

Book review: “Telehealth in the Developing World”

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“Telehealth in the Developing World”

edited by *Richard Wootton, Nivritti G. Patil, Richard E. Scott, and Kendall Ho*, Royal Society of Medicine Press/IDRC, 2009, ISBN: 978-1-85315-784-4; e-ISBN 978-1-55250-396-6, £29.95.

The developing world suffers inadequate health care and medical services. Lack of health care professionals and infrastructure contribute to this problem making it more and more difficult to deliver health care to people in rural and remote communities of the developing world.

Telemedicine offers methods and approaches to deliver relevant medical expertise via tele-education, teleremoting and teleconsultation. It provides better access to health services and better quality health care outcomes.

Telemedicine is not just about technology, it's about people, cultural and social influences and political and demographic factors. This book addresses a conglomerate of international projects and case studies, outlining their approaches and experiences in implementing telemedicine applications in the most rural and remote areas of the developing world.

Telehealth in the Developing World is the 9th book in a series of books on telemedicine by The Royal Society of Medicine. The production of the book acknowledges the support of Canada's International Research and Development Centre, the Li Ka Shing Facility of Medicine at the University of Hong Kong, the Health Innovation and Information Technology Centre (HiTeC) of the University of Calgary, and the U21 Health Sciences Group.

The book has 60 contributors drawn from numerous universities, health ministries and departments, hospitals and medical facilities, health and research centres, and international health organisations and institutions. The book is edited by: Richard Wootton, Director of the Scottish Centre for Telehealth, Honorary Professor at the University of Queensland (Australia), and Professor at the University of Aberdeen (UK); Nivritti G. Patil, Professor of Surgery and Assistant Dean (Education

and Student Affairs) at the Li Ka Shing Facility of Medicine at the University of Hong Kong; Richard E. Scott, Associate Professor at the Global e-Health Research and Training Program, Health Innovation and Information Technology Centre, Department of Community Health Sciences, Faculty of Medicine, University of Calgary (Canada); and Kendall Ho, Associate Professor of Emergency Medicine and Director of the e-Health Strategy Office, Faculty of Medicine at the University of British Columbia (Canada).

SECTION 1: BACKGROUND

1. Introduction Richard Wootton, Kendall Ho, Nivritti G. Patil, and Richard E. Scott 2009

The chapters are grouped in five sections. The first section provides the background, defining the field of telemedicine and the scope of telemedicine. Chapter 1 presents an overview of the work of Lord Crisp, the aims of the book, and introduces the following major sections of the book: policy, clinical, and educational factors of telemedicine.

SECTION 2: POLICY

Section 2, “Policy” presents an overview of policy issues that shape the influences and implementations of telemedicine topics described.

2. Bridging the digital divide: linking health and ICT policy Joan Dzenowagis 2009

Chapter 2 introduces us to the policy issues surrounding the issue of ICT and the driving forces for ICT in the health sector. The chapter links health and ICT policy, and the potential opportunities on health policy makers to influence ICT policy.

3. Telehealth in developing countries: perspectives from the Philippines Alvin B. Marcelo 2009

The University of the Philippines Manila National Telemedicine Centre's approach to telemedicine is discussed. This strategy is identified in three parts: the human experience; the technological opportunity; and the sustenance factor. It also highlights the need to stop the decline in the

number of healthcare professionals so telemedicine projects can benefit such relevant communities

4. Information technology for primary health care in Brazil Elaine Tomasi, Luiz A Facchini, Elaine Thumé, Maria F.S. Maia, and Alessandro Osorio 2009

Chapter 4 covers the National Telemedicine Programme in Brazil and the issues surrounding national information systems and primary care. It expresses the need for standardisation and a primary focus on people and not on technology.

5. Community-based health workers in developing countries and the role of m-health Adesina Iluyemi 2009

M-health is about the use of wireless technology to transmit data to facilitate services. This chapter shows how m-health can be used by health workers in developing countries such as India, Peru, South Africa, and Uganda. The chapter goes on to describe the effects of the m-health projects in terms of technology, social, financial and government issues. Overall, the outcomes and issues surrounding m-health projects are covered and why the misalignment of strategies and local realities may lead to project failure.

6. Global e-health policy: from concept to strategy Richard E. Scott 2009

Still under the section on "Policy", this chapter identifies the winners and losers of rapid development of healthcare, as it addresses the challenges of a global e-health policy. The limitations, key stakeholders, and global e-health governance issues are also covered. We are also introduced to "Glocal" e-health policy development, and the provision of case studies in Africa and Malaysia, before concluding the chapter with a strategy for a way forward for global e-health.

7. Experiences and lessons learnt from telemedicine projects supported by IDRC Laurent Elder and Michael Clarke 2009

Chapter 7 presents the International Development Research Centre's (IDRC) focus on prioritising ICT to solve healthcare problems. The work of the IDRC is detailed, including telemedicine in Uganda, and e-health applications in Asia, to current works in Eastern and Southern Africa and Asia. The chapter concludes with the future work of the IDRC and their overall commitment to achieving healthy societies, with accessible and effective healthcare.

8. Strategies to promote e-health and telemedicine activities in developing countries Sisira Edirippulige, Rohana B. Marasinghe, Vajira H.W. Dissanayake, Palitha Abeykoon, and Richard Wootton 2009

The last chapter in section 2 of the book identifies the factors preventing developing countries from using e-health and what strategies we can use to promote it. Promoting e-health, the role of national governments, reasons for not adopting e-health, and the role of international agencies and strategies are also discussed.

SECTION 3: EDUCATIONAL

This section of the book describes the educational applications, exploring its meaning by successfully addresses this topic in the following chapters.

9. Telemedicine in low-resource settings: experience with a telemedicine service for HIV/AIDS care Maria Zolfo, Verena Renggli, Olivier Koole, and Lut Lynen 2009

This chapter interestingly explores how telemedicine has provided clinical mentoring to overcome challenge to introduce HIV/AIDS care in a safe and effective way to resource restricted areas. The HIV/AIDS TELemedicine service and other telemedicine approaches using consultations via call centres in Uganda, case conference twinning and other web-based collaboration and telemedicine systems are explored.

10. Medical missions for children: a global telemedicine and teaching network Philip O. Ozuah and Marina Reznik 2009

Medical Missions for Children (MMC) is a not-for-profit organisation, with a recognised telemedicine network between 27 American hospitals, delivering more than 1000 consultations each year to children in over 100 developing countries, and providing over 25000 consultations to children since the program began. This chapter outlines the diverse range of programs developed, as well as providing real-life moving case studies that demonstrate the exceptional utilisation of the MMC network.

11. Telementoring in India: experience with endocrine surgery Saroj K Mishra, Puthen V. Pradeep, and Anjali Mishra 2009

This chapter investigates telementoring via tele-education, mentoring surgeons in remote locations in India. Endocrine surgery is not well developed in India, so this chapter shows how telementoring can be used to reinforce endocrine surgical training. The benefits and experiments in India and other developing countries outline the successful use of telementoring and the need to continue to support telemedicine for total success to be achieved

SECTION 4: CLINICAL

The fourth section, the largest part of the book, presents sixteen chapters devoted to clinical applications. This section walks the reader through various approaches to telemedicine across a range of medical specialty areas and international case studies, outlining their approaches and lessons learned.

12. Teledermatology in developing countries Steven Kaddu, Carrie Kovarik, Gerald Gabler and H Peter Soyer 2009

Chapter 12 is about how the use of telemedicine and the nature of dermatology go hand in hand. The benefits of teledermatology and the models aims of teleconsultation and telescreening are discussed. Teledermatology networks and projects in developing countries such as Africa,

Nepal, Solomon Islands, Latin America and more are covered. Overall the chapter discusses the outcomes of the program in terms of quality, legal issues, integration and intercultural factors, financial aspects and the future developments of teledermatology.

13. Cross-cultural telemedicine via email: experience in Cambodia and the US Paul Heinzelmann, Rithy Chau, Daniel Liu, and Joseph Kvedar 2009

This chapter interestingly explores poverty stricken Cambodia; its limited access to healthcare, and overall poor health outcomes, but the highest ratio of mobile phone subscribers in the world. It is this huge telecommunications investment that has highlighted the opportunity to rehabilitate Cambodia using the growing communications networks for social change. The Telemedicine Programme, a collaboration between healthcare partners in Boston and in Phnom Penh discusses their aims to provide remote healthcare for the people in rural and remote northern Cambodia. The results of the program, the effects on local care, and the lessons and future directions are outlined in terms of the human, economic and technological factors.

14. Telepathology and telecytology in developing countries Sangeeta Desai 2009

"Telepathology and telecytology in developing countries" looks at how the utilisation of telemedicine bridges the gap between uneven development of healthcare services. Here, the use of telepathology, its limitations, and applications in developing countries are investigated. The chapter also details the experience of telepathology in Mumbai using telesurgical pathology and telecytology consultations.

15. Internet based store-and-forward telemedicine for subspecialty consultations in the Pacific region C. Becket Mahnke, Charles W. Callahan, and Donald A. Person 2009

This chapter introduces the radio telephone, the early form of telemedicine communication in developing countries. Early telemedicine work at Tripler Army Medical Centre (US) and its prohibition is interestingly covered. Electronic consultation approaches used in the Pacific Island Healthcare Project and the Pacific Asynchronous TeleHealth (PATH) system are compared, whilst the challenges, experiences and future work are also covered.

16. Telehealth support for a global network of Italian hospitals Gianfranco Costanzo and Paola Monari 2009

Chapter 16 looks at health cooperation of a new kind, in its investigation into the Integration and Promotion of Italian Hospitals and Healthcare Centres worldwide project (IPOCM). It examines teleconsultation using various methods of telemedicine, and the adoption of an e-learning facility. The difference between the IPOCM program to most other telemedicine projects is outlined as it focuses on organisational governance and policy development.

17. Telemedicine in Nepal Mohan R. Pradhan 2009

In Nepal, the high cost of band width and poor telecommunication infrastructure led to the introduction of a store-and-forward telemedicine approach – Hnet telemedicine. This chapter explores the software development process and the software for data transfer and security of the Hnet system. A pilot project and the outcomes of the project are discussed, along with an assessment of store-and-forward telemedicine technology findings are also recorded. The chapter concludes with the potential future developments of telemedicine in Nepal, and raises our attention to the importance of telemedicine evaluation and the question of how cost effective telemedicine really is?

18. Telemedical support for surgeons in Ecuador Stephen Cone, Edgar J. Rodas, and Ronald C. Merrell 2009

Telemedicine: the perfect fit for isolated and underserved Ecuador. This chapter takes us on an interesting journey into Ecuador's healthcare system and the diverse range of healthcare providers operating within this intriguing system. It illustrates the eye opening, Mobile Surgery Programme (in other words, an operating room on wheels, with tents for patients pre-op and recovery). This highly successful cost effective program offers free care to patients and has performed over 4500 operations with no mortality, and a minute complication rate. The chapter details how telemedicine is used to support surgery outlined and the methods used dependant on telecommunications availability. The success of the program shows how telemedicine has contributed to making the program more efficient, accessible and available to more patients.

19. A low-cost international e-referral network Richard Wootton, Pat Swinfen, Roger Swinfen, and Peter Brooks 2009

Here the methods of store-and-forward telemedicine methods such as web telemedicine and email telemedicine and the differences between these approaches are investigated. The chapter also details the work of the Swinfen Charitable Trust and of Partners Telemedicine, and goes on to further discuss the establishment and development of the network in Iraq and the Middle East. The U21 Consortium is also highlighted here along with the future success of the international e-referral network. Overall, the Swinfen Charitable Trust successfully shows how telemedicine in the developing world can work, how this has been achieved, and how it will continue to achieve in the future.

20. Telehealth in China: opportunity and challenges Jie Chen and Zhiyuan Xia 2009

Chapter 20 discusses a variety of telehealth networks in China including the telehealth program of Shanghai Medical University (SMU). As the pioneer of telehealth in China, it outlines the development of the first general telehealth system, and the progress of the SMU Telemedicine Centre conducting remote consultations, distance medical education via a remote education system. The chapter goes on to explore the challenges of

telehealth, and the opportunities for telehealth in China.

21. Telemedicine in South Africa Maurice Mars 2009

To a different area of the world, chapter 21 describes the situation in South Africa as one of “*managed liberalisation*”. It outlines the implementation of a national telemedicine strategy for South Africa and the governance issues in the development of a National Telemedicine Task Force Team. The lessons learnt, what happened, and where telemedicine now sits is also covered. Telemedicine activities by other enthusiastic agencies are also comprehensively explored.

22. Telemedicine in sub-Saharan Africa Maurice Mars 2009

With no single repository of information on telemedicine in Africa, it's difficult to provide information about its progress. The demographics, burden of disease and population predictions, lack of doctors and healthcare funding introduce us to this chapter. Telemedicine as a solution and its obstacles are explored which directs us to the initiatives in sub-Saharan Africa. The chapter concludes with the overall status of telemedicine applications and the need for such services to be sustained.

23. Telehealth for mountainous and remote areas of northern Pakistan Hameed A. Khan and Irfan Hayee 2009

An intriguing account of the hurdles of setting up telehealth services in mountainous and remote areas of Pakistan where cultural traditions are strong and change is unheard of. This chapter is a testimony of the successful implementation of change, both in the attitudes of local people, and in their methods to overcome such change. The phases of the project and problems experienced are recorded focussing on design and implementation factors of telemedicine services. Overall, it concentrates on the people factors to ensure the concept of telemedicine can continue to improve traditional methods of health care delivery.

24. Teleneurology: past, present and future Usha K. Misra and Jayantee Kalita 2009

Here, this chapter investigates the benefits of real-time telemedicine in the management of neurological emergencies. It explores the use of mobile phones and medical education in the treatment of neurological disorders such as epilepsy, acute stroke, movement disorders, neurophysiology, and neurological outpatients. Telemedicine in India, resource availability, and the legalities of telemedicine are also discussed.

25. Telepaediatric support for a field hospital in Chechnya Boris A. Kobrisnkiy and Vladimir I. Petlakh 2009

This chapter examines the utilisation of remote decision support for the Children's Field Hospital in Chechnya. This chapter is very interesting as it describes the rebuild of medical services, the

system architecture and how teleconsulting has supported clinical treatment. It goes on to define the difference of teleconsulting in traditional settings versus the emergency setting, identifies the challenges during implementation, and wraps up with the future of disaster telemedicine in Russia.

26. Web-based paediatric oncology information and registries: an international perspective André Nebel de Mello 2009

The importance of accurate data collection for cancer registration from an international perspective is the focus of this chapter. The chapter covers the issues of cancer in children, the availability of cancer information and the benefits of more informed patient care. Examples of international paediatric oncology initiatives such as online cancer registries and paediatric oncology web based information in Latin America, Morocco, Jordan, Mexico, Brazil and more are discussed.

27. E-health in international networks: new opportunities for collaboration Shariq Khoja and Azra Naseem 2009

Chapter 27 is about the collaboration of healthcare resources in ensuring the provision of high quality, equitable and accessible healthcare. In particular it presents the cooperative and collaborative work of the Aga Khan Development Network (AKDN) and the benefits in adopting e-health. It also outlines the lessons learnt for continuous medical education using e-learning methods, the provision of care at the AKDN using telehealth methods in Tanzania and Afghanistan, and the information exchange opportunities, challenges and steps for the future. This chapter provides a very interesting example of collaboration of different countries working together to achieve better health outcomes.

SECTION 5: THE FUTURE

The final section of the book presents a view of the future.

28. The future use of telehealth in the developing world Richard Wootton 2009

The final chapter summarises telehealth and how the examples and cases used in the book prove that telemedicine can be effectively implemented in rural and remote areas of the developing world. The chapter also points us to the reasons for this, and the barriers of ICT and other implications. Telemedicine applications and examples are then categorised and discussed in terms of clinical, educational and administrative terms. The chapter concludes by addressing evidence of the cost effectiveness and a strategy of telehealth for long term benefits realisation in the developing world.

Conclusion

Overall, this interesting and informative text provides the basis for considering health policy, education, and healthcare management implications in remote and resource limited countries.

With limited published material on telehealth

¹ Mars M. Telemedicine in South Africa. In: Wootton G., Patil NG., Scott RE., Ho K, eds. *Telehealth in the Developing World*. Royal Society of Medicine Press Ltd, London, 2009; 21:222

initiatives in developing countries, this book is a practical guide of real-life studies that make it interesting to all healthcare professionals. Each chapter invites you into the references eager to find out more.

The editors describe the book as “*a state-of-the-art review of telemedicine in the developing world, and should also provide the basis for a high-level operations manual*”², and I could not agree more. Not only do we learn about developing countries, we can learn from them and their experiences.

² Wootton R., Ho K., Patil NG., Scott RE. Introduction. In: Wootton G., Patil NG., Scott RE., Ho K, eds. *Telehealth in the Developing World*. Royal Society of Medicine Press Ltd, London, 2009; 1:4