

## Chapter 5.13

# Knowledge Management in Telemedicine

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### ABSTRACT

*Knowledge management (KM) can be defined as the discovery and dissemination of new knowledge. It has also been defined as the efficient utilisation of the existing intangible knowledge-related resources available in every sector of the economy to enhance the productivity of all factors of production. Telemedicine is a tool to enhance equitable distribution of healthcare across the world. In this chapter the author discusses the various aspects of knowledge management and telemedicine and proposes to globalize telemedicine.*

### INTRODUCTION

Organizations all over the world are adapting to rapid changes in many ways, and an approach that has made significant contributions to the resurrection of postwar Japanese industry is Deming's philosophy of total quality management (TQM). Deming's TQM is indeed applicable to the man-

agement of Internet businesses and eminently suitable for telemedicine and data-mining projects in life sciences. The apparent complexity of the system may appear as a deterrent to many, but the inherent simplicity is clear on examination of the Deming charter points. Leaders of Internet business houses will derive rich benefits from applying Deming's TQM to their organization, while investors will find it comfortable to interact with such organizations.

There is an urgent need for healthcare professionals to be multiskilled. Doctors and nurses have to introspect periodically and adopt a plan for self-improvement that should include acquiring new knowledge, developing a positive mental attitude, and learning new skills to meet the rapidly changing health needs of people across the globe.

The methods of diagnosis and treatment of human diseases have altered significantly in the last decade. In the early 1990s, the first signals of change began to surface with patients expressing dissatisfaction and discontent with one or more

aspects of their care. Unknown to their primary-care physicians, they began to talk about their experiences with the hope that a degree of attitudinal change would emerge in some physicians, and permanent solutions to chronic health problems would start emerging. Direct patient-doctor communication was not in evidence, and institutions committed to healthcare chose not to encourage free discussions with their clients. This pattern persisted over the best part of that decade and led to strained communications between physicians and patients. This at one time resembled an estranged love affair, with neither party willing to move forward to resolve the conflict. However, before long, the Internet revolution became a phenomenon and made its presence felt in healthcare activities. Curiously, the initial recognition of the value of this phenomenon was made by suffering patients who realized the Internet was a handy tool to share their tales of woe amongst themselves and to obtain a degree of temporary relief and comfort. It was fortunate that some physicians had woken up to this phenomenon simultaneously and had begun to address the different scientific aspects in a proactive manner.

During the period of 1998 to 2000, the undercurrents of rapid information exchange were being felt, with different nations discovering its effects through a variety of experiences. Limiting the discussion on the influence of the Internet phenomenon on healthcare, we begin to see certain common patterns emerging across a wide spectrum of diseases across the globe, making data mining an exciting and profitable activity. The need is to automate:

- The right process,
- To the right population,
- At the right time,
- Through the right channel.

It is obvious that there are many elements of equal importance that have to be brought together in order to succeed at biomedical computing and

data mining. What then has to be done to amalgamate these elements into a single whole in order to begin the process of data mining? Simply stated, if we have a foolproof system and the necessary human intelligence, it is possible to build a data warehouse and then mine it into saleable data marts for global consumption. I believe that the global scientific community possesses both the system and the intelligence to do this successfully.

The purpose of this chapter is to highlight the capability of Deming's total quality management to provide the directions and impetus to establish a framework for data mining in life sciences, and to demonstrate through a simple application the different ways to apply Deming's 14 charter points in actual practice (Creech, 1995). The future possibilities are varied and some thoughts will be shared toward creating an international consortium for the research and development of telemedicine applications (Paraki, 2001).

## **THE CONTEXT**

In the last decade, observations of results of treatment with allopathy show it is incomplete and inadequate. This applies to both the outpatient and inpatient care of those with acute and chronic ailments. Patient dissatisfaction is evident in patients with chronic diseases such as arthritis, bronchial asthma, and many functional disorders like migraines, obstinate constipation, and irritable bowel syndrome. Furthermore, extensive interaction with professionals from other disciplines like management, IT, telecommunications, fundamental sciences, psychology, and philosophy has provided a solid basis for the development of holistic medicine as a preferred approach to the prevention and treatment of acute and chronic disease. This is keeping in tune with the current changes in developed nations such as the USA and those in Europe where holistic medicine is gaining popularity.

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