Knowledge Management in Health Care

Janet Guptill

It is a long-term, sustainable commitment to changing the culture of health care to become more collaborative, more transparent, and more proactive. Knowledge management, implemented well, will transform the health care delivery system over the next few decades, into a more cost-effective, error-averse, and accountable public resource. For the sake of simplicity, this article will limit the application of knowledge management principles to the context of hospitals, hospital systems or associations, or other groupings of hospitals based on a common interest or focus. The field of knowledge management has tremendous application and value to the health care industry, particularly for hospitals and hospital systems. For many who have invested in a knowledge management infrastructure, it has become the measure of value of belonging to a hospital system or membership organization. Key words: *knowledge management, information, system, performance.*

KNOWLEDGE management is a contemporary business philosophy that represents the logical extension of three basic trends:

- The increasing amount of digitized information—text, pictures, audio, video—and the Internet's ubiquitous presence that makes this information readily available 24/7;
- The globalization of business such that production can occur anywhere in the world and it is the knowledge of how to make products "better, cheaper, faster" that is the true source of competitive advantage; and
- The growing complexity of modern business that requires new business processes to deliver "the right information at the right time" in order to ensure accountability and reduce the risk of mistakes.

In other words, there is more "stuff" out there to process; our ability to process mass quantities of information efficiently is what defines success; and processing information correctly requires that the context be considered in addition to the information so that we make appropriate judgments in our work.

Since the early 1990s, various businesses have embraced, defined, and evolved "knowledge management" into a discipline that focuses on bringing together people, processes, and technology in a systematic way such that the "knowledge needed for an organization to succeed is created, captured, shared, and leveraged."[1] Names of companies that have become known for their application of knowledge management principles include IBM, Hewlett Packard, Texas Instruments, Chevron, Shell, British Petroleum, Pfizer, Buckman Labs, and Chaparral Steel.

Health care is not immune to these same pressures:

- More stuff—*Digital Medicine* is Jeff Goldsmith's latest book, the most prominent "futurist" and opinion leader in the health care industry. Capturing, cataloguing, and retrieving clinical information affecting patient care

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decision making is the most critical issue facing most health care providers today.

- Globalization—Health care is delivered locally, but national standards of "evidence-based medicine" are emerging, and health care providers are increasingly expected to report on how they are performing compared to national standards of quality of patient care.
- More accountability—The Institute of Medicine called for reform of the health care delivery system by drawing attention to the alarming rate of medical errors in hospitals, where mistakes are made because of inadequate processing of critical knowledge at the point of care.

Knowledge management in health care is "aligning people, processes, data and technologies to optimize information, collaboration, expertise, and experience in order to drive organizational performance and growth" according to a current knowledge management special interest subgroup of the Healthcare Information & Management Systems Society (HIMSS), a multidisciplinary group of health care IT professionals, clinicians, managers, and consultants grappling with the application of the knowledge management discipline to the health care industry.

Applying Knowledge Management to Health Care—a Framework

For the sake of simplicity, this article will limit the application of knowledge management principles to the context of hospitals, hospital systems or associations, or other groupings of hospitals based on a common interest or focus. In my consulting practice, "knowledge management" has at times felt too passive to hospital system clients and they have instead preferred terminology such as "knowledge transfer for performance improvement" to indicate that the value of knowledge management is in its application and its ability to impact organizational performance in a positive way.

In health care we have the luxury of learning from the experiences of other industries as we conscientiously apply the principles of knowledge management to improve the clinical and operational performance in today's hospitals. In this context, I see five major components of knowledge management as this discipline is applied to health care:

1. Communities of practice;
2. Content management;
3. Knowledge and capability transfer;
4. Performance results tracking; and
5. Technology and support infrastructure.

Communities of Practice

Knowledge management is more than the centralized repository of data, documents, and other information. Knowledge management encompasses the social context of others' experiences and the "lessons learned" in the process. Therefore, it is essential to include the concept of collaboration among individuals with a shared common, purpose, or interest when discussing how knowledge is shared, used, and communicated. Etienne Wenger is considered the leading practitioner in the area of "communities of practice" and his book, *Cultivating Communities of Practice*, is considered the authoritative source on this concept of communities and

their role in transferring knowledge in a social and business context.

In the hospital system setting, communities might consist of individuals with similar roles across an organization, *e.g.*, the directors of pharmacy for the hospital system members; or with similar business issues, *e.g.*, education and learning managers among the various member hospitals; or it may have been created to address a specific business or clinical care issue and exist as a multidisciplinary work group or team to address a compelling topic, *e.g.*, the care of patients on anticoagulant medications in the hospital setting.

The goal of a knowledge management program as it relates to communities of practice is to codify the process of how a community is "chartered," *i.e.*, how membership is defined, key roles to be filled, preferred communication styles, and the purpose of the group as it relates to organizational objectives. Once a community activation process has been defined, progressively more communities can be activated or chartered, and eventually that becomes the way business is conducted, issues are addressed and resolved, and knowledge is gained and shared.

Content Management

Core to a knowledge management strategy is to develop a centralized knowledge "library" with various "layers" of information, such as corporate policies and procedures; organizational resources, such as directories, performance reports, or HR tools and forms; and community specific resources, such as membership lists, work process templates, or project management tools.

Developing a valuable content repository to facilitate knowledge exchange requires a thoughtful plan for determining the types of content to be published, levels of security access, publishing formats, and processes for ensuring that the content posted is accurate, up-to-date, and consistent.

This step also entails developing a communications plan for marketing the knowledge base throughout the organization, utilizing both "push" and "pull" strategies for disseminating information, and developing a schedule for refreshing the content so that employees and other associates find a reason to continually refer to the knowledge library as a renewable resource.

Knowledge and Capability Transfer

Knowledge management can be distinguished from information management in that it is actionable and should result in changed behavior as a result of knowledge sharing. Knowledge transfer should spark innovation, operational process improvement, and enhanced patient care. The act of transferring knowledge in a manner that results in new behavior can be compared to the process of diffusion of innovation within or across organizations. Everett Rogers is the leading researcher on this topic and in his book, *Diffusion of Innovations*, he describes the various phases of innovation adoption as well as the critical success factors for accelerating the rate of adoption or diffusion of an innovative idea or product.

Innovation adoption or "spread" is getting a fair amount of attention lately, for example from the Institute for Healthcare Improvement (IHI), which is seeking to start up a new hospital collaborative specifically on the notion of "spread" or effective and efficient diffusion of new clinical practices. Paul Adler at the University of Southern

California has also conducted research into the unique characteristics of how clinical practices are "spread" within or across hospitals, taking into account the unique relationships between hospitals, physicians, payors, and consumers in the health care system.

Thus, related to knowledge transfer is the idea of skills or capability transfer, in that hospitals must have a way to identify how to teach people new skills if that is needed to adopt the new behavior; hence, the connection to elearning and other educational programming tools, leadership development programs, and other HR practices that hire, motivate, train, and develop the set of skills necessary to apply the knowledge gleaned through successful transfer of "best practices" or other standards of performance excellence.

Performance Results Tracking

In order that organizational activity results in improved organizational performance, there needs to be a rigorous results tracking capability incorporated into a successful knowledge management program. Classically there are three types of measures that are tracked as a result of an on-going knowledge management program:

- Outcomes measures that reflect attainment of financial, clinical, or operational performance targets;
- Process measures that track activity that is expected to yield results, such as the number of participants in communities of practice, the quantity and quality of knowledge sharing activities, and the depth of organizational involvement in knowledge sharing processes; and

- Satisfaction measures that track improvements in employee attitude, physician engagement, and consumer satisfaction with the care process.

The performance results tracking component should incorporate a broad array of metrics instruments, such as surveys, transaction data analysis, and outcomes data interpretation.

Technology and Support Infrastructure

Web-based technology is a tremendous enabler of knowledge management, in that it simplifies the collaborative process, makes knowledge instantly available on a global basis, and provides the structure for publishing content in a searchable form for knowledge capture and re-use.

In March 2001, Etienne Wenger completed a comprehensive review of software products that support communities of practice, categorizing them into these types of enabling technology tools:

- Knowledge bases (content management tools such as Documentum);
- Access to expertise (many incorporated into email tools such as AskMe);
- eLearning spaces (ranging from interactive collaboration tools such as Blackboard to learning management systems such as HealthStream);
- Synchronous interactions (online Web meetings such as WebEx or NetMeeting);
- Discussion groups (ranging from simple listservs to asynchronous discussion boards, products include WebCrossing and Prospero);
- Web site communities (linking people to people as well as to documents, tools

like Communispace or, while not mentioned in Wenger's list, NewSof);

- Project spaces (many of which are linked to Outlook email and incorporate shared folders and project management tools); and
- Knowledge workers' desktop tools (customizable Web portals such as Plumtree).

The full white paper is well worth reading, and can be purchased from his Web site or made available through membership in CP-Square, the community of practice for communities of practice at *www.cpsquare.com.*

Implications for Health Care Providers

The field of knowledge management has tremendous application and value to the health care industry, particularly for hospitals and hospital systems. For many who have invested in a knowledge management infrastructure, it has become the measure of value of belonging to a hospital system or membership organization. As one hospital system CEO has said, "Knowledge transfer has become a strategic imperative; it is no longer a nice to have, it is a must have."[2] As another CEO has put it, "KM allows us to deliver the wisdom of the whole system to every individual hospital decision."[3] Other hospital systems and organizations that are leading the pack on the application of knowledge management to today's business and clinical decision making include such industry leaders as Ascension Health, CHRISTUS Health, Partners HealthCare, and UTMD Anderson Cancer Center.

Software and data companies that recognize the power of knowledge management as a tool for leveraging and sharing the intellectual capacity of their customers include Siemens Medical Solutions, Cerner, Solucient, Healthcare Management Council (HMC), and Press Ganey. These companies have online communities for their customers, incorporate rules-based engines in their products, and continually look for ways to package renewable knowledge into their product delivery and support.

Knowledge management is not a short-term quick fix. It is a long-term, sustainable commitment to changing the culture of health care to become more collaborative, more transparent, and more proactive. Knowledge management, implemented well, will transform the health care delivery system over the next few decades, into a more cost-effective, error-averse, and accountable public resource.

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