e-Atlas and Hospital Safety Index for disaster risk reduction in Health Sector

Dr. Qudsia Huda
WHO EMRO
WHO?

Death
Disease
Disability
Displaced population

Collapsed infrastructure
Inadequate medical supplies
Inadequate skilled health workforce
Total health facilities destroyed by disasters in EMR during 2004-2009
More than 24.6 m persons affected by disasters during 2004-2008
WHO in Global Drive for improved action

- World Health and General Assembly resolutions, 2005
- 6 years strategy on Risk Reduction & Emergency Preparedness, 2006
- World Health Day on Safety of health facilities
- Humanitarian Response Review
public safety and public health

WHO working in countries with other partners to develop a culture of risk reduction by:

• Public health risk and analyze vulnerabilities
• Emergency preparedness and response focusing on risk communication
• Building resilient community
• Strengthening health services in crisis
As a start: e Atlas

- encourage and stimulate Ministries of Health and other stakeholders within the health sector to strengthen their disaster management capacity: decision making & resource allocation, mostly risk communication

- Aid emergency preparedness, response measures on evidence base:
  - Hazard analysis
  - Public health vulnerability analysis
  - Risk communication
  - Prioritizing communities for mitigation activities
  - Providing springboard for early recovery
  - Maximizing resources complement disaster risk reduction in countries
WHO e-atlas of Disaster Risk in Eastern Mediterranean Region

(0 × A) + (1 × B) + (3 × C) + (5 × D)
First volume of the WHO e-atlas of Disaster Risk

Risk $\propto$ Hazard $\times$ Vulnerability $\times$ Capacity

Emergency Preparedness and Response Program in Health Sector
Risk Analysis

Risk $\propto$ Hazard x Vulnerability / Capacity
Risk Analysis

Risk: Hazard \times \text{Vulnerability} / \text{Capacity} = \text{Death} \times \text{access to health care}
Hospital Safety Index

• 1. Life Protection
• 2. Functional protection
• 3. Investment protection

(From “Guidelines for Vulnerability Reduction in the Design of New Health Facilities”, PAHO, April, 2004)
WHY?

1. **Economics**: the cost of hospital failure during disasters is too high, particularly for developing countries.

2. **Health and development**: We need disaster resilient hospitals, health facilities and health workers to save lives during disasters, and to reach the Millennium Development Goals.

3. **Social and political demands**: Protecting hospitals and health facilities is a moral and political obligation.
Health is a **RIGHT**

not charity
Collapse of the building
Collapse of support provider
Continuing function of health workforce
What is a safe hospital?

A Safe Hospital

Is a **health facility** whose services remains **functional** at its **maximum capacity** and at its **same infrastructure** immediately after a destructive natural phenomena.
The Hospital Safety Index

1. **Hazard Analysis**: location (geological, hydrometeorological, environmental etc)
2. **Structural safety** (history of the buildings, structural systems, construction materials etc)
3. **Non-structural safety**: electrical, communications, water supply systems, equipment etc.
4. **Functional Safety**: disaster plan, EOC, operational and contingency plans etc.
5. **Health Workforce**: quality, quantity and availability
- Expand analysis to OIC Member States
- Add Health Facilities
Hospital infrastructure should be appropriate to safeguard its advanced technological equipment so as to reduce its vulnerability. (PAHO)
Communication systems
Drugs and medical supplies
MINISTRY OF HEALTH
SOUTH SHARQIYA REGION
SUR HOSPITAL
DISASTER MANAGEMENT PLAN

Issue Date: 24th October 2002
Triage: International Colour Code
Triage area at the entrance of the A & E Department
4. Safety aspects of a hospital’s functional capacity
This refers to the level of preparedness of hospital staff for major emergencies and disasters as well as to the level of implementation of the hospital disaster plan.

| 4.1 Organization of the Hospital Disaster Committee and the Emergency Operations Centre | Level of Organization |
|---|---|---|
| Assess the level of organization achieved by the hospital management team. | LO W | AVER AGE | HIG H |
| 85. Committee has been formally established to respond to major emergencies or disasters | □ | □ | □ |
| Obtain a copy of the Committee’s terms of reference and most recent meeting minutes and verify that the list of members corresponds to current personnel. | |

Low = Non-existent; Average = Exists; High = Exists and is functioning.
2.2 Safety of the structural system and type of materials used in the building (75)

<table>
<thead>
<tr>
<th>Condition of the building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low = significant deterioration, Average = some deterioration, High = minimal/insignificant deterioration</td>
</tr>
<tr>
<td>Safety Level</td>
</tr>
<tr>
<td>---------------</td>
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</table>

<table>
<thead>
<tr>
<th>Construction quality and condition of building materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low = Deterioration caused by weathering; cracks on the first floor (e.g. Rust with flaking; cracks larger than 3mm); Average = Deterioration caused only by weathering (e.g. Cracks between 1 and 3 mm; rust powder present); High = Good; no deterioration or cracks observed (e.g. Cracks less than 1 mm; no rust.).</td>
</tr>
<tr>
<td>Safety Level</td>
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<tr>
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</tbody>
</table>

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<tr>
<th>Interaction of non-structural elements with the structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low = Separation is less than 0.5% of the height of the shorter building; Average = Separation is 0.5%-1.5% of the height of the shorter building, High = Separation is more than 1.5% of the height of the shorter building.</td>
</tr>
<tr>
<td>Safety Level</td>
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<th>Proximity of buildings (hazards of pounding, wind tunnel effects, fires, etc.)</th>
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</thead>
<tbody>
<tr>
<td>Low = Separation is less than 0.5% of the height of the shorter of two adjacent buildings; Average = Separation is between 0.5% and 1.5% of the height of the shorter of two adjacent buildings; High = Separation is more than 1.5% of the height of the shorter of two adjacent buildings.</td>
</tr>
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<td>Safety Level</td>
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Safe Hospitals Index: Calculator

1. Hazard Analysis

2. Structural safety (history of the buildings, structural systems, construction materials etc) (Weighting – 40%)

3. Non-structural safety (critical systems, HVAC, office and medical equipment, architectural elements) (Weighting – 20%)

4. Organisation and management of the institution (Disaster plan, EOC, operational and contingency plans etc.) (Weighting – 20%).

5. Health Workforce (Weighting - 20 %)
<table>
<thead>
<tr>
<th>3. Non Structural Safety</th>
<th>20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Critical systems</td>
<td>25%</td>
</tr>
<tr>
<td>3.2 HVAC</td>
<td>12%</td>
</tr>
<tr>
<td>3.3 Office Equipment</td>
<td>13%</td>
</tr>
<tr>
<td>3.4 Medical and lab equipt.</td>
<td>25%</td>
</tr>
<tr>
<td>3.5 Architectural elements</td>
<td>25%</td>
</tr>
</tbody>
</table>
Safe Hospitals Index: Calculator

Hospital Safety Index

Index

Hospital ...

0.45

0.55
<table>
<thead>
<tr>
<th>Safety Index</th>
<th>Category Type</th>
<th>What should be done?</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 0.35</td>
<td>Category C</td>
<td>Urgent intervention measures are needed. The hospital’s current safety levels are inadequate to protect the lives of patients and staff during and after a disaster.</td>
</tr>
<tr>
<td>0.36 – 0.65</td>
<td>Category B</td>
<td>Intervention measures are needed. The hospital’s current safety levels are such that patients, hospital staff and its ability to function during and after a disaster are potentially at risk.</td>
</tr>
<tr>
<td>0.66 – 1</td>
<td>Category A</td>
<td>It is likely the hospital will function in the case of a disaster. It is recommended however, to continue with measures to improve response capacity and to carry out preventive measures in the medium- and long-term to improve the safety level in case of disaster.</td>
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</tbody>
</table>

Health Facility Status

Category B
“Safe Hospitals”

Develop/implement Safety Programme

Hospital Assessment

Safety Index
The way forward

- All levels of WHO (Country, Region, HQ) to work together, taking advantage of the e-atlas and the index to support countries in developing their own capacities for a continued health services in crisis
- Developing Partnerships: technical proliferation
- Launching more trials
- Advocating and raising awareness for risk reduction
- Evaluation of the process and outcome
- Exploring resources
Who is working with us?

- Universities
- UN Agencies
- World Bank
- NGOs
- Financial Institution
- Public Health Institutions
- Institutions working with GIS
- Central Data Protocol
- CDC

22 Member States
Let us work together towards developing a culture of risk reduction.