Telemedicine in Bhutan

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Outline

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Bhutan- The Land of Thunder Dragon
Landscape:
Total size: 46,500 Km2
  Forest coverage: 72%
  Agriculture & Pasture: 12.6%

Population: 0.7 million
  Growth Rate: 2.5%
  Predominantly rural (79%)
  Life expectancy at 66.3 years
Profile

- Government: Constitutional Democracy
- Development Philosophy: Gross National Happiness
- Economy:
  - Per Capital GDP: US$ 758
  - Agriculture still dominant sector
  - Hydropower (45% of domestic revenue)
Health Sector

• Health Care system based on the principal of Primary Health Care (PHC)
  – Health Coverage (about 90%)

• Socially welfare oriented state
  – Free Health care including referral outside
  – Four-tiered system (30 Hospitals, 166 BHUs & 455 ORCs)

• Integrated Traditional Medicine System
Telecommunication Infrastructure

- state-of-the-art digital network system (nation wide)
- 34 Mbps digital microwave system (few at 8 Mbps)
- DrukNet with 65Mbps asymmetrical connections
  - 55Mbps to British Telecom (BT) LYNX - fiber (routed thro’ india)
  - 10Mbps to Loral SkyNet (backup link)
Rationality for Telemedicine

- The Changing epidemiology of diseases
- Free Health & Sustainability issue
- Health inequalities and Social Group differences
- Harsh topographical nature
- Shortages of Medical Doctors
- Increasing expenditure
Objectives

- Specialized consultative opportunities for all peripheral hospitals
- Specialized services to the people of catchment's area
- Provision of Continuing Medical Education
- Equitable and accessible basic health services at an appropriate cost
- Further linkages for higher and broader range of services beyond national boundaries
- Strengthen human resource capacity for information technology
Milestones...

- 2000: Telemedicine Project initiated between Mongar Regional Referral hospital and Thimphu JDWNRH

- 2001: Consultants- Mr. Steve and Dr. Zhao visit to Bhutan to study and review the Telemedicine program

- 2002: Gelephu General Hospital included as a Telemedicine site after supply of equipments

- 2003: East-Bhutan Tele-ECG Project for T/Yangtse and Lhuentse hospitals

- 2004-2005: setup of LANs at the telematic sites of T/yangtse and Lhuentse hospitals, Survey of basic connectivity in health care facilities

- 2006: Development of master plan via satellite connection by WHO SEARO, Web-based telemedicine system for Bhutan developed inhouse

- 2007: Initiation of SAARC Telemedicine Concept, ICT in BHUs and Rural Telemedicine Project

- 2008: MoU signed on SAARC Telemedicine Project, Start of ICT in BHUs and Rural Telemedicine Project
Bhutan Health Telematics Project

- Regional Referral Hospitals connected to the telemedicine network with X-Ray digitizer and digital cameras with dial-up connectivity
- Bhutan Health Telematics Taskforce formed to monitor and plan strategies for the Bhutan Health Telematics Project.
- At present 24 health centers trained in Web-based Telemedicine and effectively using the System for tele-consultations.
East-Bhutan Tele-ECG Project

- Japan’s Grant Assistance for Grassroots Projects (GGP)
  - Collaboration with Tokai University, Japan
  - For Trashiyangtse and Lhuntse District Hospitals
- Multi-purpose equipment
  - 12-lead ECG, Cardioechogram, Phonocardiogram, and computer aided analyzer software
- Dial-up type workstation linking with PSTN connection to Internet
- Tutorial and training program by Tokai University
- Tele-consultations still done on regular basis with the regional referral hospital and the apex hospital in the capital.
SAARC Telemedicine Project

- Equipments provided for Telemedicine centre
  - VSAT system
  - UPS system
  - Camera (s), lights, projector and other related presentation accessories needed in a model classroom
  - Digital X-Ray System
  - Computer hardware, system and application software and accessories

- Modalities for sharing costs
  - Consumable items- eg printer ribbons & cartridges, X-Ray films, aprons and safety shoes for staff, rubber mats, coded strips for glucometer and urine analyzer, protection glasses, hand gloves, lubricating oil, protective devices, equipment cleaning agents, cleaning cloth etc.) charges for utilities, security of equipments and the expenses connected with the upkeep and maintenance of all the facilities – to be provided by the member state
  - Consultation fees
  - Recurring costs

The entire cost (capital and recurring cost) for a period of one year is through the Project.

- Link through with Chandigarh, video-conferencing being done
Challenges

• Budget constraints
  – Expensive medical equipments
  – Recurring high bandwidth expenditure

• Human Resource
  – Retention of trained personnel at sites
  – Not enough technicians at sites for implementation of Telemedicine
  – Health workers anxious on use of computers and low literacy in computer usage

• Infrastructure
  – No high speed networking backbone for the country in place
  – Even some basic necessity for communication like telephone is missing in some BHUs
  – Equipment maintenance
Future Perspectives

• Explore cost effective means of connectivity of the healthcare centers within and beyond national boundaries
• Expansion of Telemedicine services to the BHU levels
• Continued support from WHO through its biennium country program
• Prepare code of ethics for Telemedicine issues on legal responsibility, mutual recognition of registration of medical degrees on reciprocal basis, time schedule for providing consultations etc.
• HRD and Training Programs
  – Collaboration with Tokai University and other institutes in the region (Technical and Management)
  – User Trainings as regular activity of the project