

ABSTRACT

Healthcare is an incredibly dynamic field that requires an equally dynamic school of thought-sharing in order to maximize the benefits that organizations bring to patients. Knowledge management (KM) is the process of creating, sharing, using and managing the knowledge and information of an organization. The principles of knowledge management are thoroughly applicable in medicine. Tacit knowledge, which is at the center of knowledge sharing, is very potent in its ability to cause miscommunications when not properly shared within an organization. If it is shared in an open forum that is very accessible however, it can also help organizations in building up their knowledge base by sharing the experiences of long-time employees. By taking the time to learn about knowledge management, workers in medicine and healthcare can position themselves and their organizations to be successful for many years to come. Healthcare organizations and leaders in these organizations should take the time to learn more about knowledge management, assess the knowledge gaps in their organizations, build new knowledge sharing initiatives, foster the culture of a learning organization, and communicate successes from the new initiatives early and often. By taking the time to build a learning culture, one that values knowledge management, organizations will be prepared to quickly adapt, regardless of whatever changes that come in the future.

INTRODUCTION

Healthcare is an incredibly dynamic field, with rapid changes and new technologies being introduced to the fold seemingly every week. In order for workers in healthcare to keep up with all of these changes, it is important to consider how information is circulated amongst members within healthcare organizations to optimize efficiency. With all of the information that is out there, clear communication and sharing of ideas is essential in order to help streamline the organizational learning process. For this reason, the practice of knowledge management and how to successfully implement it within an organization has been the subject of much interest recently. Knowledge Management (KM) is quickly coming to the forefront as the next innovative frontier for organizational management. Although healthcare has been heavily invested in evidence-based methodology, many in the medical field are beginning to recognize the role knowledge management is playing in bringing about a new era in medicine. By learning about

knowledge management, how to create and foster a culture of knowledge sharing, how each of us can become a knowledge worker, and how to evaluate organizational knowledge management, we will be prepared to help usher in this new age of medicine. In this review we will learn about knowledge management, creating a culture of knowledge management, how to measure the effectiveness of knowledge management and ultimately how to become a KM worker.

WHAT IS KNOWLEDGE MANAGEMENT?

Healthcare is a very evidence-focused field, requiring that any given hypothesis be thoroughly backed up with data before any given action can be taken. It has been suggested that this way of thinking, though effective and time-tested, is why knowledge management as a field of study has lacked serious academic interest from many in the medical community until recently.¹ Knowledge management (KM) is the process of creating, sharing, using and managing the knowledge and information of an organization.² Increasingly, these teams are beginning to understand that effective practice of organizational knowledge management lead to everyone having a better understanding of their teams' visions. The first step to understanding knowledge management is to understand the definition of knowledge. Ackoff's hierarchy describes both how knowledge is derived from both data and information and how knowledge leads to understanding and wisdom.³ In Knowledge Management in Healthcare, Ackhoff's hierarchy is described within the context of healthcare.⁴ Data can be described as "patient and family history, basic physiologic monitors, medication history...", which is then used and compared to standard evidence-based values of normal baselines to help create information. This information helps a doctor obtain a better sense of his or her patient's current state of health.⁴ Medical information is then used by the doctor in conjunction with his or her knowledge to create a plan of care. Knowledge in the context of healthcare refers to a clinician's understanding of "disease process, clinical experience, knowledge of the patient and his or her preferences, familiarity with practice guidelines, and practice alerts".⁴ To this end, knowledge is subjective as it is born from one's own experiences. By using knowledge to create a plan of action, the doctor has now gained an understanding of the patient's current situation. After attaining understanding, a clinician can graduate to the final level of wisdom after they have helped the patient come up with "subsequent decisions about care including discussion of preventative actions to ensure

health". Central to this entire process is the concept that knowledge is created from an individual's experiences.⁴ These experiences take the form of the clinician's past medical training and cases seen, which after using as a reference to the patient's current condition, help the clinician move forward with a decisive plan of how to best help the patient.

Knowledge itself comes in three types: explicit knowledge, implicit knowledge, and tacit knowledge.⁵ Explicit knowledge is defined as "knowing what", and usually manifests as data that is easily understandable. Implicit knowledge is "knowing how and being able to talk about it", as it influences action and is shared through common experiences. Tacit knowledge is "knowing how but not being able to explain it", and is practical knowledge that is conveyed through clinical experiences.⁴ In the context of knowledge management, it is the last category of knowledge, tacit knowledge that is suggested to yield the highest benefits if sharing of this type of knowledge is optimized within an organization.⁶ If sharing of tacit knowledge is not optimized within an organization, the team can be compromised with turnover in the workforce occurs. Equally problematic to inefficient sharing of tacit knowledge within healthcare are both a lack of understanding regarding what knowledge management entails from a resource perspective and an incomplete comprehension of the terms that define knowledge management.⁴ To mitigate this problem, organizations can implement "mental models" that "...sustain [knowledge management initiatives] and create the culture to support them".⁴ Especially in organizations that are beginning to value the importance of tacit knowledge, the shared mental models are essential to successful practice of knowledge management. By standardizing knowledge and the sharing of it, those within the organization can feel confident that they are moving forward in a unified direction towards an agreed-upon vision. These mental models are also a way of organization-wide standardization of communication regarding initiatives aimed at improving safety. Mental models ensure that the organization has a shared understanding that new initiatives are being implemented to benefit patients, and not to point blame on others within the organization. By attaining a better sense of the types of knowledge and how to implement shared mental models, organizations can make moves to start fostering frequent practice of knowledge management.

A CULTURE OF KNOWLEDGE MANAGEMENT

Fostering a culture of knowledge management can drastically improve the outcomes of knowledge management initiatives. Especially during a time when healthcare organizations are getting larger and changes are occurring at a rapid rate, the importance of effective knowledge management practices is paramount.⁴ As organizations in healthcare make steps towards improving overall quality of the care and regulatory agencies enforce more strict policies to ensure higher levels of patient quality are met, this reinforces the cultures of knowledge

sharing. This will help to assure the proper protocols are shared throughout organizations, thereby improving their ability to keep up with any organizational or personnel changes that may occur.

In order to create a learning organization, one in which frequent knowledge sharing is encouraged and the ability to effectively do so is optimized, Garvin et. al.⁷ describe three essential pillars that are required. These are a "supportive learning environment, concrete learning processes, and leadership that reinforces learning".⁷ The supportive learning environment is essential as it ensures that everyone feels comfortable asking questions to their colleagues, and any organizational uncertainties can be quickly cleared up. Concrete learning processes are very important in knowledge management, as it ensures that those in the organization who are creating the protocols and those in the organization who are trying to learn from the protocols are both on the same page. It makes the entire process of distributing knowledge more efficient by decreasing the overall variability and ambiguity of organizational learning processes. Finally, it is very important that the leadership in any organization encourages this learning environment. If leaders in the organization do not aid in the reinforcing of knowledge management, the top-down effect will be less success in any knowledge sharing initiative. As Zipperer describes in her textbook on 'Knowledge Management in Healthcare', "A learning culture develops when leaders decide that new patterns to thinking and acting are essential for the organization . . . Leaders should engage others to create organizations ... where employees excel at creating, acquiring and transferring knowledge".⁴

Learning organizations must partake several activities to successfully engage in knowledge management. These activities include, systematic problem solving; experimentation with new approaches; learning from their own experience and past history; learning from the experiences and best practices of others; and transferring knowledge quickly and efficiently throughout the organization.⁸ When partaking in organizational problem-solving, it is very important that a system is in place and closely followed as this will ensure that in the future, if similar problems are encountered, workers in an organization can effectively glean from the wisdom and experience of their colleagues. On the same token, experimentation with new approaches is important in learning organizations as there is a constant influx of new knowledge that can be applied to organizational practices to make them more efficient. Overall, learning organizations are best geared to carry out new knowledge management initiatives because the systems that they have in place encourage rapid transfer of knowledge throughout the organization.

Organizational leaders should lead the initiation of knowledge management initiatives and foster the learning culture. To do so, these leaders must have a particular set of personal characteristics to encourage this transformation in the organization. Balik and Gilbert

1084 together describe four characteristics that enable leaders to create change: “1) A personally hold passion for healthcare. 2) Consistency in words and actions, authentic, humble. 3) Intelligence, eager to learn, reflective. 4) A genuine concern and trust in others”.⁹ Tangible passion in leaders is essential, as their passion for healthcare trickles down through the organization and fuels interest among employees in incorporating organizational changes, to better deliver quality care. Consistency amongst leaders in their words and actions is crucial when leading any knowledge management initiative, as this enables the quick transfer of knowledge that comes with these initiatives. The ability for leaders to quickly learn and reflect is essential as it ensures that they will be able to adapt to new information and adjust the organization-wide messaging to reflect this new knowledge in a way that puts everyone on the same page. The capacity of a leader to trust others is imperative when leading a learning organization and fostering a learning culture, as a leader’s confidence empowers employees with their own feelings of confidence, enabling them to more quickly be able to learn and adapt to new knowledge. The following are success factors that transformational healthcare leaders introduce to their organizations: “A constant focus on patient care combined with disciplined action; an ability to challenge the status quo while maintaining a future orientation; an eagerness to engage everyone; an atmosphere of teamwork and problem solving; an ability to develop the talents of others”.⁴ These factors all culminate in an organization that is poised with a culture that encourages knowledge sharing. Altogether, while leaders are important in kick starting efforts to create learning organizations, the success of new knowledge management initiatives is dependent on the entire organization’s ability to efficiently share knowledge in a systematic fashion.

STARTING KNOWLEDGE MANAGEMENT INITIATIVES

For organizations to start knowledge management initiatives, equally important to fostering a culture of knowledge sharing is attaining an understanding of how to effectively start knowledge management initiatives. If not done properly these initiatives may fail to take off and, though well-intentioned, can result in organizations shutting off further interest to any potential future knowledge sharing initiatives. The following section provides a thorough look into how to build successful knowledge management programs that shape how organizations conduct knowledge sharing.

As has been explored in earlier sections, without proper knowledge management programs in place, organizations have tendencies to exhaust resources through inefficient policies. These result in delays of delivering services, as employees are met with similar problems that previous employees have faced, but information on these lessons has not been appropriately communicated. In a hospital setting, it is even more imperative that proper knowledge sharing initiatives are installed, as the stakes are arguably even higher than in

other institutions. As Zipperer mentions, “In a hospital, the delay in improvement, or possible worsening of care due to a lack of optimizing ‘what the knowers know,’ could adversely impact those who have entrusted their lives or the lives of their loved ones to the organization”.⁴ This highlights a very important aspect of knowledge management, by optimizing the care a hospital provides by implementing “what the knowers know” into new initiatives for healthcare, hospitals and their doctors are adhering to their missions of providing the best possible quality of care to the patients who are dependent on their services. With a proper understanding of the importance and the scope of knowledge management programs, organizations can go about planning and starting these programs with the right mindset.

Part of the mindset that organizations must adopt when starting up new knowledge management initiatives is that there is a level of complexity when trying to implement them. One of the biggest contributors to this complexity, especially in the realm of healthcare, is that employees have become accustomed to frequent new initiatives aimed at improving different aspects of the organization. Without proper communication of the reasoning behind the initiatives, employees are tasked with immediately changing the way to conduct certain practices. When done in combination with infrequent updates on the results of such changes, results in employees feeling discouraged and often frustrated with any new initiative that is introduced.¹⁰ In a setting such as healthcare, doctors, nurses, and administrative staff all want to feel that their day to day efforts and cooperation with new programs is leading to improvements in the ability of their hospital to provide high quality care to the patient population. In order to prime an organization for the maximal benefit of a knowledge management initiatives, Zipperer noted, “participants must understand the context of the requested change. New initiatives need to be distinguished from past programs in order to demonstrate why the new initiative will be successful in contrast to former failed attempts”.⁴ In the case of knowledge management programs, proper communication needs to be relayed as to the importance of knowledge management towards optimizing delivery of new information, and the overall ability for the organization to deliver its services to its customers. Employees should also understand how these new initiatives will help them. This includes citing examples of how knowledge sharing can serve as a way to help people encountering similar problems communicate solutions to one another. Ultimately, while fatigue from implementation of new programs can add complexity to starting new knowledge sharing initiatives, proper communication throughout the organization as to the reasoning behind these new initiatives can ameliorate much of this complexity.

This leads us into the key strategies for starting knowledge management initiatives. In a healthcare setting, when starting communications about the need for knowledge management initiatives, Riege describes that need for knowledge sharing improvements should

be communicated within the context of benefiting patient safety and quality of care.¹¹ After the initial communication has gone out, organizations should take some time collecting and receiving input from employees as to how to shape the programs and what initiatives should be prioritized. It is very important that organizations take as much time as needed to fully determine the current knowledge sharing state, as this will determine how they build their knowledge management initiatives. Zipperer outlines three essential steps that organizations should follow when identifying the current knowledge sharing state: 1) Determining what exists and where the gaps are, 2) Considering and collecting real-life examples, and 3) Defining and recognizing context.⁴ First, it is important for organizations to get an understanding of how communication of current protocols and any new revisions is being handled, within the different departments and divisions. This involves surveying employees regarding both the forum through which procedural updates come (i.e. email, memos, or during meetings), as well as any current problems they have with the current system of problem-solving. By finding where the gaps in knowledge sharing are most prevalent, organizations can quickly pinpoint which areas knowledge management initiatives need to prioritize. Second, once the initial survey has gone out and adequate responses have been collected, it is important for organizations to highlight to their employees what their own colleagues have identified as needed areas of improvement. By providing these examples, people throughout the organization can attain an understanding of the importance of implementing effective knowledge management initiatives. Third, in order to effectively assess the current knowledge management state, it is important to recognize the context and define it in a way that the entire organization can understand. Zipperer outlines that “Conducting group interviews, conducting a team-focused assessment, and employing social network analysis tools” can all be effective ways of doing this.⁴ These methods can be effective in establishing the context of how organizational knowledge sharing occurs, which similar to before, can help organizations in determining how to best allocate resources when starting new knowledge management initiatives.

After steps have been taken to conduct an intake of the current gaps in knowledge and priorities for new knowledge management initiatives have been set, creating the right team to carry out the implantation of the program is essential.¹² Zipperer outlines strategies that can be utilized towards building this team, “1) Engaging leadership, 2) Identifying champions, and 3) Trumpeting early findings/successes”.⁴ First, by connecting knowledge management initiatives to the organization’s mission statement and relating the potential results of effective knowledge sharing to potential improvement in the organization overall, leaders throughout the organization will be interested to offer their support and encourage others to support the movement. Second, it is important to identify champions in the organization who can help

possess the necessary knowledge of organizational procedures, can point out the flaws of certain new initiatives, and can help build out the context of these initiatives within the values of the organization.¹³ Third, it is important to relay early findings and successes to the entire team. This can help motivate people in the organization who have not yet contributed to the initiative to start helping out.¹⁴ By showing to the entire organization on a consistent basis that the knowledge sharing initiatives are yielding benefits, more people will be excited to join the cause. As Zipperer writes, “Even the most emergent successes should be broadly shared with champions through the organization and, when appropriate, more publicly. Storytelling can serve as an effective tactic to spread news of success”.^{4,15} This approach of spreading successes to the team as soon as they occur will be very helpful in engaging the support of the organization and get everyone excited about the possibilities that future knowledge sharing initiatives can bring. Building out a team of champions and using them to engage the support of the entire organization will ultimately greatly improve the chances of successful implementation of knowledge management initiatives.

As organizations determine champions who can work to engage the entirety of the organization in joining the new initiatives, it is important to make sure that the team is a multidisciplinary team that is a manageable size and has members who appreciate working with one another. After determining who will be a part of the core team, leading the integration of knowledge sharing programs, it is important that the members of this team are appropriately assigned a focus for their contributions.¹⁶ The three methods of how these assignments can be made in order to improve the odds of the team successfully creating and implementing knowledge management programs: 1) Building a mental model around what a team is, 2) Partnering with Human Resources, and 3) Articulating requirements needed to get the job done. First, when building a mental model of what a team is, it is essential that every member of the team has bought into the mission of the focus group; everyone should be fully cooperative and enthusiastic to create new knowledge management procedures and integrate them into the workplace. This is very important to the success of the team, as everyone should feel that their viewpoint is valid and should be motivated to contribute their thoughts towards building out the best possible knowledge sharing programs. Second, partnering with Human Resources (HR) can be incredibly helpful in successfully implementing knowledge sharing programs as HR can create specific requirements that make sure that people are using knowledge sharing procedures in their work, ensuring that employees in an organizations are accountable for their adoption of knowledge management, and by creating policies that ultimately encourage knowledge sharing.⁴ Third, it is important that the team clearly defines the what is needed to successfully complete the creation of knowledge management initiatives. By taking the time to collect thoughts on the knowledge gaps that exist in

1086 the current organization, teams can prioritize which knowledge sharing programs should be focused on and implemented in the shorter term. Here, the teams can also determine which programs would be easier to implement and which could be introduced at a quicker rate than others. Engaging in these discussions will make sure that resources are properly allocated and that the knowledge sharing initiatives can be rolled out and implemented in a timely manner, keeping with the expectations of everyone within the team and the organization at large.⁴ Altogether, building a multidisciplinary team ensures that knowledge management initiatives take multiple views into consideration and are built in ways that can maximize their chances for success.

After taking the time to assess the current knowledge sharing state, and building a multidisciplinary team of champions that can engage others in the organization, the last phase of developing successful knowledge management initiatives is developing methods for knowledge sharing that utilize a communication tool that works for everyone in the organization. Zipperer outlines three main points to consider when building the communication process, “1) Identifying and committing to a sharing process that has minimal impact on daily work, 2) Selecting tools that make sense, and 3) Leveraging an existing wiki or intranet site”.⁴ By creating a sharing process that has minimal to no impact on an employee’s daily work, the chances of knowledge management being successfully practiced increases exponentially. When taken with the above point that employees eventually become weary after multiple new programs and initiatives that can be time-consuming and distracting to comply with, the welcome change of a program that brings benefits with minimal distractions from work can be enticing for many. In line with this point is the importance of selecting a communication tool that is easily accessible to all employees. The more unwieldy a tool is for someone to use, the less likely they are to use it. Especially in the case of hospital work, where buy-in of clinicians will be essential, simplifying the tools they need to use is very important.¹⁷ When unveiling any new technology that has been deemed necessary for the success of a new knowledge management initiative, proper guidance on how to use the technology has to be relayed to the entire team, as well as communication as to how exactly the technology fits into the context of better, organization-wide knowledge sharing. Finally, leveraging an organizational intranet site as the central location to display all of the success stories that were discussed earlier can be highly effective as a communication tool. This can be the method of connecting the entire organization with updates on how the knowledge management initiatives have been going, and keep everyone in the loop as to improvements that have been recorded as a result of the new programs. This can again serve as motivation for employees in all levels of the organization to get involved, as excitement builds on the potential that better knowledge sharing brings to everyone. Creating places on the intranet for discussion forums regarding the implementation of knowledge

management programs can help the entire organization feel additionally invested, as everyone has a chance to feel that his or her voice has been heard and contributed to an aspect of the new initiative. Ultimately, by adopting a top down approach and recognizing the importance of engaging people at all levels of the organization in implementing new knowledge sharing initiatives, these programs can be successfully built and implemented in ways that benefits everyone involved.

HOW TO MEASURE KNOWLEDGE SHARING EFFECTIVENESS

One of the most important aspects highlighted above when starting knowledge management programs is building effective methods of measuring the effects that these programs have on the ability of employees within the organization to communicate new knowledge and updates on protocol with one another, as well as their effect on the overall productivity of the organization. It is imperative that the correct approach is taken when trying to measure the effectiveness of knowledge management programs, as incorrect information can make employees wary that the program itself may be inefficient. The information provided to the organization, measuring the effectiveness of new knowledge sharing initiatives, should be relayed in a way that is credible and easily understandable by everyone who reviews it. The following is a detailed account into how organizations should properly assess the success of any knowledge sharing initiative.

The first point that is important for organizations to understand when beginning to measure how well a new knowledge management initiative is performing is that the process itself can be very difficult for a number of reasons, many due to the nature of tacit knowledge itself which is at the core of knowledge management. Tacit knowledge, by its nature, is intangible and difficult to measure upon initial inspection. Zipperer has described, “Tacit Knowledge, which represents the social and adaptable knowledge vital to collaboration and patient-centered care, is harder to quantify and capture”.⁴ In order for knowledge sharing to be measured, it requires that organizations to think outside of the box when creating innovative methods.¹⁸ Part of what makes tacit knowledge difficult to measure is the fact that it is passed on through many different forums of communication. Tacit knowledge is exchanged through more observable actions and not articulated ones, such as both “experientially driven behavior” or “expression of thought through language”.¹⁹ This contributes to the elusive nature of tacit knowledge and to the difficulty of engaging in discussions about knowledge management. It is therefore essential that tacit knowledge is well defined within organizations. In order to do this, tacit knowledge must first be translated into “written verbal or observed processes so that it becomes explicit, tangible, transferable, and measurable”.⁴ This ensures that communication about tacit knowledge is clear organization-wide, contributing to the consistent and clear messaging that will be delivered to the team.

A way to successfully translate tacit knowledge into more

measurable explicit knowledge form is through the use of a knowledge audit.⁴ Zipperer outlines four key aspects of organizational knowledge sharing that a knowledge audit is able to determine 1) the current state of knowledge sharing pertaining to how widespread is organization-wide sharing; 2) Who are the experts that have most of the knowledge that needs to be disseminated, and how well have they done in spreading what they know; 3) are there sizeable gaps in the current state of knowledge within an organization, and if so, within what specific areas of the organization do those gaps exist; and 4) how can follow-up measurements of knowledge sharing be effectively coordinated. While carrying out this sort of knowledge audit is very useful when collecting information on the knowledge sharing status during the creation phase of new knowledge management initiatives, it can be even more effective when deployed soon after the new initiative has been implemented as a way to get back data on whether knowledge sharing has indeed improved since the new programs have been integrated into the organization.

Another important aspect of tacit knowledge is to keep in mind that it is deeply rooted in the social interactions between colleagues. Because of the social nature of knowledge management, the appropriate channels should be leveraged when trying to build an understanding of how knowledge sharing occurs between people. There are three forums for knowledge sharing which can be used when measuring knowledge management: 1) social networks, 2) knowledge harvesting, and 3) communities of practice.⁴ When assessing social networks, Liebowitz has suggested using social network analysis tools such as questionnaires, surveys, and interviews, as well as utilizing the services of actors, in order to understand how organization-wide communication is handled.²⁰ This also helps build an understanding of which leaders within the organization are considered to be the chief disseminators of knowledge. Based on feedback from social network analysis, certain people and groups of interest can be pinpointed as needing improvement in their sharing of knowledge. Knowledge harvesting, on the other hand, makes tacit knowledge more tangible through the use of interviews that can serve to highlight key aspects of the day-to-day knowledge sharing that occur, which are difficult to pick up from normal questionnaires. These interviews are usually conducted with long-term employees who are leaving the organization, as a way to make sure that their knowledge is appropriately documented and their thoughts can be distilled for the rest of the organization to use.²¹ This is beneficial to the entire organization as knowledge is appropriately shared and it prevents a potential “brain drain” if the employee eventually does leave the organization. The third method way to record knowledge sharing by leveraging the social aspect of tacit knowledge is through communities of practice (CoP). CoPs are groups, that can be a variety of sizes, who share and create knowledge that is shared quickly throughout the group. The benefits of having such groups has been shown to improve the delivery of

care in hospital settings.²² Zipperer describes how CoPs are effective when trying to measure knowledge sharing in an organization as: “CoPs provide opportunity and means for researchers to disseminate findings quickly to interested individuals who in turn apply the research in the real world. Results from implementation then inform further research elements of open communication, mutual interest, negotiation, and trust contribute to the success or failure of the process. This method accelerates the research to practice and practice-informed research paradigms, while providing valuable data from research, funding, real-world application and outcomes measurement.”⁴

In order to build a thorough understanding of the knowledge sharing status within the organization, three knowledge discovery tools should be utilized, namely content analysis, text mining, and ontology application.⁴ Content analysis refers to building context of knowledge based on analysis of words used in reports.²³ This allows researchers to discover the specific terminology that is used when conducting knowledge sharing, and allows them the opportunity to find areas for improvements in relaying of information. Text mining, on the other hand, delves even deeper by determining the number of times certain terms are used and giving them value-weighted numbers based on the which terms are used more than others. Text mining is effective in capturing context and experience in healthcare.²⁴ Lastly, ontology application is a third very useful tool for knowledge discovery. Ontologies themselves are terms that are used to group separate concepts together under one umbrella. By applying ontologies into knowledge management initiatives, organizations can help take tacit knowledge and connect it to other concepts in ways that are “collectively accessible” and “applicable”. This is very important, especially in the realm of medicine and healthcare, as tacit knowledge that is not properly distinguished to an entire care team can result in miscommunication or inefficiencies that affect quality of patient care. Ontologies, when applied in this example, can help unify the team in their understanding of different concepts related to the delivery of patient care.²⁵ Altogether, knowledge discovery can be successfully practiced when content analysis, text mining, and ontology application are used in tandem to help build out a team’s understanding of how knowledge sharing is conducted and the effects that new initiatives are having on the ability of a team to perform knowledge management.

HOW TO BECOME A KNOWLEDGE WORKER IN HEALTHCARE

The most empowering aspect of knowledge management is that, while it tends to be introduced in organization-wide initiatives, everyone has the ability to start engaging in knowledge sharing and becoming knowledge workers. As long as employees have an understanding of the steps that are required to practice knowledge management, they can start actively participating as knowledge workers within their organizations. It is important however that people who work in healthcare organizations also understand the interactions between tacit knowledge and healthcare.⁴

1088 It is very helpful to take the time to explore how different people within healthcare organizations can engage in knowledge sharing, as their experiences can help build the platform for others to similarly engage in the practice of knowledge management. In this section, we will focus primarily on the roles of Case Managers, Hospitalists, Nurses, and Patients as knowledge workers, but by the end of this section, you should have an understanding of how anyone who is involved in the healthcare industry can effectively practice knowledge sharing.

Case Managers play a very important role in healthcare as knowledge workers. They work as advocates for the patients in identifying their needs and serving as a hub for the patient's care, connecting patients to a variety of healthcare practitioners as well as entities related to their care that exist outside the realm of healthcare (i.e. financial institutions, social workers, and insurance providers).⁴ Because of their multifaceted roles in the healthcare delivery process, they possess unique knowledge built from the time they have spent both with the patients and with the rest of the healthcare industry. They have the ability to help patients decide what is the best course of action based on their conditions and necessary medical care. For this reason, it is important that Case Managers share their knowledge both with other Case Managers, as well as others who they interact with.

Hospitalists have tremendous roles to play in engaging with knowledge sharing practices. They manage a patient's care after the patient has been admitted to the hospital for any number of conditions or medical problems. They work with other clinicians, engage in the reading and interpretation of the patient's past medical charts, and take charge in determine the patient's medical plan. Hospitalists will engage in sharing of knowledge when the patient is discharged from the hospital, as they help explain to the patient the prescribed medical treatment plan. These instructions must be given using terminology that the patient understands, while also helping the patient become accustomed to the medical terminology of their current or treated medical condition.^{4,26} Because of their position, working within multidisciplinary teams and coordinating many different types of healthcare workers, hospitalists can serve as the ideal knowledge worker, helping to engage everyone in making sure that communication is clear and knowledge is being properly shared amongst all necessary channels.

Nurses serve a crucial role in knowledge sharing within a healthcare setting because of their close interactions with both the patients and the physicians. They can observe every day where miscommunications are occurring and possess an acute understanding of how this miscommunication can result in frustrations on both sides. It has been seen that because of their close interactions with patients, "the perception of trust and shared vision by nurses has been shown to positively influence knowledge sharing".^{4,27} This makes sense because if patients feel comfortable with their nurses and trust them, they will be more likely to engage in sharing

of knowledge with their nurse that can help in ensuring that the best care is delivered.

It can be empowering to learn that patients themselves play a very large role in knowledge management within healthcare organizations. For this reason, patients must be sure that they ask all of the necessary questions, clear up anything they do not understand with their nurses and doctors, and make sure that they are getting the most out of their healthcare experience. Patients should feel that they are "in the loop" so to speak when care is being delivered. This helps ensure that the patient's needs are held first and foremost as the highest priority when care is being delivered. For this reason, the patient must make sure that they elucidate, in their own words, exactly what they are going through, and the physician must make sure to document the patient's description of their present condition in exactly those same words. This ensures that the knowledge has been properly shared and the doctor has a good understanding of what the patient is going through.

In total, the though four roles have only been covered in this section, healthcare itself has many different roles, where everyone should feel empowered to begin working as a knowledge worker. By taking extra time to make sure that goals are properly communicated, assignments are clearly worded, and different terminology for similar concepts are cleared up, organizations can make dramatic improvements before starting massive organization-wide knowledge management initiatives.

CONCLUSION

The principles of knowledge management are thoroughly applicable in medicine. Tacit knowledge, which is at the center of knowledge sharing, is very potent in its ability to cause miscommunications when not properly shared within an organization. If it is shared in an open forum that is very accessible however, it can also help organizations in building up their knowledge base by sharing the experiences of long-time employees. By taking the time to learn about knowledge management, workers in medicine and healthcare can position themselves and their organizations to be successful for many years to come. By taking the time to build a learning culture, one that values knowledge management, organizations will be prepared to quickly adapt, regardless of whatever changes that come in the future. Learning the important role that each one of us plays in a knowledge management-based system empowers everyone, especially in healthcare organizations where uniting every team member's focus ensures the highest quality of care is given to patients. Healthcare is an incredibly dynamic field that requires an equally dynamic school of thought-sharing in order to maximize the benefits that organizations bring to patients. Healthcare organizations and leaders in these organizations should take the time to learn more about knowledge management, assess the knowledge gaps in their organizations, build new knowledge sharing initiatives, foster the culture of a learning organization, and communicate successes from the new initiatives early

and often. If done well, knowledge management initiatives can empower everyone within the organization, and improve the organization's service-providing capacity moving forward.

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