Chapter 12

A Stroke Information System (SIS):
Critical Issues and Solutions

Subana Shanmuganathan
Auckland University of Technology, New Zealand

ABSTRACT

Fundamental end user issues identified in the design stage of a Stroke Information System (SIS) for Hospital Information Management System (HIMS) in the secondary care and above phase of TACMIS[1], depict the 'gloomy trend' in introducing Information and Communication Technologies (ICT) to the health sector observed across the world and understanding this trend is vital to the future of eHealth '. TACMIS is a total, integrated and inclusive healthcare information system design solution that reflects DAITS[2] core ideas, namely, creativity, cutting edge and being global. In align with the architecture and concept.of the main system TACMIS, the subsystem HIMS-SIS design as well consists of functions that provide stakeholders and nonmedical professionals involved within a stroke special care unit practice, with access to information stored in this subsystem. The SIS functions are especially introduced to inform staff from the so called nonmedical professions in order to improve healthcare quality. This may also make improved treatment affordable for many if not all. At the end of this chapter, some initial investigations on how to transform large volumes of patient data into useful knowledge using intelligent information processing methodologies are outlined.

INTRODUCTION

Stroke Information System (SIS) design issues relating to the system's end users belonging to professions categorised as other than allied to medicine in TACMIS (in a stroke special care unit practice)

depict the general gloomy trend observed across the world in introducing Information and Communication Technologies (ICT) to the health sector and understanding this trend is vital to the future of *eHealth*. SIS is an integrated information system design being developed for Hospital Information Management Systems (HIMS) in the *secondary care and above phase* of TACMIS (see Figure 1

and for further details refer to Chapter 20). Self care: Patient Empowerment and Environmental Control System (PEECSS), and Community care: Socio-economic and Health Care Support System (SEAHCSS) are the other two phases (sub systems) and corresponding information systems of TACMIS. All these systems reflect DAITS core ideas, namely, creativity, cutting edge and being global. Hence, the main focus of HIMS-SIS initial design research was to identify the issues and then to formulate potential solutions, such as integrated information systems, models, and products to equip health sector professionals with concise and precise information on patient care. However, special emphasis was given to look into ways and means to equip the nonmedical staff with information that would be of use to bettering healthcare services relentlessly bearing in mind the rapid growth of the world's ageing population. Thus, the SIS design team in the initial stages of the design looked at the possibilities of including universal design (UD) principles for improving every aspect of the health sector, with an overall aim of delivering quality and efficient services at affordable costs to many ordinary citizens. The major issues encountered in introducing modern ICT capabilities to HIMS and SIS within a stroke special unit practice portray the issues in the whole of the health sector experienced in many countries such as, the United States, the United Kingdom, Canada, European Union countries and the Pacific Region supported by well-known corporate enterprises and is discussed in detail. Finally, the chapter concludes with some initial investigations into how heuristics, such as artificial intelligence, could be introduced to analysing large volumes of stroke clinical data for producing concise information for use by nonmedical staff.

TACMIS FOR STROKE CARE

Stroke care in recently introduced special unit practices is used for the initial prototyping and information system implementation of TACMIS as well as HIMS-SIS and the reasons for this are:

a.   Stroke care issues, such as disability, therapy, rehabilitation in nursing/care home setups, exemplify the basic healthcare issues associated with the rapid growth of the worlds ageing population, especially in the next two decades (for details see Chapter 20);

b.   Stroke in developing countries is rated as the second major killer next to heart attack by the World Health Organisation. Six million people die of stroke annually, whereas for heart attack the recent annual death rate is around seven million (World Health Organisation, 2006); and

c.   In developed countries, stroke is the third leading cause for death also raising significant concerns over the burden of the disease, such as long term care, on state and private healthcare institutions as well as insurers (Gordon et al, 2004; Sharma et al, 2005; Sharma & Gehring, 2004).

Stroke Special Unit Practice and Information Sharing

The special stroke unit practice introduced with an aim of providing inclusiveness, information integration and sharing is yet to serve all staff within the clinical professions of TACMIS. The stroke special unit features, such as information sharing and participation in decision making processes relating to patient treatment, progress and disease outcome, are achieved through some radical changes recently adapted by staff from professions allied to medicine. Such recent changes differ significantly in the way professionals allied to medicine perform their daily functions and duties in general. In this special unit practice, most of the staff, namely consultants, senior as well as junior medical registrars, nurses, speech and physiotherapists, all of them are present when an indoor patient's daily progress is assessed. In so doing any decision on a patient treatment or

Related Content

A Neuromorphic Robot Vision System to Predict the Response of Visual Neurons
Kazuhiro Shimonomura (2013). *Technological Advancements in Biomedicine for Healthcare Applications (pp. 193-199).*
www.irma-international.org/chapter/neuromorphic-robot-vision-system-predict/70861

A Measure to Detect Sleep Onset Using Statistical Analysis of Spike Rhythmicity
B.R. Purnima, N. Sriraam, U. Krishnaswamyand K. Radhika (2014). *International Journal of Biomedical and Clinical Engineering (pp. 27-41).*
www.irma-international.org/article/a-measure-to-detect-sleep-onset-using-statistical-analysis-of-spike-rhythmicity/115883

Information Imbalance in Medical Decision Making: Upsetting the Balance
Jimmie L. Josephand David P. Cook (2009). *Medical Informatics: Concepts, Methodologies, Tools, and Applications (pp. 1381-1394).*
www.irma-international.org/chapter/information-imbalance-medical-decision-making/26303

A Mirror Visual Feedback Therapy System Applying Virtual Reality Technology
Akio Gofuku, Satoshi Fukumoriand Kenji Sato (2013). *Biomedical Engineering and Cognitive Neuroscience for Healthcare: Interdisciplinary Applications (pp. 73-80).*
www.irma-international.org/chapter/mirror-visual-feedback-therapy-system/69907

Design of Low-Cost Solar Parabolic Through Steam Sterilization
N. K. Sharma, Ashok Kumar Mishraand P. Rajgopal (2021). *International Journal of Biomedical and Clinical Engineering (pp. 50-60).*
www.irma-international.org/article/design-of-low-cost-solar-parabolic-through-steam-sterilization/272062