Introducing Evidence Through Research “Push”: Using Theory and Qualitative Methods

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Abstract
A multitude of factors can influence the uptake and implementation of complex interventions in health care. A plethora of theories and frameworks recognize the need to establish relationships, understand organizational dynamics, address context and contingency, and engage key decision makers. Less attention is paid to how theories that emphasize relational contexts can actually be deployed to guide the implementation of an intervention. The purpose of the article is to demonstrate the potential role of qualitative research aligned with theory to inform complex interventions. We detail a study underpinned by theory and qualitative research that (a) ensured key actors made sense of the complex intervention at the earliest stage of adoption and (b) aided initial engagement with the intervention. We conclude that using theoretical approaches aligned with qualitative research can provide insights into the context and dynamics of health care settings that in turn can be used to aid intervention implementation.

Keywords
knowledge transfer; organizations; health care professionals; practice guidelines; arthritis; case studies; research, qualitative

The last three decades have not only seen the rise of evidence-based medicine (EBM), but corresponding endeavors to understand the process of how research evidence gets put into practice (Tabak, Khoong, Chambers, & Brownson, 2012). A multitude of theoretical models have been developed and we will draw on a selected number of those to situate the study reported in this article, which focuses on how qualitative theory-based research can be used to optimize the design and initial implementation of a complex intervention. The overview of relevant concepts will be followed by an explanation of the theoretical framework adopted in this study and a discussion of the role of qualitative research within trials. The study design and methods are then outlined and the results are presented thematically, with a conclusion addressing whether theoretical approaches aligned with qualitative research can provide insights into the context and dynamics of health care settings that shape the uptake of new interventions.

Knowledge Translation
Research “push” relates to the dissemination of evidence by researchers and/or government-funded bodies such as the United Kingdom’s National Institute for Health and Care Excellence (NICE), which often is in the shape of clinical guidelines. Seow and colleagues observed that translation of evidence into guidelines is not straightforward and has been influenced by the processes, relationships, and institutions that dictate policy making (Seow et al., 2006). However, when evidence has been translated into guidelines, and policy makers or researchers have directly engaged with health care providers, the main issues were those of relevance and fit.

Research has suggested that the mere presence of guidelines, no matter how clearly communicated, is insufficient to change practice. Health care practitioners have not always implemented evidence because of the complex interplay of personal, professional, and contextual factors, which means new evidence might not fit with their existing ways of working, priorities, or relationships with patients and other practitioners (see, for example, Alaszewski & Brown, 2007; Dobrow, Goel, & Upshur, 2006).
Increased attention has been paid to the social processes associated with the uptake of evidence and, in particular, through the notion of complex interventions in health care, which are often research driven (Medical Research Council [MRC], 2008). These are defined as “interventions that contain several interacting components” (p. 7), including systemic and organizational influences, alongside individual professional’s personal factors (MRC, 2008).

Recent literature on the uptake of new innovations in health care has argued for a more complete theoretical consideration of individual, organizational, and policy contexts by drawing on a wider range of disciplinary perspectives (Flottorp et al., 2013; Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004; Grol, Bosch, Hulscher, Eccles, & Wensing, 2007; Lourenco, Grant, Burra, & Vale, 2011; May, Mair, Dowrick, & Finch, 2007; Pentland & Feldman, 2007; Swan, Kilmartin, & Liaw, 2007; Webster, 2007). Thus, a common thread within the literature is the emphasis on contextual factors, including policy and structural aspects, and the social processes that shape knowledge and what is defined as believable evidence. One strand of the implementation literature has drawn attention to the need to understand how innovation or interventions are introduced to clinicians as part of a process of research push. Empirical studies have shown that without engaging health care professionals and ensuring “buy-in” from the outset can lead to failure of an intervention (Bamford et al., 2012; Gask, Levergreen, & Hays, 2008; Gunn et al., 2010; May et al., 2007), and thus was an appropriate choice of theory for our project (we outline the intervention below). The main focus of NPT is on collective, coordinated, and cooperative social action to understand agents at work (in this case, primary care professionals) within implementation processes (May, 2013b). It focuses on the work required to achieve routine use, which centers around four dimensions (see Figure 1).

First is coherence, that is, the work that defines and organizes the objects of practice. This emphasizes that the intentional actions of agents are achieved through joint enterprise, and this happens from the first stage of implementation: Participants attribute meaning to a complex intervention and make sense of its possibilities within their field of agency. This “sense-making” work can be formal or informal, but makes everyday work into a coherent whole and gives it a sense of orderliness. In other words, agents individually and collectively need to recognize that the intervention is new, useful, and relevant to their work. Second is cognitive participation, described as the work that defines and organizes the enrolment of participants in a new way of working. This equates to individuals and collectives working to agree, delineate, and self-identify with the tasks that will need to be achieved as part of an intervention. Put simply, this is the process of stakeholders identifying and agreeing on their roles in the setting up and running of a new system or way of working.

Third is collective action or the work that defines and organizes the enacting of a practice. Put simply, this is the actioning of the processes, roles, and tasks identified during implementation: Participants attribute meaning to a comprehensive analysis of the key social processes associated with the overall trajectory from innovation to embedding new interventions in everyday care.

Normalization Process Theory (NPT) during this study. However, it is worth justifying our choice to use NPT has been tested in a number of primary care–based studies and has been shown to provide good explanatory power for why interventions have worked (or not) retrospectively (Bamford et al., 2012; Gask, Levergreen, & Hays, 2008; Gunn et al., 2010; May et al., 2007), and thus was an appropriate choice of theory for our project (we outline the intervention below). The main focus of NPT is on collective, coordinated, and cooperative social action to understand agents at work (in this case, primary care professionals) within implementation processes (May, 2013b). It focuses on the work required to achieve routine use, which centers around four dimensions (see Figure 1).

The purpose of our article is not to explicitly debate the relative merits of different theoretical approaches, but to demonstrate the potential role of qualitative research aligned with theory to inform complex interventions. However, it is worth justifying our choice to use NPT to understand the uptake of research evidence in practice, NPT has a starting point of understanding change within context. One critique of other frameworks and theories is that they are complex and impractical to use in real-world contexts (Cook et al., 2012). NPT offers a streamlined approach to examining the use of evidence in health care (Finch & May, 2009), is built on previous theoretical models and empirical studies, and provides a dynamic and comprehensive analysis of the key social processes associated with the overall trajectory from innovation to embedding new interventions in everyday care.

The Theoretical Framework

A variety of theoretical frameworks and/or checklists have been developed that can identify context-specific domains or areas that need addressing when trying to implement evidence or aid knowledge translation (see, for example, Flottorp et al., 2013; Greenhalgh et al., 2004; Grol et al., 2007; May et al., 2009; Michie & Johnston, 2012; Michie et al., 2005; Shettle, Woolf, Grimshaw, Schunemann, & Eccles, 2012; Tabak et al., 2012).

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“cognitive participation,” or the individual and collective work that is needed to sustain an intervention and to make sure that it fits in with usual ways working (both individual and collective). Finally, there is reflexive monitoring, that is, work that defines and organizes the knowledge on which appraisal of a practice is founded. This process features appraisal of the benefits of an intervention at the individual and collective level. In other words, this is the ongoing individual and group evaluation about the worth of a new way of working, be it for patients or their own practice. Without appraisal, problems are unlikely to be ironed out or an intervention deemed worthwhile and sustained (May et al., 2009; May et al., 2010).

The decision to utilize the NPT as the conceptual framework for our study meant that we could examine how participants we enrolled into the trial interpreted its relevance to their everyday practice and what helped or hindered their willingness to take part. Because the focus of this article is on the introductory stages of a study, we only draw on the first two NPT components of **coherence** and **cognitive participation.** Although checklist and theories provide insights into what might need to be addressed, less attention has been paid to the “how” of understanding contexts and ensuring interventions make sense and fit with clinicians’ work contexts and relationships (with colleagues or patients) at the outset of a study, and it is to that topic we now turn.

### Qualitative Methods and Trials of New Evidence

Qualitative methods have been shown to potentially aid the conduct of trials and complex interventions. Donovan and colleagues improved patient recruitment rates to the ProtecT trial (from 40% to 70%) by making adjustments to the recruitment process based on findings from qualitative interviews (Donovan et al., 2002). Similarly, Hoddinott, Britten, Harrild, and Godden (2007) benefited from deviating from a rigid protocolized recruitment strategy (common in most trials) by using an iterative qualitatively driven recruitment process. By undertaking interviews with potential recruits for a breastfeeding trial, they were able to identify reasons for non-participation and make modifications better suited to individuals and organizational contexts (Hoddinott, Britten, Harrild, & Godden, 2007). Hoddinott, Pill, and Chalmers (2007) further demonstrated the potential of qualitative research methods within their breastfeeding intervention by explaining the contextual, organizational, and interpersonal dynamic that influenced the outcome of the trial (Hoddinott, Pill, & Chalmers, 2007).

These examples notwithstanding, the potential of qualitative research within trials has arguably not been maximized. Lewin, Glenton, and Oxman (2009) outlined three areas in which qualitative methods have mostly been used alongside randomized control trials (RCTs): before (to generate hypotheses, to develop interventions and outcome measures), during (to explore the delivery of and responses to the intervention, to explore processes of change), and after (to explore reasons for findings, including variations in effectiveness, to examine the appropriateness of the underlying theory, or to generate further hypotheses).

O’Cathain, Thomas, Drabble, Rudolph, and Hewison (2013) reviewed the use of qualitative research in trials and suggested that
lessons learnt were for future trials rather than the trial the qualitative research was undertaken with, and these lessons were not always explicitly articulated within these articles so that researchers not involved in the original research project could utilize them. (p. 5)

Accordingly, they argued for more qualitative work to be undertaken at the pre-trial or developmental stage to aid the design, uptake, and conduct of trials and for better reporting of such work (O’Cathain et al., 2013).

Thus, the scope for qualitative research has arguably not always been utilized to its full potential. Qualitative methods are considered to be especially useful when applying theory to develop an intervention, as well as testing the outcomes of an intervention (May et al., 2010). Furthermore, qualitative methods aligned with theory are powerful tools for understanding and responding to health care professionals’ contextually situated changes in behavior (or lack of) when confronted with innovations (Ong, Rogers, et al., 2014).

The overall aim of the research detailed in this article was (a) to ensure key actors made sense of the complex intervention at the earliest stage of adoption and (b) to aid initial engagement with the intervention. In this article, we provide an example of facilitating initial engagement of primary care professionals with evidence in a case of “research push.” In doing so, we outline the crucial role that qualitative research methods played in supporting a theoretically informed approach to guide and influence this engagement, arguably a key, but often overlooked, part of the implementation process. We outline how our approach facilitated introduction of and engagement with a complex intervention, thus ensuring participation and subsequent knowledge dissemination. First, we detail the methodology we used (including a description of the intervention), before outlining how continual data collection and analysis helped the study team refine their approach to initial engagement with the clinical sites that took part in the research project.

Method

The Complex Intervention: EBM for Osteoarthritis

Before we describe the qualitative methodology we deployed, we offer a brief outline of the intervention. The complex intervention we discuss in this article is the Management of OsteoArthritis in Consultations (MOSAICS) study. Research has shown that patients with osteoarthritis (OA) are not optimally treated in primary care (Jinks, Ong, & Richardson, 2007; Morden, Jinks, & Ong, 2014; Porcheret, Jordan, Jinks, & Croft, 2007; Steel, Maisey, Clark, Fleetcroft, & Howe, 2007), and the MOSAICS study was designed to investigate the impact of a complex intervention to improve OA management. The MOSAICS study was a cluster RCT testing an intervention for primary care management of OA based on the 2008 version (an update was made available in 2014) of the NICE OA guidelines (NICE, 2008).

The aim of the intervention was to promote the uptake of the NICE-recommended core treatments (access to information, exercise advice, and, where appropriate, advice on weight loss; NICE, 2008) and to enhance the support for OA self-management in primary care settings. The intervention was developed by researchers in close collaboration with primary care clinicians and patients and consisted of a semi-structured general practitioner (GP) consultation; an OA Guidebook, specifically written (by researchers and patients) for use in the consultations; and a nurse-led OA clinic. A template was installed on all the practice computers that alerted GPs and practice nurses to specific tasks in the management of OA and to complete prompts for information (see Figure 2 for an overview). Control sites provided usual care plus the consultation template, compared to intervention plus consultation template. A full description of the whole intervention can be obtained from the study protocol (Dziedzic et al., 2014).

The intervention and accompanying sub-studies (including the qualitative study) were approved by a local U.K. National Health Service (NHS) Research Ethics Committee (approval ref: 10/H1017176), and informed consent was obtained from participants for each sub-study. All research was carried out in accordance with the Helsinki declaration (World Medical Association, 2013).

Recruiting and Allocating General Practices

A detailed program for recruitment of General Practices to the study was designed: 10 potential General Practices, who fulfilled the eligibility criteria (see protocol, Dziedzic et al., 2014), were identified through the English West Midlands North and North West Primary Care Research Networks (PCRNIs). The General Practices were introduced to the trial by the study research team at a “roadshow” meeting (Hoddinott, Britten, et al., 2007), where they were given information about the study rationale and an overview of its design, the main research questions, what was required from their teams, and potential benefits of participation. An overview of the training program for participating GPs and nurses was presented. Subsequently, eight General Practices agreed to take part in the study. Two General Practices declined, one because of competing pressures, and one did not provide a reason. A research GP worked closely with the General Practices to train clinical staff in using the template and to monitor...
ease of use and acceptability. In each General Practice, he held a template review meeting where problems could be addressed.

The intervention and control arm were randomized using a computerized random number generator, and each arm contained four General Practices. A meeting with the research team, with the GP facilitator and relevant network staff member present, was held in each General Practice to reveal the allocation and explain what it meant in terms of level of involvement for individuals and at an organizational level. Again, GPs and practice staff could get additional clarification or ask further questions about the study. Operational meetings in each intervention practice followed, in which more details were provided on the timetable and training programs for GPs and practice nurses. These meetings also allowed exploration of issues pertaining to each General Practice or individual professionals who might facilitate, or pose a barrier to, the study. Final arrangements as to the conduct of the study tailored to the context and circumstances of each practice were agreed on.

**Methods, Data Collection, and Analysis**

Case study methods are distinguished by their in-depth focus on a relatively small number of units or “cases” from a variety of data sources and angles (Luck, Jackson, & Usher, 2006). They are research strategies suited to studying a particular phenomenon and examine, in detail, the activities and processes that take place in “real-life” contexts (Baxter & Jack, 2008; Luck et al., 2006). Case studies are particularly useful when studying bounded complex systems, institutional settings, or group interactions that are in a state of flux (Luck et al., 2006; Yin, 1999).

Multi-site case studies provide comparison and allow understanding of similarities and differences across a number of sites (Baxter & Jack, 2008). Doing so offers comparison and theoretical generalizability, either developed from cases or by testing existing theory against cases (Baxter & Jack, 2008; Flyvbjerg, 2006; Yin, 1999). Qualitative case studies can feature multiple sources of data collection (potentially including observational methods, interviews, and documentary analysis) to provide insights into phenomena from a variety of angles and sources (Baxter & Jack, 2008; Luck et al., 2006). Thus, a case study design facilitated the exploratory approach required to inform the implementation of the intervention, in particular, gaining an understanding of context, which could facilitate introduction of the intervention.

We used a case study approach to evaluate the whole intervention using NPT, and more data were collected than reported here and the totality of the dataset comprised the case study. Data collected at later stages in the study pertain to what happened during the trial once operationalized, if and how context and clinicians’ actions influenced the effectiveness of the trial, and longer-term routinization beyond the confines of the funded study (these findings will be reported elsewhere). As we discussed earlier, the focus of this article is on the work conducted to help guide the intervention at its introductory stages (using the NPT constructs of coherence and cognitive participation), and the data reported here concern only those introductory stages. To achieve this, two approaches to data collection were utilized at this stage of the study: observations and in-depth semi-structured interviews.

Observation as a qualitative research method involves the researcher “going into the field” and describing and analyzing what has been seen, and what people do and
say, therefore illuminating behavior and interactions in natural settings (Mays & Pope, 1995), and aims to identify what is meaningful to people in that setting (Sharkey & Aggergaard Larson, 2005). An overt non-participatory approach to observation was utilized in this research (Fitzpatrick & Boulton, 1994). Each General Practice took part in a series of meetings that had a standard content and purpose, but featured room for questions, discussion, and feedback. At each meeting, GPs, nurses, and practice managers (those considered to be key to operationalizing and delivering the intervention at each organization) were present. The following meetings were observed at each practice:

- the introduction meetings with all General Practices interested in hearing about the study ($N = 10$)
- allocation reveal meetings in the intervention General Practices ($N = 5$, one practice required two meetings because of size)
- one site visit discussing the operational issues with each General Practice team

We chose not to observe allocation reveal meetings at the control General Practices because the presentation given was qualitatively different from that given at the intervention sites. Information about what happened next, training, and other requirements was provided only at the intervention General Practices, so our resources were focused there. The aim of conducting observations at this stage of the study was to build a picture of each General Practice, the key actors, interrelationships and dynamics, responses to the purpose and description of the study, and potential barriers and drivers to uptake of the study. The NPT constructs were used as sensitizing devices, and structured observation schedules and interview topic guides were developed with them in mind. Data collection remained sufficiently open and exploratory for other issues and themes to emerge (analysis is discussed further below).

Detailed notes were taken of how individual professionals reacted to the presentations in the first two meetings (introduction and revealing allocation) and of group dynamics (whether and how discussions between practice members evolved and who made key decisions). Non-verbal communication, spatial positioning, and other salient features were documented. Observation of the operational meetings focused on similar issues, especially who was involved in pragmatically translating the intervention and how this was achieved (balancing barriers and facilitators).

In addition, semi-structured interviews were carried out with specific network staff who supported each General Practice ($N = 5$). The reason network staff were recruited was because they are part of the local PCRN, a body which facilitates engagement and recruitment of primary care sites to deliver research studies. The network staff were full-time employees who acted as conduits between research institutions affiliated with the local PCRN and General Practices who are part of the PCRN. As such, they have formed good relationships with all General Practices in the PCRN, know how they work, and have good insight into their thinking as a result of their ongoing communications and relationships. Thus, they played an important part in maintaining long-term General Practice involvement in research (for this and other studies) and therefore were positioned to understand participating General Practices’ thinking and motivations because of their roles.

The main purpose of undertaking these interviews was, in line with case study methodology, to obtain multiple sources of information, supplement the observations and field notes, and provide contextual information about the intervention and control General Practices. The interviews allowed additional access into the relations, structures, and nature of each organization, as well as their “sense-making” about what was involved in delivering the study. This then allowed the study team to respond to issues and concerns. Sampling was purposive and five staff interviewed represented all who were involved in mediating between researchers and the research sites. Interviews were audio-recorded and fully transcribed. Interviews lasted between 30 minutes and 1 hour and were completed in-person. Interviews and observations were conducted by A.M., L.B., and B.N.O., social scientists trained and experienced in interview and observation methods.

A standard interview guide was used. The purpose of the interview guide was to help to build up a profile of each participating General Practice to allow contextual understanding and inform the conduct of the study. Topics included the following: individuals’ understanding of how each General Practice operated, including how decisions were made, who the key decision makers were, and how decisions were operationalized; relationships within each General Practice and between, that is, inter- and intra-professional groups (GPs and nurses) and staff (practice manager and administrators); previous research experience of each General Practice; and perceptions of what the practice staff think about the study concept, study content, and implementation of the study.

We analyzed the observation field notes by identifying “categories and instances” and we reconfigured them as themes within the data (Atkinson, 1992, p. 455). This process featured constant comparison of categories, instances, and themes across the dataset. Any subsequent themes that emerged were subjected to the same process (Charmaz, 2006). Interviews were analyzed using...
ongoing inductive coding, subsequent theme development, and constant comparison (Charmaz, 2006).

The range of variability between participating General Practices and individuals could thus be identified and data saturation was achieved. Next, we deductively recoded data using the NPT constructs to not impose the constructs on data, but to allow other themes to emerge. Following the example of Macfarlane and O’Reilly-de Brun (2012), B.N.O. actively strove to “bracket” out previous knowledge of NPT while coding. Members of the study team less familiar with NPT (A.M. and L.B.) also coded data independently. This helped to challenge interpretations and refine coding and themes. Finally, A.M., B.N.O., and L.B. independently coded the data using NPT constructs. A detailed breakdown of coherence and cognitive participation as defined by existing literature was used (May et al., 2010), which we detail below:

Coherence

a. Differentiation: An important element of sense-making work is to understand how a set of practices (i.e., a new way of working, in this case, delivering an intervention) is different from existing practices.

b. Communal specification: Sense-making relies on people working together to build a shared understanding of the aims, objectives, and expected benefits of a set of practices.

c. Individual specification: Individuals reflect on their beliefs and knowledge that will help them understand their specific tasks and responsibilities around a set of practices.

d. Internalization: Sense-making requires involving people to work on understanding the value, benefits, and importance of a set of practices.

Cognitive participation

a. Initiation: This concerns whether key participants are working to drive new or modified practices forward.

b. Enrolment: This concerns whether participants organize or reorganize themselves and others to collectively contribute to the work involved in new practices.

c. Legitimation: This aspect concerns the relational work to ensure that other participants believe it is right for them to be involved, and that they can make a valid contribution to it.

d. Activation: This concerns whether participants collectively define the actions and procedures needed to sustain a practice and to stay involved.

This round of NPT-based coding was compared against our earlier inductive coding before codes were refined collectively. Miles and Huberman recommended the use of matrices in data analysis because they provide visual shorthand and allow ease of comparison and enable connections to be made across datasets (Miles & Huberman, 1994). We similarly constructed a matrix that allowed comparison of themes that had emerged from inductive data analysis alongside deductive analysis informed by NPT constructs, such as the organizations'/individuals' understanding of the study concept. This process ensured that we were able to compare across General Practices and make a judgment about whether coherence or cognitive participation was evident at organizational or individual practitioner level. All data were analyzed and managed using the QSR NVivo 9 software package.

All interview and observational material were then mapped within the matrix. The matrix allowed comparisons across themes and General Practices and cross-referencing between interviews and observations. A composite picture of each General Practice, its actors, and internal dynamics was produced that forms the basis for this article. The focus of our discussion is on the intervention General Practices (Practices 3, 4, 7, and 8) because they participated in the full range of meetings and were prepared for the implementation of the new intervention. Figure 3 details how data collection, analysis, and feedback to General Practices worked as a process.

Results

We now present our findings by outlining the themes that emerged from the data and detail the stage of the research process from which they originated (i.e., introductory meeting or interviews with network staff). As discussed in the “Method” section, each theme was mapped onto a matrix and then the NPT constructs of coherence and cognitive participation were in turn mapped against each of these themes. This analytical process is reported below and in doing so we outline what we learnt and how we subsequently engaged with participating General Practices.

Understanding of the Study Concept

The introduction of the MOSAICs study to general practices was tested in a session with senior managers of the GP Research Network and two GPs. Specific feedback was given in terms of sense-making and its fit with everyday practice. The presentation was restructured using the NPT framework with particular attention paid to the constructs of coherence (or sense-making) and cognitive participation (or how an intervention might fit in with existing patterns of work and individual duties). The
Figure 3. Method, analysis, and intervention development process.
presentation focused on how participation in the study might be beneficial to everyday clinical practice and took account of the potential costs organizationally. The first presentation was delivered by the lead GP and the chief investigator, who were able to demonstrate that they understood the work and pressures of General Practice.

The presentation made the case of need (e.g., high prevalence of OA, the link between OA and other morbidities, appreciation of GPs’ frustration about the limited number of effective interventions); outlined the extensive, General Practice-specific support that would be given throughout the study by the research and network team, including IT; and gave an overview of the reimbursements. In this way, the presentation aimed to be responsive and flexible so that the General Practice staff could be confident that the study was adaptable to their needs and local context. The aim of the observations was to obtain a sense of how effective the presentation had been and to identify issues, the needs of professional groups or the whole organization, the relationships across or within General Practices, or the particular skeptics who would need targeting or addressing in future visits.

In General Practices 4 and 8, the GPs asked a lot of questions about the purpose and content of the study and talked about patient needs. Observation notes recorded GPs at General Practice 4 saying “It is good someone does something about OA as it affects us all, myself included.” Notes from the observation at General Practice 8 also captured the sense that GPs considered OA to be a frequently encountered concern, with one GP stating, “We see so many people with joint pain.” The proposed study thus made sense to clinicians because of the prevalence of the condition and encountering it in their everyday work. The NPT construct of coherence focused the research team on the importance of “making the case of patient need” to convince GPs of the relevance of the condition.

Interviews with the network team members confirmed that at the end of the introduction meeting, the GPs appeared to understand the difference between the new intervention and current care for patients with OA. Their comprehension featured recognition of a more explicit focus on the condition and the wider range of options available if they followed the NICE guidance. The research team appeared to have been successful in translating the NPT concept into a recognizable distinct intervention and identification of potential patient benefit. This distinction between what they offered currently and what was proposed in the study is central to the concept of coherence. For example, one network team member, reflecting on their sense of GP’s engagement with the study suggested “... I think he does. And I think he sees the potential of yes, having patients self-manage their problems right from the onset. I think he does buy into it, absolutely.”

The detail of the intervention and the content of the training programs (for GPs and nurses) and the division of labor between themselves and the practice nurses were not clear at this stage, and thus it was anticipated that full understanding of the new intervention would emerge over time. As such, cognitive participation could only be identified as a willingness to take part in the trial. It was more difficult to gauge the understanding of the study among practice nurses and practice managers: In General Practice 7, they were not involved in the first meeting, and in the other three General Practices, their participation in the discussions was minimal. Only in General Practice 3 did the nurse practitioner (a senior member of the practice nurse team) comment on the study concept because she had been involved in a group that had earlier advised the research team on the design. Consequently, she had prior knowledge and understanding, and therefore, she was enthusiastic about being involved and willing to adapt her way of working.

In summary, the design of the implementation was shaped by the NPT concept of coherence and this meant specifically inserting the case of need and explicitly detailing the differences between current practice and the proposed new intervention. GPs at all participating General Practices displayed the hallmarks of achieving coherence with regard to distinguishing the study from usual care provision. However, it was clear that additional work in this respect would need to be done to ensure nurses gained the same understanding (see also below).

The Potential Value of the Intervention

A key element in establishing coherence is whether participants are able to grasp the potential value, benefits, and importance of the new intervention. At this stage (initial introductory meetings), the value of the intervention was purely based on individuals’ interpretation of the information given by the research team and the “fit” with their own interests. The GPs in General Practice 8 provided their views at the end of the introductory meeting, saying that they liked the structure and more systematic approach to caring for people with OA and concluded that “it is nice to be able to try something that may make a difference.”

Their assessment was similar to that of GPs in the other General Practices, and linked in with their interpretation of the study concept, and how it might enhance their ability to respond to patient need. This broad notion of the potential value of the intervention appeared to be sufficient for General Practices to agree to commit time and effort to the training program and adopt the intervention (at least for the duration of the study). Whether the benefits of the intervention crystallized to a greater extent during and after the training will be reported elsewhere.
In General Practice 7, the link was made with providing evidence-based care and implementing NICE guidance. GPs admitted that the NICE OA guidance had not been at the forefront of their mind, but felt that the study could facilitate its use, especially because “it was good for the PDP (professional development plan).” The GPs in General Practice 3 felt that the importance of OA was not recognized in the Quality and Outcomes Framework (QoF), underpinning care targets in England and Wales (which shapes priorities that attract payments for General Practices), which frustrated them, and they thought that it became more difficult to provide holistic care. For them, the study offered a new opportunity to link with their interest in falls and musculoskeletal health.

In tandem with the previous theme, it was clear that coherence was achieved for the GPs, but less so for the nurses being asked to deliver the study. Equally, there was little evidence that cognitive participation was occurring at this stage. The difficulty was that the research team could not control who would come to the meetings as this was determined by individual organizational factors. Thus, the research team became conscious of the need to engage nurses more pro-actively and stimulate their presence at future meetings, as well as working to facilitate cognitive participation at each General Practice through the incentives built into the research agreement.

**Decision Making About Participation in the Study**

Interviews with the network staff provided extra insight into what the General Practices were thinking about the study: whether the initial presentations were sounding the right notes and what levers or issues might need to be addressed to help engagement with and initiation of the study. The NPT concept of coherence emphasizes not only individual sense-making, but also collective sense-making and agreement. With regard to the decision-making process, one or two GPs at three of the four General Practices were seen as the opinion leaders with regard to research. Being sensitized to this, the research team made active use of the network staff as they were invaluable for providing insight into who made the decisions, for example, “Dr A is the main partner for the surgery, so (Dr A) is the one that makes all the decisions.” This pattern of decision making happened in three of the four General Practices; so for these organizations, the presence of the key GPs at the introduction meeting was very important to gain buy-in.

In the largest General Practice involved in the study, the process seemed to be slightly different, even though some GPs were seen to be more influential than others. One member of the network staff commented, “I don’t get the impression that any single person makes the decisions. I get the impression it’s more of a big meeting... decisions get made at those meetings.” However, another member of the network team felt that 4 out of 15 GPs tended to lead organizational opinion, and this was observed in subsequent meetings and taken into account. With regard to research, the General Practice selected one GP to be the link with the research team, and this GP played a prominent role in facilitating contact.

Nurses were not involved in the decision making apart from at General Practice 8, where they were described as key partners, or in the words of the senior GP, they were “a family” and would only take part if all staff were brought on board. General Practice 7 appeared to have a different approach to engagement and one network staff interviewee observed,

> The nurses didn’t come to the promotional [introduction] meeting for the study and the GPs didn’t raise any concerns. It was: “Well, if the GPs are doing it, the nurses will do it as well and the practice manager will sort out the days and times and the commitment for it.”

It appeared that this process was common to the organization, probably because of its size, and thus difficult to get everyone present. The communication with the nurses went through their nurse manager who seemed to be well briefed, and no major problems were reported with regard to nurses’ reaction to being enrolled in the study.

In summary, the idea of “buy-in” by the GP practice aligns closely with what Currie and White (2012) term knowledge brokering, which they defined as the translation of knowledge in the course of day-to-day professional activities. This requires participants in any collective activity to share understanding about their work and roles. The literature also emphasizes the role of the knowledge broker who can fulfill multiple functions in terms of gatekeeper, liaison, coordinator, or representative (Currie & White, 2012). For the research team, it was important to understand the internal dynamics, decision-making processes, and opinion leaders at each General Practice because it meant that when arranging subsequent meetings, all efforts were made to ensure that key opinion leaders, as essential to the knowledge translation process (Kitson, 2009), were present to maximize the chance of achieving coherence.

However, concerns remained in terms of ensuring that cognitive participation was accomplished in respect of ensuring that the General Practices understood what practical work and activities the intervention required. Thus, the research team elected to ensure that details of the logistics and content of the intervention were made explicit to facilitate cognitive participation as well as working to ensure coherence could be maintained (or achieved in the case of nurses) during subsequent meetings.
The Presence and Actions of Key Individuals

During meetings where General Practices were told to which arm of the intervention they had been allocated, it became increasingly apparent that key individuals were central to ensuring operationalization of the study. In each General Practice, participation was decided by GPs, be it the senior partner or the lead GP for research, or in the largest General Practice a group of GPs, combining senior partners and the lead GP for research. At this point, we were only able to identify the role of leaders with regard to the very early stage of cognitive participation, namely, the willingness to take part in the training.

As for the training, it was difficult to disentangle the interest in the content of the new intervention and its practical application from the—often considerable—logistical challenges of free up time for training. This was additionally complicated by internal communications with, at times, GPs and/or nurses not being totally clear about the level of commitment required. For example, releasing nurses caused considerable debates:

On seeing the training dates Dr 1 [senior partner] stated that “these will need to go to X” [practice manager], to which Dr 2 [the lead GP for research] replied: “the nurses are available on these dates” and assured Dr 1 that he had worked out availability with X. Dr 1 then started a discussion about which nurses would be trained and if all of them should run the nurse clinics. . . . Dr 2 assured Dr 1 that X had worked out that there would be enough nurses available to provide cover while other nurses attended training. Dr 1 seemed happy with this.

These observation notes highlight the organizational concerns that GPs have in ensuring the smooth running of their workplace and balancing this with participation in research. Furthermore, the role of the lead GP for research was demonstrated by the individual fulfilling the role understood both the requirements of everyday General Practice and the study and was able to navigate these potentially contradictory demands. In all General Practices, the lead GP played this facilitating role and thus also allowed the practice managers to sort out the logistics.

Although GPs acknowledged the importance of practice nurses, none were directly involved in the decision-making process, but most were either informed or consulted. However, the significance of the attitudes of practice nurses became clear, particularly outside of the formal meetings, with one member of the network staff commenting, “. . . the nurse was very positive and knew much more about the study than the practice manager. So the nurse didn’t challenge anything and was quite willing and enthusiastic to be involved.” In the larger General Practices, the role of senior nurses was important in terms of encouraging and organizing their colleagues. Thus, the research team gained insights into the mechanisms and processes that underpinned each General Practice and obtained some reassurance that each organization were identifying the necessary roles to operationalize the study (cognitive participation). Questions still remained about the level of understanding and value that the nurses placed on the intervention.

Roles: Interpretations of What the New Intervention Requires From Individuals

Once the practices had been allocated to the intervention or control arm, the second stage of project meetings took place where the new intervention was explained in more detail in the intervention practices, and the training for GPs and practice nurses was outlined. The presentation by the research team thus contained a substantive element, focused on the new intervention, and a logistical element, dealing with the structure and organization of the training. Although it made sense to combine these two elements, in particular because it was time-efficient for hard-pressed clinicians, it seemed to create an imbalance with more attention being paid to the organizational side of study participation (in the meetings that were observed).

In three practices, little or no discussion took place about the content of the intervention, whereas in Practice 7 most questions centered on patient recruitment. Because this practice was large, two meetings had been held, and it was difficult to gauge whether all GPs and practice nurses had knowledge and understanding of the study. The first meeting was attended by seven GPs and five nurses. The observation notes read,

GP2 seemed to know nothing about the study. She asked no questions. GP3 and 4 asked a lot of questions and engaged with the meeting. I am not sure that GP4 understood the study based on a couple of questions she asked. GP6 turned up late and did not ask any questions. It was difficult to tell what the nurses made of the study because they were so quiet.

Yet, despite the limited discussion of the content, the majority of the GPs appeared to have a grasp of what was being asked of them, for example, notes from observations quote one GP as stating, “We want to give patients information so this (the guidebook) is helpful.” Observation notes from another General Practice revealed the following: “Dr 1 said he likes MOSAICS because he feels it offers OA care in a formalized, structured manner. To him it takes what he feels they do already in a patchy way and this enhances it.” Thus, coherence was maintained with GPs, and there were signs that they were
beginning to define roles and responsibilities in relation to the intervention (cognitive participation).

The attendance of practice nurses at the meetings varied: none in General Practice 4, four in General Practice 7, and all nurses in the other practices. Communication to the nurses about the practices’ decision to participate in the study appeared to be inconsistent, which in some instances might have influenced the level of enthusiasm shown by them. In General Practice 8, one of the practice nurses seemed unaware of the study and initially unhappy about the level of involvement required. In contrast, the nurses in General Practice 7 had not received much information about the study, but observations captured that they appeared very positive:

C [research team member] said from her conversation with the nurses after the end of the meeting that they seem very excited and interested in the study. Apparently the nurses are planning to hold a meeting among themselves to talk about the study generally as well as the training.

Communication between GPs (who tended to be the ones deciding on study participation) and practice nurses was important in gaining commitment and a willingness to understand what is required from participating clinicians. However, this was not necessarily the main factor, because the nurses in General Practice 7 had scant information, but as a group realized that the study offered opportunities to enhance their skills. To explore this and to clarify their own role, they organized to meet together. Thus, coherence and cognitive participation were present in some instances for nurses but varied by General Practice and therefore needed more work during ongoing contact and communication (which occurred throughout the training program).

The main difficulty in these meetings was that most time appeared to be spent discussing the logistics of the training. Not surprisingly, this was a difficult issue with both GPs and practice nurses having clinics booked well in advance, and coupled with other commitments, finding days for training (up to 4 half days for GPs, and 4 full days for nurses) was a challenge. In General Practice 8, the two nurses were concerned about the training requirements and said these were incompatible with their domestic arrangements. The GPs, being very committed to the study, put a lot of effort into accommodating their objections so that they could attend the training.

In summary, an understanding of what the intervention required from individual clinicians (cognitive participation) and coherence (for nurses) was incomplete at this stage, partly because the change in practice was still theoretical and partly because it was overshadowed by the concerns about the logistics of implementing the training required to operationalize the study. Consequently, the study team reflected on the need to communicate more regularly and explicitly with practices about these issues and to ensure the benefits, difference, and importance of the intervention to usual care were built into the training, which eventually helped to ensure participants attained coherence and cognitive participation (see Ong, Morden, et al., 2014).

Discussion

We have discussed one particular way that qualitative methods can be used in the context of encouraging knowledge dissemination and the uptake of EBM as part of a process of research push. We have outlined how qualitative methods, used in tandem with a theoretical framework, can be fruitfully used in the early stages of an intervention to help present the study to potential participants, refine the introductions where necessary, and ensure that those delivering an intervention were engaged. Accordingly, the design of the MOSAICS study has explicitly focused on the organizational concerns of the everyday operation of General Practice and thus opted for a flexible approach.

The study was not without limitations and utilizing observation methods conducted by members of the trial team to understand responses to the new intervention might have influenced participant’s behavior. Equally, interviewing PCRN staff did not provide the same direct insights that interviews with General Practice staff could have. Nonetheless, they provided a useful overview of organizational relationships and thinking (and corroborated findings from observations). Another limitation is the relatively small amount of data focused on from the overall case study (the amount of data collected at this stage was partially dictated by the number of site visits the research team could negotiate with participating General Practices). However, despite this limitation, concentrating on these data was necessary to understand and, latterly, facilitate the process of ensuring initial “buy-in” and engagement, a recognized vitally important part of delivering an intervention (Bamford et al., 2012).

Using the NPT framework to situate findings from the qualitative study helped us to reflect on how coherence and cognitive participation could be achieved in each General Practice. Doing so allowed us to reflect on how context influenced the perceived “worth” of evidence (Dobrow et al., 2004). This took the form of using the data generated from the qualitative study to guide discussion points at each General Practice and take into account the specific organization and working arrangements. In doing so, it helped to clarify how the trial intervention was distinct from current ways of working, establishing its potential value, agreeing on what was required from clinicians both in terms, and committing to training and organizing themselves to deliver the intervention.
The study findings demonstrate that differences between organizations and between clinicians within organizations existed, and that sense-making was not uniform, thus allowing researchers to adjust to the variable nature of health care settings (Kitson, 2009). However, a sufficient understanding was established to arrive at agreeing on the worth of the intervention and what was required in terms of using the template within everyday care provision. The importance of providing care that was based on evidence, the NICE OA guidelines, was recognized, and the intervention facilitated its translation into consultations. GPs acknowledged current and growing patient need and realized that the intervention helped them to offer a wider range of treatment options. Furthermore, all General Practices agreed to a training program that required a considerable investment of time and organization of roles and duties (cognitive participation).

Using the NPT framework embedded within a qualitative study granted us insights into the fact that nurses might not have had such a clear sense of what the study was about, why it was useful, and what their roles were—all arguably impediments in engaging with new evidence. These insights allowed us to modify our approach and engagement with the General Practices as the study progressed (e.g., providing continuous contact and support and helping to set up a nurse email forum), thus recognizing the situated and relational nature of evidence engagement (Dopson, 2005). Current scholarship about knowledge mobilization in health care emphasizes the importance of context (Crilly, Jashapara, & Ferlie, 2010; Dobrow et al., 2004; Dopson, 2005; Kitson, 2009; McCormack et al., 2002; Rycroft-Malone et al., 2004) in understanding how research “push” operates. Empirical studies are being developed that examine this dynamic (MacDermid, Law, Buckley, & Haynes, 2012).

Until recently, relatively little attention has been paid to the early stages of participation and ensuring “buy-in” to a study. Returning to the argument that one person cannot sufficiently instigate uptake of evidence alone (Dopson, 2005), similar to Currie and White’s (2012) discussion of knowledge brokering, we used internal brokering through mobilizing the engagement of key players (mainly GPs, but also a nurse manager and practice manager; Currie & White, 2012). External brokering was achieved through deploying a senior GP as the person presenting the study to the participating General Practices, which could be seen as peer-to-peer knowledge brokering. Research has shown this to be more effective as it is based on a shared (clinical) identity conferring legitimacy (Shi, Markoczcy, & Dess, 2009).

With the advent of studies using theories, frameworks, or checklists (May, 2013a), the issue of “buy-in” is now being addressed, and our article highlights the potential contribution of qualitative research in aiding the effective use of theoretical approaches that are concerned with the uptake of evidence, in particular with regard to introducing a new intervention to GPs and practice nurses. Without the use of qualitative research that allowed deeper insights into the processes of meaning making at individual, professional group, and organizational level, we would not have been able to illuminate and respond to these key factors to ensure the intervention was engaged with.

We are keen to stress that qualitative research is not limited to the practical purpose of guiding the conduct of the trial but is also central for understanding and explaining outcomes of a trial (Hoddinott, Pill, et al., 2007; Lewin et al., 2009) and for generating new theoretical insights (Ong, Morden, et al., 2014). Furthermore, the approach we advocate is arguably a cross-disciplinary approach, in our case bringing together a team of trialists, clinicians, and social scientists, requiring a commitment from researchers to work together and commit time, energy, and resources, something that is not always easily achieved (O’Cathain, Murphy, & Nicholl, 2008). However, we contend, and demonstrate with the example of our trial, that using qualitative methods in tandem with theory to guide EBM interventions in their early stages is an important and underused endeavor. Doing so can aid implementation and improve the potential for sustaining interventions beyond the trial period and thus is worth the investment of time and resources.

**Conclusion**

We demonstrate the importance of understanding the complexity and variability of General Practice organizations, and an appreciation of the burden of participation on individual clinicians in implementation studies. The ongoing feedback to the trials team based on findings from the qualitative study allowed for constant reflexivity, which aided the design of the trial and instigated a responsive and flexible approach. Using qualitative research alongside a theoretical framework (in this case NPT) allowed the team to systematically assess the introductory process, in particular, focusing on coherence and cognitive participation. Taken together, we have provided an example of how a theoretically informed approach facilitated by the use of qualitative methodology helped operationalize one research-driven EBM intervention. Using such an approach might be usefully applied to other contexts.

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