World Conference on Disaster Reduction
18-22 January 2005, Kobe, Japan

Thematic Session 4.2

Vulnerability Reduction of Health Facilities

Vulnerability Reduction and Emergency Preparedness in Health System of Nepal

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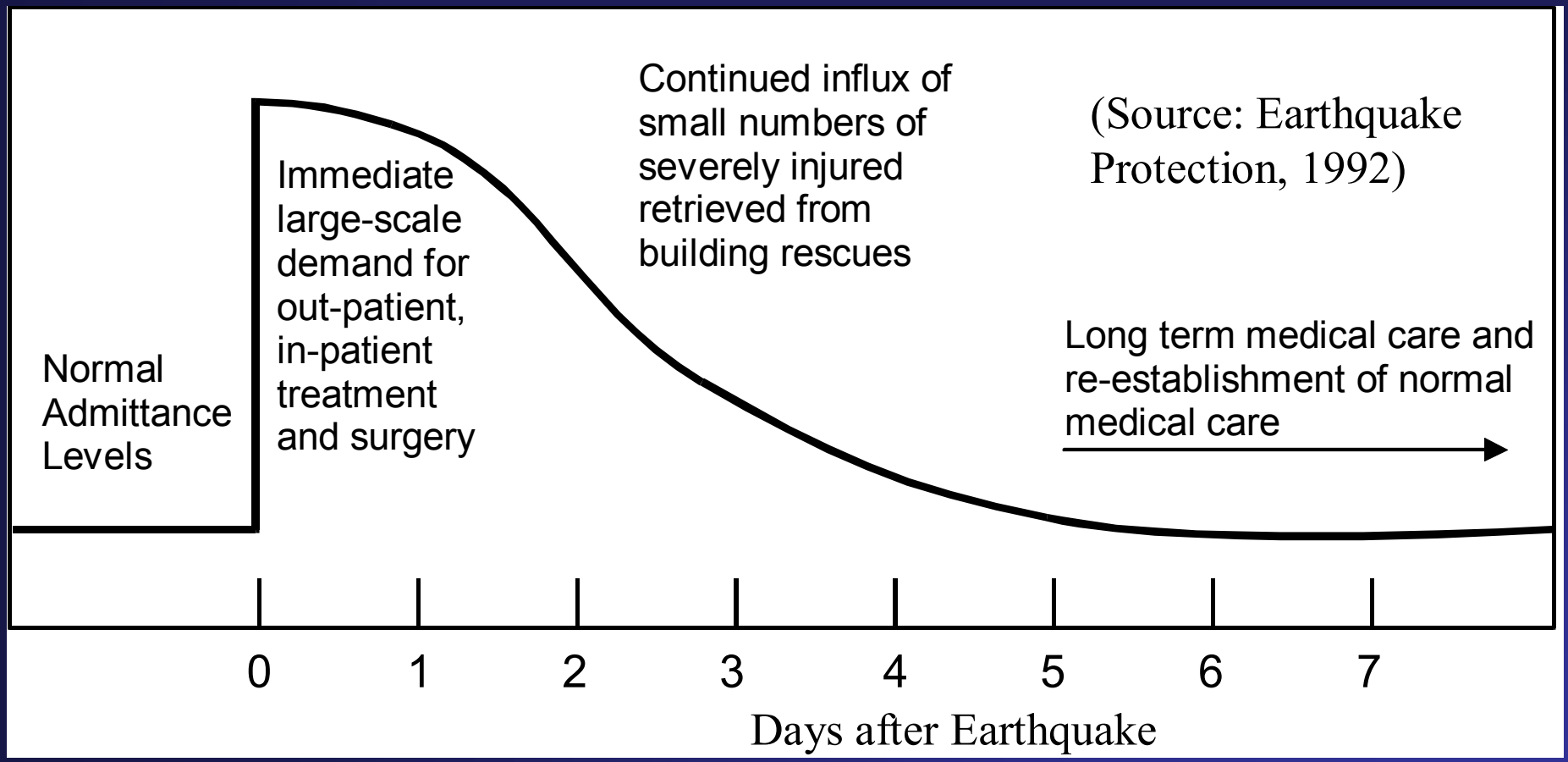
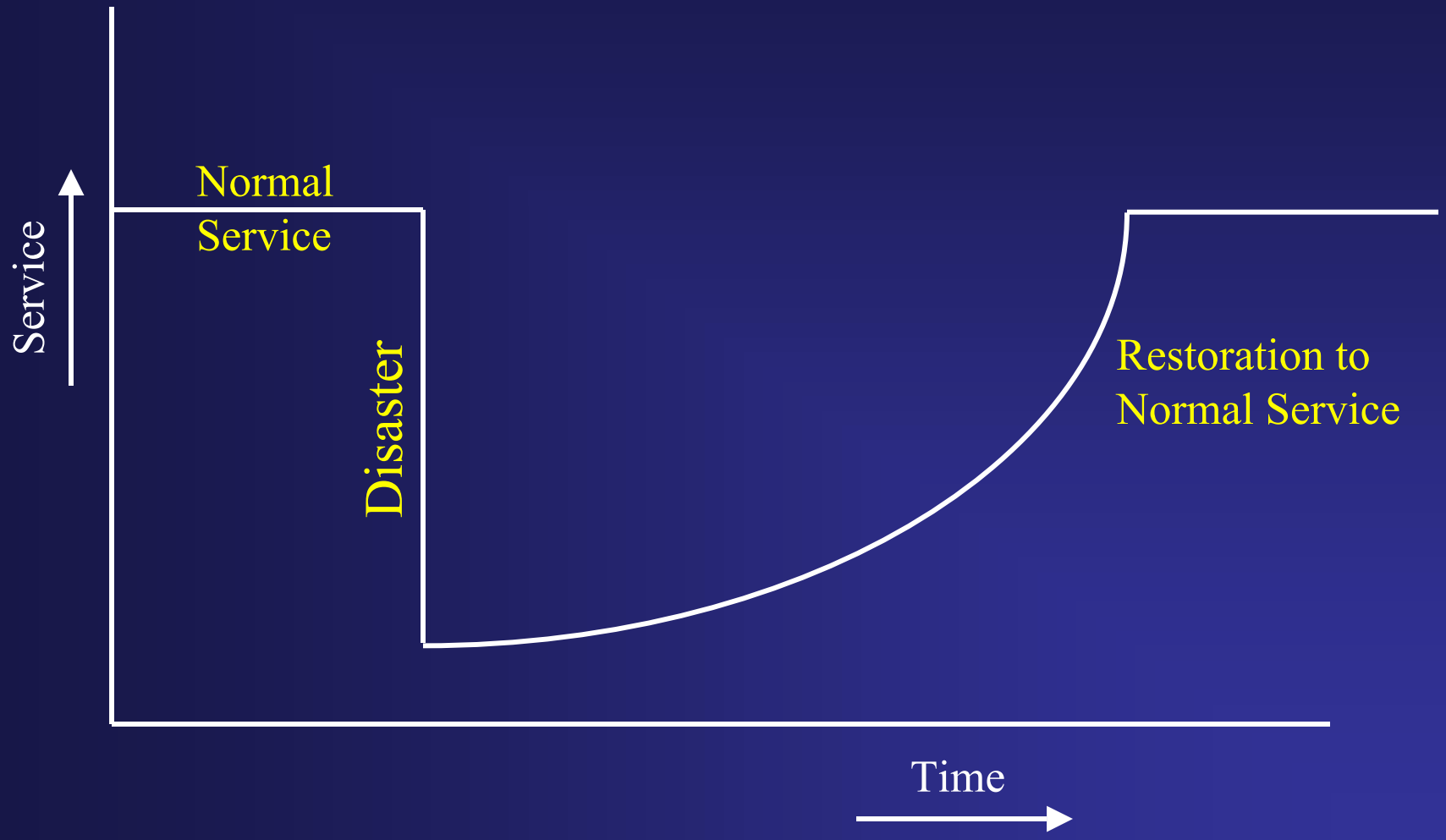
Demand for Medical Services



(Source: Earthquake Protection, 1992)

Situation in our context



Initiatives

- **Collaborative efforts by government agencies, WHO and NSET for vulnerability reduction and emergency preparedness**
- **Main objectives**
  - Expediting the process of health sector emergency planning
  - Assessment of vulnerability and strengthening the hospitals
  - Providing training to the health workers in emergency preparedness and disaster response
  - Strengthening a mechanism for multi-sectoral coordination and collaboration in health sector disaster management
  - Information sharing and awareness raising

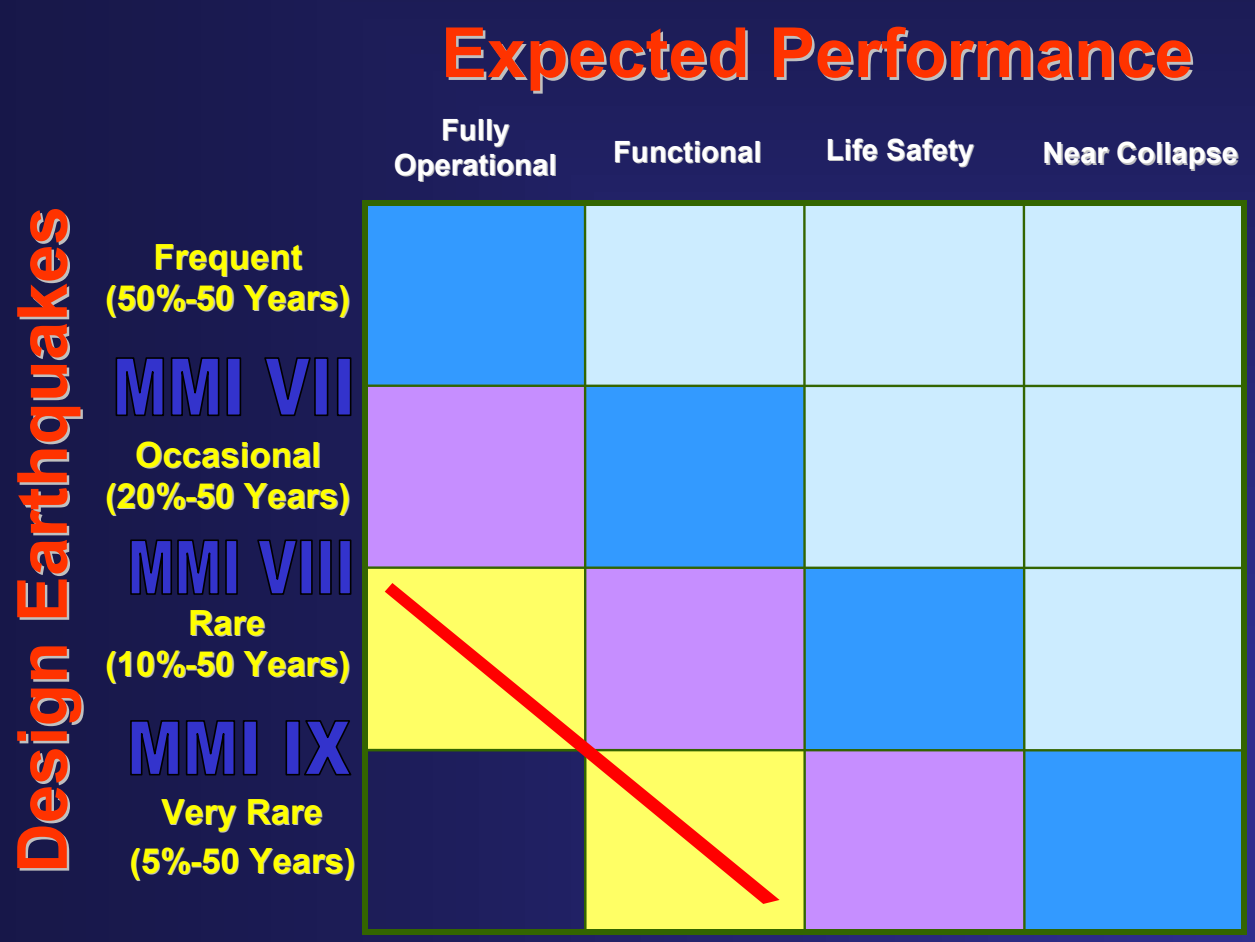
Emergency Planning in Health Sector

- The Disaster Health Working Group (DHWG) established in 1993 and revitalized by the MOH/DHS/EDCD and WHO from the end of 2000.
- In September 2003, institutionalized as a legal entity for Disaster Management in the health sector by MoH.
  - Secretariate with 16 disaster planners and managers and
  - Large group comprising of around 50 members from collaborative partners, various stakeholders involved in health sector disaster management
- Health Sector Emergency Preparedness and Disaster Response Plan developed in October 2003

Seismic Vulnerability Assessment

- Structural Vulnerability Assessment of 14 hospitals in the Kathmandu Valley in collaboration WHO/PAHO.
- Non-Structural Vulnerability Assessment of 9 hospitals (4 in Kathmandu and 5 outside) in collaboration with NSET
- Outcomes of studies are consolidated as "Guidelines for Seismic Vulnerability of Hospitals"

Required Performance of Hospitals



- Unacceptable Performance for New Construction
- Performance Objective for Standard Occupancy Buildings
- Performance Objective for Emergency Response Facilities
- Performance Objective for Safety Critical Facilities

Reference: Structural Engineers Association of California (SEAOC) – Vision 2000, 1995.

But,

- **Due to high seismic hazard**
- **Due to many structural and non-structural defects**
- **Due to lack of emergency preparedness**

Our hospitals in Kathmandu Valley might be

- **Partially or fully not operational after a moderate earthquake**
- **Most of them are even posses life safety hazard with heavy structural and non-structural damage during a severe earthquake**

Medical system of KV may be totally out of order for a long time after a severe earthquake

Situation in our hospitals…

No extra precaution for passing the medical gas pipe from one building to another, no flexible coupling.

ECG monitor just above the bed and on a weak tray

Other non-structural elements

Window glasses without plastic lamination may cause life safety hazard

Failure of cracked partition wall has potential of life safety hazard to doctor, patient or other people

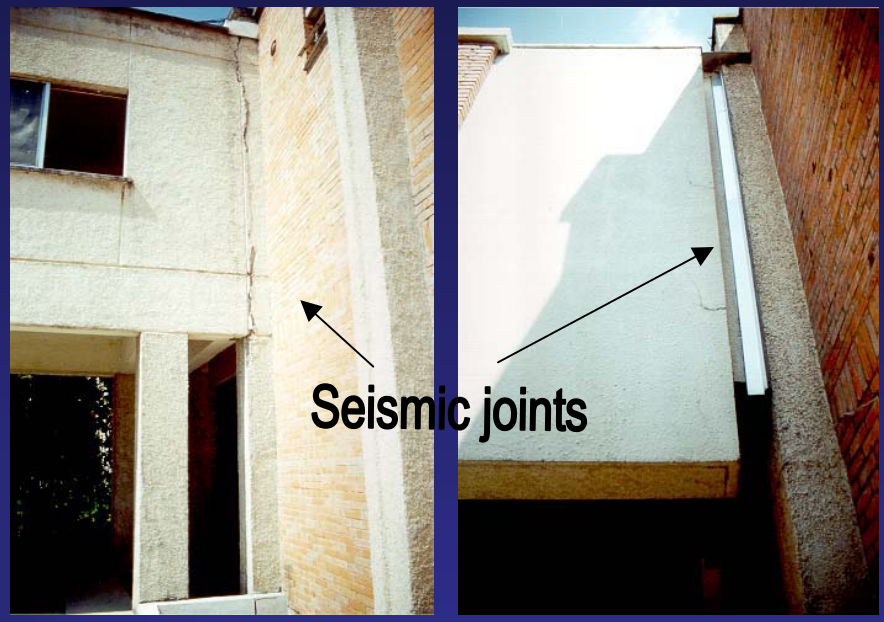
Structural Defects

Inadequate/improper structural system

Low quality materials and workmanship

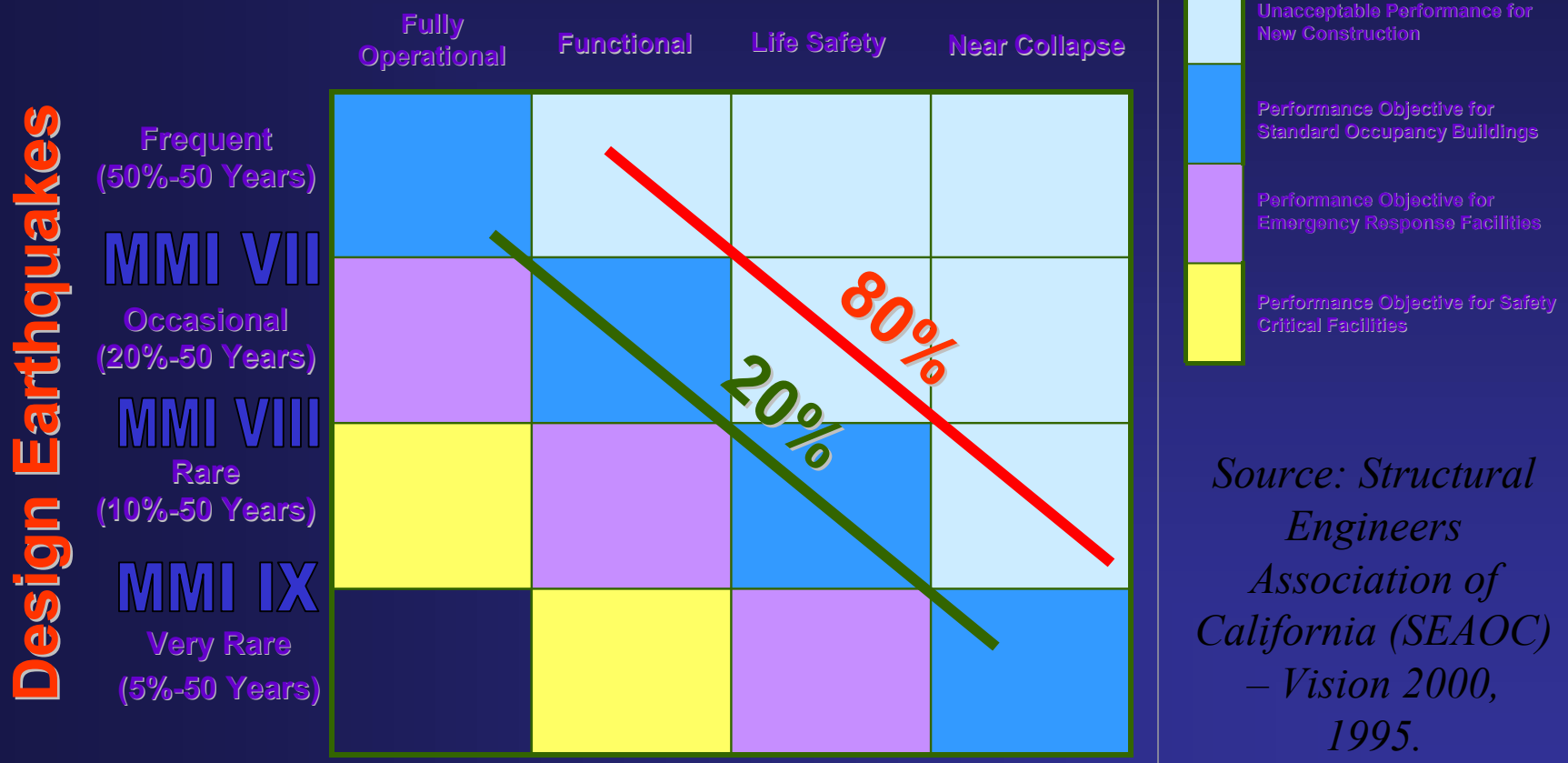
Lack of repair and maintenance

Weak links between different buildings



Improper or seismic joints

Expected Performance



Source: Structural Engineers Association of California (SEAOC) – Vision 2000, 1995.

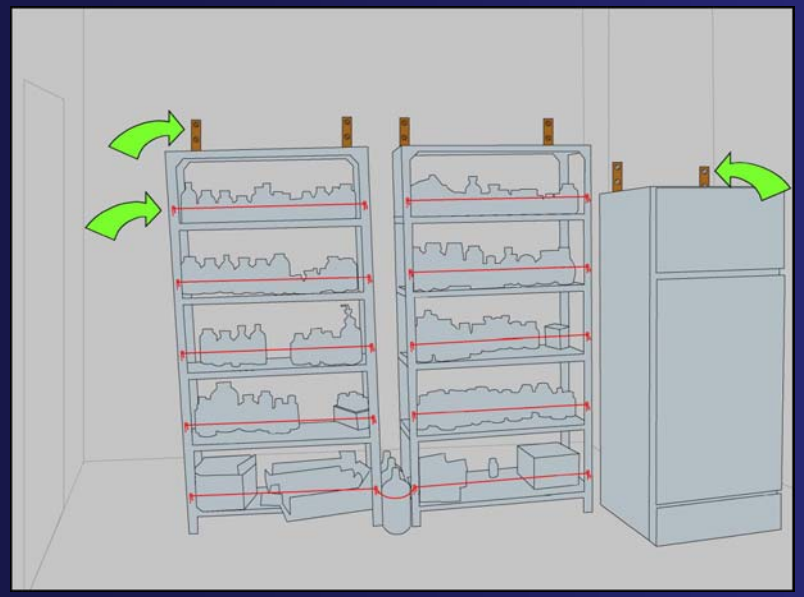
This situation demands

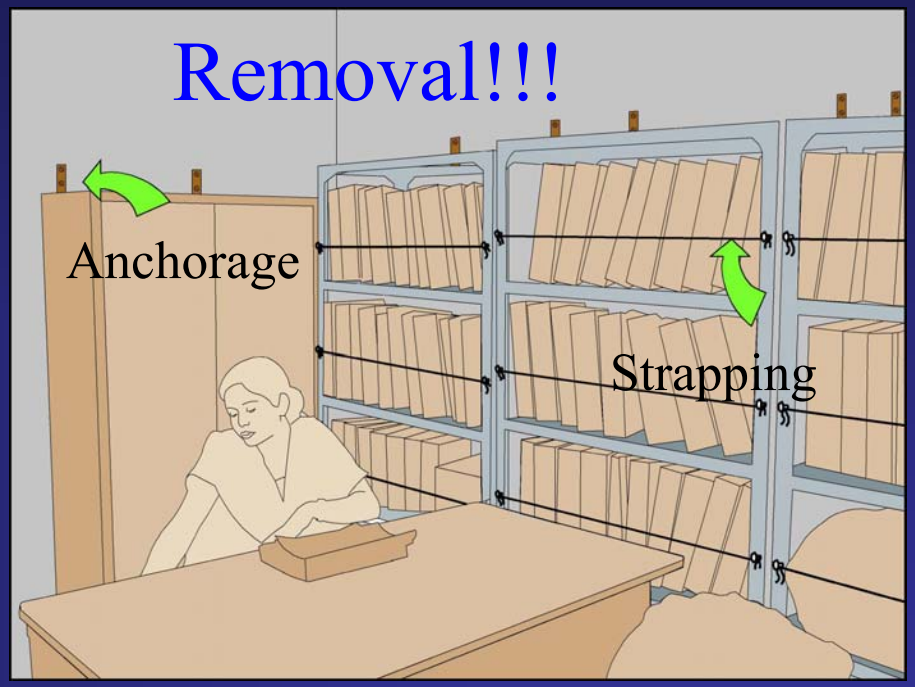
- **Urgent attention !!!**
- **Immediate intervention in all hospitals**
- **But,**
  - We have resource constraints
  - Little experience in implementing structural and non-structural mitigation measures
- **Therefore,**
  - Piloting and phase-wise intervention is proposed

Required Intervention

Hospital	Necessary Improvements and Expected Performance		
	Phase I	**Phase II**	**Phase III**
Bir Hospital	Improvements in non-structural elements	Retrofit of existing buildings	Additional Improvement of Non-structural elements
Patan Hospital	Improvements in non-structural elements	Quantitative structural assessment and retrofit as per requirement	Additional Improvement of Non-structural elements
Teaching Hospital	Improvements in non-structural elements		Additional Improvement of Non-structural elements
Bhaktapur Hospital	Improvements in non-structural elements	Quantitative structural assessment and retrofit as per requirement	Additional Improvement of Non-structural elements

Simple improvement can enhance a lot





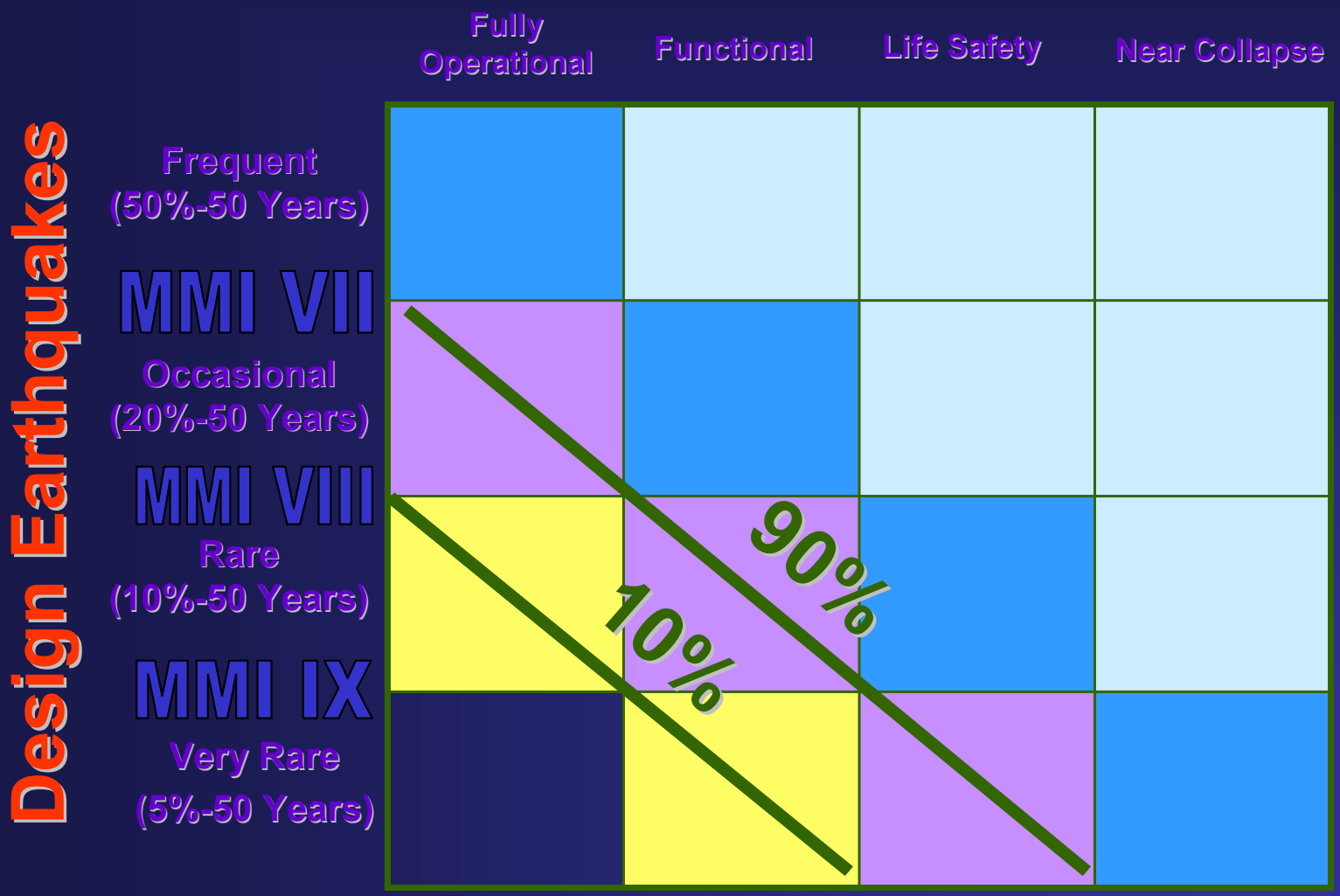
Outcome of Intervention

Description	Phase I	Phase II	Phase III
Expected Performance at Present	Hospitals partially operational after a moderate earthquake	Hospitals near to collapse during severe earthquake	Hospitals partially operational after a severe earthquake
Input	**150 -200 k $ 8-12 months time**	**2,150 - 3,400 k $ 12-24 months time**	**375 - 500 k $ 6-8 months time**
Intervention Activity	**Improvements in non-structural elements**	**Detail assessment, design and retrofit of hospital buildings**	**Additional Improvement of Non-structural elements**
Expected Performance after Intervention	Hospitals fully operational after a moderate earthquake	Hospitals do not collapse during a severe earthquake and partially operational	Hospitals fully to partially operational even after a severe earthquake

Benefit of Intervention

- **Performance of Hospitals enhanced**
  - Medical persons and hospitals staff will not die or become injured during earthquakes
  - Patients will also be safe
  - Can provide service smoothly even after a severe earthquake
- **Repair and maintenance staff will be trained in implementing the mitigation measures**
  - they will continue to maintain the hospitals

Expected Performance after Intervention



Needs to bring experience from other countries

- **This type of job is new in the region**
  - Therefore, requires lots of innovative solutions to the problems to suit the local condition
  - Needs training to all involved from designers, builders to the hospital maintenance staff
- **Hence, it may be difficult to implement in conventional way of construction procedures**
- **Therefore, we seek sharing of experiences from other countries of the world**

Training and Capacity Building

- Interactive computer-based mass casualty management training and simulation exercises
  - more than 500 participants (medical doctors, nurses, medical students, paramedics and volunteers)
- Field and hospital based mass casualty management training and mock drill exercises
  - About 1500 volunteers from Royal Nepalese Army, Nepal Police, Nepal Red Cross, Nepal Scouts and various Communities

Institutionalization

- **Hospital Preparedness for Emergencies (HOPE) course**
  - As part of Program for Enhancement of Emergency Response (PEER)
- **Now this course has been institutionalized at the University**
  - The university will run this regional course with required adaptation to suit local needs

HOPE

- **Assess physical facilities and strengthen them – structural and non-structural**
- **Design Effective Disaster Plans for Hospitals**
  - Prepare Operational Teams for on-site management
  - Preparedness for external (mass casualty) and internal (evacuation) incident

Publication and Information Dissemination

- Guidelines on Emergency Preparedness & Disaster Management for Hospitals
- Guidelines on the Best Public Health Practices in Emergencies for District Health Workers
- National template (i.e. Triage Tag) for emergency response
- Rapid Health Assessment Format and Guidelines for using the formats
- Guidelines On Non-Structural Safety in Health Facilities
- Poster on myths and realities of natural disaster based concept from the WHO/ PAHO.
- Guidelines for Seismic Vulnerability Assessment of Hospitals

Challenges

- Implement risk mitigation measures (strengthening of hospitals - both structural and non-structural)
- Extension of program from central level to regions and districts
- Effective coordination
- Institutionalization at government level

Thank You !