Chapter 1.18
Knowledge Management in Hospitals

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ABSTRACT

The medical field in recent years has been facing increasing pressures for lower cost and increased quality of healthcare. These two pressures are forcing dramatic changes throughout the industry. Managing knowledge in healthcare enterprises is hence crucial for optimal achievement of lowered cost of services with higher quality. The following chapter focuses on developing and fostering a knowledge management process model. We then look at key barriers for healthcare organizations to cross in order to fully manage knowledge.

INTRODUCTION

The healthcare industry is information intensive and recent trends in the industry have shown that this fact is being acknowledged (Morrissey, 1995; Desouza, 2001). For instance, doctors use about two million pieces of information to manage their patients (Pauker, Gorry, Kassirer & Schwartz, 1976; Smith, 1996). About a third of doctor's time is spent recording and combining information and a third of the costs of a healthcare provider are spent on personal and professional communication (Hersch & Lunin, 1995). There are new scientific findings and discoveries taking place every day. It is estimated that medical knowledge increases fourfold during a professional's lifetime (Heathfield & Louw, 1999), which inevitably means that one cannot practice high quality medicine without constantly updating his or her knowledge. The pressures toward specialization in healthcare are also strong. Unfortunately, the result is that clinicians know more and more about less and less. Hence it becomes difficult for them to manage the many patients whose conditions require skills that cross traditional specialties. To add to this, doctors also face greater demands from their patients. With the recent advances of e-health portals, patients actively search for medical knowledge. Such consumers are increasingly interested in treatment quality issues and are also more aware of the different treatment choices and care possibilities.

Managing knowledge in healthcare enterprises is hence crucial for optimal achievement of lowered cost of services with higher quality. The fact that the medical sector makes up a large proportion of a country's budget and gross domestic product (GDP), any improvements to help lower cost will lead to significant benefits. For instance, in 1998 the healthcare expenditure in the US was $1.160 billion, which represented 13.6% of the GDP (Sheng, 2000). In this chapter, we look at the knowledge management process and its intricacies in healthcare enterprises.

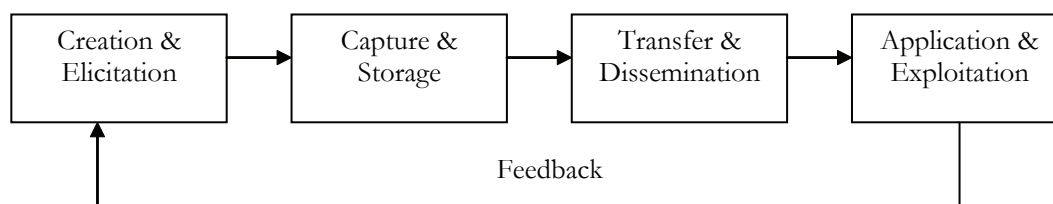## KNOWLEDGE MANAGEMENT PROCESS

Knowledge management from a process perspective is concerned with the creation, dissemination, and utilization of knowledge in the organization. Therefore, a well-structured process needs to be in place to manage knowledge successfully. The process can be divided into the following steps: beginning with knowledge creation or elicitation, followed by its capture or storage, then transfer or dissemination, and lastly its exploitation. We now elaborate on the various stages of the process:

Creation and Elicitation

Knowledge needs to be created and solicited from sources in order to serve as inputs to the knowledge management process. For the first scenario where knowledge has to be created, we begin at the root

— data. Relevant data needs to be gathered from various sources such as transaction, sales, billing, and collection systems. Once relevant data is gathered, it needs to be processed to generate meaningful information. Transaction processing systems take care of this task in most businesses today. Just like data, information from various sources needs to be gathered. An important consideration to be aware of is that information can come from external sources in addition to internal sources. Government and industry publications, market surveys, laws and regulations, etc., all make up the external sources. Information once gathered needs to be integrated. Once all necessary information is at our disposal, we can begin analyzing it for patterns, associations, and trends — generating knowledge. The task of knowledge creation can be delegated to dedicated personnel, such as marketing or financial analysts. An alternative would be to employ artificial intelligence-based computing techniques for the task such as genetic algorithms, artificial neural networks, and intelligent agents (Desouza, 2002a). Data mining and knowledge discovery in data bases (KDD) relate to the process of extracting valid, previously unknown and potentially useful patterns and information from raw data in large data bases. The analogy of mining suggests the sifting through of large amounts of low grade ore (data) to find something valuable. It is a multi-step, iterative inductive process. It includes such tasks as: problem analysis, data extraction, data preparation and cleaning, data reduction, rule development, output analysis and review. Because

Figure 1. Knowledge management process

| Creation & Elicitation | → | Capture & Storage | → | Transfer & Dissemination | → | Application & Exploitation |

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