allowing for more clinical discretion in decisions about the development of the program activities. An emphasis on developing clinical leaders' capacity for managing clinical service innovation became a key characteristic of the CORE groups' leadership. Hence, no longer did the CORE group describe themselves and their practices in terms of being 'authoritarian':

> It's got to be about the clinicians being able to develop as leaders, or being recognised as leaders in their field, to show their leadership qualities. However there are times that leadership has to come from the top and we cannot ignore that […] we have to struck a balance between these different leadership approaches if you know what I mean, and I think that's good (CORE team).

The CORE group emphasised the importance of leadership capacity building for KT, to ensure that PROJECT leaders could direct clinical research and training in the implementation of new practices, either via CLD events or dedicated on-site training. Informants also mentioned the benefits of CLAHRC's support for continuing corporate education aimed at clinicians, nurses, and managers, including MSc and PhD training, leadership programs and fellowships:

> There are opportunities for project management development, clinical leadership as well as in terms of running a group which is not a group of your staff but a group of mixed discipline, like multi-disciplinary staff, and

> how you would go about engaging people who are not responding to you (PROJECT leader).

The CORE team had now developed CLAHRC wide narratives for leadership for KT that attempted to blur the boundary between science and practice by promoting closer collaboration between different epistemic groups.

Iterative cycles of reflection, feedback and learning

Leadership that fostered collaboration between clinicians and academics became an important means of moving beyond more limited notions of being a professional. Such collaboration was based on iterative cycles of reflection, feedback and learning that empowered PROEJCT leaders to think and work differently:

> The strategy that I've been most involved with is around the research about the quality improvement methods and the teaching and design of quality improvement methods. So I think a lot of that has felt, you know, has really been this kind of action research, reflecting and learning between the projects and the programme and that kind of iterative learning cycle (PROJECT leader)

Creating a culture of reflection was instrumental. Most CLAHRC managers' understanding of leadership development emphasized the importance of engaging in reflection.

> Building leadership capacity has evolved, and everything we're doing has evolved, so it's always been the same vision, but how we do it has always been based on the

> learning from previous things. So actually everything we do is reflected on them and we do change it each year to make it better (CORE team).

A key mechanism to develop PROJECT leaders' capacity for translational research and a shared understanding of KT methods was the Collaborative Learning and Delivery (CLD) program. During the early stages the purpose of the CLD program was loosely defined. Consequently, many leaders were not able to understand what was required of them:

> And really again we've gone to many CLDs and again we've obviously benefitted fantastic from a point of view of being enthused by fantastic speakers. Really I still think you come away not quite understanding what it's all about? (PROJECT leader)

Many leaders were frustrated with the CORE teams' tendency to promote their own solutions and practices to KT and measurement through lecturing during the CLD events, without adequate attention to their own clinical approaches and other perspectives:

> There are lots of things at CLAHRC CLDs that tend to be repeated and they're not necessarily relevant for clinicians and their practice. It seems to be more about CLAHRC than about, you know, how CLAHRC can help you. (PROJECT leader)

The CORE group saw this growing frustration as problematic, especially when dealing with powerful senior clinicians, whose narratives at CLD events was often expressed in terms of the irrelevance of the program. In discussions amongst the CORE management, we observed that building new shared understandings regarding the CLD events was seen as critical to promoting project leadership development for KT capacity building and to disseminating new understandings.

In response the program evolved and the focus and scope of CLD events changed to be more clinically relevant:

> We've actually reshaped the purpose of the CLD, (…) it is a learning event, we have more directive workshops and less time for motivational speakers to offer much more support to projects… and equally, with CLD we get evaluation forms back from project leaders and we look through those; we look through the comments, we change in response to that. (PROJECT leader)

As a consequence, a large number of informants emphasized that the CORE team were redefining CLD events. These were now seen as an intervention oriented toward the development of leadership capacity for KT in the local health economy, creating a culture of collective inquiry and mutual accountability within the projects:

> Projects don't have a history of kind of cooperation, collaboration and my perception is there's no shared accountability. So it becomes a bit of a blame game; okay, well, I did my bit, now it's their problem, you know. And we try to change that (PROJECT leader).

We observed that during the CLD events the CORE team increasingly encouraged clinicians to work collaboratively with academics and other key colleagues, building shared visions and the capacity to deliver on new projects. In particular we observed that clinicians and academics sat together and developed shared purposes of learning with the objective to have common learning goals and the particular learning of how to improve patient care in mind, as highlighted by our informants:

> I've never worked within an academic institution. For me, having not worked in academia, it was a fantastic exposure to all the different

> stakeholders. You guys are your own beast in and of yourselves, so trying to understand just how you're structured in a formal fashion, also the informal mechanisms of learning are totally different, has been a great learning experience for me (Project leader)

> When I first did join the team, I know, in sitting down with the academics, I just was perplexed. I was, at times, very frustrated. I could not get a hold of what the heck they were talking about; It just was all just airy-fairy. I had no idea. Where's the point? We were just going round, and round, and round ,and round, and it did add a sense of, wow, this is a whole new world we're in. But now we've got better at doing it in terms of collectively learning about an improvement methodology (Project leader)

Leadership as a more collective process (Exchange model)

Using ambiguity to define leadership roles for knowledge exchange

The CORE team sought to establish a vision that was perceived as academic – through the publication of high quality research evidence – and about directly informing and modifying practice and closing the research to practice gap. Boundary spanners - people who created new connections and talked about experiences – were crucial in this mission (Currie et al., 2007). To create this vision they tried to prompt exchange of how project leaders' knowledge about saw important elements of their work:

> So I guess those kinds of connections between teams which are, sort of, boundary isn't it? It's about taking some of the skills from

> academia, some of the skills from the NHS and applying them in different environments. (PROJECT leader)

This knowledge exchange process, which occurred amongst project teams and academics, helped project members and researchers integrate new knowledge into their everyday tasks. They did this by attempting to bring multiple perspectives and multi-level solutions to problems and managing relationships with the projects:

> Our core group and the academics within our core group, such as the ones that provide information and support, I think, have kind of gone out of their way to support the project teams, to explain things to them, to really see things from their point of view and kind of build these really, you know, deep understandings of the challenges that the front-line team has faced and, you know, I think, really effective collaborative relationships. (CORE group)

The way these knowledge exchange processes were set up aimed to transform the top-down, authoritarian and hierarchical leadership of the CORE team. To this end the CORE team assumed a flexible distribution of leadership roles for project leaders:

> Well, my role's the clinical lead for the project, but it's a bit confusing, it's just the lack of clarity around roles, responsibilities and maybe expectations. My role in CLAHRC is still quite fuzzy actually'. (PROJECT leader)

Project leaders made sense of this ambiguity in ways that were individually meaningful and allowed them the agency they required, responding to the new CORE team narrative heterogeneously. For example, some medical academic physicians accepted that achieving quality improvement required a management focus, and used performance

management tools to support centralized monitoring of project progress and performance:

> When you understand the improvement methodology tools and what they can do then they are very useful. I think we have learned a lot about, retrospectively looking back now, about improvement methodologies. We've learnt a lot about using feedback from many improvement tools. (PROJECT leader)

Others played along more grudgingly. They defined leadership as the autonomy to make decisions as they saw fit. They negotiated with the CORE group how to perform their roles and tried to minimize inherent conflict in being both a clinician providing care and a manager responsible for monitoring and reporting work performance. They often used their power to negotiate away more administrative aspects of their role, so that the clinical leadership role aligned more closely with their professional interests. Negotiation of these practices was a complex process:

> I don't think we comply with all the CLAHRC monitoring requirements. I suppose, the question, is whether there is a fit between the CLAHRC program methodology and the actual requirements and needs of the local project. And we use our discretion to answer this question (PROJECT leader)

Re-engineering social relations and governance structures

To make knowledge exchange processes and flexibly defined leadership roles easier to comprehend the CORE team created a hybrid model of governance for its membership by promoting joint clinical-academic appointments, and held strategic meetings and educational events at shared facilities. Many project leaders saw this as the natural development of a synergy between the local universities and NHS organizations. By

attempting to re-engineer these social relations and governance structures the CORE team aimed to break down traditional hierarchical barriers between epistemic groups. This signified a tacit but potentially crucial shift whereby leadership for improvement was deemed to be spread across a diverse range of people rather than residing solely in the CLAHRC.

> Well, there's a hierarchical organizational structure, if you like, which would look like a hierarchical structure. But I think actually the sort of leadership components of that are probably more distributed than what that actual structure looks like. They're kind of exhibited with well, not only boundary but beyond her organizational structure to influence something else (PROJECT leader).

For example, we observed that clinical researchers and project leaders in the CLAHRC were invited to share in strategic conversations about how to build leadership capacity for KT:

> While we've got what looks like a relatively traditional hierarchical structure, which does work and will need to work at times, I think actually it's quite a flat structure. There's a lot of, you know, merging of roles and ideas and stuff (Project leader)

Such a characterisation of leadership resonates clearly with the trends in the literature away from 'leader as individual' towards a more collective leadership concept (Shortell 2002; Denis et al., 2012). In this way clinicians who were not generally associated with leading specific research projects were given the opportunity to be actively engaged in knowledge exchange activities and the work of the vision and mission of the CLAHRC. It was further emphasized that networking opportunities – the CLD events and partnership

forums – promoted a facilitative leadership, creating an open, informal environment for capacity building:

> The role for CLAHRC is that actually we should be able to build capacity in the sector, to break down professional boundaries and facilitate leadership development through iterative learning (CORE team)

This distributed element of learning provided project leaders with the opportunity to learn from each other by sharing knowledge and discussing the problems they faced. Collective learning was frequently reported as being central to leading KT.

> One of the things I feel very strongly about with CLD events is that they do bring people together who wouldn't normally sit in the room together, and I think that is very valuable to learn together how to lead improvements in practice (PROJECT leader)

> I think it was really good for building links and certainly through this project particularly, I've made contact with a number of academics that I wouldn't have necessarily have met outside CLAHRC but all of whom, I think, helped me to learn how to lead improvement projects. (PROJECT leader)

Discussion

At the outset of this study, we aimed to understand how to bridge the gap between research and practice, by focusing on the enactment of different leadership styles that influenced KT. For example, CLAHRC deployed a visible top-down leadership for the

development and implementation of a KT push model, to ensure that the right infrastructure was in place to support KT activities through rigid performance management regimes. Our analysis led us to believe that although this approach to leadership helped CLAHRC develop a technical infrastructure for KT, it was not enough to facilitate KT at the project level. For successful KT it was necessary to mobilize a type of leadership that generated shared accountability and built leadership-capacity amongst clinicians, through reflection and the ability to develop pull and exchange models. To this end, the CORE group of the CLAHRC reframed their approach; building leadership capacity for KT through investing in developing clinicians' capacity to lead improvement in practice and assume leadership roles. We portray how the relationship between leadership and KT shifted over time. Initially, the CLAHRC senior management developed a push model where the authoritarian top-down leadership team (CORE group) developed a technical infrastructure by which to measure KT activity at the project level. Project leaders responsible for enacting KT interpreted the CORE groups' demands as 'unfit for purpose' and sought to resist this autocratic and technical approach. Their dissent impacted on the CORE team, who evolved their approach to leadership to accommodate more experiential, collaboratively constructed knowledge. The previously enacted top down approach shifted, to give more discretion and support to the clinical PROJECT leads. In CLARHC's latter phases the CORE group 'assumed a flexible distribution of leadership roles for the project leaders' and developed a more hybrid model of governance (which included project leaders).

A major issue that emerged from our analysis was how the relationship between leadership and KT emerged, what Schön terms 'reflection-on-action retrospective' (1983). From longitudinal data we found that CLAHRC's KT models were continuously and iterative shaped through processes of iterative change and reflection. KT models did not

simply determine reflection-reflection also developed and modified the approach. By reciprocally changing CLAHRC's KT model, there was a shift from a push model to a more flexible distribution of leadership roles for KT. We observed the organization and practices of KT largely being driven through a process of negotiation between the two leadership groups, in which conflict and holding divergent views were a catalyst for creating new knowledge.

These findings offer new insights for the applied implementation of KT in healthcare. The conceptualisation of KT as emergent and 'messy' has become an established norm within the literature (Kontos & Poland, 2009). Our empirical data demonstrate the challenges to KT within the CLAHRC, laid out in collective leadership processes. Our analysis demonstrates how the leadership of the CLAHRC reacted to conflicts arising out of the macro-level context, with different perspectives and objectives. This is juxtaposed against the micro level, in which one must consider the 'reflection-on-action' that would influence individual involvement in KT activities. Our results suggest that KT is an ongoing process informed by interactions between individuals and groups, underpinned by pre-existing individual and group experiences and values. By taking this approach complex organizations such as CLAHRCs can ensure that leadership development for translating knowledge can better accommodate the understandings of its diverse range of stakeholders.

By developing a joint approach, using the best from KT and leadership theory, the notion that leaders can simply enact planned KT strategies at a certain point clearly does not reflect the dynamic nature KT in an evolving organization. We point the way toward a leadership development for KT that privileges process over strategies, in which the 'reflection-on-action' about a particular set of problems requires an appreciation of ambiguity and flexibility.

This more theoretical blended approach also provides a way of seeing and researching leadership for KT that reflects the complexity and dynamism of knowledge evident in healthcare, by placing concepts not normally considered in the same research, side by side. It is argued that 'the contribution of social science does not lie in validated knowledge, but rather in the suggestion of relationships and connections that had previously not been suspected' (Weick, 1989, p. 524). We suggest that future studies of leadership for KT include a more detailed exploration of 'reflection-on-action' - how local meanings emerge, change and can be realigned and integrated into KT initiatives. This theoretical blending needs further work, but it offers a theoretically grounded of understanding how leadership can contributes to KT. Using a blended approach such as this in a variety of situations would give researchers a common language within which to discuss and compare their findings. This is important in a field where there is an acknowledged complexity and a lack of clarity surrounds the concept of KT (Davies et al., 2008).

This is a qualitative research study, carried out in single organization. As a result it is difficult to generalise widely about our findings. This is a key limitation. In addition, participant observation of clinical practice may further advance our understanding of improvement tools in use and how this influences particular forms of knowledge translation; this approach may complement data obtained through interviewing informants. Ideally, our research would have involved such direct observations, but this was not feasible in working across such a large number of NHS trusts. However, the power of an in-depth qualitative investigation such as this is that it offers the opportunity to reach an understanding of not only what is happening but also why this might be so. Accounts of the kind outlined in this article can then be further investigated in other contexts, and in this way more thorough and nuanced understandings advanced.

Conclusions

Given the imperative to improve health care provision and organization, the promotion of KT is more necessary than ever. Hence there is urgency for policy-makers and service leaders to recognise and understand the significance of local contextual influences on policies directed at KT. There is a need to take into account more dispersed type of leadership to accommodation 'reflection-on-action' and idiosyncratic nature of collective action. Further work is needed to more fully unpack the interrelations between these domains and across different organizational settings.

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Appendix

Table 1: data analysis process