



KOBE REPORT draft
Report of Session 4.2, Thematic Cluster 4

Vulnerability Reduction of Health Facilities

1. Summary of session's presentations and discussions

The arrangement of the session was the joint work of Dr Poncelet of Pan American Health Organisation / World Health Organisation (PAHO/WHO) and Mr Amod Mani Dixit of National Society for Earthquake Technology of Nepal (NSET). Dr Jean Luc Poncelet introduced the session with a reference to the Mexico earthquake of 1985 where many of those most able to respond to the disaster died in the disaster. This event brought about a sea change in the attitudes to safety of healthcare facilities in Latin America.

The session was chaired by Dr Minister Maria del Rocio Saenz Madrigal (Costa Rica). She pointed out that the destruction or impairment of hospitals places unacceptable strain on the community. She also indicated that safe hospitals are affordable. Well-built or retrofitted hospitals have remained functional when impacted by natural hazard events in the Latin America and Caribbean region and, indeed, around the world. What is required is political support at the national and international levels. The loss of a hospital is not only a health problem.

Engineer Surya Narayan Shrestha (NSET/Nepal) spoke about methodologies of vulnerability assessment. It must be recognised that the demand for medical services is very high after a disaster. However, it is often at such times that the supply collapses. Nepal has set up a Disaster Health Working Group which spearheads the task of making the health services in that country more resilient in the face of severe natural hazard events. Vulnerability assessments have been carried out of hospitals in Nepal. The experience gained in these exercises has been documented in the publication "Guidelines for Seismic Vulnerability Assessment of Hospitals". This publication is now available on a web site. The current situation is very dangerous in Kathmandu Valley. 80% of hospitals may not be functional, even in the event of earthquakes with statistical return periods of once in 10 years. The country has embarked on a phased programme of improvements. The implementation of retrofitting actions is undertaken largely by hospital maintenance staff. Some of the challenges faced by the country are adequate funding for the implementation of strengthening recommendations coming out of the vulnerability assessments and extending the vulnerability-reduction programme to outlying regions beyond the capital.

Dr Eduardo Jose Gonzalez of Direction of Disaster Prevention and Relief (DNPAD/Colombia) spoke about capacity development and "institutionalisation" of risk reduction in the health sector. 86% of Colombians live in areas of high or medium vulnerability. Over the years there have been several decrees, laws and regulations addressing disaster preparedness and prevention (Decree of 1984; Law of 1997; building standards, *Normas*, of 1998). These culminated with the *Plan Nacional de Desarrollo* of 2003. Dr Gonzalez presented an organisation chart showing the national system which has been put in place for the prevention of disasters. The present problem in Colombia is significant. For example, the 1999 earthquake affected negatively 10 municipalities. He stressed the importance of international cooperation if we are to achieve success in the goal of safe hospitals.

Engineer Mehmet Nuri Erikel (Ministry of Health / Turkey) spoke about experiences in vulnerability reduction in the health sector. He articulated the lessons learnt from the 1999 earthquakes and asked, rhetorically, why we continue to have so many losses when earthquakes

strike. He pointed out that more than 90% of the land, the people, the dams and the industry in Turkey are located in earthquake zones. In such a situation the country can expect frequent problems. Turkey has many natural hazards, both geological and meteorological. The country has spent 2% of its GNP for the period 1925 to the present repairing damage caused by earthquakes which occurred during that period. The two earthquakes in 1999 affected 100,000 sq km and 15 million persons in Turkey. One of the aims in the country's programme is to reduce mortality in earthquakes. National medical rescue teams have been set up and over 500 persons have been specially trained to participate in this programme. Many hospitals require strengthening. Retrofit projects have been completed in Burdur, Denizli and Istanbul. Improvements have been made in other areas such as special-purpose vehicles. There are programmes of education and research to produce a more disaster-resilient community. What is required is a multi-sectoral and multi-disciplinary approach to disaster reduction for the decade 2005-2015.

Dr Engineer Carlos Zavala of Peru (PAHO/WHO Collaborating Centre, University of Chile) presented the technical aspects of understanding and reducing vulnerabilities in health facilities and systems in developing countries. He introduced the PAHO Collaborating Centre and the Disaster Mitigation Advisory Group of PAHO (DiMAG/GAMiD). DiMAG provides help for all countries, not only those in the Americas, that request it. He addressed structural, non-structural and lifeline issues affecting the vulnerability of hospitals. In particular he stressed the need to focus on the functional vulnerability of hospitals. There is the need to educate the staff of hospitals about natural hazards and their impact on health facilities and so as to avoid disasters. There is the need to update the disaster-response plans of healthcare facilities. There must also be concern about the lifelines in the community. If municipal lifelines fail, the hospitals would fail. He outlined some of the more common modes of structural failures, eg short columns and soft storeys. He said the total programme of retrofitting was beyond the resources of Peru.

In view of this there is a concentration on the critical functions of the hospitals. Vulnerability assessments are undertaken for two levels of earthquakes, the 50-year event and the 10-year event. Demand-resistance and displacement criteria are used in the structural assessments. Examples were given for hospitals in Lima, Peru. There was the opportunity recently to validate some of these assessments.

Economist Ricardo Zapata Marti of the UN Economic Commission for Latin America and the Caribbean (ECLAC/Mexico) spoke about the financial aspects of vulnerability reduction in health facilities of developing countries. He promoted the investment in disaster reduction and alluded to the positive evidence from cost-benefit analyses. These studies took into account the loss of productivity and loss of competitiveness of stricken communities. There was, of course, the loss of physical assets as well. This leads to the use of funds for replacement of damaged assets rather than for the needed expansion of services. After a disaster there is greater demand and reduced supply of medical services. He explained the terms "hazard", "vulnerability" and "risk" which are related by the equation $\text{Hazard} * \text{Vulnerability} = \text{Risk}$. Complex hazards, such as earthquakes and hurricanes, have exponential impacts. He then addressed the options of risk reduction, risk spread and risk transfer, all of which could play a role. So called catastrophe (CAT) bonds were described. There were also the financial instruments of disaster contingency funds and insurance. These have the advantage of reducing dependency on the central budget.

In the discussion which followed there were interventions from persons from Cuba, Mexico, Nepal, Israel, Canada and Turkey. There were cases of duplication of effort on the part of international agencies. It was emphasised that non-structural retrofitting is very feasible in almost all cases. The need for training of hospital staff for disasters was stressed. In the case of Nepal, the country is 75% mountainous and has scarce resources. Networking was therefore vital. Questions were asked about priorities in retrofitting and the need to strengthen the vital services in the hospital. This should be combined with contingency plans in case parts of the hospital should fail. It would be desirable to have information transfer from eg Peru to Israel. Additional issues such as biological and chemical releases need to be addressed. How do we bring together the various and different needs of different countries? In general we know what to do but for one reason or another we are unable to do it. Let us get started with whatever we can now. Some vulnerability reduction is better than none. The comprehensive and desirable

programmes will come later. The point is the we all need safe hospitals. Vulnerability assessment and retrofit programmes are to be put in place within our various economic constraints.

2. Primary issue

- a Existing healthcare facilities must be subjected to vulnerability assessments followed by implementation of recommended retrofitting actions.
- b Hospital staff must be trained in disaster mitigation measures.
- c Decision makers and the community must be sensitized to the vital importance of safe hospitals
- d Since safety of hospital facilities is affordable the question of lack of resources should not be allowed to deter the “safe hospitals” initiative of ministries of health and WHO.
- e Exchange of experiences and networking should be promoted.

a) Suggested targets and indicators to measure accomplishments

All referral hospitals should be made safe from natural hazard damage by 2015.

Strengthen ministries of health so that the health sector infrastructure remains functional during and immediately after natural hazard events by 2015.

Immediately, mechanisms must be put in place to ensure that all new health facilities will remain functional after natural hazard events. These mechanisms should include the independent reviews of designs and the independent reviews of construction quality control systems, both reviews to be undertaken by checking consultants.

Immediately, phased programmes of vulnerability assessments of existing healthcare facilities should be put in place. The aim is to complete the assessments of all facilities by the year 2010.

By 2010 all countries should have specific legislation of vulnerability reduction of health facilities.

b) Existing indicators with reference

Resolution CD45.R8 of the 45th Directing Council of the ministers of health of the Americas on disaster preparedness and response. Adopt “Hospitals Safe from Disasters” as a national risk reduction policy. All new hospitals are built with a level of protection that better guarantees their remaining functional in disaster situations. Implement appropriate mitigation measures to reinforce existing health facilities, particularly those providing primary care.

3. Partnerships

National disaster organisations; ministries of health; private health sector; PAHO/WHO; universities; International Strategy for Disaster Reduction (ISDR); national and regional professional associations; regional organisations; financial institutions; donor agencies.

4. Other relevant and brief comments

For this issues to be addressed effectively a multi-sectoral approach is essential. The session participants highlighted the balance between the political, health sectoral, technical, financial and operational backgrounds of the speakers and participants.

5. Names, affiliations, contacts, subjects, roles -- See the table below

Name	Affiliation and contact	Title of presentation
Dr Jean Luc Poncelet	PAHO/WHO	Session planner
Mr Amod Mani Dixit	NSET, Nepal	Session planner
Dr Maria del Rocio Saenz Madrigal	Minister of Health, Peru	Moderator
Eng Surya Narayan Shrestha	NSET, Nepal	Methodologies of Vulnerability Assessment
Dr Eduardo Jose Gonzalez	DNPAD, Colombia	Capacity Development and Institutionalization of Risk Reduction in the Health Sector
Eng Mehmet Nuri Erikel	Ministry of Health, Turkey	Experiences in Vulnerability Reduction in the Health Sector
Dr Eng Carlos Zavala	Peruvian-Japanese Centre for Seismic Research and Disaster Mitigation (CISMID), Peru	Technical Aspects of Understanding and Reducing Vulnerabilities in Health Facilities and Systems in Developing Countries
Mr Ricardo Zapata Marti	ECLAC, Mexico	Financial Aspects of Vulnerability Reduction in Health Facilities of Developing Countries
Mr Tony Gibbs	Consulting Engineers Partnership Ltd, Barbados	Rapporteur