ABSTRACT

Facing the contextual changes in healthcare delivery system, physicians should share medical process knowledge with their colleagues in the same specialty practice group to further improve healthcare performance. We propose a research model based on the Theory of Planned Behavior to explore the contributing factors and performance consequence of knowledge sharing behaviors. The results would benefit healthcare management for structuring a favorable organizational environment that is conducive to physician professional development and healthcare delivery quality improvement.

KEYWORDS: Knowledge sharing, Process improvement, Healthcare delivery

INTRODUCTION

Facing drastic changes in the context of healthcare, the processes and outcomes of healthcare delivery are under increased scrutiny. The efforts aiming at delivering greater value and increased efficiency while maintaining ever-higher health care quality have been gaining traction rapidly among researchers and medical professionals alike.

While the past endeavors focusing on operational side of healthcare delivery, such as patient flow management, and inventory management for medical supplies, have made substantial progress toward improving patient experience; the performance on the clinical side of delivering care to patients remains largely unsatisfactory. The United States has consistently been criticized for leading in terms of costliness (by a wide margin), but lagging behind on health outcomes like life expectancy and infant mortality, and having a mixed performance in terms of quality of care” (Grant Markers Health, 2012). It is widely believed that “the U.S. health care delivery is not function optimally” (ibid). From a broader system approach, public policy makers, social advocacy groups, and payers are working at incentivizing the system to achieve the “triple aim” of improving the patient experience, improving health of populations and reducing costs (ibid). At a narrower and more specific level, issues such as how physicians pool their expertise to design and structure treatment plans to individual patients in an efficient and cost-effective manner can contribute to some significant process capacity increase to the core of the current healthcare delivery system, thus warrants further research attention.

Healthcare delivery is undoubtedly a knowledge intensive process. According to Berg (2004), to deliver good care, physicians must possess at least two types of knowledge. The first type is the
knowledge on the specific condition of each individual patient (e.g. pre-existing chronic conditions, allergies, drug interaction etc.) so that medical professionals with different specialties can work as a care team to coordinate between-specialty efforts and address the holistic needs of the patient. Recent initiatives that advocate lean management and team-based care models, as well as new technologies, such as digital medical record systems and other automated tools that centralize patient’s entire medical history to physicians’ fingertips, have successfully enhanced between-specialty communication and integration.

Physicians’ process knowledge on their own specialty, the second type of knowledge Berg (2004) underscored, is often considered as one of the hallmarks of the medical profession. It includes skills and techniques such as how to perform certain medical procedures, how to adjust standard treatment guidelines to provide customized care, and how to communicate with patients about critical diagnoses. Coming out of stringent selection and training processes, American physicians traditionally enjoy some of the highest confidence from the general public. An American College of Surgeons consumer survey showed that “patients were significantly less proactive in learning about the surgical procedure they will undergo” (on average just one hour researching), when compared with preparing for other major life events (e.g. ten hours for changing jobs, and eight hours for buying or leasing a new car) (Health & Medicine Week, 2008). Even when patients do research on their doctors, they often make the judgment on “issues such as attentiveness and demeanor, rather than training and experience” (Chen, 2008). Physicians’ specialty knowledge and expertise confers power and status on their profession, and is often taken for granted by patients and the public (Medical Professionalism Project, 2002). It is however often ignored that the complexity of healthcare and the exponential expansion rate of new medical knowledge requires doctors’ full commitment to continuous knowledge renewal and life-long learning.

But how they renew their specialty knowledge is largely under the discretion of individual physicians, and has not been thoroughly studied in the literature. Often being the only expert of a specialty within the care team to a particular patient, physicians are juggling multiple care teams without sufficient opportunities to share and reflect their medical process knowledge with other colleagues within the same specialty practice group. Not all physicians stay abreast at the same level to all the latest advancements made to the guidelines, protocols and medical supplies that are relevant to their specialty. Confounding factors such as ground rounds, legacy hiring practices, varying affiliation relationships and the availability of technology and equipment further complicated the scenario. Even when physicians are aware that their practices are different from one and another in the same practice group, they do not always have the capability or motivation to explore and compare such differences and alter their own clinical behaviors for the purpose of process improvement and process standardization. The result can be significant medical process variations between different physicians. It is not uncommon that physicians of the same specialty within the same clinic perform the same procedure with very different protocols using very different materials with no compelling medical reasons (Gawande, 2012). It violates the fundamental principle of evidence-based medicine, which calls for patients being given the care based on the best available scientific knowledge, and these cares should not vary illogically from clinician to clinician or from place to place.

Such unnecessary inconsistency can introduce added operational difficulties into the care delivery process and negatively affects care quality and patient experience. Examples include:

- Burdening the supporting care team and increasing the probability for medical error (e.g. from giving out different recovery and discharging instructions);
• Disrupting physician, equipment and facility (such as OR) scheduling because of different utilization time requirement from different protocols used;

• Forcing hospitals to maintain a larger variety but smaller volume for each medical supply SKU, thus resulting in higher inventory maintenance costs and lower possibility for volume discount from suppliers.

Additionally, from knowledge management perspective, with each physician working in silo, creating and owning one’s medical process knowledge, it could be a huge waste to the healthcare organization. This is because

• if certain knowledge has not been properly harvested and processed into organizational knowledge (e.g. in the form of practice protocol or policy), such knowledge would easily get lost when the individual knowledge owner exits the practice group;

• if other physicians in the same practice group are not aware of the availability of certain knowledge (e.g. know-how on dealing with a special scenarios of drug-patient condition combination), they may have to re-create the same knowledge that has already been generated previously. Knowledge creation in healthcare is time consuming and is often associated with high risk and high capital expense;

• new knowledge is created from novel combination of existing knowledge. Inadequate coordination and communication between physicians in the same department limits the opportunity for their ideas to collide with each other, thus makes it less likely for physicians to be able to continuously improve their practices.

It is thus evident that in additional to patient-centered care team that features between-specialty integration and collaboration, within-specialty knowledge sharing between physicians of the same practice group must also be advocated in order to further improve healthcare delivery performance. It becomes intriguing to explore questions such as why physicians choose to share process knowledge with their colleagues (or not), how they actually communicate and transfer process knowledge in their specialty, and what tangible benefits can be achieved from such knowledge sharing behaviors. In this study, we propose a model to investigate the antecedents and performance impact of knowledge sharing behaviors between physicians of the same specialty practice group.

THEORETICAL DEVELOPMENT/MODEL

The extremely hierarchical and differentiated nature of a physician’s job often puts him/her in an authoritative role in directing a care team of assistants, nurses, and technicians. Physicians are not always accustomed to articulating and sharing their processes of making medical decisions. To advocate knowledge sharing behaviors involves physicians making drastic behavioral changes. We would thus use Icek Ajzen’s the Theory of Planned Behavior (TPB) (1985; 1991) as the conceptual foundation to structure our research model.

Credited as one of the most influential and popular conceptual frameworks to understand the mechanism of human behavioral change, TPB has been used in a wide variety of fields, such as advertising, public relations, and healthcare. As illustrated in Figure 1 below, TPB believes that
the intention to demonstrate certain human behavior is subjected to three kinds of personal evaluations /considerations.

- **Attitude toward the behavior** refers to the degree to which an individual holds a favorable or unfavorable personal evaluation toward the outcomes of the behavior (Ajzen, 2006). It includes both more tangible evaluative considerations (e.g. whether this behavior would bring me more advantages or better results) and relatively subtler affective judgments (e.g. whether this behavior would make me feel good). Positive attitude encourages individuals to demonstrate the behavior of interest.

- **Perceived social norms** depict an individual’s perceived social normative pressure regarding whether he/she should or should not carry out the behavior. From a social-capital point of view, it particularly emphasizes the consideration to what one perceives as the opinion of the “important others” (reference people) (e.g. whether this behavior would win approval from “important others”). External endorsement and support would make an individual more likely to carry out the behavior of interesting.

- **Perceived behavioral control** extended the earlier/original Theory of Reasoned Action (Fishbein and Ajzen, 1975; 1980) into TPB, since attitude and subjective norms can only lead to behavioral intention, but not necessarily the actual behavior. Ajzen (1991) argued that an individual would not engage in a behavior if he/she perceives no control over the behavior, even when there is positive intention. This construct is defined as the perception of feasibility (outcome expectation) and self-efficacy (self-beliefs) in fulfilling the behavior. To actually initiate the behavior of interest, an individual must believe that he/she has the capability to perform and can perform the behavior with an acceptable level of ease.

In combination, the above three perceptions lead to the formation of a behavioral intention. It is generally believed that the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger should be the person’s intention to perform the behavior (Ajzen, 2002; 2006). Intention is therefore assumed to be the immediate antecedent of behavior. It indicates how hard people are willing to try, and of how much of an effort they are planning to exert in order to perform the behavior (Ajzen, 2006). The construct of perceived control associates the other two constructs with the actual behavior actions.

![Diagram of Theory of Planned Behaviour](https://example.com/theory_diagram.png)

**FIGURE 1:** Theory of Planned Behaviour.

Based on TPB, we have formulated the following research model in Figure 2.

Positive attitude is operationalized as a physician’s favorable perception toward sharing process knowledge with colleagues in the same specialty practice group. To shape a positive attitude is key to this process. Physicians must be given sufficient time to allow attitude change. They should also be supported to understand how knowledge sharing behaviors would improve their own practices rather than to challenge their authority in delivering patient care.

External encouragement parallels to the construct of subjective norms in TPB. Four levels of the clinical system (Ransom, Maulik and Nash, 2005) identified physician's “important others” (or reference people): patients (and their families), microsystem (e.g. medical professionals of other specialties in a care team), organization (e.g. the clinic or hospital), and environment (e.g. payers, pharmaceutical companies, and public policy makers). When physicians realize that these “important others” can benefit from them sharing process knowledge, or receive concrete endorsement or encouragement (e.g. pay for performance system), they are more motivated to engage in knowledge sharing behaviors.

Infrastructural support refers to the tools (e.g. information technology, process improvement techniques) and organizational structures (e.g. departmental meeting schedules, physician pay and evaluation policies) that would give physician the capability and confidence to share process knowledge. At the bottom-line, they should receive training when necessary (on how to use various tools and techniques) and feel empowered and comfortable to communicate with peers about their own practices. They should never be punished for exposing their vulnerability of acknowledging the mistakes they may have made in providing care.

**FIGURE 2: Research Model**

Based on arguments above, we have formulated the following propositions:
**Proposition 1:** The more positive attitude a physician holds, he/she would be more likely to engage in process knowledge sharing behaviors with colleague clinicians in the same specialty practice group.

**Proposition 2:** The more external encouragements a physician receives, he/she would be more likely to engage in process knowledge sharing behaviors with colleague clinicians in the same specialty practice group.

**Proposition 3:** The higher level of infrastructural support a physician receives, he/she would be more likely to engage in process knowledge sharing behaviors with colleague clinicians in the same specialty practice group.

To explore the consequence of knowledge sharing behaviors, we amended the model by adding a new construct to measure the performance indicators. We believe that by sharing process knowledge, physicians would have more opportunity to reflect on their practices, pool their expertise with colleagues, and renew their knowledge more effectively. It would eventually result in significant healthcare delivery process and quality improvements. We have suggested some typical benchmarking indicators such as procedural time, medical error rate, and complication rate as the sub-constructs.

**Proposition 4:** The more process knowledge sharing behaviors a physician engages in, the greater favorable performance impact he/she can achieve.

Once positive performance impact has been observed, such improvements are expected to provide favorable feedback to the process of individual physician developing personal evaluation and attitude, and “important others” developing external encouragement. Performance improvements can serve as positive reinforcers that would stimulate even more favorable attitude and a greater level of external encouragement. We thus formulate the following two feedback propositions:

**Proposition 5:** The greater favorable performance impact a physician can achieve, the more positive attitude he/she would develop toward sharing knowledge with colleague clinicians in the same specialty practice group.

**Proposition 6:** The greater favorable performance impact a physician can achieve, the more external encouragements he/she would expect to receive for sharing knowledge with colleague clinicians in the same specialty practice group.

**RESEARCH PLAN**

This is still a work-in-progress project. Considering the lack of relevant studies on within-specialty knowledge sharing behaviors in the literature, our plan is to conduct a case study to test the research model described above initially. We are currently in the process of interviewing and observing a suburban community hospital just outside of Boston. Because anesthesia group’s exclusive affiliation relationship with the hospital, and the relatively high level of procedural standardization in this specialty (which makes the performance impact more directly observable), we decide to focus the scope of this study to the eight physicians of this hospital’s anesthesia practice group. By the time of the conference, it is expected that we will have concluded all phases of the study.
CONCLUSION

In this study, we discussed the importance of physicians sharing medical process knowledge with their colleagues in the same specialty practice group. A research model based on the Theory of Planned Behavior was presented to explore the contributing factors and performance consequence of knowledge sharing behaviors. The result of the study would provide some theoretical foundation to healthcare management personnel to help them structure favorable organizational environment that is conducive to physician professional development and healthcare delivery quality improvement. Considering the scarcity of research in this area, we also hope that the study could entice more research attention toward this research stream.

REFERENCES

References available upon request.