Introduction

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On a global level, information and communication technologies are converging to increase complex networked technologies to form the basis for a new era in the practice of medicine and the delivery of healthcare. This infrastructure poses an entirely new dimension to the concept of healthcare delivery, based on the inclusion of readily accessible clinical evidence and other information applicable to an emerging model of shared decision-making between patients and providers. While users of web-based information increasingly report their reliance on such information for medical decision-making, the impact of this phenomenon on the global healthcare community has yet to be assessed in detail. Some have argued, for example, that the web may be improperly used as 'substituted clinical judgment' and relatively little attention has been paid to the selective development of methodologies for consumer-centred discussions or to the selective grouping and analysis of debated 'domains of uncertainty' in healthcare.

Overall, it is increasingly important for diverse cultures of healthcare to foster mutual understanding, learning and harmony. The examination and creation of 'patient centric' and 'consumer-centric' shared decision-making models is one major way to do this on an international level. Within this context, this special issue seeks to provide a forum for dissemination of current and envisioned activities in aspects of web-based healthcare.

This issue provides a diverse sampling of methods and subject matter intended to provide readers with an appreciation for the scope and breadth of the growing field of web-based healthcare.

Martini and Pellegrini, for example, highlight recent developments across the European Union aimed at further standardisation and quality assurance of web-based healthcare information. Their analysis provides a quasi-historical context of intranet models (functionalities, services, processes and performance) and the evolutive paths followed by those models.

Outlining an innovative web-based technology to connect the entire cancer community, Mikula et al. discuss a pilot project by The National Cancer Institute (NCI) National Center for Bioinformatics (NCICB), initiated to develop an information infrastructure that enables networked connections in cancer research, The Cancer Biomedical Informatics Grid (caBIG).

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212 D. Lorence

Rajasekaran et al. discuss a novel technique to monitor post-operative patients recovering from surgery using web-connected wireless sensor networks, which can alert medical personnel when life threatening changes occur. They explain, in detail, how recovering post operative patients can benefit from continuous long term monitoring from an acute event or surgical procedure.

Whetstone and Randeree provide an excellent review of web-based personal health records. They demonstrate how, as healthcare systems continue to change and become more patient-focused, it is important for all healthcare stakeholders to understand this tool, its function relative to a national network and its benefits.

Later, we provide an illustration of how internet-based peer-to-peer networks can be employed to examine medical patients' expectations and perceptions about their healthcare by the identification of recurring themes of peer-based interaction, using a grounded theory approach. Also introduced here is the basic concept of 'domains of uncertainty' or areas of healthcare wherein diagnosis and/or treatment are somewhat disputed within a given community of practice, making them rich areas for web-based discussion and debate. Elsewhere, the process of website evaluation is examined, with standards and criteria outlined which can be useful in a formal review of web-based content.