GUEST EDITORIAL PREFACE

Health Informatics Applications in Diverse Settings:
Beyond the Horizon

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The evolution of the computer age has been followed closely by the advent of the information era. The use of healthcare informatics based tools among patients and providers has increased drastically during the last four decades. One of the early innovations in healthcare information technology (IT) led by Dr. Lawrence Weed involved conceptualization of electronic health records. He pointed out that each individual can generate up to 50,000 data items during their life and proposed the development of a system to record patient data (Weed, 1989). His work led to the development of the first electronic medical records system called Problem Oriented Medical Records (POMR) which was implemented in the in 1960 at Medical Center Hospital at Vermont to guide and support the provision of optimum medical care. Early pioneers in the area of electronic medical records (EMR) included Regenstrief institute, Harvard and Duke Universities to name a few. Each of these systems took a unique approach to addressing

specific healthcare problems. For instance, the Technicon Medical Information system at El Camino Hospital was designed specifically for acute care hospitals while Harvard's Computer stored ambulatory record (COSTAR) system focused on records pertaining to ambulatory patient care (Congress of United State, Office of Technology Assessment, 1977).

Over the past decade, patients have shifted from being mere passengers in the process of healthcare provision to responsible drivers of their own health through participatory medicine (Frydman, 2010). The Patient centric medical home concept ensures that patients have a more central role in health care. In developed countries like the United States, almost one fourth of internet users tracked their health data online (Fox, 2011). Web 2.0 tools like online personal health records, health social networks, online support groups and smartphone applications for reviewing health information and receiving behavioral notifications are widely used

by patients. Studies have demonstrated that application of healthcare IT based tools has been effective in improving patient care as well as health outcomes (Grant et al, 2008, Ralston et al, 2009, Holbrook et al, 2009). In addition, internet-based (eHealth) and mobile-based (mHealth) health interventions are widely used in developing countries in sub-saharan Africa through initiatives like the Millennium Villages Project global network (MVG-Net) of open-sourced e-Health platform (Kanter, 2009). From global to local, each innovation in healthcare IT is tied to its unique individual patient-based and population-based outcomes. With the evolution of health IT from a simple EMR-based approach to a complex multi-pronged approach involving providers, patients and healthcare managers expanding from condition based approach to a more universal approach, the impact of the innovative approaches has increased multi-fold.

In this special theme issue of the International Journal of User-driven Healthcare, we cover a range of innovative applications in the area of health information technology in regions around the globe. In their special editorial, Purkayastha and Staring layout the general landscape of Health IT-based research and emphasize the importance of theory-driven evaluations adopted by three of the research papers published in this issue.

Transmitting health-related data through a simple handheld device like a mobile phone may have seemed difficult in remote areas in developing countries. In their paper, Manda and Sanner demonstrate the stakeholder perspectives regarding application of a bootstrapping approach for the use of mobile phones for reporting health data in Malawi. This study highlights the crucial importance of the involvement of major community-based stakeholders and policy makers including the local Health ministry for successful implementation of innovative projects. In addition, they present the barriers and facilitators to the application of this technology in a developing country setting.

Stakeholder involvement or lack thereof can impact mHealth projects at various stages from conception to conclusion. In low resource settings in Africa, there are often reservations about the potential impact of high tech interventions involving mHealth. Since 2003, about 44 mHealth projects have evaluated the impact of mobile based interventions. Aranda-Jan et al in their comprehensive review pointed out that stakeholder involvement is one of the important factors that drives the success and impact of mHealth based interventions in Africa.

Deussom et al demonstrates another significant aspect of the impact of stakeholder involvement on health outcomes associated with mHealth projects. Sub-saharan Africa bears a high burden of maternal mortality mainly due to ineffective management of complications during and after pregnancy (World Health Organization, 2004). Deussom et al focus their paper on this pertinent Public Health issue. Shortage of healthcare providers in the region is well documented and is a major factor contributing to the high burden of maternal mortality. More specifically, their paper illustrates the application of simple mobile phone-based solution to minimize three areas of delays impacting safer deliveries including 1) decision-making, 2) accessing services and 3) receipt of appropriate care once a health facility is reached. Their innovation ensures IT-driven solution guaranteeing payment using mobile money (Z-Pesa) thereby helping retain healthcare providers and staffs including drivers throughout the project duration especially during emergency labor. Increased access to emergency obstetric services is bound to improve health outcomes related to pregnancy and delivery.

Hewapanthirana and Jayasinghe, in their empirical case study, focus on Sri Lanka, a small country in Southeast Asia. They evaluated the effectiveness of open source software thereby illustrating another aspect of the general theme of stakeholder involvement for Health IT based interventions. In particular, they acknowledge risk mitigation and resource management as crucial processes of project management.

IJUDH introduces its first issue of 2014 with these three papers focusing on the central theme of Health Information technology based interventions for improving healthcare and

outcomes in low-resource settings. This timely issue coincides with major paradigm shift in the healthcare landscape with the transformation of innovations towards mobile Health.

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REFERENCES

Congress of United States. Office of Technology Assessment. (1977). Description of Three Systems In Policy implications of Medical Information Systems. Washington DC. (pp 21-30).

Fox, S. Pew Research Center's Internet and American Life Project. (2011). website The social life of health information 2011 at http://www.pewinternet.org/Reports/2011/Social-Life-of-Health-Info.aspx.

Frydman, G. e-patients.net. 2010. Apr 02. website A Patient-Centric Definition of Participatory Medicine at http://participatorymedicine.org/

Grant, R. W., Wald, J. S., & Schnipper, J. L. et al. (2008). Practice-linked online personal health records for type 2 diabetes mellitus: a randomized controlled trial. *Archives of Internal Medicine*, *168*(16), 1776–1782. doi:10.1001/archinte.168.16.1776 PMID:18779465

Holbrook, A., Thabane, L., & Keshavjee, K. et al. (2009). Individualized electronic decision support and reminders to improve diabetes care in the community: COMPETE II randomized trial. *Canadian Medical Association Journal*, *181*(1-2), 37–44. doi:10.1503/cmaj.081272 PMID:19581618

Kanter, A. S., Borland, R., Barasa, M., Iiams-Hauser, C., Velez, O., Kaonga, N. N., & Berg, M. (2009). The importance of using open source technologies and common standards for interoperability within eHealth: perspectives from the Millennium Villages Project. *Adv Health Care Manag*, *12*, 189–204. doi:10.1108/S1474-8231(2012)0000012013 PMID:22894051

Ralston, J. D., Hirsch, I. B., Hoath, J., Mullen, M., Cheadle, A., & Goldberg, H. I. (2009). Web-based collaborative care for type 2 diabetes: a pilot randomized trial. *Diabetes Care*, *32*(2), 234–239. doi:10.2337/dc08-1220 PMID:19017773

Weed, L. (1989). New premises and tools for medical care and medical education. Proceedings international symposium of medical informatics and education, University of Victoria, British Columbia, Canada. (pp.19).

World Health Organization. (2004). *UNICEF, UNFPA. Maternal mortality in 2000: Estimates developed by WHO, UNICEF, UNFPA*. Geneva: WHO.