World Health Organization

Save lives.

Make hospitals safe in emergencies.

World Health Day 2009

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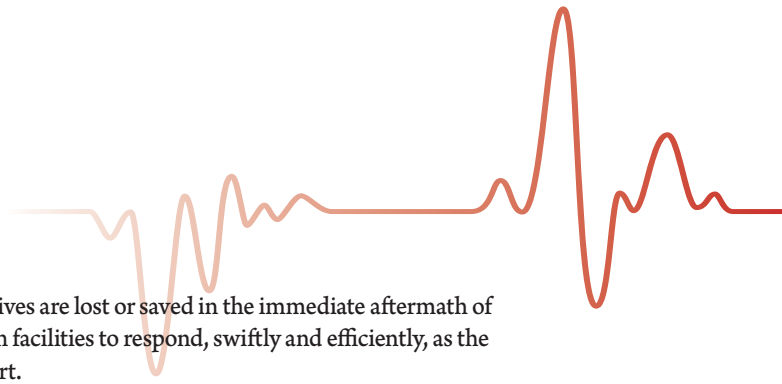
Statement by the Director-General of the World Health Organization

Dr Margaret Chan, Director-General



When an emergency or disaster occurs, most lives are lost or saved in the immediate aftermath of the event. People count on hospitals and health facilities to respond, swiftly and efficiently, as the lifeline for survival and the backbone of support.

The tragedy of a major emergency or disaster is compounded when health facilities fail. When a hospital collapses or its functions are disrupted, lives that depend on emergency care can be lost. Interruptions in routine services can also be deadly.

In large emergencies, such as those caused by earthquakes or floods, some countries have lost as much as 50% of their hospital capacity, right at the time when life-saving services were most acutely needed.

Apart from causing increased suffering and loss of life, the failure of health facilities during an emergency can provoke a public outcry, especially when shoddy construction or violations of building codes are thought to be at fault.

Such public concern is fully justified. As this document shows, it costs surprisingly little to construct a new hospital that can withstand the shocks of earthquakes, floods, or high winds. It costs even less to retrofit existing facilities to keep their services running at critical times. It costs almost nothing to integrate risk management and emergency preparedness into a hospital's operational plans.

To commemorate World Health Day this year, WHO is advocating a series of best practices that can be implemented, in any resource setting, to make hospitals safe during emergencies. Apart from safe siting and resilient construction, good planning and carrying out emergency exercises in advance can help maintain critical functions. Proven measures range from early warning systems to a simple hospital safety assessment, from protecting equipment and supplies to preparing staff to manage mass casualties and infection control measures.

Different types of emergencies bring typical patterns of injuries, such as crush injuries in earthquakes and hypothermia in floods, with corresponding needs for training and supplies. These needs can be anticipated in advance, and surge capacity can be tailored to manage them.

It is smart to think and plan ahead. Worldwide, the number of emergencies and disasters is rising. This trend is certain to continue as urbanization crowds people together on unsafe sites and climate change brings more frequent and more severe extreme weather events. We need to anticipate a growing number of areas that will become disaster-prone.

Abundant experience demonstrates the tremendous pay-off, also at the political level, when hospitals remain standing and functioning as beacons of security and solidity in the midst of disaster and despair. We must never forget: hospitals and health facilities represent a significant investment. Keeping them safe in emergencies protects that investment, while also protecting the health and safety of people – our foremost concern.

Emergencies: global and local impact

Wars, cyclones, earthquakes, tsunamis, disease outbreaks, famine, radiological incidents and chemical spills – all are emergencies that, invariably, impact heavily on public health.

Internal emergencies in health facilities – such as fires and loss of power or water – can damage buildings and equipment and affect staff and patients. In conflicts, reasons for hospital breakdowns include staff being forced to leave due to insecurity and the looting of equipment and drugs.

In 2008, 321 natural disasters killed 235 816 people – a death toll that was almost four times higher than the average annual total for the seven previous years. This increase was due to just two events. Cyclone Nargis left 138 366 people dead or missing in Myanmar, and a major earthquake in south-western China's Sichuan province killed 87 476 people, according to the United Nations' International Strategy for Disaster Reduction (UNISDR). Asia, the worst-affected continent, was home to nine of the world's top 10 countries for disaster-related deaths. Along with other weather-related events, floods remained one of the most frequent disasters last year, according to UNISDR. Conflicts around the globe have also led to great human suffering and have stretched health care services to the extreme.

Disasters also exact a devastating economic toll. In 2008, disasters cost an estimated US$ 181 billion – more than twice the US$ 81 billion annual average for 2000–2007. The Sichuan earthquake was estimated to cost some US$ 85 billion in damages, and Hurricane Ike in the United States cost some US$ 30 billion. "The dramatic increase in human and economic losses from disasters in 2008 is alarming. Sadly, these losses could have been substantially reduced if buildings in China, particularly schools and hospitals, had been built to be more earthquake-resilient. An effective early warning system with good community preparedness could have also saved many lives in Myanmar if it had been implemented before Cyclone Nargis," said Salvano Briceno, the director of the UNISDR Secretariat.

Although only 11% of the people exposed to natural hazards live in developing countries, they account for more than 53% of global deaths due to natural disasters. The differences in impact suggest there is great potential to reduce the human death toll caused by natural disasters in developing countries – and that the key ingredient in these tragedies is human inaction.

This is only one part of the picture. There are many smaller-scale events that inflict an even greater toll in terms of human suffering, such as in the case of vehicle accidents and fires. Road traffic crashes kill 1.2 million people annually, or more than 3200 people a day, while a further 20–50 million people are injured or disabled every year. At least 90% of road and fire fatalities occur in low- and middle-income countries. There are also 300 000 deaths each year from fires alone.

ANGOLA

Angola's 2005 Marburg haemorrhagic fever outbreak underlined not only the human damage the virus could cause, but how health facilities can make a deadly epidemic even worse. The outbreak was the largest and deadliest recorded of Marburg, with more than 200 reported deaths in the town of Uige. The main hospital and some smaller health centres acted as amplifiers of the outbreak, with several health care workers and other patients being infected. At least 16 health care workers were among those who died.

The lack of existing infection control structures and weakness of supply chain infrastructure posed a major challenge for the hospital. International organizations provided support to enable the hospital to cope with the crisis. Health staff who did not employ correct infection control practices, and came into contact with patients suffering from the virus, also succumbed to it. The outbreak spread particularly among people exposed to the virus at home, during health care, or at funerals after coming into contact with the bodily fluids of those who died from the disease. Dangerous use of home-based injections was also identified as an important cause of the outbreak's spread.

To halt the outbreak, strict infection control measures were implemented to stop the virus spreading in health clinics and hospitals. These measures included detection and isolation of cases within health facilities, organization of basic infection control services, and the provision of appropriate personal protective equipment to staff. Staff were trained in basic infection control measures and proper waste disposal. Tanks were installed at health facilities to provide water storage and improve hygiene practices.

Control efforts also focused on training health workers, community midwives and traditional healers, as well as following up people who had been in contact with ill people. Mobile teams were sent to the field to investigate rumours of illness, obtain clinical specimens for laboratory tests, hospitalize suspected cases and monitor their contacts. Work also had to be done to create trust amongst the population.

Outbreaks of communicable diseases can spark emergencies that cause widespread death and suffering. In the 12 months up to 31 May 2008, WHO verified 162 outbreaks of infectious diseases in 75 countries worldwide. More than a third of the outbreaks occurred in Africa. They included cholera, other diarrhoeal diseases, measles, haemorrhagic fevers and other severe emerging diseases.

The risk of outbreaks is often presumed to be very high in the chaos after natural disasters, a fear likely stemming from a perceived link between cadavers and epidemics. However, the risk factors for outbreaks after disasters are connected mainly with displacement of people, commonly linked to conflict. Even a few cases of a given disease can give rise to the perception that the public faces a grave health risk, which can lead to major political, social and economic consequences.

Infectious diseases are major causes of death and illness in children in conflict settings, especially among refugees and the internally displaced.

How emergencies threaten health facilities and delivery of care

Apart from their effects on people, emergencies can pose huge threats to hospitals, clinics and other health facilities.

Structural and infrastructural damage may be devastating exactly at the time when health facilities are most needed. Health workers have been killed in collapsing hospitals. The number of other deaths and injuries is compounded when a hospital is destroyed or can function only partially. Health facilities should be the focus for assistance when disaster strikes but, if they are damaged or put out of action, the sick and injured have nowhere to get help.

The 2003 Algerian earthquake rendered 50% of health facilities in the affected region non-functional due to damage. In Pakistan's most-affected areas during the 2005 earthquake, 49% of health facilities were completely destroyed, from sophisticated hospitals to rural clinics and drug dispensaries. The December 2004 Indian Ocean tsunami affected national and local health systems that provided health services for millions of people. In Indonesia's northern Aceh province 61% of health facilities were damaged.

Despite international laws, health facilities continue to be targeted or used for military operations in conflicts. Health facilities in Bosnia and Herzegovina, Somalia, the Central African Republic and the Gaza Strip are among those that have been caught in the line of fire.

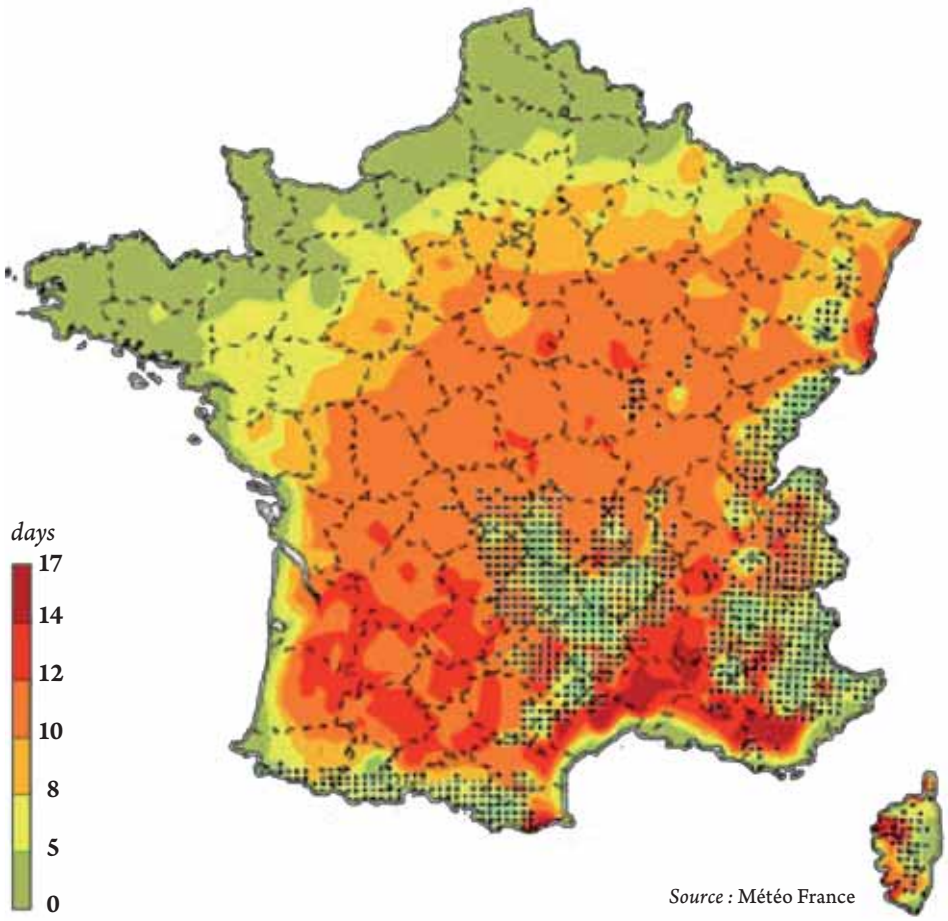
An emergency may be limited to the health facility infrastructure – for example, fire damage, power cut or loss of water supply. Chemical and radiological emergencies in or near a health facility can also disrupt the delivery of care. In addition, emergencies threaten health staff – the

FRANCE

Europe's 2003 heatwave hit France and its health sector hard. A 60% increase in deaths – close to 15 000 people – was recorded during the 16-day heatwave. The French government found that heatwave monitoring before and during the summer was insufficient. So a heatwave warning system was developed to respond quickly with life-saving actions involving both hospitals and public health workers. The system aims to give public authorities three days warning that a heatwave may occur so measures can be implemented under the "national heatwave plan." In parallel, a volunteer "syndromic" surveillance system now operates in at least 120 health facilities to monitor the number of patients presenting to emergency departments with heat-related illnesses. The system shows that hospital emergency departments can provide real-time information on heatwave illness to allow authorities to take early action to save lives.

France: number of days with maximum temperature ≥ 35 °C

Period: 1st–18 August 2003
Resorts at altitudes < 500 m



Source : Météo France

doctors, nurses, ambulance drivers and other staff working to save lives. When a hospital collapses, or an artillery shell destroys a ward or an ambulance, health staff are killed or injured. When staff are incapacitated and cannot do their work, health care is further interrupted.

Even if health facilities themselves are not affected during disease outbreaks and epidemics, their services and provision of safe care may be. Increased demands for services and a decreased workforce can impact on health care by disrupting communications, supplies and transport. Continuity of care is then in turn disrupted, including for chronic diseases like HIV and tuberculosis.

If measures to prevent and control infection are not effective, health care facilities may act as "amplifiers" of outbreaks, generating cases of the disease among other patients or health care workers and further decreasing the capacity to provide services.

Power cuts linked to disasters may disrupt water treatment and supply plants, thereby increasing the risk of waterborne diseases and affecting proper hospital functioning, including preserving the vaccine cold chain. A massive power outage in New York in 2003 was followed by an increase in diarrhoeal illness.

Why keep health facilities safe?

Safe health facilities in emergencies are a collective responsibility

Hospitals are more than just buildings. They are a vital asset at the heart of a community, the place where often life starts and ends. Due to the central role played by hospitals in our communities, we all share the responsibility of making sure they are resilient in the face of emergencies. Below are three reasons as to why we must make hospitals safe in emergencies.

1. Save lives, protect health

As they are occupied 24 hours a day, hospitals cannot be evacuated easily. They must remain working if their occupants – especially the most vulnerable such as newborn babies and patients in intensive care – are to survive. When the work of hospitals and other health facilities is disrupted or their buildings are damaged, both urgent and routine health care is interrupted and may be halted altogether – leaving the sick and injured without the care that they need.

Health "systems" rely on a range of public, private and nongovernmental facilities to work together to serve the community. In times of emergency, this is even more important. Hospitals, primary health care centres, laboratories, pharmacies and blood banks work with other non-health sectors, including energy, roads and transport, and the police to ensure the continuity of health services.

TAJIKISTAN

Central Asia's 2008 cold wave showed how vulnerable health systems can be in the face of extreme weather events. In the midst of drought and insecurity, Tajikistan also suffered its coldest winter for three decades. Reduced fuel supplies from neighbouring countries drastically affected electric-power generation, leaving health facilities without energy for prolonged periods of time. A rapid health assessment showed a sharp increase in frostbite cases and burns from use of alternative heating devices at home. More people were admitted with acute respiratory infections, while maternal and infant deaths increased. People couldn't reach hospitals because of transport problems and some hospitals closed down. The cold front also decreased water supplies and raised concerns around sanitation. WHO, Tajik emergency authorities and health partners conducted a post-disaster assessment of key health facilities to improve disease surveillance, to ensure that medicines and supplies were available, to strengthen sanitation and hygiene, and improve basic energy supplies.

Health facilities are safe havens for people during an emergency (Azerbaijan).

Health facilities are safe havens for people during an emergency. Hospitals and their staff must be regarded by all parties – particularly combatants during conflicts – as neutral and must not be subjected to any form of violence. Sadly, the provisions of international humanitarian law in this regard are often not respected.

During emergencies, health facilities play a vital role. They:

- Provide emergency care to the injured (e.g. surgery and blood transfusions) and to the critically ill – as in outbreaks of communicable disease.
- Collect and analyse data on illness and deaths in order to detect and prevent potential communicable disease outbreaks.
- Deliver longer-term health care before and after an emergency. People need long-term nursing and medical care, maternal and child health services, rehabilitation of injuries, management of chronic diseases, and psychosocial support long after the emergency is over.
- Provide immunization services to prevent outbreaks of communicable diseases such as measles that lead to the needless deaths of more children.
- Provide other critical services – including laboratories, blood banks, ambulances, rehabilitation facilities, aged care facilities, and pharmacies.

2. Protect investment

The most costly health facility is the one that fails. Hospitals and health facilities are enormous investments for any country and their destruction or damage imposes major economic burdens. In some countries, up to 80% of the health budget is spent on hospitals and other health facilities. Rebuilding a hospital that has been destroyed virtually doubles the initial cost of the facility.

3. Safeguard social stability

Public morale can falter and political discord be ignited if health and emergency services fail during emergencies. Conversely, an effective emergency response and functional health service can reinforce social stability and cohesion. Hospitals are a haven for the public during conflicts and other emergencies due to their neutrality, impartiality and ability to protect a community's social and health capital.[1]

1. Disasters are also politically important and their handling affects public confidence. Perceived inadequacies in the emergency response to Hurricane Katrina in New Orleans, USA, in 2005 reduced public confidence in government when the country witnessed 44 dead bodies being recovered from a hospital that had been flooded, damaged and abandoned. At least 140 elderly patients of hospitals and nursing homes died in the wake of the hurricane.

   On the other hand, approval ratings for President Alan García of Peru rose following the government's effective management of the Peruvian earthquake of 2007. The Peruvian government indicated that hospital needs were covered one week after the quake. China's leadership instilled public confidence by directing emergency response efforts from the scene of the 12 May 2008 earthquake in Sichuan Province.

NEPAL

Patan Hospital has made disaster prevention a priority. With 60% of Kathmandu Valley buildings likely to be heavily damaged in a strong earthquake and casualties predicted to reach into the thousands, Patan Hospital has taken measures to reduce its risk of damage. Following a seismic assessment of 14 Valley hospitals, the Patan facility relocated its planned maternity wing, and made required retrofitting modifications. The hospital also prepared an emergency plan and conducts mass casualty drills every year to test and refine the plan. Measures such as these will help increase the hospital's chance of providing good quality medical care in disaster situations.

How to safeguard health facilities

Planning and preparation are needed to protect health facilities and make sure they are able to continue providing health care during and after emergencies.

A safe health facility will protect patients, visitors and staff from hazards. It will continue to function and provide essential services when they are most needed. And it will have emergency response plans and a trained workforce to continue the normal provision of health care and cope efficiently with the additional demands resulting from the emergency.

Building hospitals safe from disaster or making existing ones safer by retrofitting is surprisingly cost-effective. In many new health facilities, incorporating comprehensive protection from earthquakes and extreme weather events into the design from the beginning will add no more than 4% to the cost.

Retrofitting is an effective way to make existing hospitals safer, and thereby save lives. Using a tool[2] to assess hospital safety will allow health authorities to determine priorities for renovating or retrofitting health facilities. A Costa Rican hospital retrofitted before the 1990 earthquake withstood the shock of a 5.8 magnitude quake in excellent condition, with the savings far exceeding the cost of retrofitting.

Most of a hospital's value is represented by non-structural elements – including mechanical, electrical and communications equipment, shelving and water heating. It is damage to these that most often renders a facility inoperable. Retrofitting non-structural elements in an otherwise structurally sound facility costs about 1% of the hospital's budget but will protect up to 90% of its value. Here are six actions that can make hospitals safe.

1. Situate, design and build new health facilities

Problem

A health facility's location can doom it from the start. In high-risk coastal areas, cyclones or hurricanes not only generate powerful winds but can cause sea surges that drive massive amounts of water into anything in their path, flooding and destroying them, and washing some away entirely. Building hospitals in areas of high seismic and volcanic activity carries high risk, as China, Iran, Japan, Mexico, Pakistan and other earthquake-prone countries can attest. Locating health facilities near factories which may cause contamination should also be avoided.

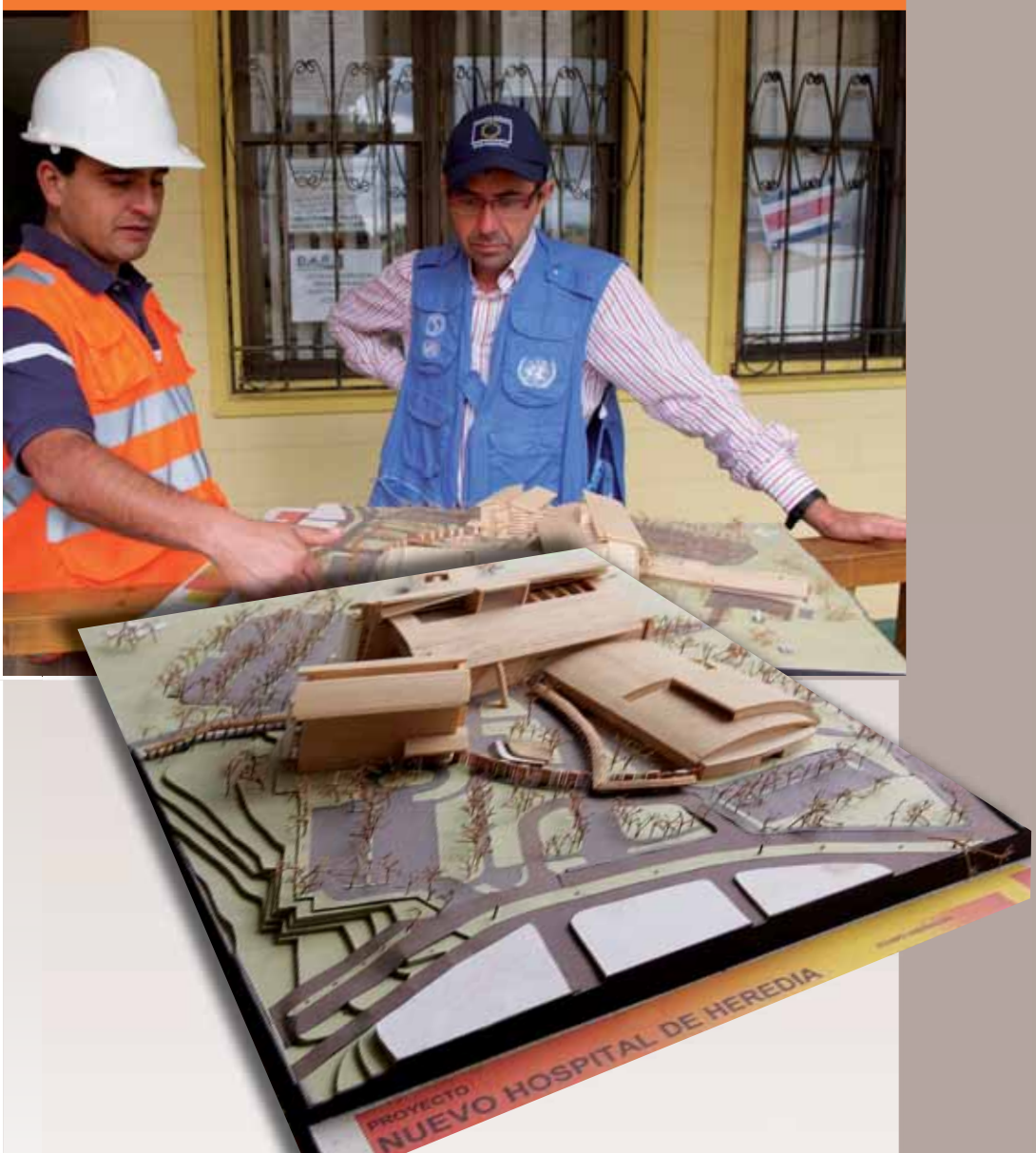
Structural damage stops many facilities from providing health care during crises. Earthquakes and floods can damage a hospital's structure and its non-structural components, while hurricanes can tear off roofs. Damaged health facilities pose health risks to patients and staff and cannot remain open.

2. Safety Index http://www.paho.org/english/dd/ped/SafeHospitalsChecklist.htm

INDIA

Gujurat's devastating 2001 earthquake provided impetus for change. Not only were nearly 14 000 people killed, but the quake destroyed 1813 health facilities and partially damaged another 3812, leaving them partly or wholly inoperable. A post-quake survey showed that damage to health facilities was mainly due to poor-quality building materials and foundations that collapsed randomly and extensively. Planning by national authorities, engineers and consultants for new and retrofitted health facilities included revising building guidelines to take account of seismic zones. Gujarat also appointed consultants to supervise and monitor hospital reconstruction and established a unit to ensure that new health facilities were constructed according to building codes.

A well-chosen site allows health facilities to keep functioning in emergencies (Costa Rica).



Solution

Location

A well-chosen site allows health facilities to keep functioning in emergencies. When choosing a site:

- Choose locations for hospitals that are not exposed to the elements or are less prone to known hazards.
- Build away from chemical and other hazardous industrial plants that may contaminate the facility.
- Do not build near high-risk coastal areas, in flood plains or other low-lying locations that are prone to damage from hurricanes, floods or water surges, including rising sea-levels associated with climate change.
- Do not choose sites that are prone to landslide or on ground that amplifies ground-shaking from seismic activity.
- Ensure that the health facility has good access for pedestrians and vehicles, and that entrance and exit routes are protected from hazards.

Design and construction

These structural techniques will help health facilities withstand hazards and operate in emergencies:

- Build on high ground to avoid flood damage, or elevate floor levels by using multi-storey designs and piles or stilts.
- Design to provide resistance and stability against hazards known to threaten the area.
- Adhere to local building codes.
- Use building techniques such as "base isolation technology" by which a building is isolated from the ground oscillations in earthquakes.
- Use natural ventilation[3] in order to provide air change that decreases the transmission of communicable diseases within low-cost health care facilities.
- Construct the building's external envelope, such as walls, doors, and roof coverings, according to regulations and standards to protect, for example, against strong winds.
- Design health facilities so all aspects of the building, from its various wards to medicine cabinets, are well integrated. Symmetrical designs can help health facilities withstand earthquakes and strong winds.
- Apply designs to allow staff to expand critical health services, such as intensive care and surgery, in order to manage the surge of patients in an emergency.
- Have independent consultants review the health facility's design and construction.
- Design health facilities for all major hazards they are exposed to. Designs should not be done separately for earthquakes and hurricanes; they should be done for both.

3. WHO Interim Guidelines: Infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care. June 2007. http://www.who.int/csr/resources/publications/WHO_CD_EPR_2007_6/en/

MEXICO

Mexico City's devastating 1985 earthquake marked a turning point for disaster preparedness. The magnitude 8.1 earthquake killed around 10 000 people and damaged much of the city. Five hospitals collapsed and 22 suffered major damage, leading to almost 6000 beds being lost. Some 561 people died at Juarez Hospital alone. Many in the disaster community were awakened to the importance of disaster preparedness and the need to build hospitals safely and in safe locations. Mexico's health authorities are now among the region's strongest proponents of emergency preparedness. One way that Mexico is committed to this is through its low-cost Hospital Safety Index. The tool allows countries to use information about their hospitals to rank a health facility's level of safety, prioritize improvements, and monitor progress. Mexico has applied the index to more than 100 health facilities and plans to use it on more than 1000 additional high-risk facilities prepare them to withstand disasters.

2. Assess the safety of existing facilities

Problem

Many existing health facilities have not been built with safety and resilience in mind. They remain hazardous for the people inside them and could fail if an emergency occurs. Too often, assessments of the structure and emergency preparedness of the health facility are either not carried out or are done in an ad hoc and inappropriate manner. Without an understanding of a hospital's vulnerabilities, staff and patients are invariably left at risk as the chances are higher that the facility will not be able to cope in an emergency.

Solution

- Assess the safety and functionality of facilities that are already built and operational by employing competent health facility design experts, engineers, architects and builders and health emergency personnel.
- Identify structural, non-structural, functional and other deficiencies in safety and emergency preparedness through proper assessments. They should suggest areas that need to be addressed that could involve protection of equipment, development and testing of emergency response plans, retrofitting or complete reconstruction.
- Conduct safety assessments to ensure that appropriate infection control measures are in place in health facilities – including the availability of personal protective equipment for staff and the means to isolate patients.
- Act on the findings of assessments for the safety of the staff and patients.
- Ensure that appropriate infection control measures are followed, such as using alcohol hand-rub when the water supply is interrupted.

3. Retrofit existing facilities

Problem

If a health facility is assessed as being unsafe, posing a threat to health or liable not to function in an emergency, retrofitting should be considered to improve its resilience. The challenge of undertaking such a project and the costs involved have in the past been cited as impediments to retrofitting health facilities.

Solution

The cost of structural retrofitting – such as bracing, reinforcement or other engineering interventions – can vary greatly according to the situation, but it may be a necessary investment in the safety of the health facility and the security of the health care system in emergencies. Retrofitting non-structural elements for a small cost – as little as 1% of the value of a hospital – may protect up to 90% of the hospital's assets, such as equipment and medicines.

Low-cost measures can also improve a hospital's safety and its ability to function after emergencies. In Nepal, a study[4] found that spending US$ 150 000 on non-structural

4. Study conducted by WHO, the country's Ministry of Health and the National Society for Earthquake Technology of Nepal

HAITI

The 2008 hurricane season in Haiti was highly intense, with three major tropical storms (Ike, Gustav and Hannah) hitting the country within two months. More than 800 people were killed and critical infrastructure was severely damaged. The city of Gonaives was one of the hardest hit areas, with its 175-bed Providence Hospital completely lost. The hospital served a population of more than 1.8 million people in and around Gonaives. In response, the Ministry of Health, with WHO support, is tackling ways to prevent such tragedies in the future. Sites on higher ground are being located to build the new hospital so that it can be protected from future floods. The new hospital, if built as planned, will comply with all the standards to make it a "Safe Hospital."

mitigation measures in nine hospitals – securing equipment and medicines – made them better able to function in a moderate earthquake. The findings showed that before the improvements, 20% of hospitals would be able to function partially after an earthquake and 80% would be out of operation. But with the mitigation measures implemented, 20% of hospitals would be fully operational after an earthquake and 80% at least partially operational.

Retrofitted health centres in the Cayman Islands were virtually undamaged during Hurricane Ivan in 2004, as were five Costa Rican hospitals retrofitted before a 1990 earthquake. Preventive savings far exceeded the cost of retrofitting.

4. Protect non-structural elements: essential services, equipment, medicines

Problem

For health facilities to function properly in emergencies, non-structural elements must be in place. Such elements include mechanical, electrical and communications equipment, water and electricity supplies, medicines, and facilities for handling hazardous hospital waste.

If these are compromised, the health facility will not function during outbreaks, conflicts and natural disasters. Water had to be delivered by truck or extracted from bore holes to health facilities in Zimbabwe during the cholera outbreak that commenced in August 2008 as the country's water infrastructure has been under great strain.

Likewise, many hospitals cannot deliver health care during emergencies because staff are not protected. Armed combatants clash with each other near health facilities and sometimes enter them, endangering staff and patients. Medical supplies are put at risk when conflict or natural disasters destroy or threaten central drug stores and other medical warehouses. Sometimes the hospital environment itself poses a threat to the safety of staff and patients, such as when infectious disease outbreaks occur. During the SARS epidemic in Asia, response efforts were complicated by the fact that in some locations approximately 40% of those infected were health workers.

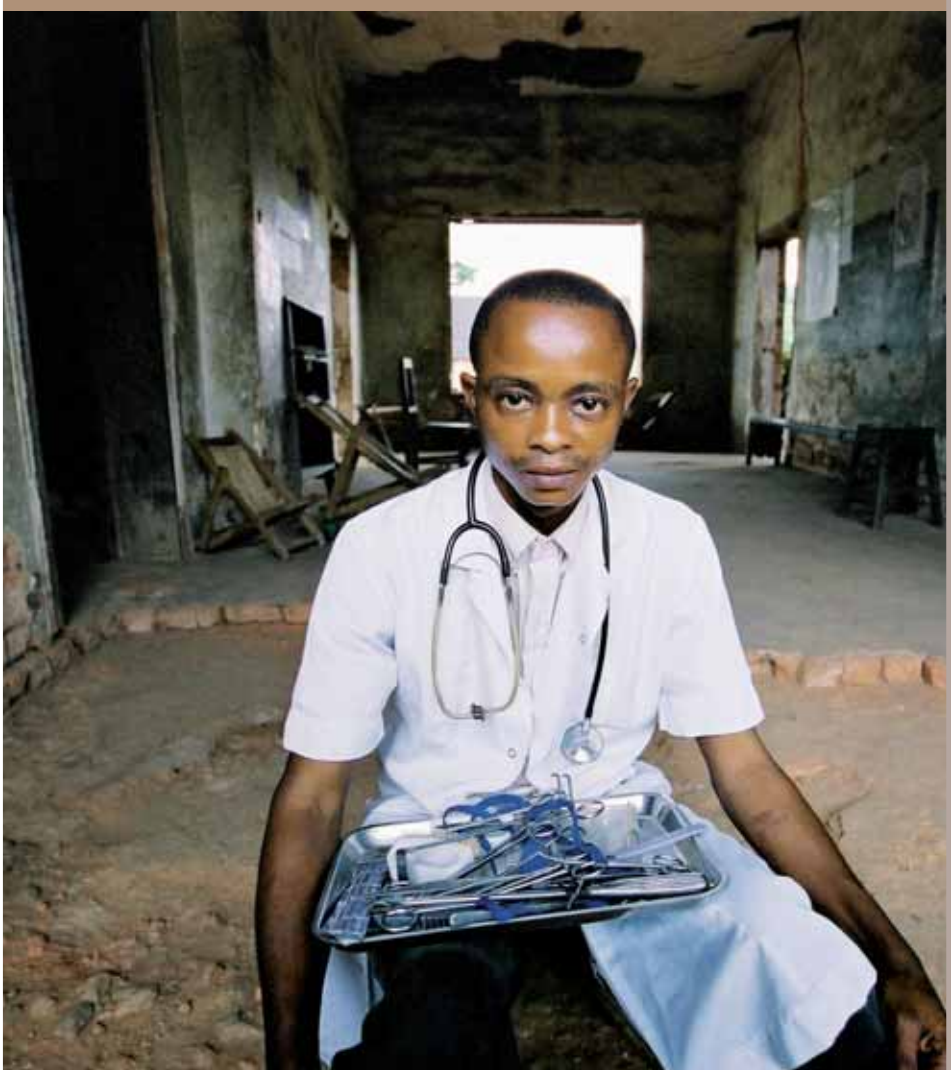
***Sudan:** Hundreds of health facilities in Darfur have been unable to provide health care because many health workers were forced to flee areas affected by the conflict broke out in 2003. Equipment, reagents, generators and water tanks were looted or destroyed. The general insecurity in this area led to a decrease in access to health facilities.*

***The Philippines:** Bicol Regional Teaching and Training Hospital was among the health facilities hardest hit when Typhoon Reming devastated great swathes of the Philippines in 2006. Medical teams were deployed from Manila and nearby regions and medicines, power generators, water tanks and other supplies were provided by a strong network of emergency response partners. The head of the hospital was given full authority through activation of an incident command system. This enabled close coordination between the hospital and central emergency authorities.*

ISRAEL

Israel has developed emergency preparedness programmes to ensure continuous operation of medical facilities before, during, and after a health-related crisis. Health authorities have put in place comprehensive command operations and contingency planning guidelines to provide health services during emergencies. They have focused on ensuring hospital and staff safety to keep the medical services functioning. Hospitals have also taken measures to secure non-structural hospital elements – such as medical equipment, furniture and beds – that have been fixed with special joints and screws to reduce their risk of falling or moving during emergencies. To ensure staff safety, general hospitals have installed decontamination facilities for toxic, chemical and radiological events and isolation rooms for biological emergencies. Personal protective equipment is stored in emergency departments for use in chemical or toxic emergencies. To protect health staff from shrapnel, special protective suits that include vests and helmets are provided.

Even in the most difficult situations, as in protracted conflicts, health workers and equipment must be protected (Democratic Republic of the Congo).



Solution

To protect infrastructure, equipment and staff, and to ensure patient security, thus allowing health facilities to function more effectively in emergencies:

- Ensure that health facilities have a steady flow of safe water and electricity that can be assured during times of emergency.
- Properly enclose and secure power generators to make them more likely to function after a disaster. Powerful back-up generators, with sufficient supplies of diesel fuel stocked in different locations, and with access to more, are critically important in settings prone to emergencies that could disrupt the regular mains supply.
- Equip health staff with appropriate personal protection equipment for use during disease outbreaks.
- Store medicines and supplies in secure cabinets or in cupboards that are fastened to walls to make them more likely to withstand earthquakes.
- Protect pipes and ducts, and ensure a safe supply of gases, including oxygen.
- Secure medical and life-saving equipment, such as respirators or suctioning devices, to make them less likely to disconnect during emergencies.
- Ensure the non-stop functioning of operating room facilities (the backbone of a health facility in an emergency).
- Strengthen security for health staff and denounce the deliberate targeting of staff and use of facilities by combatants in armed conflict.
- Ensure that voluntary non-remunerated blood supplies continue during emergencies.
- Provide a supply chain for medicines and laboratory supplies during an emergency.
- Secure alterative sources of supply as part of the overall health emergency response plan.
- Ensure that there are systems to manage hazardous substances, including chemical, biological and radiological waste.

5. Plan and train for emergencies

Problem

Hospitals must be ready for a surge in numbers of sick or injured patients during emergencies. Many health facilities cannot deliver adequate health care in emergencies because they have not planned or tested their response to such situations. Health facilities without effective emergency management plans or staff trained in emergency preparedness will be overwhelmed by unusual or major events.

> ***Pakistan: In the South Asia earthquake of 2005, almost 50% of health facilities were destroyed and the rest were overwhelmed. While a massive emergency response was rolled out by the authorities in the wake of the earthquake, many more lives might have been saved if hospital disaster plans had been better prepared and tested and health staff had been trained in mass casualty management.***

GAZA STRIP

Even before the first casualties in the three week crisis that began in December 2008 came into hospitals, Gaza's health system was ready for action. "The Ministry of Health had an integrated plan in place for all health facilities that assigned a role to each person," said Dr Mohammed Al-Kashif, director-general of hospital services and head of emergency operations for the Gaza Strip. Off-duty health staff had to report for work as soon as they received word of the commencement of hostilities. "Within the first two hours we gathered more than 600 staff, including doctors, nurses, paramedics, operating room technicians and administrative staff to help the system cope with the initial shock. In the first day, we received more than 350 casualties, many of whom died despite our best efforts."

Dr Al-Kashif said the key needs for any emergency preparedness and management plan are to have well-trained staff, good working relations with other health providers in the community (NGOs, private sector, UN agencies and ICRC), the ability to expand operating room and intensive care unit space, readiness to decentralize control to local levels in case of a disruption of central command, and communications systems (particularly wireless radio) to guarantee communication during the crisis.

Solution

Health facilities should be ready for any manner of emergency. This can be done by implementing an emergency preparedness programme led by key personnel within the facility who form a committee to prepare and implement the programme, which should:

- Assess the health facility's internal and external hazards.
- Assess the health facility's safety – including vulnerability assessments of the facility itself, the surrounding community, and the infrastructure on which the facility depends.
- Develop an emergency response plan to guide the facility's functions during emergencies. A hospital with an emergency response plan can deal better with an increased number of patients by cancelling non-urgent surgical cases, increasing operating rooms, mobilizing staff, freeing up bed space, and handling triage, referrals and evacuations.
- Provide checklists that identify tasks that staff must follow in emergencies. Safer hospitals for patients are ones in which staff have clearly defined roles.
- Have a training programme for health workers. Staff must know how to make themselves safe, and training in emergency scenarios is crucial. Health staff should update, maintain and practise their skills and procedures in emergencies.
- Conduct exercises and, preferably, have an exercise management programme. Regular, preferably annual, exercises and drills enable health facility management to test their emergency response plans. They will help identify gaps in the plans and will contribute to the training and preparedness of health facility staff, emergency services and other health facility partners.
- Coordinate emergency planning and training with other agencies or sectors in the community.
- Integrate pandemic influenza plans into national emergency response plans. Preparedness activities are needed to strengthen basic capacities and bolster communications networks.

Training in the provision of emergency surgical care is especially important even for health care workers without formal surgical training. Such skills are vital when there are increased numbers of casualties. WHO launched its Global Initiative for Emergency and Essential Surgical Care in 2005.[5]

> ***Sri Lanka:** The medical superintendent of Ampara General Hospital had no inkling of what lay ahead when he attended a training course on public health and emergency management in Asia and the Pacific (PHEMAP[6]), just before the December 2004 Indian Ocean tsunami. The course, organized by WHO and the Asian Disaster Preparedness Centre, focuses on multi-hazard health disaster management, including tsunamis. On his return to Sri Lanka, the superintendent conducted a workshop for all hospital staff based on what he had learned, and developed a hospital disaster plan. When the tsunami hit and hundreds of casualties started arriving at the hospital, the staff knew how to respond. Ampara Hospital managed the highest number of tsunami survivors in Sri Lanka, with 1015 patients admitted immediately after the disaster and more than 4000 patients receiving treatment from the outpatient department. Of all these patients, only 17 died in the aftermath of the tsunami.*[7]

5. http://www.who.int/surgery/globalinitiative/en/
6. http://www.adpc.net/technical/seminar/07102002/overview.html
7. http://www.searo.who.int/worldhealthday2009/linkfiles/CaseStudies/3-Ampara_General_Hospital.pdf

SOMALIA

Despite years of internal conflict and humanitarian crisis, Somalis have built a health system sustainable and flexible enough to provide care for thousands despite the hardships. "The high level of community participation and the important role played by NGOs have been the keys in delivering health care in Somalia," said Dr Mohamed M Ali, officer-in-charge of WHO's Mogadishu sub-office.

Primary health care provides the backbone for health service delivery in all Somali districts depending on health centres at local level. Insecurity prevents international agencies and NGOs going to some areas, but local organizations have taken on the responsibility to keep health care centres running so that health services are provided at grassroots levels.

"When the community sees a need, such as malaria control, they come to the health centres to seek support," Dr Ali said. "Whether its bed nets or medicines, the community leaders let us know what is required. They do not ignore the problem." These centres can serve as the base for vaccination campaigns. For example, over 10 000 people across the country – including vaccinators, community mobilizers and drivers – stage immunization campaigns. But polio officers carry out other valuable health services, including providing vitamin A supplementation for children, de-worming activities and collecting communicable disease data and other health information.

"There is a sense of community ownership of health care in Somalia. After having most health infrastructure destroyed or looted, the community really suffered and now they want to protect it," Dr Ali said. "Civil society is instrumental in facilitating this sense of ownership and health staff are regarded by the community as crucial."

More than 1000 graduates from Bangladesh, India, Indonesia, Nepal, Pakistan and the Philippines have been trained in hospital risk reduction through the Hospital Preparedness for Emergencies (HOPE)[8] course since 2001. Similar training courses such as the Mass Casualty Management programme of the WHO Regional Office for the Western Pacific and the Hospital Emergency Preparedness and Response course of the Asian Disaster Preparedness Center, Bangkok are available at national and regional levels.

6. Build partnerships for safe health facilities

Problem

When developing health facilities, there is often a lack of coordination between health officials, funding sources, architects and builders. Also, health services are further threatened when a health facility has no partnerships or formal agreements with other community entities on which the facility depends, such as other hospitals, emergency services, utility suppliers, nongovernmental organizations, faith-based organizations, community-based organizations and the private sector.

Solution

- Build close working relationships between government decision-makers and planners, architects, engineers, builders and financial institutions to create new safe health facilities and to assess existing ones to ensure that they can withstand hazards and provide health care in emergencies.
- Form multisectoral committees to plan and implement safety measures.
- Establish working partnerships with and among health facility managers and health service providers, as well as with emergency services and local authorities. Such partnerships must be based on the need to assist each other during times of emergency and on the understanding that it is vital to keep health facilities functional during a crisis. Patient triage, referral and evacuation systems are essential components of viable emergency and mass casualty management plans.

Bangladesh: Investment in safely built multifunctional facilities for health, education, agriculture and other community services has provided shelter and protection for communities in cyclones and floods. Many thousands of lives in Bangladesh were saved when Cyclone Sidr struck in 2007, compared to the more than 140 000 killed in 1991 when a cyclone of similar strength hit the country.

8. http://www.nset.org.np/peer/hopepakistan.htm

Essentials for making health facilities safer

- Develop and implement national policies and programmes to make health facilities safe in emergencies.
- Select a safe site for the health facility.
- Design and construct safe health facilities.
- Assess the safety of existing health facilities.
- Protect health workers, equipment, medicines and supplies.
- Ensure that health facilities receive essential services.
- Develop partnerships between health facilities and the community.
- Develop an emergency risk management programme for individual health facilities.
- Develop an emergency response plan for each health facility.
- Test and update response plans with drills and exercises.
- Train the health workers to respond to emergencies.
- Evaluate and learn lessons from past emergencies and disasters.

What can you do?

Everyone has a role to play

We can all help to support better health care in emergencies. Wide support for safer hospitals is needed from all within the community. Partnerships between different sectors (including emergency services) are vital to ensure that health facilities receive priority attention when an emergency occurs – for instance, by safeguarding the water supply or securing access to hospitals and other health centres.

Many do this already. Some volunteer in health facilities. Professional bodies encourage innovations and designs that make health facilities safer and more functional in emergencies.

But more can be done. Urgent action needs to be taken if we are to prevent unnecessary death and suffering when our hospitals fail in emergencies. Here is what you can do to start making hospitals safe in emergencies.

Governments should:

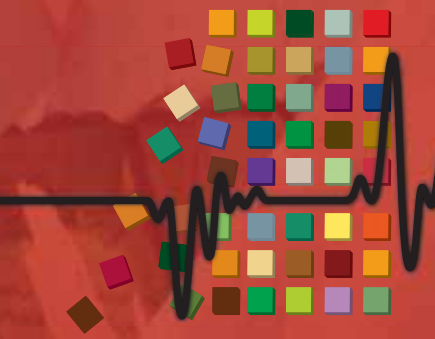
- Champion the need to make health facilities safe and functional in emergencies for health, social and economic reasons.
- Integrate "Safe Hospitals" programmes and health-risk reduction into national platforms for disaster-risk reduction.
- Develop national multisectoral programmes and policies to make health facilities safe in emergencies. Countries that have established a "Safe Hospitals" programme will have taken an important step towards protecting their health facilities and providing health care when most needed.
- Monitor and report on implementation of the "Safe Hospitals" programme to ensure success.
- Invest only in health facility projects that ensure safe location, design, construction, provision of care and emergency preparedness.
- Integrate health facility safety and emergency preparedness into procedures for the licensing and accreditation of health facilities.
- Draft, pass and enforce legislation that protects hospitals – including hospital-specific building codes.
- Carry out safety assessments of existing health facilities and establish a schedule for retrofitting the most critical and vulnerable ones.
- Support measures to keep health staff safe and secure during emergencies.
- Undertake field missions during emergencies to gather information and learn lessons.

Financial institutions and donors should:

- Integrate safety and emergency preparedness measures into all plans and proposals for health construction projects, including hazard and vulnerability assessments and safety assessments for retrofitting projects.
- Work with governments to enforce land-use planning and building codes.
- Promote research and studies on economic assessment of making health facilities safe in emergencies.
- Integrate safe health facilities and emergency preparedness into disaster and health development portfolios.

World Health Day 2009

World Health Organization



Save lives.

Make hospitals safe in emergencies.

- ☐ Assess the safety of your hospital
- ☐ Protect and train health workers for emergencies
- ☐ Plan together for emergency response

Para salvar vidas:

hagamos que los hospitales sean seguros en las situaciones de emergencia.

- ☐ Evaluar la seguridad del hospital
- ☐ Proteger y formar al personal de salud para las emergencias
- ☐ Planificar conjuntamente las emergencias y las respuestas

Спасем жизни.

Обеспечим безопасность больниц в чрезвычайных ситуациях.

- ☐ Оцените уровень безопасности вашей больницы
- ☐ Обеспечьте защиту медицинского персонала и его подготовку к чрезвычайным ситуациям
- ☐ Совместно планируйте действия при чрезвычайных ситуациях

拯救生命。

加强医院抵御紧急情况的能力。

- ☐ 评估医院的安全性
- ☐ 保护和培训卫生工作者，应对紧急情况
- ☐ 共同计划应急措施

Sauver des vies:

assurer la sécurité des hôpitaux dans les situations d'urgence.

- ☐ Évaluer la sécurité de votre hôpital
- ☐ Protéger le personnel de santé et l'entraîner aux situations d'urgence
- ☐ Planifier ensemble les interventions d'urgence

المستشفيات الآمنة تنقذ الأرواح أثناء الطوارئ

- ☐ قيّم مدى مأمونية المستشفى الذي تعمل فيه
- ☐ احم ودرّب العاملين الصحيين من أجل الطوارئ
- ☐ خطط مع غيرك للاستجابة للطوارئ

Organización Mundial de la Salud | Всемирная организация здравоохранения | Organisation mondiale de la Santé | 世界卫生组织 | منظمة الصحة العالمية

Universities, schools and professional bodies should:

- Develop modules or courses that place safety and emergency preparedness of health facilities on university and professional curricula.
- Encourage innovative, cost-effective and energy-efficient designs for the safety of health facilities.
- Encourage an integrated approach to basic emergency and surgical care training modules in teaching and training curricula for health providers at all levels of care.
- Research and evaluate the impact of disasters on facilities with a view to improving performance and personnel practice in emergencies.

Health institutions and the health workforce should:

- Enquire about the safety of your own health facility.
- Develop an emergency risk management programme for the health facility.
- Promote the safety and security of health workers in emergencies on a personal, institutional and national level. Implement low-cost solutions for isolation of cases of infectious disease and for prevention of disease transmission within the health care facility.
- Seek opportunities for training and exercising to update skills and knowledge.
- Develop an emergency response plan for your health facility and integrate it into health emergency and community emergency plans.
- Test and update national, local and health facility emergency response plans.
- Involve all sectors of the health workforce (administration, nurses, doctors, staff association, etc.) in the planning phase.
- Make the plan known to all and update periodically.

International and regional agencies, NGOs and media should:

- Identify your agency's or NGO's specialized niche as it relates to health facilities in emergencies and share your knowledge and expertise to make health facilities safe and able to function in emergencies.
- Build on existing interagency mechanisms and strategic partnerships to strengthen health facility preparedness.
- Recognize the media's vital role in raising public awareness of the importance of emergency preparedness. Reporting on needs, gaps and best practice can trigger public interest and prompt higher-level discussion on and implementation of measures to make health facilities safer.

More information

- WHO World Health Day 2009 website: https://www.who.int/world-health-day
- WHO Health Action in Crises: http://www.who.int/hac
- WHO Health Systems and Services: http://www.who.int/healthsystems
- WHO Epidemic Pandemic Alert and Response: http://www.who.int/csr
- WHO Public Health and Environment: http://www.who.int/phe
- WHO Noncommunicable Diseases and Mental Health: http://www.who.int/nmh/about
- WHO/AFRO: http://www.afro.who.int/hac/mission.html
- WHO/EMRO: http://www.emro.who.int/eha/hospitals.htm
- WHO/EURO: http://www.euro.who.int/emergencies
- WHO/PAHO: http://www.paho.org/english/dd/ped/home.htm
- WHO/SEARO: http://www.searo.who.int/en/Section1257/Section2263/Section2519/Section2520.htm
- WHO/WPRO: http://www.wpro.who.int/sites/eha
- Architecture for Humanity: http://www.architectureforhumanity.org
- Engineers for Disaster Relief: http://www.redr.org
- Global Facility for Disaster Reduction and Recovery (GFDRR): www.gfdrr.org
- International Committee of the Red Cross: http://www.icrc.org
- International Council of Nurses: http://www.icn.ch/matters_overtime.htm
- International Federation of Red Cross and Red Crescent Societies: http://www.ifrc.org
- International Federation of Hospital Engineering: http://www.ifhe.info
- International Federation of Medical and Biological Engineering: http://www.ifmbe.org
- International Hospitals Federation: http://www.ihf-fih.org/jsp/index.jsp
- International Strategy for Disaster Reduction: http://www.unisdr.org
- International Union of Architects: http://www.uia-architectes.org
- One Foundation: http://www.onefoundation.cn/html/en/beneficence_01.htm
- Safe Hospitals: http://www.safehospitals.info/
- UN Children's Fund: www.unicef.org
- UN Habitat: www.unhabitat.org
- UN Office for the Coordination of Humanitarian Affairs: http://ochaonline.un.org
- World Meteorological Organization: www.wmo.int

Global efforts to make hospitals safe from disasters

Much has been done to ensure that health facilities can better cope with emergencies and to increase awareness of the vital role that health facilities play in emergencies. "Hospitals Safe from Disasters" is the theme of the 2008–2009 World Disaster Reduction Campaign, which focuses on natural disasters and preventing the damage they can cause to hospitals in particular. The United Nations International Strategy for Disaster Reduction (UNISDR), the World Bank and WHO are jointly involved in this campaign. WHO's regional and country offices have been instrumental not only in helping to share best practices in health facility preparedness for emergencies but also in implementing such guidance and making hospitals and clinics more resilient and functional.

While much work has been done to raise the issue of emergency preparedness for health facilities and to build a "community" of people and parties dedicated to the cause, efforts remain sporadic and are neither sufficiently integrated into government development and emergency response plans nor properly harmonized with other sectors.

WHO's partners, including WHO's regional and country offices and Ministries of Health, are also leading the way in advocating how best to safeguard health facilities and their personnel and patients. The International Committee of the Red Cross, which advocates for the protection of health personnel and services in conflict settings, and its sister organization, the International Federation of the Red Cross and Red Crescent Societies, which works with communities on emergency preparedness at community level in natural disasters, play critical roles in making hospitals safe from disasters. Donors and financial institutions – including the World Bank, USAID and DIPECHO – have answered the call by offering funding to make health facilities safer.

WHO is devoting World Health Day 2009 to the theme of health facilities in emergencies – "Save lives. Make hospitals safe in emergencies" – to further strengthen the imperative that health facilities must be prepared to withstand emergencies so that they can treat patients both during crises and afterwards. The World Health Day campaign builds on the "Hospitals Safe from Disasters" campaign and calls for hospitals to be safer in all types of emergencies, including natural disasters, conflicts and outbreaks of communicable diseases.

World Health Day is more than just a one-day event. WHO, from its country and regional offices and headquarters, is continuously working with international and national partners to assist countries in preparing their health facilities and staff for emergencies. What 7 April 2009 marks is the launch of the next step of a campaign to build resilience into our health systems so that hospitals, clinics and staff can withstand the next crisis, whatever it may be, and provide the health care that their communities need in times of emergency.

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