

# Chapter 1.15

## Medical Education in the 21st Century

**Stefane M. Kabene**

*University of Western Ontario, Canada*

**Jatinder Takhar**

*University of Western Ontario, Canada*

**Raymond Leduc**

*University of Western Ontario, Canada*

**Rick Burjaw**

*University of Western Ontario, Canada*

### INTRODUCTION

As with many disciplines, the fields of healthcare in general and medicine, in particular, have made vast strides in improving patient outcomes and healthcare delivery. But, have healthcare professionals and medical academia been able to maximize the utilization of new technologies to improve the delivery of the right knowledge, to the right people, at the right time across geographical boundaries? In order to provide the best quality of care, regardless of patient or provider location, specific issues must be addressed.

Healthcare consumers and providers recognize that the system is often over worked, time con-

strained, poorly funded and desperately in need of a means to maintain up-to-date knowledge and efficient skills in order to deliver the best quality of care (Health Canada, 1998). We also know that there is a large disparity in both the quality and types of healthcare available between developed and developing countries (Lown, Bukuchi & Xavier, 1998). Within a single country there are also differences in healthcare services based upon location (rural vs. urban areas), wealth, age, gender and a host of other factors (Health Canada, 2004). However, because Information and Communication Technologies (ICT) can be a simple and cost effective tool, it can make desperately needed medical knowledge available to developing coun-

tries (Pakenham-Walsh, Smith & Priestly, 1997). Furthermore, it is becoming more difficult to get physicians and extended healthcare professionals to participate in face-to-face seminars in order to learn about the progress and changes in the delivery of healthcare. Time, travel requirements and cost are the biggest barriers to overcome. For rural areas and developing countries these issues are even more evident (Ernst and Young, 1998). Today, many institutions and countries are exploring and implementing ICT solutions to help reduce these inequities. The fact remains however that in the case of developing countries, a critical shortage of healthcare professionals remains (Fraser and McGrath, 2000). Adding to the problem is the fact that the telecommunications network, the backbone of ICT, in Africa is the least developed in the world (Coeur de Roy, 1997)

This article concentrates on two main aspects of ICT. First, it examines ways in which ICT can assist in information and knowledge transfer and second, it explores the challenges of ICT implementation.

## **ICT AND ITS ROLE IN MEDICAL EDUCATION**

Providing the right medical knowledge and training to healthcare professionals can be a challenge in the best of circumstances. In developing countries dissemination of the best clinical practice protocols at an affordable cost regardless of the location of the targeted audience is even more daunting. While technology such as CD-ROM-based learning can be tremendously efficient in helping medical students learn fast and well, there may be a lack of individual access to the necessary infrastructure such as equipment and power. In these cases the material is often used in classrooms and the goal of facilitating individual learning and allowing students to go at their own pace may not be met (Pakenham-Walsh, 2003). It is important to keep in mind that even developed

countries have, in spite of relatively easy access to the necessary technology, difficulties in properly managing its introduction and use in medical schools (Greenhalgh, 2001).

Tele-education can help in reaching remote communities in developing countries. However, in many regions, technological compatibility and training remain a challenge (Pakenham-Walsh, 2003). The birth of the Internet, in spite of its many imperfections, has dramatically changed the way information, communication and learning are delivered. Although there still exists an imbalance (Davison, Harris, Vogel & Vreede, 1999), in many ways the Internet Age can reduce the gap between developed and developing countries in terms of access to all types of information (United Nations ICT Task Force-1, 2004). While the full potential of the Internet as an ICT tool has yet to be defined it does allow access to information at a speed, quality, and cost previously unseen and defies the notion of geographical boundaries. The Internet allows access to medical information through online articles, video presentations, videoconferences, e-mail-based information and communication. Today, a medical student or healthcare practitioner in India, Africa or any developing country can gain access to the latest medical information from around the world. This new reality has set the foundation for a truly worldwide medical and healthcare community of practice. However, the lack of technological infrastructure and training in developing countries can affect the delivery and use of this health care information (Lown et al., 1998).

As mentioned earlier, users of ICT in the healthcare field face many challenges. Yet despite these challenges, we are at the beginning of a marvelous adventure that has the potential to create a healthcare arena for all with unrestricted access to information and knowledge for practitioners around the world. While this could be viewed by some as simple, utopian rhetoric, the group "Doctors without Borders (Medecins sans Frontières)" already demonstrates the willingness

6 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: [www.igi-global.com/chapter/medical-education-21st-century/26215](http://www.igi-global.com/chapter/medical-education-21st-century/26215)

## Related Content

---

### Using Eye Tracking to Explore Visual Attention in Adolescents With Autism Spectrum Disorder

Anne M. P. Michalek, Jonna Bobzien, Victor A. Lugo, Chung Hao Chen, Ann Bruhn, Michail Giannakos and Anne Michalek (2021). *International Journal of Biomedical and Clinical Engineering* (pp. 1-18).

[www.irma-international.org/article/using-eye-tracking-to-explore-visual-attention-in-adolescents-with-autism-spectrum-disorder/272059](http://www.irma-international.org/article/using-eye-tracking-to-explore-visual-attention-in-adolescents-with-autism-spectrum-disorder/272059)

### Recent Advances in Synthesis and Biomedical Applications of Magnetic Nanoparticles: Magnetic Nanoparticles for Biomedical Applications

Irshad Ahmad Wani (2018). *Biomedical Engineering: Concepts, Methodologies, Tools, and Applications* (pp. 1424-1447).

[www.irma-international.org/chapter/recent-advances-in-synthesis-and-biomedical-applications-of-magnetic-nanoparticles/186734](http://www.irma-international.org/chapter/recent-advances-in-synthesis-and-biomedical-applications-of-magnetic-nanoparticles/186734)

### Use of Clinical Simulations to Evaluate the Impact of Health Information Systems and Ubiquitous Computing Devices Upon Health Professional Work

Elizabeth M. Borycki and Andre W. Kushniruk (2010). *Ubiquitous Health and Medical Informatics: The Ubiquity 2.0 Trend and Beyond* (pp. 552-573).

[www.irma-international.org/chapter/use-clinical-simulations-evaluate-impact/42950](http://www.irma-international.org/chapter/use-clinical-simulations-evaluate-impact/42950)

### Biocompatible Carbon Nanodots for Functional Imaging and Cancer Therapy: Carbon Nanodots for Imaging and Cancer Therapy

Alexandre Roumenov Loukanov, Hristo Stefanov Gagov, Milena Yankova Mishonova and Seiichiro Nakabayashi (2018). *International Journal of Biomedical and Clinical Engineering* (pp. 31-45).

[www.irma-international.org/article/biocompatible-carbon-nanodots-for-functional-imaging-and-cancer-therapy/204399](http://www.irma-international.org/article/biocompatible-carbon-nanodots-for-functional-imaging-and-cancer-therapy/204399)

### Bone Age Assessment

S. Kavya, Pavithra Pugalendi, Rose Martina P. A., N. Sriaram, K. S. Babu and Basavaraj Hiremath (2013). *International Journal of Biomedical and Clinical Engineering* (pp. 1-10).

[www.irma-international.org/article/bone-age-assessment/101925](http://www.irma-international.org/article/bone-age-assessment/101925)