Hospital Response to Natural Disasters: from Tsunami to Hurricane Katrina

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The Affected Areas

Tsunami 2004

South Asia Map Locating Tsunami Hit Areas
Our Medical Team
Lessons from Tsunami 2004

- Hospital system damaged
- Thousands of severe traumatic injuries & soft tissue infections patients
- Inadequate medical professionals or equipments for extensive wound debridement, orthopaedics or amputation

→ mobile medical programs & temporary field hospitals needed

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Hurricane Katrina 2005
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Lessons from Katrina 2005

- Poor pre-crisis planning
- Insufficient priority to critical public health issues & basic human needs
- Communications break-down
- Safety & security system failure
- Most vulnerable populations neglected
Nature & Human Disasters

1. Disasters of Natural Origin
   - Sudden - Earthquakes, tsunami
   - Less sudden : Hurricane

2. Disasters of Human Origin
   - Industrial Accidents ( e.g. chemical, biological etc )
   - Transportation Accidents ( e.g. plane crash )
   - Wars & Terrorist Attacks
   - Complex Emergencies ( e.g. civil strife )
Hong Kong

Place of Luck & Fortune
Typhoon Rose 1971

Figure 16: Track of Typhoon Rose past Hong Kong (after HKO)
Typhoon Rose 1971
Typhoon Rose 1971
Typhoon Rose 1971
Landslide 1972

1972 秀茂坪山泥傾瀉
(~ 6,000 m³) (71 死)
Major Isolated Accidents
WTO MC6 2005
Arts of War

- Not on the likelihood of the enemy’s not coming, but on our readiness to receive him;
- Not on the chances of his not attacking, but rather on the fact we have made our position steadfast’
Healthcare Managers Should Prepare for Disasters

1. Turbo-charge your imagination
2. Scenarios planning
3. Think in probabilities, impact and cost
4. Cultivating a need for preparedness
5. Create a culture to face reality
Since the 1980s, the Earth's temperature has risen at an increasing rate (below left), probably in response to rising concentrations of CO₂, the atmosphere's main greenhouse gas. Signs of climate change are obvious in data assembled by Belgium's Center for Research on the Epidemiology of Disasters: Calamities have become more frequent. (In part because the center only started in 1974, earlier data may not be as complete.)

Plot showing number of natural disasters recorded each year worldwide, 1900-2005.
Risk Assessment

- Great population density.
- **Geographic Characteristics**
  - Hills, Island & Peninsula,
  - Slopes, reclamation land along harbor
  - Not in earthquake zone
  - Heavy rainfall & typhoon
- High rise building supplied with life-lines
- Heavy & modern traffic
- International city
- High dependence on external support
When Mega Disaster Strikes
Disaster Management

- **Communication** — obtain information from various sources
- **Co-ordination** — liaise with other involved agencies
- **Control** — deploy and utilise resources
- **Command** — take charge of the appropriate response
Major Impacts of Mega Disaster

- Facilities Destruction
- Lifelines Disruptions
- Traffic & Transport Disruptions
- Communication Breakdown
- Mass Injuries & Deaths
- Healthcare System Disruption
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Healthcare System Disruption

Mission Critical Functions
Healthcare System Disruption

Mission Critical Persons
Health Impacts

1. Deaths when the disaster strikes

2. Survival of the immediate threat but deaths from injuries induced by the event

3. Death due to diseases due to destruction of the public health infrastructure

4. Mental & Psychological Trauma
Disaster Responses I

- Search & Rescue
- Shelter & Evacuation
- Medical Relief
- Multi-agency Collaboration
- Volunteer Coordination
- Outside Assistance Coordination
Search & Rescue

- Extrication
- Incident Site Triage
- Emergency Medical Team
- Accident & Emergency Care
Shelter & Evacuation

- Temporary shelters
  - Community halls, schools and other premises

- Basic Needs for Health
  - Clean water & sanitation
  - Food
  - Shelter and clothing
  - Health services
  - Information
Medical Relief

- Assess capability & functionality
- Support current systems that function
- Designate clear roles and functions
- Consider patient evacuation
- Triage & referral networking
- Build temporary facilities & clinics
Medical Relief

- Community Health Centers
- Triage & Treatment
- Infectious Diseases & Chronic Diseases
- Psychological Support
Disaster Responses

- Search & Rescue
- Shelter & Evacuation
- Medical Relief
- Multi-agency Collaboration
- Volunteer Coordination
- Outside Assistance Coordination
Multi-agency Collaboration
Voluntary Agencies

- UNICEF
- Salvation Army
- St. John Ambulance
- WORLD RELIEF
- Hong Kong Red Cross
- Oxfam Hong Kong
National & International Assistance

(Day 4 - 7)
(Day 2 - 3)
(Day 1)

Hong Kong SAR
MAINLAND CHINA
INTERNATIONAL COMMUNITY
The Right Place & Time

INTERNATIONAL ASSISTANCE

NATIONAL ASSISTANCE
“The Right Things”
The nature of donations

- Should be required
- Should not be available locally
Disaster Responses II

- Resource Deployment
- Coordination
- Communication
- Media
- Information & Media
- Logistics
Disaster Responses II

- Resource Deployment
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Media

在晴朗的一天出發
1. Measure crude mortality rates, causes of mortality, nature of health problems
2. General condition of the population with regard to the supply of basic needs
3. Condition of the environment in terms of weather, water supply and drainage, transmissible diseases outbreak etc
4. Morbidity of the affected or vulnerable population esp. on Chronic Diseases & PTSS
“Logistics First”

- “What can I do to help?” ……lacking an assigned role, many found themselves sitting on their hands, doing nothing for which they had been trained.
- First priorities are security and safety for the population
- Water, sanitation, food and shelter
- Vaccination against measles ( <15 years old )
- Curative care etc
Disaster Occurs → Field Operations → Health Needs
Disaster Occurs

Field Operations

Hospital damage assessment

Health Needs
Disaster Occurs

Field Operations

Hospital damage assessment

Health Needs

Hospital Evacuation if required
Disaster Occurs

Field Operations

Health Needs

Hospital damage assessment

Hospital Evacuation if required

Role Delineation of Healthcare Facilities based on capacity & capability

Health Needs
Disaster Occurs

Field Operations

Hospital damage assessment

Health Needs
Short, intermediate & Long Term Needs

Hospital Evacuation if required

Role Delineation of Healthcare Facilities based on capacity & capability
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Role Delineation of Healthcare Facilities based on capacity & capability

Central co-ordination of Medical logistics With NGO and HKSAR

Health Needs
Short, intermediate & Long Term Needs
Disaster Occurs

- Field Operations
- CHINA & International Help
- Hospital damage assessment
- Central co-ordination of Medical logistics With NGO and HKSAR
- Role Delineation of Healthcare Facilities based on capacity & capability

Health Needs
Short, intermediate & Long Term Needs

- Hospital evacuation if required
Prevention

- Prediction & intervention
- Population evacuation
- Health related disasters
- Drive for higher “Safety”
- Planning and drilling
Learning & Sharing

- No incident is the same
- No quick manual for disaster management
- Must research, share & learn from each other
Thank you!