Chapter LV
Knowledge Management for Healthcare:
Vision, Strategies, and Challenges

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ABSTRACT

During the last two decades there has been a revolution in both healthcare and information technology. As a result of the advances in healthcare, tremendous progress has been made in increasing life expectancy and in disease control. Simultaneously, advances in information technology has made possible for a healthcare stakeholder to have access to almost all existing health information available. However, as a result of these advances, physicians and other healthcare stakeholders are facing an information overload and, in some cases, paradoxical information. This chapter presents evidence for the fact that the inability of healthcare professionals to deal effectively with the information explosion has started to have an impact in terms of: (a) lives lost and affected adversely and (b) financial terms. Furthermore, this chapter argues that the healthcare sector is ignoring the potential impact of two new emerging revolutions (biomedical knowledge and genetic engineering revolutions) which have the potential to make irrevocable changes in the very nature of healthcare processes. This chapter presents evidence of how the synergistic interaction between the biomedical knowledge and genetic engineering revolutions is made further accentuating the information explosion in healthcare. This chapter then analyses the potential of knowledge management (KM) in alleviating the information overload in healthcare. The chapter examines the linkages between the building blocks of both: (a) KM solutions and (b) the process of medical diagnosis and treatment. The outcome of this analysis (i.e., examinations of these linkages) provides new insights to healthcare professionals on how to adopt KM to deal with the information crisis in healthcare.

CURRENT STATE OF INFORMATION MANAGEMENT IN HEALTHCARE

A recent study by (Desouza, 2004) noted that about a third of an average physician's time is spent managing information. This observation has been supported by other studies which have noted that, in the UK, an average physician spends about 25 percent of his or her time managing information and has to learn two million clinical specifics (The Knowledge Management Centre, 2000). In the UK, each physician receives about 15 kg of clinical guidelines per annum (Wyatt, 2000). A survey by Hibble, et.al on the amount of information present in an average UK General Practice found that practices generally had "855 different guidelines - a pile 68 cm high weighing 28 kg" (Hibble, Kanka, Pencheon, & Pooles, 1998). The above indicators validate the fact that the healthcare industry is information intensive and urgently requires a solution to the problem of information overload – a reality collaborated by a number of studies (Dawes & Sampson, 2003; de Lusignan, Pritchard, & Chan, 2002; Dwivedi, Bali, & Naguib, 2005; Gray, 1998; Hall & Walton, 2004). This situation is further aggravated by the synergistic interaction between the biomedical knowledge and genetic engineering revolutions (Dwivedi, Bali, James, Naguib, & Johnston, 2002).

IMPACT OF BIOMEDICAL KNOWLEDGE AND GENETIC ENGINEERING ON HEALTHCARE

An indicator of the impact of the biomedical knowledge and genetic engineering revolutions on healthcare is the exponential increase in biomedical knowledge in the National Library of Medicine's Medline database (4500 journals in thirty languages, dating from 1996) of published literature in health-related sciences. In 2002, Medline contained 11.7 million citations and, on average, about 400,000 new entries were being added per year (Masys, 2002). If a typical modern day healthcare stakeholder, who wanted to get updated with the current literature, was to read two articles a day, it would take him or her 550 years to get updated with the new literature added every year (the 400,000 new articles being added every year).

The calculations above ignore the existing literature level of 11.7 million items and also ignore the projected increase in the growth of new research. It is judicious to assume that not all the literature would be of relevance to a particular healthcare stakeholder. If we assume that about one percent of the new literature added every year is of relevance to a healthcare stakeholder, it would still take a stakeholder five years (reading an average of two articles a day) to be updated with the healthcare advances of one year. The information explosion is further compounded by the fact that biomedical literature is doubling every nineteen years.

It would appear that contemporary healthcare stakeholders are always lagging behind the current state of knowledge (Masys, 2002). This is validated by another study by Sharma, et. al (Sharma, Wickramasinghe, & Gupta, 2004) who have noted that, in 2004, there were about 20,000 medical journals published worldwide and that established researchers (such as a professor of medicine) have, at best, an average of one day a week to spend on reading research so as to remain abreast of current medical studies. More sobering is the implication of this fact. If leading researchers have so limited amount of time to remain updated, how updated is an average physician?

Advances in modern day genetic sciences are acting as a key driving force behind the development of pharmaceutical drugs and have augmented the number of potential drug compositions from a meagre 400 to over 4,000 in a very short time span (Pavia, 2001). The completion of the Human Genome project (the mapping of the entire human genetic code) is likely to further fuel the discovery