KNOWLEDGE SHARING
INTERVENTIONS IN HEALTHCARE:
EVIDENCE FROM THE LITERATURE

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Abstract: Knowledge sharing is pivotal for improving performance in healthcare. Hospitals, in fact, are knowledge-intensive organisations and the innovation of current practices requires healthcare professionals to share their knowledge. Despite massive work on this topic, however, a comprehensive look at the actionable interventions is lacking. This study aims at providing hospital managers a comprehensive view of which interventions have been identified as most effective in the literature. Evidence has been gathered through the review of major contributions from the Information Systems, Management and Medicine fields. As a result, this study identifies ten interventions, classified in accordance to their potential impacts on physicians’ motivation to share, knowledge transmission and social capital improvements.

Keywords: Knowledge Sharing; Physicians; Hospitals.

1. Introduction

A rich body of literature remarks the significance of knowledge for organisations (Grant, 1996; Nahapiet and Ghoshal, 1998; Volberda et al., 2010). According to the knowledge-based theory of the firm, competitive advantage, performance improvement and innovation all depend on the ability to create new knowledge and integrate it into products and practices (Nonaka and Takeuchi, 1995). Nevertheless, organisations are confronted with the evidence that “knowledge always begins with the individual” (Nonaka, 1991: 3) and all the previous benefits can be attained only if it is possible to seize individual knowledge and translate it into an organisational asset. Past research has repeatedly shown that managers cannot identify the full extent of personal knowledge because they suffer an irresolvable information asymmetry with the owners (Shin, 2004). Since top-down or mechanical approaches to knowledge management would probably fail, organisations should rather promote and sustain employees’ willingness to expose their knowledge and share it with others (Ruggles, 1998). Consequently knowledge sharing - defined as the deliberate action through which employees diffuse relevant information to others across and outside the organisation (Kumar and Ganesh, 2009) – emerges as a crucial behaviour for organisational welfare
Scholars have, over the years, significantly contributed to improve our understanding of knowledge sharing by investigating the factors that are supposed to trigger or inhibit this behaviour. Despite the fact that scholars have often adopted different perspectives and have sometimes claimed diverging results, there is a consensus that managers should move into three majors directions (e.g. Ruggles, 1998; Cabrera and Cabrera, 2002; Husted and Michailova, 2002; Yang and Chen, 2007): (a) improving employees’ motivation to share their knowledge, in spite of the personal gains they may obtain from its hoarding; (b) facilitating the mechanisms of knowledge sharing and (c) removing organisational barriers to employees’ engagement with the behaviour.

Several contributions have also described possible interventions that could be adopted by managers to address such barriers and facilitate knowledge sharing (e.g. Cabrera and Cabrera, 2002; Shin, 2004; Van den Hooff and Huysman, 2009). The actionability of these contributions, however, is under question because most scholars have focused their attention on the effectiveness of a single set of interventions, and only few have attempted to provide a more comprehensive look. This can be distressing for organisations which need to promote a comprehensive strategy of intervention, but are also financially constrained and can invest only on a selected number (Wiig, 1997). Accordingly, managers would benefit from a detailed overview of the existing evidence about which interventions have proven to be more effective and, thus, worthier investing to. However, given the existing gaps in the literature, the question of which interventions are more effective remains mostly unaddressed.

To make improvements over this gap, we adopt employees’ knowledge sharing as our unit of analysis and propose a literature review that identifies the available evidence on the effectiveness of interventions which are supposed to enhance this behaviour. Specifically, we decided to investigate interventions related to hospitals that intend to facilitate knowledge sharing among professionals. Healthcare is currently pressured to deliver more services with less resources in order to remain sustainable over the years. Knowledge sharing is a crucial issue for attaining this result (Sheffield, 1998a). On the one hand, hospitals are knowledge-intensive organisations where different expertise needs to be combined to continuously deliver value to patients. Knowledge sharing is a major driver for standardization and improvement. On the other hand, healthcare professionals tend to share a limited amount of their knowledge because (a) it often represents a change in their modus operandi that professionals may consider irrelevant for their practice (Lorenzi and Riley, 2000); (b) the role of knowledge for career and access to resources may justify its hoarding (Pearson, 1999); (c) it is difficult to design effective information systems that capture relevant knowledge and facilitate its sharing (Ellingsen and Monteiro, 2003). Among the different healthcare professionals that coexist in a hospital, we will focus on physicians because they are regarded as crucial enablers of practice improvement and
because they need to manage massive amount of medical knowledge to deliver care (Lipshitz and Popper, 2002)

The structure of the paper is as follows. Section 2 describes the methodology adopted to review the literature. Section 3 illustrates the state-of-art concerning the major barriers to knowledge sharing in healthcare. Section 4 describes current evidence on the interventions for addressing the barriers to knowledge sharing, with Section 5 discussing the results of this analysis. Finally, Section 6 concludes and outlines a number of avenues for future research.

2. Methodology

We conducted a Literature Review based on an electronic search from January 1990 onward covering Ebsco, Proquest and Pubmed databases to collect relevant contributions about interventions related to knowledge sharing among physicians. Our search strategy aimed at collecting findings coming from three main disciplines: Management, Information Systems and Medicine. Specifically, the keyword strategy was: [“knowledge” AND “sharing” OR “transfer” OR “management”]. The specification of both keywords and the databases allows that others may replicate the results (Tranfield et al., 2003), and represents a more rigorous and bias-free method than common narrative reviews (Mulrow, 1994). Coherent with existing literature, we consider as “knowledge” the clinical know-how and know-why regarding clinical practice coming from personal experience, training and education, and evidence from research, publications and conferences (Atkinson, 1995, Sheffield, 2008a).

Since relevant articles may not be included in the databases, the references of the identified contributions were also reviewed. In order to be included, a contribution had to describe, in whole or part, theoretical frameworks or surveys/case studies/anecdotes about knowledge sharing initiatives in hospitals. Contributions about knowledge sharing in other industries were included once they provided results that could be easily translated to healthcare professionals. The identified contributions were reviewed for relevancy by the authors separately, on the basis of the title and abstract to manage a mass of potential contributions.

As a result, 74 articles were selected for developing our results.

3. Potential barriers to Knowledge Sharing

The current literature on knowledge sharing clearly points out that interventions should address barriers located at three different levels (cfr. Yang and Chen, 2007): (a) employees’ lack of motivation to share their knowledge; (b) transfer difficulties which are intrinsic to knowledge nature; (c) transfer
difficulties which are caused by organisational constraints.

In the remain of this paragraph, we will briefly overview these three arguments.

Motivation to share

Since knowledge sharing is primarily an individual effort, motivation – that is “how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior” (Ajzen, 1991: 181) - is a primary factor for the success of any initiative.

Unfortunately, it is not possible to assume that physicians are in any case willing to share their knowledge. In fact, while there are sound theoretical reasons to expect that physicians may be motivated to share their knowledge – such as, the belief in the organizational ownership of knowledge (Jarvenpaa & Staples, 2001), the recognition of knowledge sharing as a driver of systemic improvement (Van Raak et al., 2005), the interest for the intellectual challenge, learning effects, perception of fairness and “general reciprocity” towards the community (Lerner and Tirole, 2002) and pressures from colleagues (Haas et al., 2010) - other contributions have clearly pointed out a list of sound reasons to expect the opposite. Avoiding knowledge sharing may, in fact, be a rational choice that physicians intend to pursue in order to maintain a competitive advantage towards direct competitors (Husted and Michailova, 2002), maintain a power relationship versus colleagues (Pearson, 1999) and maintain professional autonomy from managerial attempts to control or evaluate their work (Walter and Lopez, 2008).

As a result, hospital managers must be aware that interventions aimed at supporting employees’ motivation to share should directly account for the personal gains that physicians may eventually lose (Kollock, 1998; Husted and Michailova, 2002; Shin, 2004).

Knowledge nature

Motivation to share is not a sufficient condition for knowledge sharing in hospitals: physicians may be willing to share their knowledge, but nevertheless being unable to do it. Individuals, in fact, may struggle to share their knowledge either because they are not fully aware of the relevant information they possess and because they may not be able to fully transmit it to others (Polanyi, 1958). These problems are salient in healthcare organizations because health knowledge is mostly tacit as it is significantly developed through narratives (Hunter, 1991; Atkinson, 1995; Sheffiled, 2008a). Tacit knowledge creates significant problems for its sharing because most attempts to reduce such knowledge into codified texts or data is either impossible or inappropriate (McKinlay, 2000). In other terms, tacit knowledge is “sticky” (Von Hippel, 1994), and its sharing may require
high costs and lead to the loss of relevant information (Szulanski, 1996).

As a result, hospital managers must be aware that not all nor most of the knowledge can be made explicit. Thus, hospital managers should facilitate conditions in which such tacit knowledge is transmitted through a continuous process of osmosis through which employees share their experiences and work routines in spite of a conscious transfer of information (Martin et al., 2009).

**Organisation constraints**

Different organisational constraints need to be overcome in order to allow physicians sharing their knowledge. First, disperse relationships between physicians may be an obstacle to an efficient communication of knowledge because they cannot articulate their knowledge nor build a long-term reciprocal trust (Hansen, 1999). Accordingly, managers should facilitate the development of a social network populated with strong ties (Granovetter, 1982) among the potential sharers. The nature of the social network, in fact, has a direct impact on speed, precision, continuity and reciprocity of knowledge transmission within an organisation. Second, opportunistic behaviours may hamper organizational climate and, ultimately, individuals’ motivation to engage in a behaviour they perceive as dangerous (Coleman, 1988). Managers should then introduce visible sanctions that improve physicians’ perception that the organisation is able to identify and correct misbehaviours. This, in turn, would contribute to a climate favourable to knowledge sharing. Last, the lack of a shared meaning is troublesome because physicians need a reference framework both for the transmission of knowledge and for the shaping of a common understanding (Weick, 1979).

The concept of Social Capital - defined as the “knowledge embedded within, available through, and utilized by interactions among individuals and their networks of interrelationships” (Subramaniam and Youndt, 2005: 451) - has been increasingly adopted within this argument, because it is a multidimensional construct that includes all three aforementioned components: network structure, sanctions and shared meaning (Nahapiet and Ghoshal, 1998). Several contributions have identified the development of Social Capital as a key enhancer of knowledge sharing and, thus, a primary task for managers (e.g. Inkpen and Tsung, 2005; Chen and Hung, 2010).

**4. Interventions addressing Knowledge Sharing**

A consistent amount of contributions has dealt with the interventions that can facilitate knowledge sharing in an organisation. Some authors have investigated the perspectives through which these interventions can be classified according to the underlying strategy and/or the targeted assets. For example, Van den
Hooff and Huysman (2009) distinguished between emergent and engineering approaches where the first emphasises the resolution of the social issues and the latter emphasises the role of management in influencing the processes; Shin (2004) distinguished between approaches based on technological supply, financial evaluation of intellectual assets, organisational learning, improving knowledge flows and on new “philosophical” ways of thinking; Cabrera and Cabrera (2002) distinguished interventions aimed at restructuring the payoffs for sharing, at increasing efficacy perceptions, and at improving employees’ group identity and personal responsibility.

We decided to adopt a different perspective that, like Cabrera and Cabrera (2002) use the expected impact as the reference framework, but identifies these impacts at three different levels: (1) improving physicians’ motivation to share; (2) reducing knowledge stickiness; (3) improving social capital in the organization.

Improving motivation to share

This group relates to interventions that are primarily aimed at improving physicians’ motivation to share by either inflating the perception of the benefits attainable with the behaviour or by inflating the perception of the costs of non-sharing.

It is possible to distinguish between “hard” and “soft” approaches to motivation (McGregor, 1960).

Hard approaches. They involve the use of extrinsic motivators such as mandatory requirement, sanctions and incentives that explicitly alter the cost-benefit perception of knowledge sharing (Ferrin and Dirks, 2003).

Interventions based on extrinsic motivators are often problematic and ineffective because managers cannot monitor whether physicians share knowledge at their best, and consequently they can be easily eluded (Kaser and Miles, 2002; Wang et al., 2008). Sanctions, in particular, only inhibit the most manifest forms of opportunism and ostracism. As such, they are needed to improve trust among employees and toward the organisation, but an excessive use can easily backfire and create a “who’s to blame?” climate which is ultimately detrimental to motivation (Husted and Michailova, 2002).

The effectiveness of financial incentives has received increasing attention and criticism among scholars. Scholars have expressed significant scepticism that incentive systems could produce a positive impact on knowledge sharing. Economic incentives may, in fact, discourage knowledge sharing if physicians perceive them as manipulative and controlling or perceive to be punished when they do not receive a reward (Bock and Kim, 2002). Interestingly, an increasing body of literature also claim that even well-designed incentive strategies may ultimately not be effective in the long run, because they “do not create a lasting commitment, they, merely, and temporarily, change what we do” (Kohn, 1993:3). Economic incentives may create an inappropriate situation where physicians would share their knowledge only when they expect a reward. Moreover, explicit incentives may trigger a systematic competition over resources that may
ultimately justify the perception of knowledge as a source of personal gain (Bock and Kim, 2002; Fernie et al., 2003).

In sum, “hard” interventions based on extrinsic motivation ultimately “crowd-out” motivation, with employees that are willing to share knowledge only when they expect to be rewarded for doing it or punished for not doing it (Osterloh and Frey, 2000). This “crowding out” effect was often observed among physicians and health volunteers (Siciliani, 2007; McDonald and Roland, 2009; Wynia, 2009).

Soft approaches. Scholars are showing increasing support to the adoption of interventions that exclude extrinsic motivation in favour of facilitators of intrinsic motivation (e.g. Bock and Kim, 2002). It is widely accepted, in fact, that physicians should be motivated by “larger themes of social responsibility, public trust, teamwork and civic virtue” (Wynia, 2009: 885). Managers should consequently aim at (a) showing how knowledge sharing had translated into tangible results in clinical practice (Davenport, 1998) and (b) creating an adequate organisational context (Bock et al, 2005). Three interventions can be deployed.

First, many hospitals have been experiencing the creation of an ad hoc role – i.e. the “Chief Knowledge Officer” (Earl and Scott, 1999; Bontis, 2001) – or, on broader terms, of knowledge brokers (Oldham and MacLean, 1997; Von Malmborg, 2004) who intercept good ideas, link employees and spread knowledge (Brown and Duguid, 2001). These initiative are coherent with Ellingsen and Monteiro’s (2003) observation that hospitals are “notoriously hierarchical institutions” (p.223) and, thus, the problem of knowledge legitimisation (i.e. who generates the knowledge and where it comes from) is highly relevant. Nevertheless, while their effectiveness was confirmed in the business sector (Hislop, 2003; Hargadon, 2005), it has not been yet fully evaluated in healthcare (CHSRF, 2003; Lyons and Warner, 2006; Dobbins et al., 2009). Specifically, Dobbins et al. (2009) claimed that important issues still need to be addressed as to whether it exists an optimal dose of knowledge brokering and which specific strategies ought to be promoted. For example, there are no definite indications on whether physicians, administrators or external individuals are more appropriate for the job. Right now, the literature only concedes a solid tenet, expressed by Bontis’ (2001) call for “evangelical skills”, i.e. the ability to act as “trust stewards” and be respected as “knowledge sharing icons” by co-workers through interpersonal, communication and motivational skills.

Second, Carroll and Edmondson (2002) suggested that similar hierarchical solutions in healthcare are not sufficient to promote knowledge sharing and need to be coupled with initiatives that facilitate local empowerment. This may take the form of informal networks where their leaders, with little or no formal authority, can prove to be as or more effective than formal leaders. Sheffield (1998a) noticed that an important prerequisite for a systemic development of healthcare institutions is the willingness of members to negotiate mutual expectations as this “promises to expand in a virtuous circle to ‘sweep in’ other
healthcare workers, including those from heterogeneous work groups who have in the past occasionally ‘dropped the ball’” (p. 289). This is confirmed by further evidence that physicians look to peers to negotiate role expectations and, in particular, “if withholding behavior appears socially unacceptable, it would seem to threaten the rewards that the reference group can provide and increase the risk of sanctions” (Haas and Park, 2010, p. 876).

Third, the correct exploitation of employees’ potential to share depends on proper mechanisms of selection, education and support. As Cabrera and Cabrera (2002) argued “one of the most direct ways for an organisation to achieve this transformation is to align its human resource policies with this new role that is demanded from employees. This organisational shift is in fact so deep that it even affects the nature of the psychological contract between the employee and the company” (p. 699). In particular, the role of strong, empowering, leadership has been stressed (Connelly and Kelloway, 2003; Amabile et al., 2004; Srivastava et al., 2006). In opposition to authoritarian leaders, empowering leaders are those that define precise and convincing targets, and provide fair guidance to employees on how to reach them.

Table 1 summarises these findings. The positive or negative effects have been argued by the literature review and synthesised with plus or minus. Specifically, some interventions are termed with plus/minus to indicate that the literature has not yet reached a consensus over their impact.

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<thead>
<tr>
<th>INTERVENTION</th>
<th>IMPACT ON MOTIVATION TO SHARE</th>
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<tr>
<td>Hard approaches</td>
<td></td>
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<tr>
<td>Mandatory</td>
<td>(-) Difficult to implement effectively and easy to elude (Wang et al., 2008; Bock and Kim, 2002; Kohn, 1993; Kaser and Miles, 2002)</td>
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<tr>
<td>Sanctions</td>
<td>(-) Can “crowd-out” motivation (Wynia, 2009; McDonald and Roland, 2009; Siciliani, 2007; Osterloh and Frey, 2000)</td>
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<tr>
<td>Incentives</td>
<td>(+/-) May be dedicated to induce physicians into sharing knowledge (Bontis, 2001; Earl and Scott, 1999). Effectiveness still unclear (Dobbins et al., 2009; CHSRF, 2003; Davenport, 1998)</td>
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<tr>
<td>Soft approaches</td>
<td></td>
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<tr>
<td>Ad Hoc Roles</td>
<td>(+/-) Provide peer pressure which is effective in inducing physicians into sharing their knowledge (Haas and Park, 2010; Carrol and Edmondson, 2002; Argote and Ingram, 2000; Sheffield, 1998a)</td>
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<tr>
<td>Informal Networks</td>
<td>(+) Allow to align personnel with organisational objectives (Cabrera and Cabrera, 2002)</td>
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<tr>
<td>Formation</td>
<td>(+) Motivates physicians through precise targets (Connelly and Kelloway, 2003; Srivastava et al., 2006)</td>
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<td>Goal Setting</td>
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Table 1: Evidence on interventions that impact on motivation to share
Reducing knowledge stickiness
This group includes the interventions aimed at reducing knowledge “stickiness” (Von Hippel, 2004). As previously observed, the nature of health knowledge can be problematic for its transmission since it is mostly tacit (Hunter, 1991; Atkinson, 1995) and any attempt to reduce such knowledge into codified texts would be both impossible and inappropriate (McKinlay, 2000).

The problem of knowledge representation is salient in hospitals which have been described as increasingly “data rich” - through the development of massive data-generating systems such as electronic medical records, clinical trial data, hospital and administrative records etc. – but also “knowledge poor”, since this information rarely translates into meaningful knowledge for the practice (Abidi, 2001). Similarly, Ellingsen and Monteiro (2003: 221) have noted that “knowledge representations about a patient in a hospital are truly dispersed and heterogeneous” because “there are numerous textual representations accumulated through different departments and laboratories” and yet none of them is credible and trustworthy per se.

Accordingly, hospital managers should couple initiatives that aim at increasing codified knowledge with others that embrace and work upon tacit knowledge. Hansen et al. (1999), for example, acknowledged two approaches to knowledge sharing: (a) standardizing health knowledge about all symptoms in order to be re-used by fellow practitioners; (b) assuming that all cases are unique and thus knowledge comes from the sharing of physicians’ intuitions and know-how in a specific context. While the authors argued that these are mainly two separate strategies to deal with health knowledge, Sheffield (2008a) stated that these ought to be treated as ideal-types of two concurring approaches that acknowledges how tacit and explicit knowledge co-exist.

Interventions regarding the codification of knowledge, in healthcare, has mostly taken the form of Clinical Practice Guidelines (CPGs) which are intended to “assist practitioner and patient decisions about appropriate health care for specific clinical circumstances” (Field and Lohr, 1990). As such, they are both the end-result and a start-up of knowledge sharing and could increase the receptivity of practitioners (Cabana et al., 1999, Nakayama, 2007). Yet, CPGs are struggling to win over physicians’ acceptance. Cabana et al. (1999) pointed out that “despite wide promulgation, guidelines have had limited effect on changing physician behaviors” (p. 1458) such as knowledge sharing. The authors reviewed a number of barriers to guidelines adherence, both external (especially, lack of ability because of their difficulty of use or resources) and internal. Among the latter, the authors showed that, most often, guidelines generate suspicions over their efficacy and outcomes since they don’t address the major elements of practice or because physicians have a frequent “inertia of previous practice” that hampers their motivation to change. Guy and Wardlaw (2002) argued that most of these problem can be explained by a frequent lack of inclusion of physicians and specialists in the writing process. As a result, “other less sympathetic or less appropriately experienced individuals” (p. 896) produce the rules that should
supposedly be followed by practitioners.

Table 2 summarises these findings concerning the interventions that directly aim at reducing knowledge “stickiness” through its codification in explicit knowledge. The following paragraph will account for other interventions that address the “stickiness” problems through the improvement of the communication ties between potential sharers.

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<tr>
<th>INTERVENTION</th>
<th>IMPACT ON KNOWLEDGE STICKINESS</th>
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<tr>
<td>Clinical Practice Guidelines</td>
<td>(+/-) They turn potentially “hidden” knowledge into codified texts and may represent a common repository of knowledge which everyone can have easy access to. However, their effectiveness still unclear (Guy and Wardlaw, 2002; Cabana et al., 1999)</td>
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Table 2: Evidence on Clinical Practice Guidelines impact on knowledge stickiness

Impact 3: Improving social capital

The last group refers to initiatives aimed at improving social capital, which mostly translates into attempt at building ties between physicians. Two major interventions have been implemented over the years: the introduction of information systems and the development of periodic meetings among physicians.

Information systems. Organisations are increasingly confronted with the appeal of information systems as the primary solution for knowledge management. Hospitals, for example, can count on a wide of technologies, ranging from intranet to electronic health records, that can trigger new and improved communication dynamics among physicians. The introduction of information systems has attracted a lot of attention because they have the potential to (a) remove barriers of time, space and convenience (Sproull and Kiesler, 1991; Van den Hooff et al., 2004); (b) improve the visibility of knowledge-related actions, thus helping workers to monitor each other (Bjorn and Ngwenyama, 2009); and (c) create “interruptive events” that interrupt the flow of routine activities and redesign new practices such as knowledge sharing initiatives (Zellmer-Bruhn, 2003). In this regard, Hara and Hew (2007) investigated the efficacy of an online community of practice in a healthcare community of practice and identified two major benefits: (a) the communication of practitioners from different organization (who, being distant, don’t feel the competition over resources and promotion they may sense while working for the same hierarchy) and (b) asynchronous communication which releases constraints of time and space).

Scholars, nevertheless, are cautious regarding the actual facilitation provided by information systems. In fact, “the mere existence of evidence is not sufficient to ensure the adoption of best practice into routine clinical care” (Samson.Fisher et al., 2003: 205). Two major issues need to be solved: (a) employees’ technological
acceptance and (b) proper integration in the workflow (Berg et al., 2003) and in the social context (Ellingsen and Monteiro, 2003).

First, it has been widely observed that the introduction of new technologies is a complex process which employees, and physicians in particular, are often antagonist or indifferent because they regard the innovation as irrelevant to their practice (Lorenzi and Riley, 2000). In this regard, Aidemark (2005), who studied the planning and implementation of an intranet in a hospital, observed that “if these knowledge management systems are going to work, they must be accompanied by social processes where people can come to terms with new ways of working. These processes reside in local groups and specialist communities, which take little interest in what top management might do or think… [because] they generally preferred to do things as they always had” (p. 365). When information systems are perceived as useful, physicians have proven to be both able and willing to overcome any problems with ease of use (Chau and Hu, 2002).

The second issue regards the position that technologies should have into a much wider communication strategy. As Van den Hooff et al. (2004) pointed out: “the contribution of ICT [omissis] is more likely to occur in a setting where other, richer communication media are used as well” (p.178). This proves a strong relationship between technology facilitation and social capital which has been also stressed by Ellingsen and Monteiro (2003) who urged hospitals to resist the current tendency of using information systems to “dis-embed” (Giddens, 1991) knowledge processes from local context.

Meetings. Among the several “richer communication media” that are needed to exploit information systems potential, the literature has particularly favoured the introduction of meetings, as moments that (a) create interruptive events in which physicians can mutually share their findings and case studies to colleagues (Argote and Ingram, 2000; Connelly and Kelloway, 2003) and (b) may facilitate the development of communities of practice where “groups of people informally bound together by shared expertise and passion for a joint enterprise” (Wenger and Snyder, 2000:139). Frequent meetings specifically aimed at sharing experiences, inter-unit team-working (Davenport, 1998; Argote and Ingram, 2000; Zellmer-Bruhn, 2003) and communities of practices (Lesser and Stork, 2001; Staples and Webster, 2008) all represent richer communication media that link employees through “strong ties” (Granovetter, 1982) and facilitate the process of “osmosis” suggested by Martin (2009). Furthermore, these interventions may ultimate lead to the development of salient groups where employees focus their attention on the creation of new ideas and on their dissemination inside the organisation (Kelloway and Barling, 2000; Bonacich and Schneider, 1992).
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<table>
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<tr>
<th>INTERVENTIONS</th>
<th>IMPACT ON SOCIAL TIES</th>
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<tr>
<td>Meetings</td>
<td>(+) Provide strong ties which generate long-term relations (Zellmer-Buhn, 2003; Argote and Ingram, 2000; Davenport, 1998) and the development of salient groups (Kelloway and Barling, 2000; Bonacich and Schneider, 1992)</td>
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Table 3: Evidence on interventions affecting the development of social ties

5. Discussion

Effective knowledge sharing among employees is a fundamental requirement for organisational performances and has attracted a lot of attention from both scholars and practitioners. This interest is cross-disciplinary, with contributions coming not only from Management and Information Systems, but also from context-specific fields such as Medicine (as explored in our illustration) and Education (e.g. Lin et al., 2008).

The literature is rich of anecdotes about managers' failure to facilitate knowledge sharing among employees, but only few academic contributions have tried to provide a comprehensive view of why this happens and which interventions are most effective. This gap is especially critical for hospital managers who are attracted to knowledge sharing initiatives because of their potential to bring forth performance improvements (Sheffield, 2008a), but are confronted with frequent resistances from healthcare professionals (Sheffield, 2008b).

Based on the findings in our literature review, we identified three issues that concern hospital managers in the adoption of knowledge sharing initiatives.

The first issue regards the need for hospital managers to focus on physicians' attention over the relevance of knowledge sharing.

We observed that an individual-based perspective to knowledge sharing is salient because physicians' lack of motivation to transmit relevant information may be a fundamental barrier (Husted and Michailova, 2002). Since knowledge sharing is also a rational behaviour (Kollock, 1998), interventions should be aimed at inflating the benefits and suppressing the costs of knowledge sharing. In our review, we observed that there is growing evidence in opposition to “hard” approaches such as incentives or sanctions in favour of “softer” approaches that aim at developing physicians’ self-motivation to be engaged in the behaviour. This result is intriguing because it suggests a clear ontological view of how physicians behave and, thus, how they should be motivated. This result evokes
McGregor’s (1960) contribution that advocated a human resource approach that acknowledges employees as being inherently responsible, committed, and creative to work (what he called Theory Y) and criticized management based on punishment and reward because it failed in its underlying assumption that employees are uninterested in improving their performance and work environment (what he called Theory X). This view is particularly appropriate in those knowledge-intensive environments such as hospitals, where physicians are responsible for activities that need strong self-control and creativity.

Since employees are not driven by an inherent aversion to work, then the central problem in the management of knowledge sharing, rephrasing Van de Ven’s (1986) insights on innovation, concerns “the human problem of managing attention because people and their organisations are largely designed to focus on, harvest, and protect existing practices” (p.591). In other terms, hospital managers should work on demonstrating the linkage between knowledge sharing and the potential outcome that physicians could obtain for their practice.

The second issue regards the opportunity to bring forth a social capital-based strategy for knowledge sharing initiatives.

While motivation is necessary, it is not sufficient to drive knowledge sharing initiatives to success. Employees may face tangible constraints in translating their motivation into an actual behaviour. Specifically, they face two major barriers: (a) communicating their tacit knowledge to others and (b) developing efficient and trustful ties with colleagues. Removing these two obstacles to knowledge sharing, then, are two fundamental steps of managerial actions.

The literature on information systems implementation allows delivering interesting insights. Their recurrent failures, in fact, have been explained by a lack of more comprehensive strategies that address the richness of communication media available in the organisations.

It is the symptomatic that the concept of “social capital” is attracting growing interest among scholars. Its attractiveness resides in its ability to hold together interventions that are apparently uncorrelated: (a) building ties among sharers; (b) prevent potential conflicts through norms and sanctions; (c) develop a shared meaning between sharers. This concept, in other terms, is valuable because it shows that knowledge resides at the individual level, it is useful at the organisational level, but it can actually be leveraged at the very different level of network.

Addressing social capital, then, allows a correct specification of the role that each intervention should have inside a much wider strategy of change. In the case of information systems, for example, the literature shows that their relevance is determined by the extent to which they (a) link otherwise disconnected physicians (Chau and Hu, 2002); (b) link otherwise disconnected communication media (Van den Hooff et al., 2004) and (c) put physicians in the condition to communicate without harming reciprocal routines (Berg et al., 2003).

The third issue regards how hospital managers can prevent a lack of involvement among physicians in knowledge sharing initiatives.
Specific insights can be drawn from the institutionalisation of initiatives such as information systems and clinical practice guidelines.

Their recurrent failures, in fact, clearly point out the need to avoid top-down solutions and involve employees in the salient moments of change brought forth by the intervention. As we observed, managing carefully the change is especially salient in healthcare because physicians are peculiar users that would resist any change that they do not perceive as relevant (Lorenzi and Riley, 2000). Any strategy of interventions should then take into account that the change must be legitimated to physicians otherwise they would not accept it (Porter and Teisberg, 2007).

In this regard, inertia to change can be won by an inclusion of potential users early in the planning phases (Grimshaw et al., 2001). This involvement should be supported by a proactive communication which is able to create a sense of urgency (Stutman et al., 2007) and expose why the change is required (Ludwick and Doucette, 2009). The use of local champions has been acknowledged as successful interventions because they, as part of physicians’ reference group, can increase trust towards and legitimisation of change (Chou, 2007). Active involvement must be maintained also in latter stages of change. Physicians must remain confident that the new modus operandi will produce benefits to patients. Thus management need to produce evidence that the interventions have produced successful experiences (Chou, 2007).

6. Conclusions

This study has investigated past evidence regarding which interventions may help improving knowledge sharing among physicians in a hospital context. Relevant contributions have been selected through a literature review that aimed at conciliating a mass of heterogeneous and often conflicting contributions coming from the disciplines of Management, Information Systems and Medicine.

Interventions were categorized following their impact on: (a) physicians’ motivation to share their knowledge; (b) mechanism of knowledge sharing; (c) improvements in the social capital embedded in the organisation.

A resulting set of ten interventions was indentified. They can provide hospital managers with a more comprehensive view of which interventions have been recognized as effective in the literature. As such, this work is intended as a introductory guide for hospital managers in the choice of interventions. Clear indications, for example, suggest the opportunity to focus on interventions aimed at building social capital among physicians rather than adopting sanction/incentive-based approaches that most often fail to motivate employees.

The present study also identified existing conflicts or gaps in the literature that require further research. The impact of ad hoc roles such as Chief Information Officers, for instance, is still unclear while the implementation of clinical practice guidelines and information systems can bring forth interesting evolutions. Existing evidence also offers a problematic picture of the implementation of clinical practice guidelines and information systems for knowledge sharing.
Further investigation should monitor any potential evolution on this topic and improve the understanding of the condition that facilitate their success.

It should be noted that while the present study is intended for the specific sector of healthcare, we believe that the information collected in this paper can be generalized, because they were collected from a broad literature review that takes into account also contributions related to other industries. Nevertheless, any empirical finding that spawns from this study should account for this problem of generalisability and evaluate the existing contingencies. This is true also within the healthcare context, which is populated by very different realities such as, for example, surgical units, general hospital departments and hospice teams which all differ in the nature and performance of their practice and, so, in their use of knowledge.

6. References


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