STI FOR HEALTH AND OTHER EMERGING HAZARDS

DATO' DR AHMAD FAIZAL PERDAUS
President, MERCY Malaysia
Consultant Physician

BENGKEL KONSULTATIF
PELAN SAINS, TEKNOLOGI DAN INOVASI BAGI DRR
Kelab Golf Danau, Universiti Kebangsaan Malaysia
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INTRODUCTION

Environmental burden of disease globally

Estimated proportion of total disease burden caused by environmental risk factors by region of the world

INTRODUCTION

STI for health and other emerging hazards

- Every minute, 5 children in developing countries die from malaria or diarrhea.

- Waterborne diseases cause about 1.5 million human deaths annually, usually attributable to unsafe water supply, sanitation and hygiene.

- Hundreds of floods, storms, heat waves and droughts have left about 606,000 people dead and 4.1 billion injured or homeless around the world since 1995.

- People suffer from a wide range of mental health problems during and long after emergencies, which post traumatic stress disorder (PTSD) is the most commonly identified disorder that occurs after exposure to a traumatic event.

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Emergency Medical Team (EMT)

EMT (also known as ERU/EHU) is part of capacity building in the pre-disaster phase. It is a practical solution in the form of a vehicle for emergency life-saving medical assistance in the acute emergency phase of a major disaster. This has expanded to include longer term health engagements such as mental health and psychosocial support (MHPSS) and rehabilitation medicine.

FEATURES OF MERCY MALAYSIA’S EMT

• Light weight- all items can be carried by hand
• Modular
• Set-up time of 24 hours
• Operational on-site for 4 weeks

The EMT is designed to cater to varying needs and can be deployed in different module combinations:
• Module A: Outpatient Department and Pharmacy
• Module B: A + Emergency Room and Wards
• Module C: A + B + Operation Theatre
• Module D: Operational in a partially functioning existing hospital

Source: MERCY Malaysia, Emergency Medical Team brochure, 2016
INNOVATIONS include

Lightweight tent systems

Modular – able to deploy singular & multiple frames

Enhanced water & sanitation systems for the ERU

Solid floor boarding for tents eg NRS HuggyPRO
Vehicular-based ERU models

Are recommended to have lightweight modular tent-based back ups for access & mobility

Example will be the IFRC Field hospital -130 BED

Level 2 EMT with Lab, OT & Radiology
New system innovation-CERT

Community based Emergency Response Team

Practical in highly disaster prone & prolonged conflict situations – eg Aceh, Kelantan, besieged cities

As well as difficult to access areas – e.g. mountainous regions Himalayas, Kinabalu
Resilient Health Infrastructure (RHI)

RHI focuses on the combination of capabilities between the hospital/health infrastructure and its human resources whom are prepared and responsive to meet pressures during the disaster and are able to recover in a timely manner.

Considering hospital is a complex organization; building, infrastructure and built environment representing aspects related to physical components, to people and hospital management through which space are planned and designed, the program aims to advocate the improvement in making a hospital more resilience.
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<td>8.2 Evaluation and Adaptation</td>
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Resilient Health Infrastructure (RHI) - Needs

Source: MERCY Malaysia, Introduction to Resilient Health Infrastructure, 2016
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Resilient Health Infrastructure (RHI) - Physical Innovation

Source: MERCY Malaysia, Introduction to Resilient Health Infrastructure, 2016
Major salient points

Disaster resistant & adjusted technology eg appropriate retrofitting

Application of disaster preparedness topography

Build resilient hospital/institution internal community together with adjacent community resilience
2.1 billion people lack safe drinking water at home, more than twice as many lack safe sanitation. MERCY Malaysia began systematically focusing on Water, Sanitation, and Hygiene (WASH) in its humanitarian relief operations in 2005. This includes the provision of safe water supply, sanitation facilities and hygiene promotion.
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Water, Sanitation and Hygiene (WASH) - Innovation Ladder Framework

1. Basic Knowledge, Awareness and Demand
   - Indicators: increasing awareness, articulated initial demand for sanitation, willingness to contribute own resources

2. Safe Excreta Containment
   - Indicators: facilities in use and clean, handwashing facility in use

3. Safe Access and Availability
   - Indicators: 24h access year-round, privacy, security, shelter

4. Greywater Management
   - Indicators: no stagnant water in compound/street

5. Excreta Treatment
   - Indicators: indicator will depend on flow-stream (e.g. urine, faeces, wastewater)

6. Safe Use of treated Excreta
   - Indicators: percentage of treated urine and/or faeces reused

7. Eutrophication Management
   - Indicators: removal of N and P from wastewater

8. Integrated Resource Management
   - Indicators: integr. managem. of stormwater, wastewater and solid waste

Open Defecation

No Sanitation Facilities and No Demand
- Indicators: faecally contaminated drinking water, prevalence of sanitation-related diseases, no key behaviours practised

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Water, Sanitation and Hygiene (WASH) - Innovation on Value Chain

EXAMPLES OF INNOVATION IN WASH PROGRAMS

1. Community mobilization linked with supply chain strengthening and coordination with local government institutions.

2. Gender-specific WASH motivation, which included interpersonal communications at places and times suitable to different gender age groups and the poor: a redesign of the communication strategy, focusing on fewer practices and two-way communication.

3. The provision of toilet loans for the poor and grants for the ultra poor.

4. Low-cost sanitation technology in areas with a high water table.

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Water-Borne and Communicable Diseases

THE CAUSE
Waterborne disease, which can be bacterial, parasitic, viral, or chemical, occurs due to exposure to one of these three types of water:

- RECREATIONAL WATER
  - swimming pools
  - hot tubs
  - etc.

- NON-RECREATIONAL WATER
  - water not intended for drinking
  - water of unknown intent

- DRINKING WATER
  - tap water
  - well water
  - etc.

DEFINING THE TERM

WATERBORNE DISEASE:  
- Disease caused by pathogenic microbes which can directly spread through contaminated water
- Can be bacterial, parasitic, viral, or chemical

COMMON TYPES:  
- E. coli
- Legionellosis
- Salmonella
- Cryptosporidiosis

COMMON SYMPTOMS:  
- Diarrhea
- Vomiting
- Nausea
- Chills
- Abdominal pain
- Dehydration
- Headache
- Fever

Source: Our Water Project, Ohio University, 2017
### Why is WASH Important?

Public health diseases in emergencies

<table>
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<tr>
<th>Disease</th>
<th>Cause</th>
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<tr>
<td>Diarrhoea, dysentery, cholera</td>
<td>Water borne (contaminated water)</td>
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<tr>
<td>Infectious skin and eye diseases</td>
<td>Lack of water</td>
</tr>
<tr>
<td>Malaria, dengue, river blindness</td>
<td>Water-related and vector borne (breed in water)</td>
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<tr>
<td>Schistosomiasis, guinea</td>
<td>Water based life</td>
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Water-Borne and Communicable Diseases

Measures in reducing risks of water-borne and communicable disease risks:

- Chlorination of water
- Vaccination against hepatitis A
- Malaria prevention
- Health education
- Enforce high standards of hygiene through legislative/administrative ways

Innovative WASH programs
Sustainable health programs
BRC programs (CBDRM, SPP, LGUs)

Source: MERCY Malaysia, Annual Report, 2016
Health innovations

Disease-specific kits for field laboratories & field hospitals e.g. rapid tests & easy-dispense antibiotics & oral & IV Fluid replacement systems

Water purification packs for ERTs & communities – need to be part of preparedness trainings
Epidemics and pandemics along with other hazards cause significant health impacts and disruption to the functioning of society including social, economic and political stability. **Epidemics may be a primary event or a secondary consequence of the impact of other hazards, such as cyclones, drought and floods.** The Sendai Framework for DRR is advocating for more explicit inclusion of epidemics and pandemics in the framework:

**1. Integration of epidemic and pandemic risks into the all-hazard emergency** and disaster risk management policies, plans and practices of governments, private sector and stakeholders within and across all sectors and at all levels of society.

**2. Increased understanding, recognition and implementation by all sectors of the International Health Regulations (2005) as a complementary framework that contributes to disaster risk reduction.**

**3. Knowledge and technology transfer between communities and actors involved in managing risks of epidemics and pandemics with those working in disaster risk reduction.**

**4. Reinforcement and scaled up action on linking epidemics and pandemics to risk assessment and early warning systems.**

**5. Continuing focus on improving access to safe water and resilient water and sanitation systems.**

**6. Strengthening capacities of health systems to manage the risks of epidemics and pandemics including through primary, secondary and tertiary care, disease surveillance, risk communication, Resilient Hospital programs to address epidemics, multi-hazard emergency preparedness and other programs.**

**7. Means to promote more urgent scientific research on epidemics and pandemics, and effective risk management strategies.**

Source: UNISDR, Working Session on Reducing Risks of Epidemics and Pandemics, 2015
Epidemics and Pandemics

The World Health Organization raised the pandemic alert level for swine flu from a phase five to a phase six, the highest phase.

Innovations

Technical- identification of virulent and dangerous pathogens & microbes – viral, bacteria & fungi as well as new tube & box systems for cold chain for anti-dote & vaccines

Regular pandemic preparedness training

Integrate epidemic & pandemic preparedness & response in field hospitals

Involve communities in disaster prone areas early in pandemic preparedness & training
In times of disaster, the mental health of the affected population may not be seen as immediate need if compared with physical injuries. However, traumatized survivors need emotional support and guidance in the aftermath of a disaster. MHPSS may assist by providing psychosocial intervention through programs such as **Psychosocial First Aid (PFA), Child Friendly Space (CFS) and Women Friendly Space (WFS)** during the crisis situation.

### Humanitarian crises impact mental health by:

1. Producing grief and acute stress as psychological reactions to adversity and loss
2. Triggering common mental disorders such as depression and anxiety, and in some cases post-traumatic stress disorder
3. Exacerbating pre-existing chronic mental health conditions and placing people who need long term care at increased risk of neglect
4. Increasing use of alcohol and drugs, resulting in further health and social problems

### Key recommendations:

Weak mental health systems not only fail to meet the needs of the general population; they also represent a major liability if a crisis emerges. Therefore, some of the key recommendations are:

1. Set up cost-effective, nation-wide community mental health systems in countries at risk
2. Plan for emergency preparedness—including mental health and psychosocial support—within the health system
3. Prioritize engagement of local expertise for sustainable change

Source: MERCY Malaysia, Annual Report, 2016 and ADPC, Bridging the Gaps in Mental Health and Psychosocial Support in Emergencies in Asia, 2013
Mental Health and Psychosocial Support Services (MHPSS)

- Specialized services
  - Mental health care by mental health specialists (psychiatric nurse, psychologist, psychiatrist, etc).

- Focused non-specialized supports
  - Basic mental health care by public healthcare doctors. Basic emotional and practical support by community workers

- Strengthening community and family supports
  - Activating social networks
    - Communal traditional supports
    - Supportive child-friendly spaces

- Social considerations in basic services and security
  - Advocacy for basic services that are safe, socially appropriate and protect dignity

Source: International Federation of Red Cross and Red Crescent Societies, 2014
Psychosocial innovations

Integrating CFS & WFS INTO Field hospitals/ERUs

Psychosocial & mental health preparedness programs initiated pre-disaster in highly prone areas

Training members of local community in MHPSS as part of CERT pre-disaster
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Building Resilient Communities (BRC) - Innovation in DRR

**PROGRAMS**

- CBDRM
- SPP
- RH
- PS
- LGUs

**OBJECTIVES**

- To provide a platform for communities to actively participate in disaster risk reduction activities, gain knowledge, skills and competencies in DRR and indigenous early warning systems are enhanced and used.
- To generate a culture of disaster awareness and response amongst school children, teachers and staff.
- To increase and introduce hospital and its management to DRR and improve the hospital’s disaster preparedness and early warning systems through the implementation of DRM.
- To provide DRR and DRM education for private and corporate sector through DRR for Private Sector and Business Continuity Plan (BCP).
- To educate, train and strengthen relevant LGU stakeholders on DRR and DRM.

**EXAMPLE ACTIVITIES**

- Rebuilding
- Capacity building
- WASH
- Safe schools
- Early warning systems
- Innovation transfer
- Knowledge generation
- Health supports and services
- Research
- Evacuation facilities
- Resilient infrastructure
- Policies & regulation
- Planning

Source: MERCY Malaysia, 2017
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Alignment to Sustainable Development Goals 2015 - 2030

1. No Poverty
2. Zero Hunger
3. Good Health and Well Being
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry Innovation and Infrastructure
10. Reduced Inequalities
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace, Justice, and Strong Institutions
17. Partnerships for the Goals

Source: MERCY Malaysia, 2017
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Alignment to Sendai Framework for Disaster Risk Reduction 2015 - 2030

Priority 1  Understanding disaster risk
Policies and practices for DRR should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment.

Priority 2  Strengthening disaster risk governance to manage disaster risk
Disaster risk governance at the national, regional and global levels is of great importance for an effective and efficient management of disaster risk.

Priority 3  Investing in disaster risk reduction for resilience
Public and private investment in DRR are essential to enhance the economic, social, health & cultural resilience of persons, communities, countries, their assets, as well as environment

Priority 4  Enhancing disaster preparedness for effective response, and to “Build Back Better” in recovery, rehabilitation and reconstruction
Strengthened disaster preparedness for response, recovery, rehabilitation and reconstruction are critical to build back better

Source: MERCY Malaysia, 2017