

Disasters

Preparedness and Mitigation in the Americas



Issue No. 94

News and Information for the International Community

January 2004

Rush to Action Before the Disaster!

A look at how money spent on costly post-disaster interventions might be better channeled to local capacity building



Photo: H. Bijan/K. Shibib, WHO

Long-term needs, more costly to address, remain long after the images of disaster-stricken countries disappear from the headlines.

The earthquake in Bam, Iran in late December 2003 brought home, once again, the reality that most international search and rescue teams arrive too late to make a significant difference in terms of saving a number of lives following sudden-impact natural disasters. The myth that the affected population is too shocked and helpless to take responsibility for their

own survival is simply that: a myth. Time and time again, the reality emerges that family, neighbors and local citizens are best placed to save victims' lives.

In an article entitled "All Search, No Rescue" in *The Guardian* newspaper just a week after the Bam earthquake, Nick Cater, a U.K. journalist and former editor of the Red Cross "World Disaster Report," makes a number of observations about the results of international search and rescue teams. These echo what many international experts and national health authorities say.

Cater reported, "... search and rescue teams arriving back from Iran have successfully proved that flying in people and dogs to scour the rubble and mud of foreign disaster zones for survivors with hi-tech gear or their bare hands is in almost all cases a waste of time, effort and money."

This story was confirmed by Iranian health experts, "Nearly all the victims buried in the debris were saved by family members, neighbors, friends and ordinary people."

(continued on page 7)

Benefits and Challenges of Distance Learning Debated at Regional Workshop

On the road to

e-learning

For more than 25 years, PAHO has supported disaster preparedness and mitigation training initiatives throughout Latin America and the Caribbean. This support has taken many forms—from complete or partial sponsorship of selected events, to providing trainers or content experts, to technical and training material. As the Region has become increasingly self-reliant in meeting their own training needs, the Organization is exploring new ways to reach a larger audience with the just-in-time information it needs to enhance performance.

What disaster managers need and how to provide this was the subject of a five-day technical workshop/course last November in Lima, Peru that brought together univer-

(continued on page 2)

Contents

News from PAHO/WHO.....	2
Other Organizations.....	3
Member Countries.....	4
Publications and Multimedia.....	6
Selected Bibliography.....	8
Supplement on Hospital Mitigation....	SI



Pan American Health Organization



Regional Office of the World Health Organization

Field Hospitals Arrive in Iran Following December Earthquake

When a major earthquake struck Bam, Iran last December, killing at least 30,000 persons, more than 10 field hospitals (defined as mobile, self-contained, self-sufficient health care facilities capable of rapid deployment to meet immediate emergency requirements for a specific period of time) were sent.

These field hospitals were accompanied by a wide range of medical staff. Three hospitals arrived three days after the quake, two on the fourth day and the others after five or more days later. Some hospitals were set up and fully operational on the day of arrival, while others required up to two days to function. The length of time they were expected to remain in Bam varied widely: one week (four hospitals); two weeks (three hospitals); one month (one hospital); three/four months (one hospital); and up to one year (one hospital). The field hospitals that remained after the first weeks were consolidated into two hospitals to coordinate inpatient services while the destroyed hospitals are rebuilt.

A global consultation on the use of field hospitals prior to the Bam earthquake concluded:

- **Field hospitals equipped to provide emergency medical care for trauma are useful only if they are available and on-site within the first 24 hours.** No hospital arrived in Bam before the third day. Despite sending 25 surgeons, three field hospitals carried out only 15 operations, demonstrating that sending surgeons three to five days after impact is not cost effective.

- **Once a field hospital is operational, it should remain on-site for a minimum of 15 days, allowing for follow up (secondary) care of trauma and routine medical attention.** In Bam, the main purpose of one of the field hospitals was delivery of primary health care services, and because it remained in Bam for just one week, not many patients benefited.

- **Field hospitals serving as temporary facilities pending reconstruction should be donated and not loaned.** The Italian government has handed over the hospital they sent to Bam. The IFRC hospital, equipped with three outpatient care modules, is now managed by the Iranian Red Crescent Society, supported by the IFRC, and under the supervision of the Ministry of Health.

The extended version of this article is at www.disaster-info.net/downloadzone/bam.htm. Read or download the *WHO/PAHO Guidelines for the Use of Foreign Field Hospitals in the Aftermath of Sudden-Impact Disasters* at: www.paho.org/disasters (click on Publications Catalog). For more information on the Bam earthquake contact Dr. Isis Pluut at pluute@who.int.



Photo: H. Bijani/K. Shribib, WHO

Distance Learning ...

(from page 1)

sity professors with a hand in traditional disaster education courses; individuals and organizations with expertise in Internet-based training and international and regional agencies active in disaster training.

The first two days were spent learning about five different models and methodologies of distance education, as presented by the University of Wisconsin (U.S.), the Open University of Cataluña (Spain), the Virtual Campuses of the Instituto Tecnológico de Monterrey (Mexico) and the Instituto TECSUP of Lima (Peru), and the experience gained by the World Bank's Global Distance Learning Network.

The following three days were devoted to a basic course to train trainers and content experts in the competencies they will need and the issues they must consider when developing interactive distance learning courses. It is easy to become overwhelmed with the time and cost required to set up and launch an e-learning initiative, making it a prospect that could never quite become a reality. However, PAHO is committed to taking the first steps. With support from the enthusiastic professionals who attended this workshop, and from many others who were not able to participate in the first encounter, the framework for the first interactive distance learning module will be ready by the end of 2004.

View documentation related to the workshop at www.disaster-info.net/elearning.

Other Organizations

Other Organizations

New Journal Features Disaster Medicine



The International Journal of Disaster Medicine is an international journal devoted exclusively to the field of disaster medicine. Practitioners and researchers in health care, academia, industry and government around the world will find analyses, ideas,

new application of knowledge and discussions on a wide variety of topical issues that will help them enhance the efficiency and effectiveness of their policies in disaster medicine. For more information, visit www.tandf.co.uk/journals/titles/15031438.asp.

OAS-led Committee to Hold Simulation of Terrorist Attack

The Inter-American Committee against Terrorism (CICTE) is committed to strengthening hemispheric cooperation and to continuing to implement specific measures to prevent, combat and eliminate international terrorism. In this framework, next June the CICTE will organize an executive-level table-top simulation game to explore issues surrounding a simulated terrorist attack in the Caribbean. The exercise will serve as an instrument to stimulate national authorities to develop appropriate policies. More information at www.cicte.oas.org.

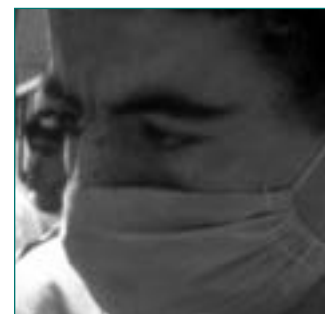


Photo: PAHO/WHO, C. Gaggero

WADM to Host Emergency Medicine Community



ISDR Looks at Information Systems and Disaster Risk


The Secretariat of the International Strategy for Disaster Reduction prepared a background paper for the World Summit on the Information Society, held in Geneva last December. Focusing on information systems and disaster risk reduction, the paper recommends how to incorporate disaster risk reduction into the Summit's outcomes and follow-up activities—starting with the premise that risk reduction begins with access to information. The paper is available online at www.unisdr.org/news/WSIS/WSIS.pdf.

The World Association of Disaster and Emergency Medicine will host the 3rd Pan-American Congress on Disaster and Emergency Medicine from 4-7 April 2004 in El Salvador. PAHO will support the participation of selected national experts from Latin America who will exchange experiences and develop a regional guide on the organization of pre-hospital emergency care systems.



Member Countries


World Health Day 2004: Road Safety is no Accident




On April 7, 2004, hundreds of organizations will host events to help raise awareness about road traffic injuries, a serious public health problem with grave consequences and enormous costs to society. Globally, more than 1.2 million people are killed on the road annually. Millions more are injured or disabled. In some low and middle income countries, road crash victims occupy up to 10% of hospital beds. Deaths from all types of injuries are projected to rise from 5.1 million in 1990 to 8.4 million by 2020 - with road traffic injuries as a major cause for this increase. In the Americas, nearly 130,000 people die annually; more than 44,500 of them in the U.S. alone.

Yet the knowledge currently exists to take action on a number of fronts to prevent these needless deaths and disabilities. A global initiative dedicated to Road Safety will be launched on World Health Day, April 7, 2004. The initiative will include a global report, conferences and discussions in the United Nations General Assembly, and other high profile advocacy events. For more information, visit www.paho.org and select World Health Day 2004.

International Simulation Exercise in Colombia



More than 600 people participated in a drill—one of the largest in recent years—that took place in Bogota, Colombia. The objective was to strengthen local, national and international coordination and response in the face of an earthquake or a large-scale terrorist attack.



The event, which simulated a magnitude 7 earthquake, lasted 50 hours uninterrupted. Seven actual sites in different parts of the city of Bogota were used. The participants, from national and international agencies, worked in operations that ranged from the collapse of different struc-

tures to accidents with hazardous materials.

A variety of activities were put to the test, such as the implementation of emergency command centers, activation of national and international assistance, search and rescue, management of cadavers and others. The SUMA system (Management of Humanitarian Supplies), used the airport to classify and inventory incoming supplies and distribute them throughout the country.

For more information on this activity, contact Steven de Vriendt at devriens@col.ops-oms.org

Regional Meetings Will Identify Mitigation Agenda for the Americas

Ten years after the Yokohama Conference, held in 1995 at the mid-point of the International Decade for Natural Disaster Reduction, the international community has demonstrated some results through declarations and agreements, but concrete action has been slow to materialize. The Second World Conference on Disaster Reduction, scheduled for January 2005 in Kobe, Japan, is expected to continue identifying practical and concrete ways to incorporate disaster risk reduction into poverty reduction, development and environmental strategies, and to ensure the continuum from relief to sustainable development.

In preparation for the Conference, PAHO will sponsor a series of preparatory meetings in the Americas to identify gaps that still exist in the disaster mitigation agenda regionwide. This regional analysis will form the basis of the agenda of the Americas on disaster mitigation, which will be presented at the Kobe Conference. Meetings are scheduled to take place in Chile in March; Nicaragua in April and the Caribbean in June. More in coming issues of this Newsletter.

Strengthening Military-Civilian Cooperation in the Americas

The Armed Forces can play an important role in disaster situations. Their organization, discipline, personnel and resources can greatly benefit the affected population if their assets are used to support civilian institutions and authorities. To contribute to achieving this objective, the Inter-American Defense College invited high-level military officers and civilian authorities from 16 countries in the Americas to participate in a workshop on emergencies and disasters.

The seminar, part of ongoing IADC-PAHO efforts, provided the forum to discuss important disaster response and risk management topics and others about which there is growing interest, such as the deliberate release of biological and chemical substances. The participation of other actors in the international arena—diplomatic missions, national disaster response agencies, regional and subregional integration agencies and U.N. agencies—allowed positive conclusions to be reached will have long term benefits for civilian-military collaboration. For more information, contact Dr. Ciro Ugarte, ugarteci@paho.org.

Project to Enhance Emergency Surveillance System in Haiti

During the past several years, average life expectancy in Haiti has dropped to 49.6 at birth. Due to economic sanctions and the already pervasive state of poverty, the health status is expected to decline even further. However, as information is scarce and not consolidated, it will be difficult to detect changes early enough to curb the effects.

In view of this scenario, PAHO has launched a project to strengthen the existing epidemiological surveillance system, established by the Ministry of Public Health and PAHO more than three years ago. The sentinel sites are all clinics or hospitals managed by NGOs, religious organizations and the Ministry of Public Health.

It is expected that with the help of the project, the country capacity to solve health crises and coordination and collaboration among agencies involved in the health response will be improved. A monthly report on selected epidemiological data will be produced.

INCAP, the Center for Nutrition based in Guatemala, will be



Photos: PAHO/WHO

involved in the collection and analysis of nutritional data. The results will be used in the design of aid projects and as an early warning system. For more information contact Dr. Dana van Alphen at vanalphe@paho.org.



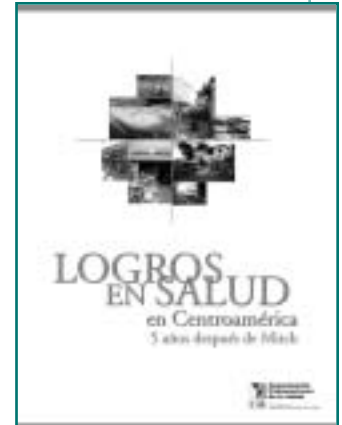
Central America Five Years after Hurricane Mitch

Five years after Hurricane Mitch—one of the most devastating disasters to strike Central America in decades—the most affected countries have much to show in terms of reducing their vulnerability to disasters. From small municipalities to the highest decision-making levels, success stories can be found in the health sector thanks to the tireless efforts of thousands of workers who turned a tragedy like hurricane Mitch into the catalyst for a process of development.

Vulnerability to disasters is the door through which the next disaster will slip.

In recognition of their work, these stories form the basis of a new publication that focuses on many achievements: safer hospitals and water systems, communities better prepared to face the health consequences of disasters; just-in-time information and

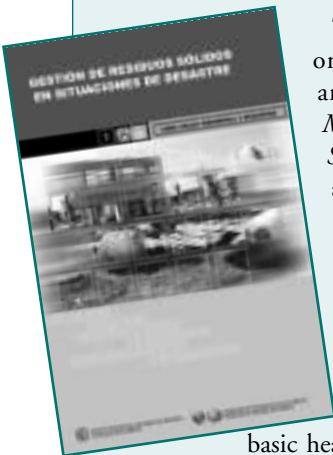
more. Disaster preparedness and mitigation however, demand continued unceasing efforts. The countries of Central America, and indeed the entire Region of the Americas, will continue to coexist with natural hazards. The vulnerability of nations is the door through which the next disaster will slip. *Achievements in Health in Central America Five Years after Mitch* is available in Spanish from the Editor of this newsletter or download a copy from www.paho.org/disasters (choose Publications Catalog).



Solid Waste Management in Disaster Situations

The first book in a series on Environmental Health and Disasters, *Solid Waste Management in Disaster Situations*, is a guide that answers questions based on the experience of Latin America and the Caribbean. It is directed to environmental health technicians, health professionals and others in charge of maintaining

basic health services to protect the population. The publication complements the guidelines and basic instructions with case studies from different types of disasters that affected the Region. Print copies (in Spanish only) can be requested from the Editor or download a copy from www.paho.org/disasters (click on Publications Catalog).



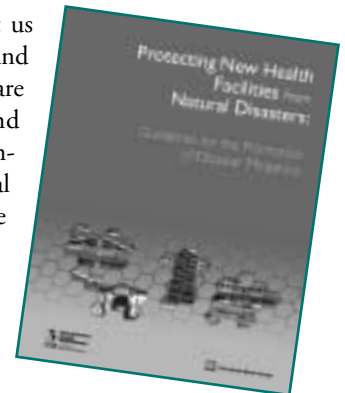
Protecting New Health Facilities from Natural Disasters

Technical knowledge and experience have taught us that it is possible to reduce to a minimum the risks and damage caused by disasters if preventive measures are incorporated early in the design, construction and maintenance of new health facilities. What this complex issue needs now is greater visibility in political and development agendas in Latin America and the Caribbean.

This is the premise of the soon-to-be published *Guidelines for Vulnerability Reduction in the Design of New Health Facilities* (see page 8 of the special supplement) for those responsible for management, design, construction and inspection of new health facilities projects.

The current publication is an overview of those guidelines and includes recommendations on how to promote their use among national authorities, planners and financing agencies involved in the development of these projects. It emphasizes the substantial social and economic benefits of applying disaster mitigation measures to the design, planning and construction of health facilities. Equally important, it describes how to apply these measures to achieve protection levels that not only ensure human safety but also the security of infrastructure and the continuity of services.

This document is online at: www.paho.org/disasters (select Publications Catalog).



Rush to Action Before the Disaster!

(from page 1)

Cater continues in his report, “This is hardly surprising. While the experts talk of the “golden hours”—usually just the first 24—in which those trapped can expect to be found alive, it is local people who recover the vast majority of survivors, often based on knowing exactly where their families and friends were when the disaster struck.”

“If local people need help, it is from staff and trained volunteers, who speak their language, know the area, require little or no external support and are integrated into the disaster preparedness and response systems of national and local governments, specialised agencies and their country’s Red Cross or Red Crescent society.”



Photos: H. Bijani/K. Shbib, WHO

“International search and rescue teams today crowd into every sudden catastrophe from all over the world. [According to OCHA situation reports and witnesses on the scene, there were upwards of 1600 persons from 46 countries in Bam as part of relief, rescue and medical teams.] They sometimes arrive without invitation or local partners, and their needs in terms of food, water, shelter, translators, transport and information put further strain on resources that are already scarce.”

“International search and rescue teams today crowd into every sudden catastrophe from all over the world. [According to OCHA situation reports and witnesses on the scene, there were upwards of 1600 persons from 46 countries in Bam as part of relief, rescue and medical teams.] They sometimes arrive without invitation or local partners, and their needs in terms of food, water, shelter, translators, transport and information put further strain on resources that are already scarce.”

Although some teams are quite well prepared, the problem is that logistically, it is impossible for them to arrive in time.

“Of course, Iran is happy to receive aid in terms of equipment, supplies and money,” Cater affirms, “but early in the crisis its health minister was quoted—and presumably ignored—as saying that foreign volunteers were not really needed since large numbers of Iranians were already coming from all over the country.”

“It appears that in everything but ill-enforced building standards, the Iranians have done a superb job, mobilising many thousands of helpers, recovering tens of thousands of bodies and, within the lim-

its of any crisis, efficiently organising evacuation of the injured and burial of the dead.” An expert sent by a Western country, who arrived 26 hours after the impact, concurs: “...the Iranian authorities and the Red Crescent were really amazing...within three days they had treated 30,000 people, evacuated 13,000 stretcher cases to tertiary care (2,000 of them by air) and were well on their way to distributing 98,000 tents, 200,000 blankets, 400,000 food rations...”

“Either way,” Cater concludes, “the best response to disaster is not to head for the airport, but to support local preparedness efforts with hard cash, and to consider how to help the recovery operation that will still be under way long after all those rescue dogs are released from quarantine.”

A senior expert from Iran’s Ministry of Health shares these sentiments. She agrees that international resources would have been better invested in “capacity building, training efforts and the promotion of new and simple technologies related to disaster management such as telecommunications (identified as a weak point in Bam) in developing countries, regardless of political sanctions. Material and financial aid seems to be more useful in reconstruction and rehabilitation phases, for temporary housing or restoration of the primary health care system.”

“Many dead bodies were still warm when pulled from the debris, showing that if local relief and rescue teams had been better trained, or had participated in joint training exercises prior to the disaster with the very international teams who came to Bam, more lives could have been saved.”

The expert from the Ministry of Health concluded, “When you compare the fiscally conservative way in which authorities, both nationally and internationally, look to save money by *not* sending people to training courses, and contrast that with the amount of money spent on transporting international teams to Iran, I tend to conclude that decision makers should review their approach and policies on the issue of how they invest resources. It was a pity that some experts who came to Bam following the earthquake could have contributed so much more in terms of training and organising Iranian teams before the disaster.”

“I believe it is imperative that national and international bodies carefully monitor aid spent on reconstruction efforts in Bam to ensure sustainable and earthquake-resistant reconstruction, especially for buildings like hospitals. Devastating disasters such as the Bam earthquake reveal many realities, including the fact that individuals and communities must become the constant targets of disaster risk management programmes, from prevention, mitigation, preparedness and response to recovery and reconstruction.”

Nick Cater’s article appeared in the Society Online section of *The Guardian* newspaper at: <http://society.guardian.co.uk/disasterresponse/comment/0,1321,1114318,00.html>.

Selected Bibliography



S e l e c t e d B i b l i o g r a p h y

The articles listed in this section come from the collection of the Regional Disaster Information Center (CRID). Request copies from CRID, citing the numerical reference code included with the title.

Moro Fonseca, R. "Rescate en emergencias." *Manual de asistencia sanitaria en las catástrofes*. Madrid, Book of the Year, p.289-308, 1992. (7888)

Stanton, P. et al. "El terremoto en Izmit : 17 de agosto de 1999 3.00 a.m. hora local - 7.4 escala de Richter." *Revista Internacional de Protección Civil*; 12 (4): 30-4p., Dec. 1999. (12418)

Nocera, Antony and Mark Dalton. "Disaster alert! The role of physician - staffed helicopter emergency medical services." *The Medical Journal of Australia*; 161 (5) : 689-92p., Dec. 1994. (8873)

Cruz Roja Salvadoreña. "Plan nacional de preparación para desastres: Directrices para los servicios de búsqueda en casos de desastre." San Salvador; El Salvador, Nov. 1995. 15p. (12904)

Almgren, Ola. "The international search and rescue advisory group (INSARAG)." *UNDRO NEWS*; 8-11p., Jan.-Feb. 1992. (11959)

Schuler, Daniel and Burkel Baumann Schuler. 'Consideraciones sobre los campos de ruinas y las operaciones de socorro tras un sismo.' *Revista Internacional de Protección Civil*; 8 (4): 36-40p., Dec. 1995. (11983)

Disasters: Preparedness and Mitigation in the Americas is the Newsletter of the Area on Emergency Preparedness and Disaster Relief of the Pan American Health Organization, Regional Office for the Americas of the World Health Organization. The reported events, activities and programs do not imply endorsement by PAHO/WHO, nor do the statements made necessarily represent the policy of the Organization. The publication of this Newsletter has been made possible through the financial support of the International Humanitarian Assistance Division of the Canadian International Development Agency (IHA/CIDA), the Office of Foreign Disaster Assistance of the U.S. Agency for International Development (OFDA/AID), and the Department for International Development of the U.K.

Correspondence and inquiries should be addressed to:

The Editor
Disasters: Preparedness and Mitigation
in the Americas
Pan American Health Organization
525 Twenty-third Street, N.W.
Washington, D.C. 20037, U.S.A.
Tel: 202-974-3522 • Fax: 202-775-4578
E-mail: disaster-newsletter@paho.org
www.paho.org/disasters/



CRID

Regional Disaster Information Center
Apdo. 3745-1000, San José, Costa Rica
Fax: (506) 231-5973
E-mail: crid@crid.or.cr
www.crid.or.cr

January 2004

FIRST CLASS

Postage and Fees Paid
PAHO
Permit Number G-61

Disasters: Preparedness and Mitigation in the Americas
Pan American Health Organization
525 Twenty-third Street, N.W.
Washington, D. C. 20037-2895
Official Business
Penalty for Private Use \$300

Disaster Mitigation in



HOSPITALS

January 2004

Special Supplement to **Disasters: Preparedness and Mitigation in the Americas**
quarterly newsletter of PAHO/WHO

Editorial

Advances in Disaster Mitigation Measures Help Reduce Impact on Hospitals

We cannot continue waiting for another large-scale disaster to force us to remember that 50 percent of hospitals in Latin America and the Caribbean are located in high-risk areas and that many of them still lack disaster mitigation programs, emergency response plans, or the infrastructure required to withstand adverse events.

Thanks to efforts to promote investment in mitigation and prevention, significant advances have been made: the importance of the issue is well recognized, vulnerability assessments of some health facilities have been carried out, many facilities have been retrofitted, prevention measures have been incorporated into the design of new buildings, technical training material has been produced, and training has been provided to thousands of professionals. However much remains to be done. Investments continue to be made in the design, construction and rehabilitation of many health facilities without including mitigation features. Why would a country decide to remodel five hospitals without taking into account earlier vulnerability assessments? Why was a retrofitted hospital evacuated during a recent earthquake, even though it suffered no damage?

Many hospitals affected by disasters have been built according to standards designed to withstand earthquakes, hurri-



Photo: PAHO/WHO

canes and floods. The philosophy, in most cases, is to protect the lives of occupants and the investment in buildings and equipment. However, these measures stop short of ensuring the hospital can continue to function. Because it is imperative that they continue to provide service in the immediate aftermath of a disaster, greater care must be taken in their design.

Existing design and construction standards must be revised to address all types of vulnera-

bility—structural, non-structural and functional—to protect the lives of patients and health personnel and guarantee the continuity of services after a disaster. By applying accumulated knowledge and existing technologies, and without enormous financial efforts, today it is possible to reduce risk and damage to a minimum—if the appropriate measures are taken in the design, construction and maintenance of new health facilities.

Disaster prevention and mitigation involve many stakeholders:

- National and local authorities and decision makers in the health sector, who can choose a safe site, hire the appropriate professionals, include prevention considerations in the planning of new infrastructure, promote vulnerability assessments of existing buildings and lobby for their retrofitting.

(continúa en la pág. 7)



Photo: PAHO/WHO

Central America makes strides in prevention and mitigation

In the years since hurricane Mitch, hospitals in Central America have redoubled their efforts to reduce the impact of disasters on health. Many of these efforts have taken place in the most hard hit countries: Honduras, Nicaragua, El Salvador and Guatemala, within the framework of a four-year vulnerability reduction program.

Currently, more than 50 hospitals belonging to the ministries of health are better prepared, with emergency plans and committees in place. Hospital staff has been trained and activities defined to ensure the operational and functional capacity to confront an emergency or disaster in a timely and effective fashion. The investments being made by the hospitals themselves is one of the most important results of the work to date. Hospital boards of directors are more aware of how important it is to assess the vulnerability of their facilities and how much can be done to improve response by modifying existing infrastructure.

Given the operational and functional complexity of a hospital, many efforts are required to reduce its vulnerability. Physicians and nurses have worked hard to identify the functional weaknesses of their hospitals; architects and engineers from the infrastructure and maintenance departments of the ministries of health are assessing the vulnerability of the medical equipment and water and power systems in the health care network.

Engineering and architectural associations, along with relevant faculty members



Photo: PAHO/WHO, C. Osorio

of universities in Central America, have collaborated to produce vulnerability assessments of regional hospital infrastructure and are now working on guidelines and standards so that new hospitals are not crippled by the next disaster.

Technical cooperation among Central American countries has also been strengthened. Guatemala has contributed its years of experience in hospital planning for disaster reduction. Graduates in biomedical engineering from Don Bosco University in El Salvador are supporting the assessment

of medical equipment. Engineers and architects from the ministries' planning, infrastructure and maintenance departments are responding to hospital managers' requests to improve their physical infrastructure; and prevention and mitigation measures are increasingly being incorporated into the process.

The ongoing strengthening of national prevention and mitigation capacities is crucial to reducing risks to hospitals.

For more information, contact Víctor Rojas at rojasv@hon.ops-oms.org.



Photo: PAHO/WHO

EL SALVADOR invests in protecting its hospitals

The government of El Salvador is developing standards for the design and construction of new hospitals in high-risk seismic areas of the country. The standards will cover the minimum requirements in terms of seismic resistance and structural design for both the hospital structure and its equipment. The Salvadoran Association of Engineers and Architects, ASIA, is in charge of producing the new code. For more information, contact ASIA at asiajunta@integra.com.sv.

Nicaragua's Bluefields Hospital Invests in Retrofitting



Photo: A. Ugarte

Bluefields is one of the most vulnerable areas along Nicaragua's Atlantic coast. In recent years, it has suffered the impact of storms such as Gert (1993), Gordon (1994), Alma (1996), and hurricane Joan in 1998. Given this background, Nicaragua's Ministry of Health is investing US\$800,000 to retrofit and remodel the city's health facilities in an attempt to make them safer in the next disaster.

With PAHO's support, a vulnerability assessment of the main hospital and 12 other health facilities was carried out. The assessment confirmed weaknesses in the metallic structure due to the severe corrosion caused by the passage of time and the unforgiving environment. Mitigation measures will begin with the retrofitting of the structure. The roofs were also redesigned to reduce vulnerability to hurricanes.

Engineers in the Ministry of Health are in charge of planning the projects and the bidding process has begun. Construction is expected to begin this year.

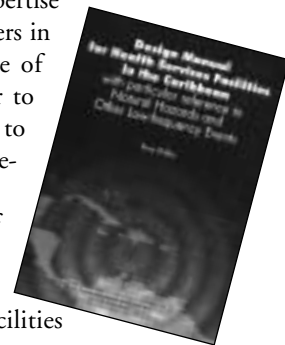
With this experience, a first step has been taken to fulfill a Ministerial Resolution on public health facilities, which states that "all new designs and constructions with national funds or funds provided by international cooperation shall include risk assessments and structural, non-structural and functional vulnerability reduction [measures].... The budget shall allocate the necessary funds to ensure the maintenance of health facilities and achieve vulnerability reduction."

For more information, visit www.ops.org.ni/.

Design Manual for Health Services Facilities

This handbook is the result of experience and expertise painfully gained during and after natural disasters in the Caribbean. It emphasizes the importance of assessing the vulnerability of health facilities in order to reduce the adverse effects of future events. It also strives to include specific measures for disaster mitigation and preparedness when planning healthcare facilities.

The manual focuses on the physical vulnerability of health facilities to strong winds, seismic events, torrential rains and other low-frequency phenomena. It is aimed at the owners and administrators of health facilities and those in charge of designing and building such projects.



Building codes for retrofitting health facilities now on CD-ROM



This CD-ROM compiles the vulnerability assessments of several hospitals in the Caribbean and contains a report on the Comparison of Building Codes and Practices in use in the Caribbean, which focuses on the design and construction of health care facilities.

The CD-ROM is aimed at professionals and decision-makers in the health sector, particularly in the field of disaster mitigation in the English, Dutch, Spanish and French Caribbean. More information at www.disaster-info.net/carib/.

Progress in Caribbean hospital mitigation

In recent years, the Caribbean has shown that it is feasible—technically and financially—to lower the risk of being affected by disasters such as hurricanes.

With funding from the DIPECHO initiative of the European Community Humanitarian Office (ECHO), PAHO is working on disaster prevention and mitigation in the region's health facilities. An expert committee on hospital mitigation and health infrastructure has been appointed to advise countries on the subject, and has produced publications that summarize the experience gained during past disasters in the Caribbean and technical documents aimed at reducing the impact of these phenomena on health infrastructure.



Photos: PAHO/WHO

Hospital disaster committees: a first line of defense

Photo: PAHO/WHO



Hospital committees are key to reducing the vulnerability of health facilities. In August 2002, representatives from Central America met in Honduras to share experiences and recommend a strategy for ensuring the sustainability of hospital committees, bearing in mind that this is a management issue both at the central ministerial level and at the hospital level. The following approaches were suggested:

In the Ministry of Health:

- Define a mandatory legal framework at the national level.
- Appoint an official in the Ministry or an appropriate department to be in charge of the committee.
- Organize a permanent system of technical advice and assistance.
- Include the issue as an ongoing item in the health sector's agenda.
- Devise a system to follow up on the work being carried out in hospitals.
- Include in the budget the necessary resources for implementing mitigation measures.
- Provide resources for the preservation of lifelines.
- Provide hospitals with the medical and surgical supplies essential to manage emergencies and disasters.
- Work in coordination with other sectors of the central government.
- Periodically measure the quality of the work being performed and reschedule pending tasks.

At the hospital level:

- Formalize the appointment and mandate of the committee.
- Schedule regular meetings that may not be cancelled for any reason.
- Plan all necessary tasks, and follow up on them.
- Train staff.
- Practice drills and simulations to keep the issue fresh in the staff's minds.
- Share experiences with other hospitals for mutual reinforcement.
- Periodically assess the hospital's vulnerability and keep track of changes.
- Set realistic short-term goals to facilitate the job.
- Work in coordination with other local sectors.

Applying mitigation measures improves preparedness



Photo: PAHO/WHO, V. Rojas

Hospitals in Honduras are allocating greater financial resources to disaster mitigation. In the Mario Catarino Rivas Hospital in San Pedro Sula, this is already taking place. The torrential rains that often plague the region affect

It is important to evaluate medical equipment in hospitals to ensure that it works properly during an emergency—when it is most needed.

health infrastructure to such a degree that in the past, the hospital has often been forced to evacuate the facility. Today, the effects of intense rains and flooding is being mitigated with public works designed to effectively dispose of excessive rainwater.

At the Tegucigalpa University Hospital, all electrical installations will be upgraded to reduce the risk of fires. In addition, an evaluation has been carried out of the medical equipment in the surgical theaters, the intensive care unit and the emergency ward, among other critical services. As a result of the assessment, it has been determined that only 60% of the equipment would remain operational in the event of a disaster. This assessment is being used as a guide when it comes to budgeting funds to improve the situation.

Building codes and standards for health facilities in Bolivia

Bolivia's Ministry of Health, in conjunction with the Civil Defense, municipalities, private institutions, professional engineers and architects' associations, universities and technical and research institutions, has made a commitment to support the drafting of new building codes and standards for Bolivian health facilities.

This commitment was made public last June during the International Workshop on Drafting Building Codes and Standards for Health Facilities in Bolivia.

Institutions and professionals who can contribute to ensuring that the Bolivian health care system enjoys appropriate design and construction standards to reduce vulnerability were identified, based on similar standards at the regional level.

A technical committee was appointed to develop a draft code for the design and construction of this type of buildings, and in the coming months they will hold a follow-up meeting. For more information, contact José Luis Gomez R. at jlomezr@entelnet.bo.



Risk management in health facilities: What can we do?

It is commonly believed that mitigating damage to health facilities requires investing large sums of money. However, simple and inexpensive solutions can reduce structural, non-structural and administrative/operational damage to these facilities.

Structural Mitigation Measures

- Design buildings according to appropriate standards and according to natural and manmade hazards.
- Ensure that any building, addition or rehabilitation or remodeling of health facilities uses appropriate materials and procedures and relies on the right technical team.
- Retrofit high-risk structures, identified as such by means of vulnerability assessments (beams, columns, slabs and walls).

Non-structural Mitigation Measures

- Guarantee the continuity of basic services and other supplies by protecting life-lines (such as water supply and sanitation, power, gas, and communications).
- Protect equipment by means of fasteners, supports, chains, etc., employing the correct anchoring materials and methods.
- Retrofit and secure architectural elements (lighting, furnishings, etc.)

Administrative and Operational Mitigation Measures

- Make sure a correct site is chosen for health infrastructure, in low-risk areas with easy access.
- Distribute interior spaces so that there is functional harmony between health and support services.
- Ensure good signage throughout facilities to direct visitors to safe areas and evacuation routes.
- Establish and implement preventive and corrective maintenance plans that make the best use of the human, material and financial resources available.
- Produce plans that enable a timely and orderly response.
- Train staff on prevention and mitigation issues in health facilities.
- Carry out educational campaigns on hospital safety.



Photo: PAHO/WHO, J. Jenkins



Photo: PAHO/WHO



Photo: PAHO/WHO, A. Waack

Argentina

Rehabilitation of hospital after floods



Photos: PAHO/WHO



Torrential rains last year caused the Salado River to overflow, which resulted in serious flooding in the province of Santa Fe, Argentina. Carlos Modesto Vera Candiotti Rehabilitation Hospital was one of the most severely affected. However, after just 50 days of interrupted services, the hospital reopened its doors to care for the disabled, meeting the demand not only of Santa Fe province but also of neighboring provinces.

This example of interinstitutional collaboration to rehabilitate a health facility also underscores the value of incorporating simple measures to ensure a far less vulnerable hospital. The prompt and affordable rehabilitation was possible thanks to the support of the provincial government, the provincial and federal

ministries of health and the environment, and the hospital's management, board of directors and staff.

At their highest point, flood waters reached 1.6 meters inside the hospital, affecting approximately 80% of the facility's property, equipment, medical supplies, administrative files and clinical histories.

The rehabilitation process started with an in-depth cleanup of the floors, walls, furnishings and the water storage tank and pumps to remove mud. The general state of the building was then assessed, after which power was restored and actions were taken to save the hospital's maintenance equipment. Most relatively new walls suffered no significant damage, while several old coverings fell off and had to be replaced. Building alternatives were sought, as well as the use of less vulnerable materials.

Emergency and rehabilitation works were used as opportunities to optimize general performance of services and to implement mitigation measures that will create a safer facility while enhancing the value of the building as an asset. For instance, electrical outlets were raised higher on walls to prevent damage in future floods. In recovering the hospital's medical equipment, the top priority was saving the most delicate technological devices; 80% of these devices were restored fully and only 15% had to be completely replaced.

For more information, contact Dr. Manuel Calvo at manuel-calvosf@hotmail.com.

El Salvador

The case of the San Rafael Hospital

San Rafael Hospital in Santa Tecla, built in the late 19th century, provided continuous service until the 1920s, at which time it was replaced by a more modern hospital, expected to operate for many years. Regrettably, reality dictated otherwise.

After the original hospital closed its doors, it was declared a national monument. The damage it suffered as a result of the earthquakes of 2001, however, turned it into a hazard that required it to be demolished.

The effects on the newer hospital were equally disastrous. This structure had to be evacuated; three years later, it still remains vacant. The hospital grounds were quickly covered with tents and improvised provisional buildings that even today, are the only available solution to delivering health care services in the area.

The structure of the newer hospital continues to deteriorate, and, for all intents and purposes, many of its structural elements and equipment have been lost due to the passage of time and lack of use.

For more information, please contact Dr. Carlos R. Garzón at garzonca@cor.ops-oms.org.



Photos: PAHO/WHO



Advances in disaster mitigation measures

(viene de la pág. 1)

- Institutions that invest in this type of infrastructure (governments, municipal councils, financial institutions, religious organizations, international agencies, NGOs, etc.) who must ensure, from the design stage of each new project, that technical features are incorporated that result in a safer building.
- Professionals in charge of planning, designing, building or overseeing this type of construction, and universities that train new professionals. Both groups must spread the message in their daily activities, thereby ensuring that each new project is sustainable. An important resource for these stakeholders is the handbook *Guidelines for Vulnerability Reduction in the Design of New Health Facilities*, which outlines the key mitigation concepts that must be incorporated into the management, design, construction and oversight of projects of this type. It contains critical guidelines that facilitate the incorporation of vulnerability reduction measures in each stage of the investment project.
- Health facilities personnel (medical, administrative, services, operational and maintenance staff, etc.) and those responsible for disaster preparedness can work within their institutions to organize an effective response to adverse events and implement non-structural and functional measures aimed at reducing the building's vulnerability. Technical training material is also available for developing integrated hospital



Photo: PAHO/WHO, V. Rojas

Health facilities at all levels deserve special attention because they must continue to treat patients and those affected by disasters. It is also important that health promotion and prevention programs are not interrupted.

plans to identify and reduce risks and confront emergencies, whether internal or external. Having staff take the Hospital Disaster Planning Course, which employs a highly participatory methodology and calls for the active commitment of all levels or departments of the hospital, enables them to produce and regularly update an effective hospital disaster reduction plan (review this material at www.disaster-info.net/planning/files/index.htm).

Hospital emergency plans must be based on realistic vulnerability assessments that reveal the type of damage that may occur and suggest how to respond to it. For example, a structural vulnerability assessment could show that wing A of a certain hospital would suf-

fer severe damage in an earthquake of a given magnitude. The plan would contemplate alternatives such as the evacuation of patients or the relocation of critical services and costly and essential equipment so they can continue to function. Here, hospital committees are a critical part of the solution, leading to an effective reduction in vulnerability.

Disaster mitigation is beginning to achieve the place it deserves on the agendas for investment, planning and construction of health facilities in the most vulnerable countries. However, the strategy of motivation and advocacy should, on no account, be allowed to falter. Unless we directly involve those responsible for public investments, the funding agencies, the planners and builders of health facilities or reconstruction projects in the public and private sector, results will continue to be scant. This supplement is an invitation to experts and concerned non-specialists to exchange views and experiences. Please send your ideas to mitigacion@ecu.ops-oms.org.



Photo: PAHO/WHO

South American Engineers Study Damage Assessment Criteria



Photo: PAHO/WHO

An international workshop on criteria for damage assessment and decision-making in hospitals in disaster situations was held in Arica, Chile to train South American structural engineers on the characteristics and functional consequences of the damage caused by natural hazards to health facilities and on evacuation criteria. Thirty-two professionals from Colombia, Venezuela, Peru, Ecuador, Bolivia, Chile and Argentina par-

Field visits provide a valuable experience in in which to study of the effects of disasters in health facilities.

ticipated, representing ministries of health, universities, professional associations and other institutions working in the field of seismic engineering.

Workshop discussions centered on the medical-architectural aspects of health facilities, the effects of earthquakes on these structures and the identification and

assessment of non-structural damage using diagnostic and evaluation criteria. Also on the agenda was a review of draft guidelines for assessing damage to health infrastructure, a practical document for gathering field data for assessing the state of the building and deciding on its functionality. (Workshop documents are online at www.disaster-info.net/PED-Sudamerica/pdcmitigacion_arica.htm.) Finally, a field trip was carried out to Juan Noé Hospital in Arica, which remains vacant as a result of the earthquake of June 2001, to appreciate the damage suffered by the hospital.

Participants concluded that vulnerability assessments are key elements of the post-earthquake evaluation of a health facility to determine if it is possible to continue providing health services, as well as to define priority retrofitting and other actions needed to reestablish operations in the shortest time possible. It was noted that, in hospital damage assessment and decision-making in disaster situations, it is indispensable for work to be carried out in a multidisciplinary fashion, with the participation of health professionals, architects, and engineers who can discuss from all angles the state of the building.

For more information contact Patricia Gómez at mitigation@ecu.ops-oms.org.



Guidelines for Vulnerability Reduction in the Design of New Health Facilities

interruption of services, and loss of the investment. Often this is due to the fact that the design only took into account the protection of personnel and patients, disregarding the infrastructure or its functional role within the health system.

This situation can be reversed if thought is given to protecting the infrastructure and its operations in the design and building of new health facilities, using methods which take into account natural hazards in the area and the level of protection required.

This is the premise of *Guidelines for Vulnerability Reduction in the Design of*

New Health Facilities. It showcases actions that should be taken during planning, selection of professional teams, selection of the site, design and construction.

The publication has been edited by PAHO, in collaboration with the WHO Collaborating Center on Disaster Mitigation at the University of Chile, with the support from the World Bank and the ProVention Consortium. Its objective is to guide managers, professionals and technical advisors in the health sector who work in administration, construction and inspection of projects for new health facilities.

In the aftermath of severe natural disasters, health infrastructure can suffer damages, temporary or permanent