This issue of IJHISI presents a collection of articles that promote an increased comprehension of key issues in national and global health information systems. This issue consists of six articles describing the latest research findings from institutions around the world. These articles investigate the adoption of various applications including electronic medical records, teleradiology system, and patient information system. This issue has a dual focus, first on the design and development of wireless technologies and applications to support the provision and management of healthcare services within the hospital, rural, and home environments as well as exploring the possibilities for these technologies to provide healthcare ubiquitously. Through wireless, integrated networks, medical knowledge can be shared almost instantly enabling the provision and management of healthcare outside traditional working hours and beyond the traditional physical constraints. The second focus is to provide a unified system to evaluate electronic health records systems initiatives and assess their relative strengths and deficiencies in realizing superior access, quality, and value of healthcare services.

Al-Ali, Ozkul, and Landolsi begin their article by recognizing the growing effectiveness and importance of a wireless environment within a hospital setting. Based upon this notion, they design a prototype electronic medical database system and evaluate its performance in near-realistic settings. Another aspect of their research is the design of a Web-based database for hospital environment, which could be equally accessed by wireline and wireless networks. The designed system was implemented using the American University of Sharjah (AUS) infrastructure and tested by doctors, nurses, and lab assistants of AUS healthcare center. AUS infrastructure provided a large number of workstations and wireless points distributed throughout the campus. Using PDAs, the medical staff was able to search, view, create, and amend patient records on the Web-based database. Their findings indicate satisfactory system performances as long as the hospital’s environment is well covered with wireless access points within a specified access range.

Rekh, Rani, Christinal, and Selvan describe a mobile teleradiology system whereby the communication is established via cellular networks and cell phones. Turbo codes are applied to an x-ray image and an ECG image and simulate the transmission system by adding Gaussian noise to the image. The aim is to prevent data from getting lost due to noise in the wireless channel. They find that the images obtained after decoding are suitable for recognition and diagnosis by the doctors in their mobile phones and propose that...
this novel technology will enhance the healthcare in rural area where the opinion of a specialized doctor is not available.

Osbourne and Clarke propose that although information and communications technology (ICT) is being used in the United Kingdoms NHS to improve medical delivery, it has not been sufficiently matched in technical organizational improvements. They present an overview of the UK healthcare system and highlight the problems with communication between hospital specialists and general practitioners, and also difficulties for healthcare professionals, particularly general practitioners, to see patients outside normal working hours. They propose that ICT, as a basis for telemedicine, can reduce existing communication barriers and initiate new forms of information exchange between medical professionals and patients. They use three published models, the technology acceptance model (TAM), Rogers diffusion of Innovation theory (IDT), and the Triandis theory of interpersonal behavior (TIB) as a means of understanding effective ways that technology can be employed to support telemedicine.

Wiggins, Beachboard, Trimmer, and Pumphrey provide an interesting perspective on Information Technology (IT) governance from a rural healthcare focus. This article describes the implementation of an EMR in a rural family practice residency program. The residency program, which trains primary care physicians and provides primary care services to widely disbursed rural communities, received a federal grant for the acquisition and implementation of the EMR, with the simple initial goal of enhancing the practice’s clinical research capabilities. The goal was later mutated and morphed into a much larger goal of extending the system throughout rural clinics and providers in the region. This article presents an innovative, relationship-oriented approach for organizations aiming for a successful adoption of IT as a means of improving healthcare in rural settings.

The penultimate article features an empirical study by Davis and Thakkar to identify the status of Electronic Health Records Systems (EHR) in U.S. hospitals. This article used the aimed to determine if there was a significant relationship between perceived levels of benefit and risk with the use of each core functionality, as well as if there was a significant relationship between the status of the EHR system and size of hospital. They identify core functionality as health information, results management, order entry/management, decision support, electronic communication, patient support, administrative processes, reporting, and population health management functionalities of an EHR system. The national survey of U.S. hospitals revealed some interesting results; 37% had some components in all of the core functionalities of an EHR system, while 27% were using at least some functionalities. Health information and data, administrative processes, and results management were the three core functionalities that a majority of hospitals had as a part of their EHR system. A significant positive correlation between perceived benefits and risks was found in all of the eight core functionalities. There was no significant relationship found between status of EHR system and size of hospitals.

The final article by Wickramasinghe et al. attempts to provide a unified system for evaluating the respective e-health initiatives and also assess their relative strengths and deficiencies in realizing improved access, quality, and value of healthcare services. They correctly identify that superior access, quality, and value of healthcare services has become a national priority for healthcare to combat the exponentially increasing costs of healthcare expenditure. The evaluation system is based on focusing on three key components: 1) understanding how e-health can modify the interactions between the various players such as regulators, payers, providers, healthcare organizations, suppliers, and patients, as well as create added value healthcare services, 2) understand the competitive forces facing e-health organizations and the role of the Internet in modifying these forces, and 3) introduce a framework that serves to identify the key forces facing e-health. This article also provides some suggestions of how such an organization can structure itself to be e-health prepared.

Once again, we trust our readers will enjoy the diversity of articles from various parts of the globe in this issue, as in preceding ones.
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