Panel 2.18
“Logistics, Information Technology and Telecommunications in Crisis Management”

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Key Question for the Panel

• What strategic components of Information Technology and Telecommunications should the health sector consider for disaster management during
  ➢ Preparedness
  ➢ Response
  ➢ Recovery

• Why?
Field Operation Challenges

Political, Social, Economic, & Environmental Issues

- Apocalyptic Scale: worst human tragedy to hit the region since WWII
- Infrastructure, voice and data communication system loss & damage
- Rapidly changing environment & unique support requirements
- Individual, bureaucratic and departmental interests - “stovepipes”
- Multiple agency, UN, NGO, government & private sector coordination
- Resource needs – food, supplies, personnel, money
- Chaos, trauma, emotional stress, harsh environment
- Policies, regulations, practices, military activity
- Manual – traditional paper driven systems
Primary IT & Tele-Communications Support Goals

- Re-establish critical communication support capabilities
- Improve access to critical “Real-Time” decision support information
- Implement data triage procedures
- Provide decision makers with high value information matched against pre-defined decision support variables/ indicators
- Design for a “high stress” limited resource environment
- Facilitate information sharing and communication between relief organizations
- Identify and reduce redundant efforts
- Deliver flexible, scalable, and secure technology solutions
- Provide comprehensive reporting & linkage to organizational systems including legacy systems
- Adapt systems to meet regulatory, cultural, social, skill and usage requirements
What was done well?

- Capacity Building Initiative
- Gap Filling Initiative
- Need Assessment
- Capacity Building Initiative
Need Assessment

How IT supported initial and ongoing assessments of the disasters and what were IT & Telecom needs?
Need Assessment

Role of IT in Psychosocial support to the community

• Adaptation of the General Health Questionnaire – 12 (GHQ-12) has been very successful in identifying the levels of psychosocial distress in the community - implemented in India, Maldives and Thailand
  – In India and Maldives, the data captured remains in paper form and could not be collated for analysis
  – In Thailand, the data captured was entered in computers at PHC level and collated for analysis at national level
  – Such data management system has been very successfully used in Thailand
• Hand-held computing (PDA) devices could play an important role in facilitating data capture in the field. This information could be downloaded to a central repository to facilitate analysis on the huge data set.
Mapping of health infrastructure and disease surveillance

- GIS is an outstanding visual decision support tool and is the “DNA” of disaster management
- Use of GIS spatial data for monitoring of displaced persons & health infrastructure – Sri Lanka, Indonesia, India and Maldives
- This addressed temporary camps, displaced persons, number of deaths, injuries, impacted primary health care centers, and hospitals
- Mapping of communicable disease occurrence and trend analysis
Gap Filling Initiatives

Disease surveillance strengthened
Health Mapping activities

• Geographical Information System (GIS) support from WHO and other partners
  – GIS maps for Tsunami Country Situation Reports on daily basis
  – GPS devices provided to affected countries to aid health mapping work
What was done well?

- Gap Filling Initiative
- Capacity Building Initiative
- Need Assessment
Gap Filling Initiatives

How were IT & Telecommunications needs being met during Tsunami response, and with what results?
Gap Filling Initiatives

Secure Wireless Infrastructure System (SWIS)

*High Speed Data*
- SWIS supports up to 500 users, at a 3 MB data transfer rate.
- Wi-Max 802.11 connectivity up to 75 miles for transmission of medical diagnostic information.

*Voice over IP*
- 20 VoIP phones and can support hundreds of users.

*Video*
- Broadcast, surveillance, digital media, medical video, etc.

SWIS installed in Teunom, Indonesia supporting relief operations including on-site field hospital.
Gap Filling Initiatives

Connectivity established to overcome Communication Barriers

- VSATs installed at
  - WHO field offices at Banda Aceh and Meulaboh
  - WHO Country office for Indonesia and Sri Lanka
  - for Voice, Video, Data and Internet access (56Kbs)

- Computers in Meulaboh District Health Office were connected to a wireless LAN and VSAT installed at WHO Meulaboh Office

- ICT infrastructure deployment strategy developed and field offices ICT infrastructures established

- Other Telecom equipment
  - Telecommunication plan developed for WHO field staff supporting Health Sector
  - Provided VHF, radio, satellite phones & GSM phones to travelling WHO staff
  - VHF/HF base stations installed
Medical Challenge: Supply Management

• Develop and Implement Systems to address:
  - Medical Supply Management
    • Receiving
    • Inventory management
    • Tracking - Shipping
    • Distribution

• Operating Environment
  - Inadequate Storage Facilities
  - Limited manpower
  - 10,000 + categories
  - 67 donor countries, 20 languages
  - Packing Lists missing
  - Open packages – expired / used drugs
Medical Challenge: Supply Management (example)

- **Rapid Drug Classification**
  - Utilize Colors and Symbols
  - 27 major categories (WHO standard)

- **Warehouse Operations**
  - Redistribute inventory
  - Label all shipments
Medical Supply Management System: (example)
Gap Filling Initiatives

EMS — Emergency Management System

- Incident Reporting / Management
- GIS – location and tracking
- Contact and Personnel Management
- Equipment Resource Management
- Tasking & Assignments
- Warehouse and Facilities Tracking & Storage
- Routing & Road Condition Status
- Logistics Management
- Donation Management & Volunteer Coordination
- Incident Planning & Analysis
- Financial Tracking
- Decision Support, Data Consolidation, Report Generation
Information flow for resource tracking improved using web based systems

- Information Systems linked to WHO’s transaction systems, developed and implemented by WHO for
  - Programme Management System
  - Human Resource Tracking System
  - Supplies Tracking System
  - Security Alert System for tracking movements of staff
  - Address List system for maintaining contacts information
  - Proposal Tracking System (PTS)

- Standard Operating procedures developed
  - Protocols : Collaborative Workspace, E-mail and file management
  - Briefing packages for staff deployed in field
  - User manuals and quick references for the systems

- Round the clock (24x7) WHO ICT support to Tsunami Operations team in the Regional office and Countries
Telemedicine in disaster management

- Telemedicine system installed at General Hospital, Ampara, Sri Lanka proved beneficial by providing useful information from the Harvard university web site regarding salt water aspiration management. It helped survival of thousands of Tsunami victims.

- Telemedicine has significant role in the efficient disaster management

- Availability of this system would be beneficial for the whole community and the medical profession
What was done well?

- Need Assessment
- Gap Filling Initiative
- Capacity Building Initiative
Capacity Building Initiatives

How are country capacities being strengthened including preparedness for future disasters?
**INDIA**

- **Impacted Areas:**
  - State of Tamil Nadu: Nagapattinam, Cuddalore, Pondicherry, Karikal, Andaman & Nicobar Islands

**Relief Efforts**

- Field response teams assigned and deployed to critical sites
- Crisis Management and Application Development teams established
- Rapid application development: India Tsunami Crisis Management System
  - Relief Materials Logistic Management System
  - Prime Minister National Relief Fund Management System
  - Victim Tracking (alive, dead, photos, individuals, families)
  - Relief Camp Management & ID Card System (biometric, fingerprint, photo)
  - Report Generation and Statistical Analysis (District & Village level)
  - Helpline Services Tracking (capture service requests & monitor status)
  - Tracking early signs of disease outbreaks (cooperative effort with WHO)
- Under Development: Reconstruction decision support & project management
Tsunami Crisis Management Information System

Open source, Linux Operating System, MYSQL Database
SRI LANKA

• **Impacted Areas:**
  - Galle: Massive coastal damage

**Relief Efforts**

- Deployment of personnel to design network, staff 24 hour helpdesk and install PC’s to support the government (central network operations)
- Development of Emergency Management Software “SAHANA” system
  - Organization Registry, Request Management System
  - Personnel and Camp Registry, Assistance Database
  - Trained 300 student volunteers on use of “SAHANA” for data entry
- Development and Implementation of Trauma Counseling Training Program
  - Supported the National Child Protection Authority (NCPA)
  - Train-the-Trainer for Trauma Counseling, Worked in relief camps
  - Automated abused child “drop-in-center” tracking software
- Developed organizational structure for long term emergency program management and operations
SAHANA - Relief Management System

Student volunteer with Laptop PC

Training Session on SAHANA

SAHANA sign on screen

Displaced person registration

NGO and relief organization log
Trauma Counseling Training Program

Tsunami Memory Drawings by school children

Luisa (Trauma PhD) greeting children at Boosa relief camp

Terri (IBM CRT partner) with her new friends at a relief camp
THAILAND

- **Impacted Areas:**
  - Phuket, Narentorn and surrounding villages

**Relief Efforts**
- Deployment of trained personnel to provide on-site support for temporary government offices and NGO’s.
- Helpdesk support for Ministry of Information and Communication Technology
- Provided equipment and support to damaged international consulates
- Implemented Disaster Portal on Web in cooperation with MICT
  - www.ThaiTsunami.com
  - Database Consolidation for missing / dead–DNA–Biometric tags / injured
  - Photo ID management
  - System Infrastructure, Administration, Application, & Management Support
- Development: National Critical Incident Management Support System
- Donated PC’s, Servers, Printers, Scanners, Routers & Hubs
- Vectormax Software for multimedia conferences & “KidSmart” for schools
**INDONESIA**

- **Impacted Areas:**
  - Sumatra: Aceh Province: Banda Aceh, Lamno, Teunom, Meulaboh, Calang, Lhoknga, Leupung

**Relief Efforts**

- Technology donated to Indonesia Red Cross
- Local Critical Incident Support Team Identified & Assigned to Tsunami Relief
- Management Information System for Aceh Disaster (SIMBA) developed
  - Client and Server version developed and tested
  - Internal Displaced Person (IDP) registration and tracking
  - Logistics Management, Event Reporting, Relief Unit Administration
  - Data Consolidation and Cooperative Collaboration with UN, NGO’s
  - Reporting and Data Management
- Communication Systems – SWIS: high speed internet & Voice over IP
- Equipment Donated: Laptop PC’s, Servers
- “KidSmart” for Schools, Relief Camps and Orphanages in Aceh
Management Information System for Aceh Disaster
Sistem Informasi Manajemen Bencona Aceh (SIMBA)

Training Students on SIMBA

Requirements meeting with Government

Programming Team in Aceh
Transportation: Helicopters courtesy of the Government of Japan
Security: Indonesia Military Escort
Environment: Heat: 110 degrees
           Humidity: unbelievable

Chinook loaded with IBM SWIS
Meeting with General Bambang
Sleeping under mosquito nets
Proposed Recommendations to do better in future

• Information can be as important as food, medicine, or shelter in a disaster

• IT should be seen as a strategic partner in the development of comprehensive preparedness plans and should be involved from day ONE during a disaster Response phase

• In most major disasters, telecommunication infrastructure is damaged or destroyed. Rapid deployment of telecommunication equipment to re-establish communication links for incident management and resource deployment should be the highest priority during the response phase

• WHO Country offices and Regional Office Operations should be equipped with ICT systems to facilitate immediate communications with all three levels of the organization and the National disaster management programme
Proposed Recommendations to do better in future

• Well-designed IT architecture including hardware/software and connectivity

• Preparedness
  • Utilization of IT systems as a strategic element of preparedness
  • Inventory of essential IT & Telecom equipment
  • Development of Protocols and SOPs
  • Development of ICT applications and deployment strategy

• Response
  • Provide Information Dissemination tools such as web publishing
  • Rapid ICT staff mobilization in cooperation with public & private sector
  • Implementation of information systems which work in both connected and unconnected environment
  • Rapid deployment of Telecommunication equipment

• Recovery
  • Rebuilding the destroyed infrastructure using “systems approach”
  • Computerized systems should be introduced to replace the pre-disaster conventional systems, where appropriate and sustainable
Next Steps

Commitment, Consolidation, Enhancement, Deployment

• Build on the success of the UN agency, national government and private sector joint development programs which evolved during the tsunami relief effort.
• Implement a strategic plan to consolidate and enhance the emergency management relief systems utilized in the tsunami relief effort.
• Embrace an “open systems” philosophy to address WHO, UN agency, and local government requirements for independence and flexibility.
• Design solutions that can be easily adapted to address local social, regulatory, and operational needs while delivering preparedness, response and recovery benefits.
• Build a plan to obtain international agreement on emergency regulatory provisions that could be implemented by governments during times of crisis to address issues involving import customs, communications, UN and foreign disaster relief assistance.
• Develop and implement a practice of improved communications, coordination, and sharing of mutually beneficial information across UN agencies, NGO’s, local governments, and private sector groups involved in the relief and recovery effort.
Thank You

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