Enhancing Absorptive Capacity of Healthcare Organizations: The Case of Commissioning Service Interventions to Avoid Undesirable Older People's Admissions to Hospitals

Charlotte Croft & Graeme Currie, Warwick Business School, University of Warwick

- Knowledge mobilization occurs within four stages: acquisition, assimilation, transformation and exploitation
- These 4 stages are influenced by combinative capabilities
- Systems capabilities i.e. formalised data sets/IT systems can limit the type of knowledge acquired and used to guide service interventions
- Socialization capabilities, represented by power differentials between professional groups, can limit knowledge sharing between more and less 'credible' groups
- Coordination capabilities can overcome barriers of systems and socialization capabilities, encouraging more flexible approaches to the four stages of knowledge mobilization
- In particular we highlight the importance of clinician involvement in knowledge mobilization in healthcare settings, and identify the untapped potential of patient involvement, which could further enhance knowledge mobilization

Introduction

The quality of services delivered by healthcare organizations is improved when the organizational capacity for knowledge mobilization is developed, encouraging the integration of diverse forms of knowledge (Damanpour and Schneider, 2009; Moynihan & Landuyt, 2009; Salge, 2011; Salge and Vera, 2009, 2012). However, within complex healthcare settings, whilst different forms of knowledge may be acquired, its use in driving quality improvement is limited (Berta et al., 2010; Easterby-Smith et al., 2008; Ferlie et al., 2012; Harvey et al., 2010; Walshe et al., 2009). This challenge can be conceived as the 'absorptive' capacity of an organization to acquire and utilize knowledge (Cohen and Levinthal, 1989). Absorptive capacity conceptualizes the knowledge mobilization process as occurring

within four stages: acquiring information; assimilating or analyzing that information to make it relevant to the setting; transforming information into service design; and exploiting knowledge by scaling up services, or by altering services to improve quality (Cohen and Levinthal, 1989; Zahra and George, 2002).

Whilst developed in private sector settings, there has been recent application of the absorptive capacity concept in healthcare settings to offer insight into how organizations can improve service interventions by enhancing knowledge mobilization processes (Berta et al., 2010; Easterby-Smith et al., 2008; Ferlie et al., 2012; Harvey et al., 2010; Salge and Vera, 2012; Walshe et al., 2009). Our study offers an empirical departure from those previously carried out by focusing, not on healthcare providers, responsible for delivery of services, but upon absorptive capacity of healthcare commissioners, who plan and budget for healthcare services. Readers might note that recent reforms in the English NHS mean the central government budget for healthcare is not allocated directly to healthcare providers, but instead to commissioners, who negotiate with healthcare providers about funding for existing services and new services. These commissioners are locality-based, typically covering 500,000 potential patients, and are called 'Clinical Commissioning Groups' (henceforth referred to as CCGs), which bring together a wide range of stakeholders in a commissioning network consisting of various professionals, managers from different organizations, and patient representatives. Commissioners' ability to acquire and utilize knowledge to inform the planning and budgeting of healthcare services is crucial in ensuring a healthier population in England, but existing research suggests that knowledge mobilization processes by commissioners are ineffective, and the knowledge acquired may not translate into service design or delivery (Imison et al., 2011; Smith et al., 2000; Swan et al., 2012).

Our chapter begins with a conceptual outline of absorptive capacity, followed by discussion of its antecedents ("combinative capabilities"), and how they might play out in healthcare organizations. After outlining our specific research questions we detail our empirical research design. Our findings drive a discussion regarding the role of co-ordination capabilities to enhance knowledge mobilization within commissioning networks, supporting use, as well as acquisition, of knowledge for quality improvement. Finally, we conclude with a synthesis of the application of our findings to both theory and practice, and outline avenues for further research.

Absorptive Capacity – A Conceptual Outline

Zahra and George (2002) derive two interacting elements to absorptive capacity: (1) Potential Absorptive Capacity - the ability to acquire and assimilate knowledge; and (2) Realized Absorptive Capacity - the ability to put newly acquired knowledge into action within the organization through transformation (the development of an intervention) and exploitation (scaling up of that intervention). Whilst they identify that both of these elements are essential for innovation, they note that the majority of research focuses upon the knowledge acquisition stage, thus ignoring assimilation, transformation and exploitation. This distinction is important given that it is the variance between potential and realized absorptive capacity which explains, and determines, variance in performance amongst organizations.

Van den Bosch et al (1999) goes further to identify that combinative capabilities are an important antecedent to developing realized absorptive capacity. Van den Bosch et al. delineate three combinative capabilities: (1) systems, (2) socialization, and (3) coordination capabilities. Systems capabilities refer to formal knowledge exchange mechanisms, such as written policies, procedures and manuals designed to facilitate transfer of codified knowledge, but also to environmental incentives that shape priorities. Socialization capabilities refer to cultural mechanisms that promote shared ideology and collective interpretations of reality within organizations. Coordination capabilities refer to lateral forms of communication such as education and training, job rotation, cross-functional interfaces and distinct liaison roles.

Empirical studies in private sector settings show that different combinations of combinative capabilities have different impacts on absorptive capacity (Van den Bosch et al., 1999). The traditional interaction of systems and socialization capabilities are thought to stymie absorptive capacity. Van den Bosch et al. also show that coordination capabilities mediate their effects, and so enhance absorptive capacity. The different balances between combinative capabilities are critical to understanding the absorptive capacity of healthcare organizations. It is therefore clearly important to understand these combinations further, particularly the positive effect of coordination capabilities upon absorptive capacity.

Working from the effect of coordination capability in private sector settings (Van den Bosch et al., 1999), Hotho et al. (2012) suggest that policymakers and managers of

public services, wishing to promote knowledge mobilization, need to attend to coordination capabilities, such as: development of learning relationships through establishing internal and external networks; staff development and training; appropriate leadership; organizational strategy; investment in information support systems; participation in decision-making (also see: Harvey et al., 2010). Since coordination capabilities are likely to have the biggest and most positive effect on absorptive capacity they offer a valuable starting point for further attention. However, it is important not to lose sight of how environmental incentives and professional organization also affect absorptive capacity. Within healthcare settings, the influence of centralized performance measures and the multiple hierarchies and power differentials of professional organization impacts knowledge mobilization processes, as detailed empirically below (Easterby-Smith et al, 2008; Jansen et al., 2005; Lane et al, 2006; Volberda et al., 2010; Zahra and George, 2002). As such, healthcare organizations provide an illuminating context from which to explore the influence of combinative capabilities on knowledge mobilization.

Research Design

To explore how CCGs can enhance their absorptive capacity for acquisition and use of knowledge, we followed a tracer study (Hornby and Symon, 1994), that of commissioning interventions to reduce avoidable admissions of older persons into hospitals. In the study we gather data from 9 CCGs in the English NHS. Within each CCG we undertook semi-structured interviews and asked respondents to describe the commissioning process, focusing on the four stages of knowledge mobilization embedded in an organization's absorptive capacity (acquisition, assimilation, transformation and exploitation), and their antecedents, or combinative capabilities. We did not directly invoke technical terms, such as absorptive capacity and capabilities, but asked more general questions, such as: how do you acquire data and information about hospital admissions? How do you use such data and information? What are the barriers to using data and information? How are these barriers mediated? Our sample of interviewees from the CCG led commissioning networks represented stakeholders who were seen to be central to the commissioning process, including patient representatives and clinicians, and those that carried some 'managerial' responsibility for commissioning, from healthcare and other organizations (e.g. public health, social care). With assistance from the

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relevant CCG Chief Operating Officer in exploratory interviews designed to engage CCGs in our study, we identified some respondents a priori, and then followed a snowball sampling pattern (Biernacki and Waldorf, 1981), until the themes emerging from interviews were theoretically saturated. Further to this, to reflect the on-going politicized nature and top-down control which characterizes healthcare contexts, we interviewed those overseeing the performance of CCGs at national and regional levels. A total of 109 participants were interviewed. Interviews lasted between 45 minutes and 1 hour and were audio recorded and transcribed. Coding was carried out by one member of the research team, and analysis was guided by searching for in-vivo codes related to combinative capabilities, as set out below.

Combinative Capabilities in CCGs for Mobilizing Knowledge

We present our empirical data within the four stages of knowledge mobilization that constitute an organization's absorptive capacity: acquisition; assimilation; transformation; and exploitation. At each stage of absorptive capacity, we explore the influence of combinative capabilities on knowledge mobilization by CCGs, outlining how the limitations of systems and socialization capabilities may be mediated by the development of coordination capabilities.

Acquisition

Formal data acquisition mechanisms can be conceptualized as representing systems capabilities, whereby information is collated by the CCG through standardized reporting systems:

> *We automatically receive data from a number of providers, such as community doctors, the ambulance service, the hospitals, as well national level data (CCG D – Interview 11)*

Theoretically, the data acquired guides commissioning decisions. However, our interviewees suggested that, rather than enhancing acquisition of data, systems capabilities had the potential to inhibit acquisition. They said this was due to gaps in the type of data being collected, with some data missing that was likely to prove more relevant to their needs:

There's a mass of data floating around in the system, but people aren't collecting the right data. Further, they're not asking the right questions of the data so they're not therefore deriving the right answers from that data that they have, and so passing on less relevant data to us (CCG E – Interview 5)

In addition, acquisition of information was limited due to the influence of central government regulation on systems capabilities. For example, centralized barriers between social care and healthcare services, both in their priorities, methods of data collection and funding arrangements, had the potential to limit acquisition and knowledge mobilization:

The division between social and health is difficult… They've both got their pots and they both want to protect their money and "No, that's not my job, that's health." "No, that's not us, that's social care." … they've got different pressures and they won't share information across the system which makes it difficult to care for the patients doesn't it? (CCG G – Interview 9)

Although more explicit in relationships between health and social care teams, central government regulations were seen as limiting knowledge mobilization, due to the influence on systems capabilities, in a wide range of settings. However, interviewees in this study suggested that coordination capabilities, in the form of the involvement of community doctors (General Practitioners [GPs] in the English NHS) or patient and public representatives ("Patient and Public Involvement [PPI]" in the English NHS), could overcome the limitations of systems capabilities, and so enhance acquisition of knowledge. For example, the involvement of GPs as a coordination capability was particularly highlighted in examples where standardized acquisition systems, such as risk profiling tools for patients at risk of admission, were not perceived as comprehensive. Involving GPs in further identification of 'at risk' patients, subsequently enhanced the scope of knowledge available to guide decisions:

My experience is that the people that it [existing standardized systems] throw up are not all of the people that we need to discuss. So the GPs will

bring up other people that haven't been thrown up by the risk profiling system which they know are on-going cases that we're all involved with and we know are possibly at more risk of going into hospital than others. They don't come up in the system but the GP knows about them (CCG G – Interview 3)

In other words, knowledge mobilization was enhanced due to the acquisition of more experiential knowledge, which supplemented the 'hard' data acquired externally, overcoming the 'gaps' in information from standardized data collection services. In another example, the acquisition of information from a patient representative group supplemented formally acquired information about attendances in accident and emergency departments, leading to an understanding about the need to develop x-ray services outside of accident and emergency:

And so one of the things we [patient representatives] did was an audit of people who attended accident and emergency… we asked them questions about what alternatives to accident and emergency they had explored, such as a walk-in centre [a lower level emergency service located in the community],?... We found something like 25 to 30 per cent of people who attended accident and emergency actually just needed an x-ray and because we didn't have x-ray facilities available outside of accident and emergency all the time then we were pushing people to go to accident and emergency unnecessarily … people themselves were able to identify that "I just need an x-ray. I know I don't need accident and emergency … I've broken my arm. I know it's not badly broken, but I just need an x-ray to confirm it and a plaster" (CCG E – Interview 3)

The examples above highlight that, whilst acquisition can be inhibited by systems capabilities, coordination capabilities enacted through GPs or patient representatives can overcome these limitations. By facilitating access to more experiential forms of knowledge, coordination capabilities enhanced knowledge mobilization by contributing to a more 'complete' picture of information available to commissioners. However, acquisition is only the first step of the knowledge

mobilization process, as the data acquired now needs to be analyzed through assimilation.

Assimilation

Assimilation refers to the process by which the knowledge acquired is turned into a form which can be analyzed and used by commissioners. During the assimilation process, both internal and externally acquired information need to be brought together to develop an integrated picture of service performance and guide future decisions. However, integration of information can sometimes be problematic. As outlined by those interviewed, those with relevant pieces of information are not always brought together:

> *We've got some soft information here from the community health teams around some of the follow-up to those older patients attending accident and emergency. Community teams often have to pick up a mess because somebody's been discharged inappropriately and then they go back into hospital. There is no consistency regarding who receives this information, to supplement our formal data, yet we need that integration of on the ground intelligence to prevent re-admission of older patients to accident and emergency (CCG E – Interview 8)*

As with acquisition, GP involvement and PPI mediated the assimilation problem. The involvement of GPs encouraged different interpretation of the 'numbers' acquired through formal data collection processes, developing a more in-depth understanding of the data:

> *I can work the numbers and I can tell you statistically that's a big number or that looks very odd, but I can't always give an informed explanation as to why that might be or is that a good thing…. as soon as you start moving into some of the clinical areas just being able to work with somebody who knows their stuff, it adds something to our understanding (CCG D – Interview 5)*

GP involvement therefore added a new dimension to assimilation processes, and was used to 'make sense' of external sources of information. Similarly, information

from patient representatives was used by commissioners to triangulate quantitative data acquired, allowing a more comprehensive understanding of the quality of services:

> *So we've tried to assemble all the various pieces of patient feedback and patients' experience surveys that have been done in the past couple of years and I'm trying to triangulate the quantitative with that qualitative patient experience to actually make a slightly more valuable kind of recommendation to inform our service intervention to reduce admissions of older people to hospital (CCG F – Interview 6)*

However, direct involvement of patient representatives in assimilation process was limited. Patient representatives were not involved in the process of 'making sense' of the data, and often reported that they felt under-utilized at this stage:

> *You see, when I asked them what kind of research could I do as a member of that group… he couldn't say. He didn't discourage me from doing research, but he couldn't say if I could do some sort of research into [specific group]… that a layman like myself could carry out something (CCG F – Interview 1)*

Indeed, the perceived 'importance' of the information acquired and assimilated from PPI groups was seen as lesser than that from clinicians or managers. Professional groups with higher levels of social legitimacy, such as managers, could undermine the knowledge sharing with less powerful groups, such as patient representatives.

> *I think them feeling involved is probably the best that we can do on that and seen as being open and honest about our decision making. They don't necessarily have all the information or the knowledge and experience to make the decisions that we would make as health professionals… it's really peripheral stuff to be honest (CCG A – Interview 7)*

Whilst the influence of power differentials between groups was most pronounced on limitations on knowledge sharing with patient representatives, some interviewees also noted similarly limitations between managers and clinicians,

where clinical knowledge was perceived as more 'important' than managerial information:

> *For me to go in as a manager and try and argue a case with a dozen clinical directors, with the best motivation all I can do is argue the numbers, the philosophy, present a management argument to why we should do this or we should do that… they don't see that as credible (CCG B – Interview 3)*

In conclusion, the influence of power differentials between professional groups, representing socialization capabilities, had the potential to limit knowledge mobilization, due to the perceived credibility or appropriateness of their involvement.

Transformation

Once different types of information have been assimilated for locally relevant knowledge, there remains the need for its transformation into a service intervention to be commissioned. However, for commissioners attempting to design services, integrating perspectives and demands from multiple organizations, was seen as problematic:

> *It's challenging to get that shared interpretation of what the information actually means for actual service design because clearly there are different interpretations you can apply to the same information. From a commissioner perspective, we will see a problem or challenge from one particular perspective, but healthcare providers will see a very different challenge, and so we will support different service interventions (CCG D – Interview 12)*

In essence, the challenge for knowledge mobilization during transformation processes was one derived from socialization capabilities, within which different perspectives and power differentials between organizations and professionals were embedded. CCGs were commonly small organizations, which were seen as less influential than hospitals, the latter dominated by powerful groups of doctors, who had been accustomed to patterns of resource allocation around which they resisted

any change, whatever the 'evidence' might suggest. However, those interviewed once again noted that the involvement of GPs had potential to mediate limitations of socialization capabilities. The involvement of GPs acted as a coordination capability by encouraging integrated working with clinicians in secondary care organizations, and involving them in service design discussions:

> *When we involved GPs, we saw negotiation moved away quite dramatically from the old style negotiation which was all about finance and activity to a discussion that focused on quality outcomes and patient pathways… the GPs were able to bring a level of reasonableness into that room with their medical colleagues that had previously not been there, with hospital doctors viewing us managers with some suspicion. GPs brought in the perspective of a practitioner dealing with patients on a day to day basis, which hospital doctors accepted and which really altered the dynamic in the room. (CCG B – Interview 10)*

The involvement of GPs encouraged knowledge mobilization across doctors in different organizations derived from a shared professional background, and ability to bring in a patient focused perspective to integrate with managerial or financial considerations.

In other interviews, commissioners also noted how older people were admitted to hospital in the absence of effective collaboration across healthcare and social care organizations. Where there existed integrated care pathways between the different organizations, this acted as coordination capability, encouraging knowledge mobilization across sector boundaries:

> *It [an integrated health and social care pathway] represents a smoother pathway for the patient. In the past the older patient would have been taken into hospital, the patient discharged, and community social care teams have little contact with what's going on. The older patient may then be subsequently re-admitted to hospital because the social care support wasn't there. Because we're integrated now we can see two sides, the need for social care, as well as health care, for the patient, and so prevent re-admission (CCG G – Interview 5)*

However, whilst patient-focused care was at the centre of integrated relationships between health and social care, enhancing transformation, involvement of patient representatives in the transformation process was again limited. PPI acted as a coordination capability by encouraging patient-focused design of services, but commissioners acknowledged that knowledge mobilization of information from patient representatives was focused on setting a strategy direction in a more general way, rather than involving patients in the development of specific services; i.e. in their transformation:

> *They're more about, you know, "I've got complex problems and I get bounced around between different services and it gets confusing, it makes me anxious, I don't know where I'm supposed to go next. It's very lengthy, it's uncomfortable because I have to go on public transport for two bus rides and it takes a whole day to go to an appointment and then when I get there they haven't got my notes." It's those sort of softer things which are not amenable to a single fix, but tell me where we need to go in terms of strategy. (CCG F – Interview 11)*

In summary, coordination capabilities during the transformation process were represented by GP involvement to mediate what might prove a sticky relationship between managers and hospital doctors, thus overcoming some of the barriers associated with socialization capabilities. In addition, the encouragement of integrated relationships between health and social care organizations, with the needs of the patient held at the centre of service design, enhanced transformation processes. However, similar to their role in assimilation, PPI represented an under-developed coordination capability in the transformation process.

Exploitation
Research on absorptive capacity in the private sector suggests exploitation is related to the ability of organizations to use the knowledge derived from small local pilots or projects, to develop wider scale product or service change. Within the context of healthcare, this is perhaps difficult to examine, particularly given the local nature of commissioning organizations. However, we can also conceptualize exploitation as the way organizations are able to use any feedback from commissioned services to

constantly improve their services, adapting them to maximize their potential effectiveness, in our study to further reduce avoidable admissions of older people to hospitals. In our study, interviewees noted how systems capabilities, or the standardized systems through which they collected feedback information, could limit this process:

There's no underpinning intelligence around how that service runs, or what the experience of those patients is in those services we have commissioned (CCG D – Interview 16)

Interviewees suggested that gathering feedback on an ongoing basis about services was difficult, due to systems capabilities. A particular challenge related to how they might measure the effect of *absence* of the service intervention they had commissioned to reduce avoidable admissions of older people into hospital:

I think some of the difficulty is capturing what doesn't happen. Sometimes you will put in a service to prevent avoidable hospital admissions or perhaps deterioration in the health of an older person that might eventually lead to admission. However, there's a real dilemma about how you evidence the impact of the new service, what would have happened if it wasn't there. Our data management systems aren't sophisticated enough for this (CCG G – Interview 2)

Exploitation represented the most under-developed stage of absorptive capacity across all 9 CCG cases without exception. Indeed, across all 9 cases, it was difficult to identify any exploitation of knowledge. However, in one CCG, information obtained from patient representatives enhanced exploitation. First, acquiring information about patient experience increased the scope of data acquired to inform exploitation; i.e. it was a key dimension of the knowledge used to make a decision about whether to continue and scale up a service intervention to reduce avoidable admissions of older people to hospitals. Second, by involving patients (or their carers) in service development, or in decisions about discontinuing services, interviewees suggested that a sense of ownership could be generated amongst those experiencing services, which helped spread knowledge of an isolated service intervention in other geographical localities. Third, such involvement adapted the service intervention to

local context as it spread beyond its pilot:

> *They'll go and say to other patient representative groups and GPs, "This is a good thing. We helped with the design of this and this is the reason why it's good," and that helps any new service spread quite quickly as others want to take it up. We had an issue. It was at a public meeting somewhere, where somebody was having a go at our CCG over something and one of the guys from the patient group stood up and defended it because he'd been in on the inside and said "You've totally got this wrong. They're doing it this way, and it does work" (CCG C – Interview 4)*

However, and similarly noted above, socialization capabilities limited knowledge sharing with patient representatives, and the involvement of patients was seen as underutilised, and at times tokenistic:

> *I'm still feeling somewhat tagged on…. Tokenism is what I often say… I just wonder what my contribution is and do they really want somebody… a bloke (to) sit back and say nothing (CCG F – Interview 10)*

In conclusion, exploitation is the most under-developed stage of knowledge mobilization associated with absorptive capacity for CCGs. However, knowledge mobilized through patient representatives represents coordination capability at this stage. Patient involvement encouraged feedback of information not supplied by existing systems capabilities, developing a sense of ownership amongst the public and patients for the service intervention to which they are subject, potentially informing scale up and adaptation. Despite this potential enhancement of knowledge mobilization, socialization capabilities, in the form of power differentials between different groups, had the potential to undermine patient involvement, limiting the exploitation process.

Discussion

In this chapter we have considered the influence of combinative capabilities on the four stages of knowledge mobilization that inform an organization's absorptive

capacity. Contextualizing the findings empirically within healthcare has enabled us to develop some insights about the influence on knowledge mobilization in complex, professionalized settings. In doing so, this chapter addresses calls for more research into how organizational antecedents impact knowledge mobilization, taking account of organizational context, the role of individuals and groups, and associated power and politics (Easterby-Smith et al, 2008; Jansen et al., 2005; Lane et al, 2006; Volberda et al., 2010; Zahra and George, 2002). Existing research into knowledge mobilization in healthcare organizations highlights that acquisition of external knowledge is less of a problem than actual use (i.e. assimilation, transformation and exploitation) of that evidence to drive quality improvement (Berta et al., 2010; Easterby-Smith et al., 2008; Ferlie et al., 2012; Harvey et al., 2010; Walshe et al., 2009). We now draw on our findings to explore the influences and limitations on knowledge mobilization for commissioning decisions.

In our empirical study, we highlighted how systems capabilities had a limiting influence on the acquisition of external information, as standardized systems conform to centralized systems of performance measurement and policy compliance (Nicolini et al., 2011). Healthcare organizations represent a distinctive context compared to private sector R&D contexts, in which much of the empirical work around absorptive capacity has taken place (Easterby-Smith et al., 2008). As such, the influence of systems capabilities on knowledge mobilization in this setting was more explicit than in research into private sector organizations. First, healthcare organizations are subject to New Public Management reform that frames performance through financial incentives and regulation. Encompassed within systems capability, such government policy affords access to external resources, and directs and formalizes acquisition and assimilation of knowledge. However, it narrows the search for new external knowledge and scope for processing of that knowledge, as managers in healthcare organizations 'gameplay' to ensure compliance with policy requirements around their governance (Lavertu and Moynihan, 2013; Moynihan, 2006; Moynihan and Hawes, 2012). Pulling in external knowledge within healthcare organizations towards quality improvement appears particularly directed towards compliance with government regulation and performance management (Nicolini et al., 2011), in a way likely to limit the search and utilization of external evidence, limiting knowledge mobilization. Subsequently,

systems capabilities can narrow the breadth of external information acquired and assimilated by healthcare organizations, or available for service exploitation.

In addition to systems capabilities, the influence of socialization capabilities on commissioning processes was also more evident than in private sector settings. Healthcare organizations exemplify the professional bureaucracy archetype (Mintzberg, 1979), within which professional organization is likely to represent a key influence upon socialization capability, limiting knowledge mobilization as follows. External knowledge interacts with strong organizational cultures and structures, so that socialization capability within healthcare organizations restricts knowledge mobilization (Van den Bosch, 1999). As such, power and status linked to professional roles is likely to impact healthcare organizations' ability to exploit new knowledge (Ferlie et al., 2012; Harvey et al., 2009; Walshe et al., 2009). For example, Berta et al (2010) note the role of doctors in subverting an organization's learning capacity, in relation to the adoption of new clinical guidelines, based upon formal evidence, into practice. Similarly, Ferlie et al (2005) note that deeply ingrained organizational structures and social networks within healthcare organizations engender institutionalized epistemic communities of professional practice, which exist in silos, relatively decoupled from one another. Again, these stymie the search for external knowledge that lies outside current ways of thinking amongst powerful professional groups. Thus, the acquisition and use of internal knowledge, as well as that external to the organization, seems important in the healthcare setting.

Due to the professionalized context of commissioning organizations in this study, socialization capabilities had the potential to limit the transformation or exploitation of services. Our empirical findings indicated that socialization capabilities influenced knowledge mobilization in two ways. First, integration of PPI during transformation and exploitation processes was limited, and at times seen as tokenistic. Whilst information acquired from patient representatives was used to supplement externally acquired information, patient representatives were not involved in the assimilation, transformation or exploitation of services. In this case, the potential of PPI as a coordination capability was undermined by the socialization capability of the organization, which perpetuated power differentials between professionals and users of service, and did not integrate PPI into the commissioning process.

Secondly, socialization capabilities had the potential to limit transformation of knowledge into service design, due to competing demands and priorities of the multiple stakeholders involved in the commissioning process. This reflects the context, characterized by institutionalized professional silos, limiting communication and knowledge sharing between different organizations (Ferlie et al, 2005). However, those same professional silos appeared to enhance the involvement of GPs as a coordination capability, as they were able to communicate directly with medical peers in hospitals. This facilitated the sharing of information and integration during transformation processes, overcoming inter-organizational or inter-professional barriers experienced by managers within previous commissioning structures.

To mediate the limitations of systems capabilities, our study identified how coordination capabilities, notably in the form of GP involvement or PPI, facilitated exposure to different, experiential types of knowledge. Accessing this local, experiential knowledge, enabled CCGs to 'patch up' the gaps informed by systems capabilities, encouraging the integration of both external and experiential knowledge. We highlight the role of GPs, and to a lesser extent patient representatives, in mediating the effects of socialization and systems capabilities is particularly relevant to professionalized organizations.

GP involvement is a coordination capability of CCGs which bridges the limitations of systems and socialization capabilities in all four dimensions of ACAP. GP involvement allows integration of internal, tacit knowledge with the external information acquired from 'hard' data collection systems. It also encourages integration of knowledge across organizational barriers, overcoming previous limitations of socialization capabilities. Therefore, GP involvement in commissioning processes is an important coordination capability and should be encouraged by CCG managers. In contrast, whilst the importance of PPI was noted throughout our empirical findings, it was only explicitly integrated into acquisition processes. During the acquisition phase, PPI had an important role in overcoming systems capabilities, providing a new type of information for assimilation. However, during transformation and exploitation processes, PPI was less explicit, due to the limits of the organizational culture, or socialization capabilities. In highly professionalized organizations, socialization capabilities may limit the value attributed to 'lesser' forms

of information or external knowledge (Todorova and Durisin, 2007). PPI was not felt to be embedded in the 'culture' of CCGs, suggesting that this is a coordination capability which is underdeveloped, but has the potential to further enhance absorptive capacity. Managers within healthcare organizations should work to further integrate PPI mechanisms into all four aspects of knowledge mobilization to improve their absorptive capacity, enhancing the quality of commissioning decisions.

Conclusion

Our study, which provides insight into absorptive capacity, is particularly relevant to healthcare settings currently. Healthcare settings globally are subject to financial parsimony, and as such need to be smarter about knowledge mobilization, in particular how acquired knowledge informs the planning of, and funding for service interventions, not least given burgeoning demands by increasing demands of older patients upon hospital services (in the English NHS, for example, around 50 per cent of hospital beds may be occupied by older patients). For example, a healthcare organization may invest significant resource in IT capacity to acquire information, but if this information is then not used intelligently to inform service development, then investments will merely result in potential absorptive capacity, rather than realized absorptive capacity (Zahra and George, 2002), without patient, financial or competitive advantage. At the same time, we note our analysis is not limited to commissioning care of older people, since application of the absorptive capacity concept allows theoretical generalization to other domains of healthcare, both delivery and commissioning of services, and indeed other public services characterized by professional organization and central government intervention (Eisenhardt, 1989).

Our study highlights the importance of coordination capabilities in enhancing absorptive capacity and knowledge mobilization in public services organizations. First, coordination capabilities enhance capacity for integrating externally acquired information with more local, experiential information, overcoming the limitations of systems capabilities embedded in standardized reporting systems. Second, the involvement of professionals within public services organizations, in our study GPs, can overcome socialization capabilities by encouraging knowledge mobilization across organizations. However, we have also identified how the socialization

capabilities of highly professionalized organizations can also inhibit enactment of coordination capabilities, in our study PPI, due to power differentials across patients, managers and professionals, and more generally, an unsupportive organizational culture. .

Detailing this further, an initial problem to be addressed is that of the acquisition of knowledge. It may be that too little, or the wrong type of evidence might be acquired. Coordination capability may help ensure that a wider range of relevant evidence is acquired, including for example patient experience evidence. In the assimilation stage, different sources of evidence need to be brought together, and decision-makers need to ensure they are weighted appropriately, for example, ensuring that the patient voice is not rendered marginal as decision-making around service change ensues. During the transformation dimension of absorptive capacity, when evidence is turned into a service intervention, decisions about what constitutes an appropriate intervention should incorporate a wide range of relevant perspectives. Decision-makers must consider what the service looks like from a professional's, manager's and patient's perspective. During the final stage of absorptive capacity, exploitation, when the service intervention is scaled up, decommissioned or adapted, decision-makers need to fully examine what's working, from whose perspective, what might they adapt as they scale up. All these challenges require coordination capabilities. Our study identified three coordination capabilities – professional involvement, client involvement, integrated service delivery models. How such coordination capabilities play out is summarized in Figure One.

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The model outlines how evidence and knowledge takes the form of information from a diverse range of sources, including research, patient involvement, clinician and managerial knowledge. Facilitating, or inhibiting, knowledge mobilization are the three combinative capabilities: systems, socialization and coordination capabilities, which are antecedents to the four stages of knowledge mobilization that underpin absorptive capacity. However, socialization and systems capabilities have the potential to inhibit absorptive capacity, limiting the breadth and type of information acquired and used to guide service decisions. The three types of coordination capability identified in this study: clinician involvement, PPI and integrated services,

work to overcome the limitations of systems and socialization capabilities. In particular, the coordination capabilities have the potential to enhance exploitation processes, an area which is underdeveloped in healthcare organizations. Enhancing exploitation encourages the scaling of service intervention in response to knowledge mobilization of information from a wide range of sources, and is an area where healthcare organizations should seek to develop their capacity, improving decision making and quality of services.

Finally, in terms of further research, coordination capabilities within healthcare organizations have been identified within the literature as represented by the following: the development of learning relationships through the establishment of internal and external networks; staff development and training; appropriate leadership; organizational strategy; investment in information support systems; participation in decision-making; and, more generally, social relations inside and outside the organization (Harvey et al., 2010; Walshe et al., 2009). Whilst our empirical study has highlighted professional involvement, client involvement, integrated service delivery models, others may wish to examine possibilities offered by other forms of coordination capability.

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