

An empirically based model for knowledge management in health care organizations

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Background: Knowledge management (KM) encompasses strategies, processes, and practices that allow an organization to capture, share, store, access, and use knowledge. Ideal KM combines different sources of knowledge to support innovation and improve performance.

Purposes: Despite the importance of KM in health care organizations (HCOs), there has been very little empirical research to describe KM in this context. This study explores KM in HCOs, focusing on the status of current intraorganizational KM. The intention is to provide insight for future studies and model development for effective KM implementation in HCOs.

Methodology/Approach: A qualitative methods approach was used to create an empirically based model of KM in HCOs. Methods included (a) qualitative interviews ($n = 24$) with senior leadership to identify types of knowledge important in these roles plus current information-seeking behaviors/needs and (b) in-depth case study with leaders in new executive positions ($n = 2$). The data were collected from 10 HCOs. Our empirically based model for KM was assessed for face and content validity.

Findings: The findings highlight the paucity of formal KM in our sample HCOs. Organizational culture, leadership, and resources are instrumental in supporting KM processes. An executive's knowledge needs are extensive, but knowledge assets are often limited or difficult to acquire as much of the available information is not in a usable format. We propose an empirically based model for KM to highlight the importance of context (internal and external), and knowledge seeking, synthesis, sharing, and organization. Participants who reviewed the model supported its basic components and processes, and potential for incorporating KM into organizational processes.

Discussion: Our results articulate ways to improve KM, increase organizational learning, and support evidence-informed decision-making.

Practice implications: This research has implications for how to better integrate evidence and knowledge into organizations while considering context and the role of organizational processes.

Key words: Health care organization, knowledge management, model, qualitative research

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المنارة للاستشارات

Knowledge management (KM) can be defined as a process and set of tools used to capture, share, and store knowledge. KM encompasses people, places, technology, and processes for improving organizational performance (Kinney, 1998). Private organizations have long recognized the importance of strengthening KM with strategies and best practices for capturing, sharing, storing, accessing, and using knowledge in business enterprises (Kothari, Hovanec, Hastie, & Sibbald, 2011). Although there is minimal empirical evidence and literature regarding KM in health care, health researchers have acknowledged its potential value (Bartczak, Turner, & England, 2008; Canadian Health Services Research Foundation, 2009).

We are now in an “information age” where an organization’s knowledge base is its most valuable asset (Bereiter, 2002). Effective KM strategies need to account for the intense time demand of knowledge acquisition and the lack of available resources to do so. This issue is magnified by the ever-increasing amount of information available. Information is often understood as containing data that have been organized, yet still lacking in context and meaning. Knowledge is further developed as “information, which has been cognitively processed and integrated into an existing human knowledge structure” (Keller & Tergan, 2005). Knowledge involves combining multiple sources of information with consideration of experience and values, contextual information, and expert insight. Knowledge therefore requires human agency (Bandura, 2000), whereas information can be independent of agency. In organizations, knowledge often becomes embedded in documents, repositories, organizational routines, processes, practices, and norms (Davenport & Prusak, 2000). In health care in particular, local information and tacit knowledge are key information sources used to supplement research findings in decision-making, where local context may have a significant impact on service selection and implementation (Kothari, Bickford, Edwards, Dobbins, & Meyer, 2011). Knowing about these sources and contributing to their evolution is a key feature of KM.

Theory

The term “knowledge management” has firm roots in the business literature and has been defined as “knowledge creation... followed by knowledge interpretation, knowledge dissemination and use, and knowledge retention and refinement” (De Jarnett, 1996, p. 3). KM builds on concepts of information management by acknowledging the importance the decision-makers’ role in the process: Traditionally, information management focuses on the manipulation of data and information, whereas KM considers how people learn, create, codify, share knowledge, and make decisions (Brown & Duguid, 2000a). KM requires an organization be cognizant of knowledge they currently possess (“knowledge assets”) along with its location and also be aware of methods

used to acquire knowledge (Brown & Duguid, 2000b). Identifying knowledge assets, however, is a challenge. KM is fundamentally an organizational process to capture, share, and store existing knowledge, in addition to effectively acquiring new knowledge, in order to effectively use knowledge in decision-making.

Successful KM can be separated into activities of conceptualizing (identifying existing knowledge assets), reflecting (analyzing how knowledge is valuable), specifying (identifying necessary actions to achieve better usability), and reviewing (revisiting the use of the knowledge to ensure value; Wiig, 1993). As KM has developed, more complex, multidisciplinary thinking has occurred with the acknowledgment that nontangible or tacit assets are inherently difficult to transfer between individuals and are challenging to manage but are incredibly valuable to an organization (Heaton & Taylor, 2002). KM thus augments information management (or the task of managing explicit facts and data) by considering organizational goals, structures, and processes, along with organizational capacity (Choo, 2002). There is awareness of knowledge as an innately social process (Rogers, 1995) meaning that, in order for KM to be successful, environments conducive to social interactions need to be present (Orzano, McInerney, & Scharf, 2008). KM strategies that facilitate cooperation would be needed in health care in order to improve these inherently social and collaborative processes.

KM in Health Care

Although the abundance of information in the health field has primed researchers to consider KM (Haynes, 2005), it is rarely applied. In health care, a huge volume of information, evidence, and research is not being harnessed effectively or at all (Morris, Wooding, & Grant, 2011). Health professionals rely on quick and accurate information retrieval for actions and decisions individually and in complex, dynamic teams. KM strategies in health care therefore need to be designed to meet the demands of teamwork and have an integrated systems approach (Lee, Gillespie, Mann, & Wearing, 2010).

Although historically health care organizations (HCOs) have been slow to implement KM (Dubois & Wilkerson, 2008), there is emerging interest in the potential benefits of adopting KM in the public sector (Nicolini, Powell, Conville, & Martinez-Solano, 2008). Some studies suggest that “health KM models” borrowed from the business sector focus too heavily on making knowledge explicit (i.e., easier to capture and store; Al-Hawamdeh, 2002). The complex nature of health care, however, required the combination of explicit knowledge with tacit (experiential and clinical) knowledge. The “Total Knowledge Management for Healthcare” conceptual framework suggested by Baskaran et al. (2004) places tacit knowledge sharing at the top of the KM process and iteratively loops throughout each of its four stages of KM:

initiate, share, establish, and exploit. Orzano and colleagues (2008) further acknowledged enablers of KM, such as active networks and effective communication, to complement social and technical elements. According to Orzano et al. (2008), this KM model allows for collective and effective decision-making and organizational learning through three critical knowledge processes of sharing, finding, and developing knowledge. Knowledge seeking is often absent from KM approaches; some have argued this is due to timely methods of acquiring information such as communicating with colleagues and conducting quick Internet searches for desired information (Lottering & Dick, 2012). Senior leaders in HCOs are tasked with making difficult decisions often in a time-constrained, information weak environment, and their knowledge needs are complex and context-dependent and involve social processes (Hall & Walton, 2004). In studies regarding information-seeking behaviors and needs, health professionals report a critical need for comprehensive, coordinated, and accessible information (Dobbins, Jack, Thomas, & Kothari, 2007).

The purpose of this study was to explore KM in a health care context with a specific focus on understanding how senior leaders use different types of knowledge and knowledge processes in decision-making. We aim to fill an apparent gap in the literature by providing recommendations for incorporating KM strategies into HCOs.

Methods

Design

The study used a qualitative-methods case study approach (Yin, 1994), combining in-depth case study analysis of the transition experienced by two senior health care leaders with one-on-one qualitative interviews with a broader group of health care leaders. Public documents such as strategic plans, mission/vision statements, government reports, and information management plans were also collected to assist in analysis.

Study Participants

Interviews. Senior leaders and decision-makers from HCOs within Ontario, Canada, were contacted to participate in a one-on-one interview. The participants were members of senior leadership teams (commonly chief officers or department vice presidents). Using a public list of Ontario hospital CEOs, potential participants were contacted via e-mail regarding the study. Snowball sampling was used to identify additional participants.

In-depth case study. Concurrently, two in-depth case studies were conducted with senior leaders who had recently transitioned to a new organization and a new role. Through the case studies, we observed how a change of work environment affected knowledge processes over a longer time

period (3 years). Findings are presented thematically across these two approaches.

Data Collection and Analysis

Interviews were carried out between 2009 and 2011; the two case study participants were interviewed at regular intervals every 4–6 months. Public documents, such as operational and strategic plans and government supervisor reports (where applicable), were also collected from all participants ($n = 24$). Some participating organizations also provided additional documents such as “information management” plans, orientation material, or training documents. Organizational Web sites were scanned for content and/or tools being used for knowledge transfer and/or staff or community engagement.

Participants were asked about knowledge demands and expectations of senior leadership; role of organizational culture; function and utility of previous work environments and formal training; and experience with knowledge translation, exchange, and management (formal and informal). Interviews were audio-recorded and transcribed verbatim. Transcribed interviews were removed of any identifiers and stored in a qualitative analysis software program (NVivo 9). Interviews were analyzed using a modified content analysis approach (Berg, 1995). To ensure reliability of the coding process and representativeness of the coding scheme and to reduce threats to interpretation, two members of the research team (SS and NW) iteratively developed a coding scheme. The former has a background in health services research, whereas the latter brought her extensive knowledge of health information sciences to the process. A final review included team member AK, who has expertise in knowledge translation, to maintain openness through multidisciplinary perspectives. Quotations are drawn directly from interviews with participants and are presented to demonstrate the verisimilitude of our coding and themes. In an effort to add more rigor and validity to our results, we performed a form of “member checking,” where summaries of findings were provided to interested participants for review (Mays & Pope, 2008; Patton, 2002).

Feedback regarding the draft model was obtained through a similar member-checking process where a selection of original participants were contacted (via e-mail) for comments and criticisms. The preliminary model was also presented at two conferences where feedback was obtained. All members of the research team collaborated to incorporate the feedback into the preliminary model. Document analysis was done to complement the qualitative analysis of the interviews. For example, if an interviewee discussed using a blog as a KM tool, blog content and related information were examined.

Findings

In total, 24 of 26 requested participants completed individual interviews (response rate of 92%). CEOs accounted for the

largest percentage (25%, *n* = 6), and two (8%) were COOs (Table 1). Half of the participants have been in health care for more than 15 years (*n* = 12; 50%), and 46% (*n* = 11) have held their current positions for less than 5 years. Most participants were from academic hospitals (*n* = 16; 67%) with background in health (*n* = 5; 21%) or business (*n* = 3, 13%; Table 2). The results are divided into three main themes identified through our coding analysis: (a) understanding KM, (b) knowledge processes, and (c) the role of context. Each theme builds on the next and provides an important foundation for the model we present in our discussion.

Understanding KM

KM was viewed by participants as a combination of internal expertise and external standards. When discussing KM, leaders acknowledged the importance of transferring knowledge among people, but more often understood KM to encompass performance measurement, information management, and human resources strategies. Tools, like e-learning modules, IT solutions, and intranets were understood to be the primary methods of knowledge transfer. Corporate policies (succession planning, talent management, orientation, and secondments) supported these tools in a more formal manner. Despite this piecemeal list of “KM-like” strategies, participants suggested that the existing tools do not completely satisfy their intensive needs.

KM as performance measurement and information management. Within HCOs, participants felt current KM processes were guided by compliance measures and traditional

measurement indicators (including benchmarking, balanced scorecard, competencies, and pay for performance).

(KM) might include performance indicators, we’re much better at having indicators and targets, that’s a way of transferring information...strategic plans, operating plans and budgets, those are all tools, but they were put there in the first place to enable better management, but I think they have a secondary value in being able to be used to transfer knowledge from one person to another. (KM04)

Leaders acknowledge the multiple and complex components of knowledge, which contribute to the inadequacy of processes for organizing information. The sheer amount of information in HCOs requires leaders to be experts in information management. There are few formal tools and processes available to aid senior leaders in decision-making; participants described a variety of unique and often ad hoc processes.

Despite the distinction in the definitions of information and knowledge, “information management” was commonly used as synonym with “knowledge management,” and many participants acknowledge the importance of strong information management.

Where does information fit? Is it a little on the data side or on the knowledge side—trying to decide who has ownership in each role—data side: medical records, HR, finance; information management, decision support. The idea was that data supported (some decisions) but not all. (KM-C1)

Table 1

Position, length of time in current position, and background experience of participants

	Position					
	CEO (<i>n</i> = 12)	VP (<i>n</i> = 8)	Director (<i>n</i> = 9)	Executive leadership (<i>n</i> = 10)	Chief (<i>n</i> = 7)	Consultant (<i>n</i> = 2)
Length in current position (years)						
<5	2 (8%)	2 (8%)	3 (13%)	3 (13%)		1 (4%)
5–10	2 (8%)	2 (8%)	1 (4%)	1 (4%)	2 (8%)	
>10	1 (4%)		1 (4%)		1 (4%)	
Retired	1 (4%)				1 (4%)	
Background						
Health care	2 (8%)	1 (4%)	1 (4%)	1 (4%)		
Law				1 (4%)		
Medical professional	2 (8%)	3 (13%)				1 (4%)
Business	1 (4%)		1 (4%)	2 (8%)		
Master’s degree	1 (4%)					
Leadership					1 (4%)	
Human resources					1 (4%)	
Information systems					1 (4%)	
Health administration			1 (4%)			
Finance			1 (4%)	2 (8%)		

Note. CEO = chief executive officer; VP = vice president.

Table 2

Major themes and subthemes derived from qualitative interviews and in-depth case studies

Themes	Subthemes	Qualitative	Case studies
1) Understanding KM	a) KM as performance management	x	x
	b) KM as information management	x	x
	c) KM as human resources strategy	x	
2) Knowledge processes	a) Knowledge seeking	x	x
	b) Knowledge synthesis	x	x
	c) Knowledge sharing/use		
	i) Transparency	x	x
	ii) Accountability	x	x
	iii) Corporate memory	x	x
3) Role of context	a) Organizational history	x	x
	b) Dichotomy of culture	x	x

Note. KM = knowledge management.

Other participants pointed to corporate archives as a form of ensuring information was properly managed. The process of storing corporate information (i.e., board decisions and external contracts) was mandated by provincial legislation. Several participants noted the practical challenges around resources to store this information for a specified time frame, but more critical was the challenge of using the stored information in current decision-making. Often, the requirement to store a board decision was just that—the final decision and not the process used to get to the decision; participants saw this as a huge disservice to current decision-making processes.

KM as human resources strategies. Participants often described human resources strategies as synonymous with (or part of) KM strategies, including talent management processes, retention programs, and succession planning strategies. One leader described their nursing retention program as a way to decrease turnover and decrease tacit knowledge loss. Although few participants formally discussed talent management programs, nearly all participants expressed the importance of considering succession planning. A common explanation for losing knowledge is the inability to maintain a relationship after a leader leaves the company, presumably taking their knowledge with them. “What we lose so fundamentally is the relationships, the relationships disintegrate once they leave” (KM13), and the opportunity to gain information is lost; the talent management strategies mediate this. Succession planning becomes a key aspect of KM, as it assists in the maintenance of knowledge; however, most participants felt their organizations’ current succession planning strategies are insufficient or altogether lacking.

Knowledge Processes

Most participants were able to describe their pathways to finding simple policies or information; however, this was

not experienced by all. Some participants expressed frustration at their organizations’ lack of formal information management systems and the challenge to use the best information in decision-making.

I found I struggled sometimes because I didn’t know where to find policies so I had to figure it out. I was on call for the very first time for example and there was no manual for people on call and you know, I get, what if there’s a disaster, I don’t even know where to look, right and to get on the Web site and scroll through is, was near impossible, so policies some of those things I found challenging to get hold of. (KM12)

In general, participants experienced three knowledge processes: (a) knowledge seeking, (b) knowledge synthesis, and (c) knowledge use. A fourth phase of knowledge sharing was discussed by some, but overwhelmingly acknowledged as an area needing attention and improvement. The results section present knowledge processes 1, 2, and 4; we have left out knowledge use because this is task dependent and not of interest to our research question.

1. Knowledge Seeking: When participants were asked to describe their decision-making process, a common first-stop was to informally take stock of the information they currently had—a self-knowledge audit. The following processes to acquire additional information were multiple and varied. This first process was done independently. Hard-to-access information was described as being hidden in organizational hierarchies of information. These hierarchies were formal (e.g., the CEO would have access to information that a department head would not) as well as informal (the CNO, who had been around longer, had access to information new senior leaders did not). These hierarchies were embedded in the culture of some hospitals and created

a “traffic jam” of knowledge flow. Even when data and information were described as being stored or filed, storage in these organizations was haphazard and varied.

Participants mitigated this challenge by utilizing relationships with colleagues (both internal and external to the organization) who had access to the information, and leaders commonly sought the assistance of colleagues through e-mail and personal communication. Participants discussed sourcing information from peers external to their organization who shared similar leadership positions. Senior leaders from other organizations were seen as a “sounding board” for ideas. Many participants were able to identify experts in their own organizations whom they refer to for information and advice in particular areas; however, there were situations where participants were frustrated by locating who had access to the needed information. These individuals were identified by some as their “first point of contact,” and others described this relationship as a “work best friend”:

You need best friends at work...and you need people that you can talk to and connect with.... But what it means really is that you have someone to be able to say you know, this isn't going well, what do you think about this, and you bounce ideas off people and its safe. (KM19)

2. *Knowledge Synthesis*: Once decision-making information was gathered, synthesizing occurred to produce useable knowledge. Knowledge synthesis involves differentiating essential information from the nonessential information in terms of the decision to be made; synthesis also includes presenting the information in a meaningful and usable format. Participants spent a substantial amount of their decision-making time in this phase as sourcing and synthesizing are complex. Knowledge synthesis also included incorporating strategic directions and operational goals, as well as reviewing “sister organizations” and Ministry directions.

What are other leading organizations doing, when you look at our performance indicators, what are other leading organizations doing, so we always have an external context for whatever we're looking for ourselves, and that is really important...not just how you see yourselves, and how do you stack up against the changing benchmarks. (KM18)

Academic hospitals embed research in their organizational culture, although this does not always translate to better knowledge synthesis. Many participants saw this as a necessary and presumed task, but one that was fraught with challenges. “The ability to translate from big strategy of the Ministry of Health down to your strategy here, [is] very challenging” (KM13), thus making knowledge synthesis very difficult.

For many participants, how synthesis was actually done was based on their “success profile, that is: experience, edu-

cation, motivations that might be important to be successful” (KM03), in addition to previous experience. Although knowledge synthesis was often done independently, all participants agreed that, throughout the knowledge synthesis process, people played a prominent role:

So there's this connection all the way through, so we're not chopping up, we're not breaking up, we're introducing people into the mix that know what's going on. So I think that's a, a really interesting way of maintaining some consistency and the knowledge, what was said, what was the expectation, what are the accountabilities and sort of drive them through the piece, and keep that connection. (KM13)

In addition, information overload is a challenge in decision-making; “it's like drinking from a fire hose” (KM04). Leaders also described the feeling of “information capture overload” as a challenge. Evidently, a mechanism for organizing and archiving information is needed. Without a mechanism to organize the required data, the challenges of information overload become compounded with information disorganization.

3. *Knowledge Sharing*: Once decisions are made and knowledge is used, the knowledge processes stop. Most participants agreed there is an extensive lack of consistency across the health system and within individual organizations regarding knowledge sharing. Participants emphasized processes and tools to share explicit knowledge such as orientations, e-bulletins, and formal communication practices. Discussion of tacit knowledge sharing also occurred, but not as overtly and without examples of specific tools. Some participants identified with negative outcomes when appropriate knowledge sharing was not conducted:

(Staff) don't have the information, and (if) managers aren't there face to face, there's a big gap, no matter how many (media interviews) you do and how many, how much information is available on the internet. (KM19)

Transparency and accountability were strong themes throughout most of the documents analyzed to which knowledge sharing is key but participants overwhelmingly agreed knowledge sharing is not optimal. For many, their goal to be more transparent in order to “explain information and to try to be more proactive and deliberate [with] the information we've got” (KM18) was not achieved. This was both a challenge internal to an organization and external to an organization.

Sharing information is a delicate process and needs to be included in the knowledge process:

There's huge issues, information and the kind of information and the way in which you construct the information, how you move it in and out, is all about

breeding trust and credibility, and respect and those things, and so we're trying to do some, some things that are, trying to build some of that. (KM18)

Increased transparency was linked to improved communication. As one participant explained: “communication is a big element, and having the information readily available and access to it, and taking ownership” (KM19). Explicit knowledge sharing in academic hospitals seemed to be more prevalent, often due to the large amount of information to be organized and stored as part of the academic process. Participants from large HCOs presumed knowledge sharing was the role of existing organizational structures (such as dedicated departments for decision-making and positions such as Chief Information Officer).

Knowledge sharing was discussed as it related to sharing and rethinking “corporate memory.” Many participants acknowledge the challenges with leaders leaving and not having an opportunity (formal or informal) to share their knowledge:

When you leave the corporation, that corporate memory leaves with you and you move on to a completely separate organization as opposed to an acknowledgement that these are all really very similar organizations and that, that we could be colleagues sharing information across organizations. (KM12)

Some participants explained how their organization had instituted knowledge sharing events with exiting leaders including “coffee sessions” with staff (a venue where a senior leader is available for informal conversations). Despite a general appreciation of the importance of these events, very few participants had actualized knowledge sharing events on a regular basis. Those that had often did so at the request of the departing leader; once the leader left the organization, the events stopped. A few participants discussed their organizations’ strategies to improve “sharing of information (to ensure) accountability about where the links are” (KM21), but most participants desire a more formalized process for knowledge sharing; however, there is little consensus on what that might look like.

I think of really being clear about making sure that there are clear accountabilities and pathways for where people want to go to get information and sort through what they need to know and passing on information. (KM18)

Role of Context

Our participants acknowledge the importance of organizational culture, context, and history in the knowledge process and decision-making, but participants cautioned against using past decisions precedence:

[The hospital] has really been criticized about an over emphasis on history, and looking backward as opposed to really looking forward, so I think it was as we move forward, it was just: is there anything that's not being considered that will be a barrier or an impediment or a limiting factor in how we want to move forward? So it wasn't to over emphasize the past, but it was not to lose sight of how it is, why was it done the way it was done before, is there a context that needs to be understood? (KM21)

“Cultural” knowledge and context were discussed by many participants as being important factors in decision-making within their organization. Participants were aware this experiential or tacit knowledge is difficult to share and comprehend. Participants relied on others in their organization to better understand organizational culture: “all the (managers and leaders)...have a tremendous amount of knowledge about the organization” (KM04). Therefore, they were relied on heavily as a source of knowledge regarding organizational culture. In some situations, the collaborative nature of health care professionals was seen as valuable for decision-making:

I think that collaboration philosophy that exists here does help the transfer of knowledge, (KM13)

Contrastingly, there is the view that health care complexity and lack of coordination still exist as a barrier to KM. Many leaders described current negative morale in hospitals as an additional barrier. Hospital culture was felt to “breed competition” and as a result stunt information sharing throughout hospitals. Many of our participants mentioned the culture of secrecy, where information is privileged to few and “legacy” often comes with little procedural explanation.

I think secrecies are things that you practically hear, but we keep a lot of things very close to a few people, without really good justification for it. (KM15)

In general, participants acknowledged the dichotomy of culture in health care where sometimes collaboration is embraced and other times it is a barrier to knowledge sharing. It was not always clear which culture and associated attitude prevailed: “I realized we had several cultures depending on where you were” (KM13). It becomes difficult to capture and share knowledge in an organization with competing cultures and values.

Some spots are extremely transparent, and the interdisciplinary works really well, there's lots of collaboration, lots of information sharing, people are happy to, to let others take the lead role, and let them develop, let them experience it. Others are all about control, it's all about me, I want to control it, so we see pockets of it. (KM13)

Discussion

The above themes demonstrate the beginnings of an empirically based model for KM within HCOs (Figure 1). This preliminary model will illustrate current KM techniques in HCOs and possibly expose areas requiring improvement. Although a pervasive KM strategy was not evident in the organizations involved in this study, the current senior leaders in our sample all shared similar concerns about the challenges of inadequate resources and tools for effective KM. For many participants, this was as simple as calling for improvements in communication and information storage.

Knowledge Process

We identified four key knowledge processes experienced by most of our participants: (a) knowledge seeking, (b) knowledge synthesis, (c) knowledge use, and (d) knowledge sharing. We also identified traditional information management as occurring in some organizations, but largely in need of improvement across organizations both internal and external. We suggest an empirically based model for KM in HCOs where the major knowledge inquiry processes are supported by several important factors: existing organizational processes, resources (specifically IT), leadership, and organizational culture (including corporate memory; Figure 1).

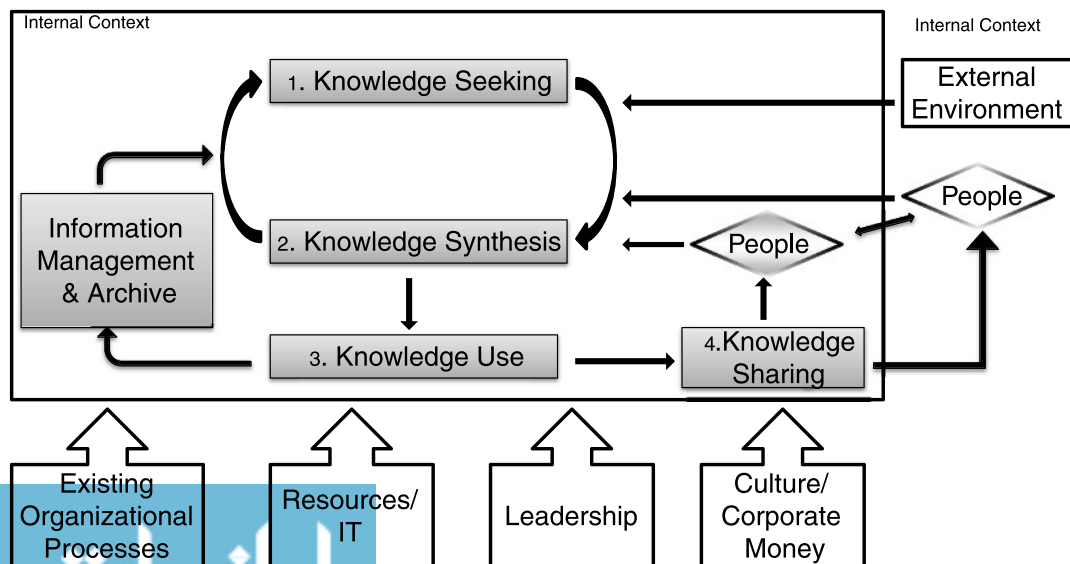
When a leader is faced with a challenge or situation that needs “new” information (i.e., more than what he/she easily has access to), they must begin a “knowledge inquiry” process. In this stage, much like traditional problem solving, the problem must be defined and information/options must be

sought out. The process begins with knowledge seeking where decision-makers collect easy-to-access information from peers and colleagues. Patterns and behaviors of information seeking are well established in the library information literature, both among health professionals (Younger, 2010) and for lay information seeking (Longo et al., 2010); however, information seeking is often absent from KM approaches (Lottering & Dick, 2012). In this stage, interpersonal relationships (internal and external to the context) are used as a resource in addition to formalized (or explicit) sources such as strategic documents and government directives. When decisions are more complex and require more information or more consideration, decision-makers begin a process of knowledge synthesis, bringing together relevant information and eliminating unneeded sources. After synthesizing knowledge, the “needed” information is used. Unneeded information is often dropped; we suggest there ought to be some form of knowledge organization brought into this process whereby information irrelevant to the decision at hand is still organized (archived) for availability for future decisions. Ideally, the useful and used knowledge will be shared internally and externally to aid in future decisions and improve the evidence base for decision-making. “Knowledge sharing” occurs internally and externally, with individuals often looking internally prior to accessing external information.

Unlike other models (Baskaran et al., 2004; Orzano et al., 2008), this model identifies issues of sharing and storing information as part of an integrated KM approach. Experiences with KM in private industry demonstrate the importance of knowledge retention (De Jarnett, 1996), reflected in our model as knowledge sharing both internal and external to the

Figure 1

Knowledge inquiry and knowledge creation using a knowledge management framework



context. Knowledge sharing is not a novel idea; however, having formal processes in place to support both internal and external knowledge sharing is currently not common practice. Scholars agree that KM is a challenge, which can be best approached by having the proper structures in place to support the knowledge creation process—KM ought to be ingrained in the values of the organization and as such support decision-makers (Von Krogh, Ichijo, & Nonaka, 2000). Unique features of our model include attention to organizational contextual factors (culture, leadership, and resource integration/IT) as well as the influence of external contextual factors, such as the legislative environment. KM requires an organization be cognizant of how to access currently held knowledge (we call this knowledge organization or knowledge archiving) and how needed information can be obtained (i.e., understanding the process of acquiring information; Brown & Duguid, 2000a).

The suggested model is preliminary and based on one study in addition to existing literature. This is a starting point for future research and management practice. The empirically based model is intended for use at the organizational level; although individual level factors required to engage employees with a KM system are not depicted, they are important. No model currently exists that specifically outlines the required processes and considerations needed for health care leaders.

Practice Implications

Our participants were clear that information tools were either not available to them or not sufficient to meet their needs. We believe this is, in part, due to information management systems not adequately considering how decision-makers learn, create, validate, codify, share knowledge, and make decisions. Variables that influence the KM process include organizational culture, leadership, and resources (Kothari, Hovanec, et al., 2011; Nicolini et al., 2008). The knowledge processes described above should be supported by formal organizational mechanics.

In order to ensure success in KM, it is important that senior leaders (a) understand KM processes and (b) support KM through their leadership. A fundamental factor that may influence KM within an organization is whether individuals are able to make the distinction between knowledge and information. Our results suggest that traditional quality indicators and succession planning approaches seemed to dominate current understanding of KM. Succession planning, if implemented effectively, is a strategy to ensure a continuous loop of knowledge sharing between individuals within HCOs and thus can be considered part of an integrated and comprehensive KM approach. Succession planning holds potential to create strong working relationships that encourage the retention of knowledge possessed by individuals leaving the organization. We know knowledge is inherently social (Rogers, 1995), and thus, KM is well supported by these existing organizational structures and processes.

Quality indicators and succession planning supporting KM are not sufficient. “Corporate memory” (a combination of written documents and individuals memories; Brooking, 1999) and organizational culture are also important supporting structures for successful KM and can significantly enrich KM processes (Terra & Gordon, 2002). Corporate memory must operate to serve the organization by recording gains from past failures, successes, and experiences (Keller & Tergan, 2005). In addition, it is imperative that corporate memory be easily accessible and available for reference (i.e., the appropriate information storage technology). The organizational culture characterized by alignment among the goals of individuals should allow for greater transparency, which aids in better understanding and appreciating the importance of KM as a practice, as well as developing better knowledge processes.

To develop effective formal knowledge processes, KM must be promoted and sustained at an organizational level through leadership. Resources should be considered in relation to the processes and in terms of physical space requirements. Researchers have indicated the value of having a venue or a social space to encourage knowledge sharing via social interactions (Quinlan, 2009). In a similar way, IT solutions need to be in place to support any successful KM strategy (Goddard et al., 2004). Our study also points to the importance of context within KM. Many current KM models do not explicitly include context. We acknowledge, where others have not, that existing organizational structures (most notably those in human resources, such as succession planning) can and should be leveraged to support a larger KM framework. Additional leadership and organizational structures can also be used in a KM approach; various roles such as knowledge brokers, communication specialists, and Chief Information Officers have been identified as key resources for developing formal knowledge processes (Dobbins et al., 2010) and can support KM.

Limitations

Although qualitative methodology allows for an in-depth and personal understanding of an issue (in our study, knowledge management), there is also the potential for several limitations. First, this paper represents KM processes based on data from a small sample of Ontario health care leaders and, as such, may not be generalizable to other provinces or countries. Second, we acknowledge the potential confusion around the terms “information” and “knowledge”; through our structured interview guide and thorough analysis, we feel we have accurately captured the participants’ intended meaning; however, there is the potential for researcher misunderstanding. Third, there is also a potential that our participants did not know about existing information or KM processes in their organization—a more in-depth approach to data collection (e.g., site visit or observation) may have allowed for a more thorough analysis of actual knowledge processes. However, we were not trying to prescribe how KM

ought to be done, merely to demonstrate how current knowledge processes could be better supported through a KM approach. The model proposed is preliminary, based on our limited findings. Because each organization is unique in its context, more research is needed to test the rigor and the applicability of the model to actual organizational processes. A next step in our research is to see if this model is empirically valid through pilot testing.

Conclusions

Although formal KM approaches are not commonplace in our sample of health care participants, we can confidently state that HCOs are primed and suitable environments to formalize knowledge processes using KM approaches. Effective leadership and management skills are essential to the success of HCOs; dynamic external factors add challenges to the KM system. In a time of increasing cost and demand within our health care system, challenges must be met with strong leadership coupled with effective KM. By thinking more critically about knowledge sharing and knowledge organization (or archiving), health care leaders can both improve their decision-making and also work toward creating a more sustainable, evidence-based organization and health system.

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