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IS YOUR HOSPITAL SAFE?

Rescue workers digging through mountains of rubble to reach those trapped after the collapse of the Juárez Hospital in the 1985 earthquake in Mexico City is an image that few of us will forget. In the Hospital General, 295 people died, and in the Hospital Juárez, 561 died among whom were patients, medical staff, and visitors. As a result of that earthquake nearly 6,000 beds were put out of service in Mexico City and the economic cost to medical facilities alone was estimated at over $US 640 million.

During Hurricane Gilbert in 1988, two hospitals were completely destroyed in Jamaica, and 11 suffered severe damage. More than half of the 377 secondary health care facilities on the island were seriously damaged.

The largest number of deaths during the San Fernando, California, earthquake in 1971 occurred as a result of the collapse of two hospitals, and two other hospitals were rendered completely inoperable.

Comparable losses have been repeated throughout the Region. Such tragedies are often seen as unavoidable, and as isolated cases occurring because of the unfortunate convergence of multiple factors. Post-disaster analysis will point to unique subsoil conditions, to miscalculations of a storm's path, to a facility's age, or to the fact that the quake or hurricane hit during peak visiting hours at a hospital. But scientific knowledge about these factors exists and is on the increase, and this information must be applied to the maintenance, planning, and expansion of a community's facilities.

In the event of mass casualties, acute care facilities are more critical to disaster response than health centers, and by the complex nature of their services, their high level of occupancy, and the characteristics of their equipment and supplies, they are more vulnerable. While a house might still be habitable even after losing part of its roof or connections to water and power, a hospital must be self-sustaining if the major systems of a community's infrastructure fail. Structural damage to a hospital which could require its evacuation converts a vital resource into a liability. And in the worst case, that of total collapse, the community's lifeline can become the most dangerous of all places to be.

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Building codes established 50 years ago have proven to be obsolete in certain hazard-prone areas, and of the new standards being developed in many countries, the strictest are enforced in hospital construction. Integrating disaster mitigation considerations at the design phase of new facilities is the only cost-effective approach. It is estimated that doubling or tripling seismic resistance capacity in a structure would increase construction costs by around 8%. The equipment and furnishings in a new hospital represent the major investment, while the structural system only represents from 12 to 18% of the total ready-for-service cost of the facility. Introducing seismic resistance during the construction phase of a building would likely not exceed 1% of the building's total cost.

Mapping of hazard zones identifies areas most vulnerable to seismic, cyclone, volcanic, and flooding activity, and this information should be included in any plans for new construction, as well as in considerations for rehabilitating structures. The involvement of hospital authorities from the initial planning phases in either new construction or rehabilitation is critical, both in the sense that it will raise the awareness about preparedness issues and will ensure that normal hospital activities can proceed without too much disruption during retrofitting activities.

In the immediate aftermath of a natural disaster, when public attention is still high, commitments for the rehabilitation of damaged health facilities, though tremendously costly, are often forthcoming. Can the same commitment be found to evaluate and retrofit the hospital that has operated for generations and may have survived an event with minimal damage? Can the expenses be justified when there's no way of knowing whether there will be another "big one"?

Retrofitting hospitals is an expensive undertaking and in an environment in which resources are increasingly scarce, there must be a particularly high level of commitment on the part of national planners. Several countries in the Region are conducting vulnerability studies of priority health facilities, and in certain cases have undertaken retrofitting.

Protecting non-structural elements of a building

An unshuttered window breaks; an improperly fastened light fixture falls; a poorly anchored power generator tips over; storage cabinets full of chemicals and supplies topple; a stairway is blocked by falling debris; an explosion is caused by an overturned oxygen bottle....These are causes of serious injury or death and can totally disrupt the functioning of a health care facility. Determining the vulnerability of nonstructural components and their priority based on life safety hazard, cost of replacement, and risk of interruption of essential services is the first step in planning countermeasures to such incidents.

The non-structural elements of a building--non-loadbearing walls, internal partitions, electrical and lighting systems, computers, elevators, laboratory equipment and supplies, and the other physical contents of a health facility can represent from 75%-80% of its cost. When non-structural protection measures are taken into account early in the design of new constructions, costs will be less. Many interventions can be made simply and cheaply to non-structural damage by maintenance staff.

Structural safety is only one part of the disaster preparedness picture in a hospital. Equally

important is the way people respond in a disaster. Hospital staff must be able to take charge, to inform patients of the situation, to communicate with the families of patients and disaster victims, and if necessary to carry out an evacuation of the facilities. Disaster drills for hospitals, where evacuation and treatment of mass casualties are simulated should be carried out annually. Each facility should have a hospital emergency committee responsible for the ongoing evaluation of the readiness of its staff, and coordination of interinstitutional communications and cooperation.

Public awareness about hospital safety issues will in turn motivate national health authorities and policy makers to support the legal and administrative initiatives to reduce the vulnerability of hospitals in the Region.

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