Application of Telemedicine in Emergencies.

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Immediate Past President e – Health Association of Pakistan
Outline of today’s presentation

- Introduction
- Telemedicine : Basic Facts
- Emergencies : Individual life threatening / Major Disasters
- Telemedicine / Application in Emergencies
- First hand Experience of disasters and role of telemedicine in Pakistan
  1. Earthquake 2005
  2. IDP’S : 2009
  3. Floods 2010
- ITU’s Role in Emergency Telemedicine Response in Pakistan
- Lessons Learnt!!
- Regional & International Collaboration
- Future Directions!
The use of electronic information and communication technology to provide and support health care when distance separates the participants.

The term telemedicine derives from Greek word ‘tele’ meaning ‘at a distance’ and the Latin word ‘mederi’ or ‘medicine’ meaning ‘healing’.
TELEMEDICINE

- Simply it is use of telecommunication to provide medical information and services.

Diagram:
- Medical information
- Telemedicine
- Clinical Medicine
- Cyber Health
- Public Health
TELEMEDICINE REQUIREMENTS

1. Network, connectivity
2. Telemedicine tools.
3. Trained health professionals
TELEMEDICINE METHODOLOGY

- Store and forward method.
- Live transmission.
  (film less transfer, two way interactive communication or video conferencing.)
TELEMEDICINE APPLICATIONS

• Early Intervention
• Emergency & Trauma Care
• Tele – Dermatology
• Tele – Cardiology
• Tele – Psychiatry
• Tele – Radiology
TELEMEDICINE APPLICATIONS

EARLY INTERVENTION

EMERGENCY & TRAUMA CARE

URGENT 2\textsuperscript{nd} OPINION
Medical Emergencies!
Emergency Consultation Trauma
Emergency Consultation Trauma
Major Disasters
Telemedicine in Pakistan

Area: 796095 sq. km
Population: 166 million
Income/capita: $925
Literacy rate: 54%

Digital Exchanges: >95%
Internet connection: 3,000 cities
Fiber optics: 500 cities
Satellite Communication: Asia Pak Sat 1

PAKISTAN STATISTICS
Telemedicine in Pakistan

Role of MOST Pakistan

Telemedicine identified - priority area.
Task Force.
National Awareness Campaign
Workshops & Conferences
Pilot projects
PMRC Project
Pak-US Collaboration in Science & technology
Telemedicine
Telemedicine/E-health training center at HFH

Telemedicine/E-health Training Center

- Training of 100 Doctors and Nurses
  - Number of Institutes benefited
  - Implementation of Telemedicine programs
- Role in Disaster Management
  - Mobile Telemedicine Units
    (ITU, INTEL, PASHA, MOIT)
  - Telemedicine Training of Paraplegics
- Research and Development Activities
Setting Up of Telemedicine/E-health training center at HFH
Telemedicine Training of Doctors & Nurses

Features:
- 03 weeks training
- Hands on experience on real time and mock cases
- Visit to remote hospital in Pindi Gheb
- Proposal Writing for introduction of Telemedicine in own institutes
Current Initiatives

• National Rural Support Program
  ( MOIT Health Net 2007-2010 )

• Tele-Rehabilitation Center
  Muzaffarabad ( 2008 -2009 )

• Establishment of Virtual Trainer Lab
  and Improving MIS Skills through
  Telementoring. ( 2008- 2009 )

• Tele-Oncology
National Rural Support Program
(MOIT Health Net 2007-2010)
Facilities at all centers
### Telemedicine Schedule

#### Speciality Weekly Teleconsultation Schedule, HFH

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<th>Days</th>
<th>Timing</th>
<th>Attack</th>
<th>Pindichub</th>
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- Tumor Board Meeting NOEI with HFH (8am to 9:30 am) CME Program Each Site per Week (Last Friday)
- Surgery Joint Meeting R.Y Khan
# Holy Family Hospital (HUB) Specialty Consultations

## July-2008 to Till Date Record (Department) 14/11/2011

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Tele Oncology HFH- NORI
Public Private Partnerships’ in eHealth

- Pakistan Telemedicine Project
- International Organization of Migration project
- ICI Telemedicine project for Khewra town
PAK – US Collaboration
Telemedicine
Public Private Partnership
US State Department
Ministry of Health, Punjab Government
IBM,
Motorola,
Medweb, USA
Motorola – Wateen Telecom
Additional Features - Tele radiology, Wimax
Applications of Telemedicine in Emergencies
Applications of Telemedicine in Emergencies

First hand Experience of disasters and role of telemedicine in Pakistan

1. Earthquake 2005
2. IDP’S : 2009
3. Floods 2010

- ITU’s Role in Emergency Telemedicine Response in Pakistan
Earth Quake of Pakistan

- Magnitude 7.6
- 86,000 people lost their lives
- 69,000 injured
- Heaviest damage occurred in the Muzaffarabad area
- Estimated 4 million people in the area left homeless
Earthquake: Pakistan  2005
Earthquake: Pakistan 2005
Telemedicine in Disaster Management

Experience in Pakistan

Initiative of:
Ministry of Information Technology Pakistan
International Telecommunications Union (ITU)
Pakistan Soft Ware Board (PASHA)
INTEL
Telemedicine & e-health center holy family hospital
Telemedicine in Disaster Management

- Collaboration with Foreign Relief Missions
- Cuba/ Turkey / UAE
- NGO’S
- Pakistan Govt. relief missions
Telemedicine in Disaster Management

- Collaboration with VCU / NASA Experts
Telemedicine – Role in disaster Management

- Multitasking
- Hub at Holy family hospital (Tertiary Care)
- Remote centers in disaster area
- Step down hospitals
- Follow up
- Rehabilitation
Telemedicine in Disaster Management

- Setting of telemedicine centers
- Shoal Najaf / Balakot
Mobile Telemedicine Setup
Results

- Teleconsultations with Specialists
- Referred cases were sent to the tertiary hospitals in a state of complete “surgical preparedness”.
- The stay in the hospital was minimized.
- Speedy treatment was ensured.
Step Down Hospital Concept
Remote Monitoring and Follow up
Remote Consultations / Supervision
Duration of stay in hospital

Total hospital stay: 10-57 days (mean 36)

- Stay at Tertiary care hospital: 6 days
- Stay at Step down hospital: 30 days
Results

- Significant reduction in readmissions to tertiary care hospitals.
  - Reduces the burden on main trauma care centers.
- Peripheral hospitals can be safely upgraded through telemedicine during the disaster situation
Tele-Rehabilitation
Experience in Paraplegics - victims of Earthquake
Tele Rehabilitation: Conclusion

- Computer skills of paraplegics and their attendants can be used as a tool in their rehabilitation.
- Rehabilitation while based at tertiary centers should include basic training of paraplegics and their attendants.
Internally Displaced Persons 2009
Emergency Response Telemedicine Vehicle
Pakistan Floods 2010

20 million people affected
Deaths: 1,384
722,000 houses damaged / destroyed
300,000 people were evacuated
6 million people do not have access to clean water
3.5 million children were at risk of contracting deadly water-born diseases
Pakistan Floods 2010
Tele consultations From Rajanpur
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Total Number of Patients
(Flooded Areas Clinic)

- 1894 patients in Medicine
- 842 patients in Dermatology
- 305 patients in Peads
- 308 patients in ENT
- 82 patients in Pshy
- 71 patients in Neuro
- 44 patients in Cardiology
- 41 patients in Urology
- 6 patients in Gyne
ITU & Major Disasters in Pakistan

“Cooperation for disaster preparedness and response through Telemedicine & e-health”
Collaboration with ITU in Emergency Telemedicine Response
Emergency Telemedicine Response Northern Areas Pakistan
Emergency Telemedicine Response Southern Punjab
Lessons Learnt!!
Nation’s Response
Lessons Learnt!!

- Disaster plans / Emergency preparedness
- Lack of & Difficulties in Co-ordination !!
- One of the most significant problems in mass casualty management is that we do not prepare for disasters; we respond to them
Major Concerns

- Impact of disaster – immediate and consequences linger over time
- Health surveillance must survey extent and patterns of injuries
- Immediate response requires documentation regarding incidence
- Relay of accurate information to command and control
Application of Telemedicine in Emergencies

- Information alone can save lives.
- But there are gaps in the way we gather and share this powerful resource.
- Timely information is a form of disaster response in its own right.
- Information reduces suffering in the wake of disaster.

*International Federation of Red Cross. World Disaster report 2005*
Conclusions

- This is a good example of the use of information technology during times of disaster.
- Prior experience during the 2005 earthquake and internally displaced persons due to terrorist clean up operations in Swat, and Floods in 2010 in Pakistan was extremely helpful.
- There are lessons to be learnt.
- A comprehensive strategy for collaborative international response to deal with these challenges is required.