Editorial Preface

JHISI: An Interdisciplinary Forum for Disseminating Healthcare Information Systems & Informatics Research and Practices

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Driven by advancing technologies and new forms of healthcare and clinical applications, the emerging field of healthcare information systems and informatics is still searching for coherent directing frameworks to advance healthcare and clinical practices and research. Conducting scientific inquiries into these areas is both promising and challenging due to a host of factors, including rapidly evolving technologies and their growing application complexity. At the same time, organizational issues, including technology adoption, diffusion and acceptance or failure as well as cost benefits and cost effectiveness of health IT investments are gaining attention among healthcare executives, vendors, providers, payers and consumers. IJHISI, the International Journal of Healthcare Information Systems and Informatics, is a quarterly, peer-reviewed journal addressing some of these emerging concepts, challenging dilemma and novel issues.

IJHISI aims to promote theoretical, empirical and applied research in healthcare information systems and informatics, including health information systems book and software reviews and relevant cases. The range of topics covered includes IT applications in various healthcare domains, medical informatics and clinical decision support systems, telemedicine, e-health, mobile healthcare, and nano-health, applied IT and health promotion research, health IT communities and healthy virtual work environments, health IT administration and services research, the management of healthcare technologies and special topics.

IJHISI is international in scope and will enable the dissemination of research findings, systematic reviews and cases to a wide audience. The focus of the journal is to bring together experts in public health, nursing, health administration and other clinical areas (e.g., medicine, epidemiology, pharmacy and genomics) interested in the applications of information systems theories, methods and applications, and advances in informatics. To this end, its ultimate goal is to generate new paradigms for developing health-related IT thinking in next-generation healthcare services delivery systems and environments.

Currently there are a number of “medically” focused journals and nursing informatics periodicals. These have tended to live within the medical/health domain, and while extremely valuable, have tended to focus on the clinical trial model and use of piecemeal approaches to bridge IT and healthcare applications. These journals have also tended to be dominated by clinicians rather than information systems professionals. Few, if any, peer-reviewed journals in healthcare IT and engineering have attempted to bridge the spirit of a truly interdisciplinary and integrated approach. IJHISI will be unique in the respect that it appreciates that each particular health domain must be seen within the larger context of health IT systems and the evolving global healthcare IT environment. This last is one of the issues confronting the general IS literature which includes some health-related work, but often struggles to put it into context. Currently the field of information systems in healthcare is
poorly served from an academic perspective. Given that the field is intrinsically international, and represents a great deal of the work of information systems professionals who must work hand in hand with clinicians and other like-minded professionals, existing journals do not reflect this adequately. Very large costs are incurred when these issues are not properly understood, and the relatively low use of IT in the health sector implies that large savings and benefits could still accrue from increased collaborative effort in this area. IJHISI readers will obtain particular benefit from the holistic, systemic overview of the journal. The benefits of improved understanding of relationships among topics will be significant. In addition, the journal will provide a unique forum for those working in interdisciplinary health IT area, while encouraging future research and rigorous studies to be accumulated in this exciting field.

This inaugural issue of IJHISI has a wide selection of papers, representative of the breadth in the scope of the different areas covered. “A Metric for Health Care Technology Management (HCTM): E-Surveying Key Executives and Administrators of Canadian Teaching Hospitals” reports on an empirical study that deals with the challenges faced by healthcare executives in measuring health technology management and its impact on organizational performance. The lack of formalization in HCTM construct, attributes and measures motivates an empirical study to develop a metric for HCTM. This metric was then used to assess HCTM practices in teaching hospitals across Canada. The project began with an analysis of developments to date in the fields of Management of Technology and Management of Medical Technology. An extensive literature content analysis generated a set of definitions and attributes of the conceptual TM construct, which was eventually extended to HCTM. A measuring instrument was developed through a formal design process involving expert panel review; pilot testing; instrument refinement and field-testing to extract and measure HCTM performance indicators. Administration of this metric with the help of the Association of Canadian Academic Health Organizations via a web-based survey of senior healthcare administrators provided insights into the HCTM status of Canadian teaching hospitals and its relationship with health organizational performance.

“Health Insurance Portability and Accountability Act (HIPAA) Compliant Access Control Model for Web Services” is the second paper in this issue. It focuses on increasing demands and discussions about Web services-based healthcare applications. It is necessary for HIPAA privacy rules to be standardized in Web services. However, no comprehensive solutions to the various privacy issues have so far been defined in this area. Therefore, the authors first summarize the HIPAA privacy rules and survey the topic of protecting health data privacy. They then propose a vocabulary-based Web services privacy framework with Role-based Access Control (RBAC) with privacy extensions and argue the HIPAA compliance for such a framework. To illustrate the model, the authors present the first two HIPAA rules in the extended RBAC model and embedded these into the HIPAA-compliant technical architecture for implementation of Web Services.

The third paper, “Evaluation of a fuzzy ontology based medical information system” deals with evidence-based medicine (EBM), which requires appropriate information to be made available to clinicians at the point of care. Electronic sources of information may fulfill this need but require a high level of skill to use successfully. The paper describes the rationale and initial testing of a system prototype to allow collaborative search and ontology construction for professional groups in the health sector. The approach is based around the use of a browser using a fuzzy-ontology based on the National Library of Medicine (NLM) Unified Medical Language System (UMLS). It is argued that this approach may provide high quality information for professionals in the future.

“Nurses’ Perceptions of Using a Pocket PC for Shift Reports and Patient Care” is the next article in this issue. It deals with the challenges of inefficiencies in providing quality nursing care by nurses working in hospitals supported by paper-based systems. Two areas of inefficiency are shift-to-shift communication among nurses, and access to information related to patient care. An integrated IT system, consisting of Pocket PCs and a desktop PC interfaced to a hospital’s mainframe system, was developed and suggested as an IT solution. The goal was to apply mobile
IT to give nurses easier access to patient information. This paper describes the development of the prototype and reports the results of a pilot study: a comparison of time spent in taking and giving shift reports before and after the study and nurses’ perceptions of the mobile IT system. Results showed significant difference in taking shift reports but no significant difference was found in giving shift reports. Yet, nurses appear to provide strong verbal support for the use of the system. The readers are therefore left with answering the key question of returns on investments (ROI) with the deployment of such a system.

The fifth paper, “Differences in Computer Usage for U.S. Group Medical Practices: 1994 vs. 2003,” is based on a study of the use of IT in group medical practices over specific time periods. It addresses the gap found in previous research focusing mainly on hospitals and Health Management Organizations (HMOs). Accordingly, in 1994, a pilot study of group medical practices was conducted and the same study was then repeated in 2003 to obtain a longitudinal understanding of the IT services used by these private practices. Results of the study provide insights on the key issues and challenges involved in IT usage in group medical practices.

The final article is a case study entitled, “Applying Adaptive Structuration Theory to Health Information Systems Adoption: A Case Study.” The authors here attempt to apply the concept of Adaptive Structuration Theory (AST), which is rapidly becoming an important theoretical paradigm for comprehending the impact of advanced information technologies, to the phenomenon of health information systems adoption. Briefly, a modified AST model was designed by the researchers to illustrate the changing interrelationships among the variables affecting the adoption and application of a new technology into a medical organization setting. Based on accumulated data over a 10-month period, the authors apply the AST case to illustrate the complex interactions between medical billing technology and organizational processes. They show that as the organization rolls out and integrates the specific IT technology into its routine operations, several aspects of the organization, technology and operations have to be modified and adapted. Moreover, they also find that different iterations of the AST model could emphasize different structures and concluded that the capacity to manage health IT often requires the enterprise to match specific needs with specific organizational structures.

Lastly, this issue ends with a review of a 2005 release: “E-Health Care Information Systems: An Introduction for Students and Professionals – A Book Review”. It is the intent of IJHISI to introduce its readers to the emerging field through the dissemination of knowledge discovered not only in empirical research, theoretical discourse and illustrative cases, but also the knowledge stored, accumulated and organized in state-of-the-art, comprehensive reviews, short essays and commentaries, and academic book releases. I hope the selection for this inaugural issue will move IJHISI forward and expand its network of contributors, reviewers, and readers. As editor-in-chief, I would like to thank Idea Group Inc., the journal’s advisory board, co-editors, reviewers, and contributors for their valuable work and commitment, without which this issue would not have been possible. I therefore also welcome any further suggestions or comments from the readers — IJHISI can only grow and improve through the active participation, contribution, review, and feedback provided by its readers.

Joseph Tan holds a professional diploma in civil engineering from Singapore Polytechnic, an undergraduate degree in mathematics and computer science from Wartburg College, IA, a master’s degree in industrial & management engineering from the University of Iowa, and a PhD in management information systems from the University of British Columbia (UBC). He has been a tenured associate professor, teaching in the Department of HealthCare & Epidemiology, UBC, for many years prior to serving as a professor and head of the Information System and Manufacturing (ISM) Department, School of Business, Wayne State University. Professor Tan publishes widely in numerous computing, ergonomics, information systems, health education, e-health, and e-business journals and has served as a guest editor and member of various journal editorial boards. He sits on
key organizing committees for local, national, and international meetings and conferences. Professor Tan’s research, which has enjoyed significant support in the last several years from local, national, and international funding agencies and other sources, has also been widely cited and applied across a number of major disciplines, including healthcare informatics and clinical decision support, human processing of graphical representations, ergonomics, telehealth, mobile health, and e-health promotion programming.