Commentary

The Health Care Reform in Mexico: Before and After the 1985 Earthquakes

GUILLERMO SOBERÓN, MD, PHD, JULIO FRENK, MD, MPH, PHD, AND JAIME SEPÚLVEDA, MD, MPH, DSC

Abstract: The earthquakes that hit Mexico City in September 1985 caused considerable damage both to the population and to important medical facilities. The disaster took place while the country was undertaking a profound reform of its health care system. This reform had introduced a new principle for allocating and distributing the benefits of health care, namely, the principle of *citizenship*. Operationally, the reform includes an effort to decentralize the decision-making authority, to modernize the administration, to achieve greater coordination within the health sector and among sectors, and to extend coverage to the entire population through an ambitious primary care program.

This paper examines the health context in which the reform was taking place when the September earthquakes hit. After presenting the damages caused by the quakes, the paper analyzes the characteristics of the immediate response by the health system. Since many facilities within the system were severely damaged, a series of options for reconstruction are posited. The main lesson to be learned from the Mexican case is that cuts in health care programs are not the inevitable response to economic or natural crises. On the contrary, it is precisely when the majority of the population is undergoing difficulties that a universal and equitable health system becomes most necessary. (*Am J Public Health* 1986; 76:673–680.)

Introduction

During the past three years, the Mexican health system has experienced a series of profound changes in the midst of a severe economic crisis. The traditional response to this crisis would have been to cut social programs, which are seen by some as an inaccessible luxury or as a secondary objective to the more urgent task of recovering economic growth. However, the Mexican government considered health care as a priority, not in spite of but because of the economic crisis. Health care, together with education and housing, was seen not only as a way to counteract the worst effects of the crisis, but also as a positive means of developing the human infrastructure to overcome it. Mexico is interested not just in what development can do for health, but also in what health can do for development. The main lesson we have learned is that in times of adversity progress in the health arena becomes most urgent.

Just as the nation was implementing the health care reform, Mexico City experienced its worst natural disaster in this century. On September 19 and 20, two of the most severe earthquakes ever to hit the country caused thousands of people to lose their lives, their homes, or their jobs. More than 1,500 buildings collapsed or were severely damaged. Direct economic losses were estimated conservatively at more than $4 billion, a figure to which numerous indirect losses must be added. The health care system was particularly hard hit. Because of the development pattern in Mexico, the area where the earthquakes struck contained the largest concentration of medical resources for secondary and tertiary care in the country.

Address reprint requests to Dr. Julio Frenk, Director, Centro de Investigaciones en Salud Pública, Ministry of Health, Mazatlán 117, Colonia Condesa, 06140 Mexico, D.F. Mexico. Dr. Soberón is Minister of Health of Mexico; Dr. Sepúlveda is General Director of Epidemiology, Ministry of Health. This paper, submitted to the Journal November 25, 1985, was revised and accepted for publication February 7, 1986.

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The present paper is divided into two parts. First, we examine the basic features of the Mexican health care reform, connecting it with broader changes both in the health conditions of the population and in the principles of resource allocation that guide the organized social response to health needs. Second, we analyze the effects of the earthquakes on the population and on the medical care system, and go on to discuss several options for reconstruction as they interact with the ongoing reform.

The Health Context

Any discussion of a health system must attempt to understand two major phenomena: on the one hand, the health **conditions** (or needs) of the population and, on the other, the **response** that a society organizes to deal with those conditions.[1] Rather than offering an exhaustive description of these two phenomena in Mexico, we will try to examine the critical concepts that synthesize their development there.

Health Conditions

To understand the prevailing conditions of the Mexican population, the crucial concept is the notion of **epidemiologic transition,** introduced by Omran in 1971.[2] This concept refers to the complex long-term changes in the patterns of health and disease as communities transform their social, economic, and demographic structures. In its process of industrialization and urbanization, Mexico has experienced an important decline in its levels of mortality. Thus, life expectancy at birth went from 41.4 years in 1940,[3] at the beginning of the period of rapid industrial expansion, to 64 years in 1978.[4] The decline in mortality has occurred mostly in infectious diseases of the younger age groups. Because of this selectivity, a growing number of survivors is exposed to the risk of chronic diseases, a process that is compounded by the aging of the population as fertility has declined from 40 to 30.5 births per 1,000 inhabitants in the short period from 1976 to 1983.[5]

The net result of this complex process is that Mexico is currently undergoing an intense epidemiologic transition, characterized by a further decline in the incidence of infectious diseases and a rapid increase in the importance of chronic

TABLE 1—Changes in the First Ten Causes of Death in Mexico

1963			1970			1980		
Cause of Death	Rate*	%	Cause of Death	Rate*	%	Cause of Death	Rate*	%
1. Influenza and pneumonia	160.7	15.0	1. Influenza and pneumonia	165.1	17.2	1. Heart diseases	74.9	11.6
2. Childhood diseases	128.8	12.0	2. Enteritis and other diarrheal diseases	138.9	14.5	2. Accidents	71.1	11.0
3. Gastroenteritis and colitis	120.0	11.2	3. Heart diseases	64.6	6.7	3. Influenza and pneumonia	56.9	8.8
4. Accidents	45.4	4.2	4. Accidents	50.9	5.3	4. Enteritis and other diarrheal diseases	55.1	8.6
5. Heart diseases	40.2	3.7	5. Certain causes of perinatal mortality	49.8	5.2	5. Malignant tumors	39.2	6.1
6. Malignant tumors	36.8	3.4	6. Malignant tumors	36.3	3.8	6. Certain causes of perinatal mortality	39.2	6.0
7. Bronchitis	31.0	2.9	7. Bronchitis, emphysema, and asthma	28.3	3.0	7. Cerebrovascular diseases	22.6	3.5
8. Tuberculosis, all forms	25.1	2.3	8. Cerebrovascular diseases	23.9	2.5	8. Cirrhosis and other chronic diseases of the liver	22.1	3.4
9. Homicides	22.0	2.1	9. Measles	23.5	2.4	9. Diabetes mellitus	21.7	3.4
10. Cerebrovascular diseases	21.9	2.0	10. Tuberculosis of the respiratory system	17.0	1.8	10. Nephritis, nephrotic syndrome, and nephrosis	10.5	1.6
All other causes	442.7	41.2	All other causes	360.0	37.6	All other causes	231.6	36.0
TOTAL	10.7	100.0%	TOTAL	9.6	100.0%	TOTAL	6.4	100.0%

*Rate per 100,000 inhabitants, except the total, which is per 1,000.
SOURCES: For 1963, reference 6; for 1970 and 1980, reference 7.

illnesses and accidents. A look at the first 10 causes of death will reveal this very mixed picture. Table 1 shows that the death rate from noninfectious causes, as well as their contribution to total mortality, has increased consistently, at the expense of infectious diseases. For example, in 1963 the three leading causes of mortality were influenza and pneumonia, childhood diseases, and gastroenteritis and other diarrheal diseases, which together accounted for over one-third of all deaths. In 1980, these three causes accounted for less than a fifth of all deaths. In sharp contrast, the death rate from heart diseases jumped from 40.2 per 100,000 in 1963, to 64.6 in 1970, to 67.8 in 1978, and to 74.9 in 1980;[6] since 1980, heart disease and accidents together have been responsible for more than one-fifth of all deaths in Mexico.[7] Furthermore, from 1958 to 1976, the incidence rate jumped 23 per cent for occupational accidents and 128 per cent for occupational diseases.[8]

It is not uncommon to hear both officials and researchers treat the rising importance of chronic diseases in developing countries as a sign of "progress," as if cancer, heart disease, and mental ailments were somehow more advanced or civilized causes of disability and death than diarrhea, respiratory infections, and malnutrition. In fact, many of the emerging illnesses are a result of a defective process of industrialization that has placed more value on economic growth than on human welfare, as reflected in the increasing rate of occupational accidents, the growing consumption of alcohol and other drugs, and the manifold problems of environmental pollution.

Actually, there is no *a priori* reason to assume that the epidemiologic transition in Mexico or in any other developing country will follow the same path as in developed nations. In fact, Mexico could well experience a "protracted transition," where the mixture of infectious and chronic diseases would persist for a long time. This would most likely reflect an "epidemiologic polarization" of society, whereby the better-off segments would have completed the transition, while the poorer groups would continue to suffer from the pretransitional pathology.[9] In order to eliminate such unequalities, it will be necessary to continue the fight against infections and malnutrition while at the same time preventing the negative health effects of industrialization and urbanization.

Social Response to Health Problems

Throughout its history, Mexico has evolved different forms of organized social response to the health problems of its population. In the contemporary era, the crucial concept inherent in this response is **State intervention.**[10] Since the promulgation of the Constitution of 1917, the public sector has assumed an explicit responsibility for the health of the population. The principles that have guided such responsibility, however, have varied widely.

Generally speaking, it is possible to identify four major principles of allocating and distributing resources for health care. The first one, which has found its organizational expression in the private sector, simply treats health care as one more element of the general reward system, to be allocated on the basis of purchasing power. Within the public sector, there are three other principles: poverty, socially perceived priority, and citizenship.

In Mexico, as in most of Latin America, the principle of poverty, which allocates health care on the basis of indigence, has been embodied by the institutions of public assistance. In recent years the most important of these has been the ministry of health. The principle of poverty views the provision of health care as an expression of the interest and responsibility of the State to help the most vulnerable groups of society and thereby also to protect the rest.

The allocation of health care on the basis of the principle of socially perceived priority has led to the development of social security institutions in Mexico and other Latin American countries. These institutions, with their own networks of hospitals, clinics, and salaried personnel, cater to the needs of special groups that are perceived to have priority, either on the basis of their merit or because they contribute financially to their own care. Typically, the covered groups have been industrial workers, government employees, and the armed forces. Public responsibility is much stronger under this principle, since the State actually recognizes a right to health care, albeit for limited groups of the population.

One of the characteristics of the Mexican health system has been the simultaneous application of the three allocation principles described so far—purchasing power, poverty, and socially perceived priority. At the same time, the three corresponding institutional sectors—private, public assistance, and social security—have operated in an uncoordinated manner, each taking care of a specific segment of the population. There can be little doubt that important progress in access to health care has been achieved under each allocation principle. Their coexistence, however, has produced serious inequities. Indeed, in 1983 it was estimated that 14 million Mexicans, representing close to one-fifth of the population, did not have easy access to health services.[11] It is against the backdrop of such inequities that a profound transformation of the health system became a social goal.

The Mexican Health Care Reform

In December of 1982, a new Administration came into office amidst one of the most severe economic crises in the history of Mexico. After four decades of sustained growth, the basis for the creation of new wealth seemed eroded. One of the elements for this erosion was the persistence of very serious inequities in the distribution of the benefits of economic development, as demonstrated by one of the most unequal income distributions in the world.[12] As part of its mandate to introduce profound structural changes in the Mexican economy, the government of President Miguel de la Madrid adopted the goal of creating a more egalitarian society.[13] A new strategy was implemented to achieve this goal. One of its main components was the decision not to cut social programs as an easy response to the economic crisis, even though this meant reducing other areas of governmental activity. In this redistribution of public resources, health services were granted the highest priority because they were conceived of as a strategic element in the development of an egalitarian society.

Social Rights

The enhanced view of the value of health care required new legal, programmatic, and organizational foundations. One of the first actions taken by the new Administration was to introduce a Constitutional amendment establishing the right of every person to the protection of his or her health. Beyond its political meaning, this change reflects the will to shift the balance among the four principles of resource allocation discussed earlier. Thus, the Constitutional amendment expresses a new principle: citizenship.* This principle arises from an extension of the concepts of civil and political rights to the realm of social affairs. One of its premises is that freedom, equality, and social justice are empty notions unless all the inhabitants of a country have attained a basic standard of living. In this conception, health care is no longer a commodity, a privilege, or an object of charity, but has become a social right.

The Constitutional amendment, therefore, provides that every Mexican is entitled to health care, without any further requirement. Due to the traditions of solidarity that have characterized the health field, foreigners who live in or visit Mexico are also covered by this principle.

In addition to its ethical and political foundations, the citizenship principle also derives from an expanded view of the role of health care in economic development. According to Cumper,[14] there has been a conceptual shift regarding the relationship between development and health. Roughly speaking, during the 1940s and '50s development was thought of as growth through material inputs, so that health care turned out to be an irrelevant matter or even a distraction from more important societal goals. In the 1960s, development began to be perceived as a function not only of material inputs, but also of human capital; hence, health care became an investment to improve the quality of this capital. During the 1970s, analysts and decision makers proposed that human welfare was the true meaning of development and that health care constituted a means to distribute such welfare. In addition, it is possible to see health care as one of the necessary conditions for true equality of opportunity, which in turn is the ethical basis for distributing the benefits of economic development. Mexican social and economic policy has moved through all the phases in this progression; its most advanced corollary is the recognition of health care as a social right.

Health Care Strategies

A formal Constitutional amendment is just the first step in a prolonged process. Clearly, the principle of allocation on the basis of citizenship implies an obligation for the State. For this reason, in February of 1984 the Mexican Congress passed a new General Health Law, which interprets the Constitutional mandate in specific terms. The Law defines a series of basic health services for which the government assumes the responsibility of universal access. Later, in August of 1984, the National Health Program was approved as a policy instrument specifying the actions required to achieve the desired goal of a National Health System with universal coverage.

These legal and programmatic innovations provided the framework for reform of the organizational bases of health care in Mexico, expressed in five major strategies: decentralization, sectorization, administrative modernization, intersectorial coordination, and community participation.

Decentralization is radically rewriting the rules of the health care game in Mexico. As with many other aspects of national life, the federal government had increasingly absorbed responsibilities that belong to state and local authorities. This process had created a gulf between the level at which problems arose and the level at which the major decisions were taken. The realization of the inequities and inefficiencies of this situation led to an energetic effort to delegate the decision-making power and the resources to deal with health problems to the 31 states and the Federal District. In 1982, only 40 per cent of the budget of the Ministry of Health was passed on to the states, and the rest was spent at the federal level; in 1986, the states will absorb 63 per cent of the budget. In addition the states increased their own allocations for health care by 280 per cent between 1984 and 1985.**

The decentralization strategy is being implemented in a gradual manner in accord with the real possibilities of each state. As of early 1986, 12 states had assumed control over their respective health systems. In these states, all the federal and state programs for the noninsured population have been merged into a single agency directly accountable to the governor. The 12 states include 40 per cent of the noninsured population of the country. A monitoring procedure has been set in place so that the administrative complexities of this transition do not interfere with the quality of the services. In

*Frenk J, Donabedian A: State intervention in medical care: types, trends, and variables. Unpublished manuscript, 1984. See Constitución Politica de Los Estados Unidos Mexicanos, para 3, Article 4.

**Ortega-Lomelín R: Los recursos para la descentralización. *Chapter in*: La Descentralización de los Servicios de Salud: El Caso de México. Mexico DF: Miguel Angel Porrúa, 1986.

all the remaining states, a first stage of programmatic coordination has been completed in preparation for the gradual transfer of authority.

Paradoxically, even in the previous centralized system the federal level was characterized by a dispersion of efforts among several uncoordinated agencies. Hence, it was necessary to integrate, under the standard setting authority of the Ministry of Health, a single health sector that included the health services of the different social security institutions. Actually, this process had begun during the 1970s. Its current consolidation has involved, among other actions, the participation of the Ministry of Health in the governing bodies of the social security agencies and in their planning and budgeting processes. In addition, all the public organizations in the health sector now order the drugs they require through a common purchasing arrangement.

As a result of the decentralization and sectorization strategies, the orientation of the Ministry of Health has been redefined. Previously, it was one organization among many operating hospitals, clinics, health centers, and sanitation programs. Now it is the intelligence center for the National Health System, providing strategic planning to anticipate overall resource requirements, to develop norms and standards that will prevent quality differentials among states, and to promote and support research and development. This redefinition has made it necessary to modernize the structure of the Ministry. It is now a much smaller agency; its resources have been freed for the decentralized operation of services and for its new intelligence functions. The research capabilities of the National Institutes of Health have been strengthened and three new centers of excellence have been established: the Center for Public Health Research, the National Center for Infectious Diseases, and the Center for Technological Development and Applications.

The health status of populations is critically dependent on many other factors besides health services. The definition of health as a top priority has made it possible to integrate other sectors of government and society into common goals. There are two areas of intersectorial coordination where special progress has been achieved: education and technology.

An Interinstitutional Commission for Education and Health has been established under the joint chairmanship of the two corresponding ministers. The Commission includes representatives from the major health care institutions and from the universities. In this way, it has been possible to coordinate the production of health manpower, particularly physicians. In the past, lack of such coordination had led to important imbalances, including medical underemployment. By having a forum for joint discussion, the institutions that employ physicians and those that train them will be able to achieve greater quantitative and qualitative congruence.

Coordination with those sectors in charge of developing and applying technology has led to important advances in the production of drugs and medical devices and equipment. Essential lists have been prepared which will guide massive governmental purchases. Thus, the health sector has become an instrument of industrial development, using its strong purchasing power to reorient the production of health care inputs so that they respond better to the needs of the nation in terms of quality, adequacy, and contribution to technological independence.

Health Services Coverage

The ultimate test of the health care reform will be the full extension of coverage that is implicit in the citizenship principle. To this end, Mexico has developed an ambitious program of building the health centers and district hospitals that will serve the remaining coverage gaps in the nation. The guiding force of this program is a primary health care model, which specifies the structural features of the centers, their quantitative relationship to the population, the composition of the health care team, the appropriate mix of technologies, the technical content of care, the criteria to identify priorities, and the instruments for community participation. All of these elements of the model will be improved through a systematic research component that will be built into the program and that will make it possible to measure its social, economic, cultural, and health impact.

The extension of coverage is not a mere quantitative exercise; it is, above all, a problem of quality. The purpose of developing an explicit primary care model is to have norms and standards about the structure and the process of care, which will improve the health outcomes. Indeed, it would be inconsistent to propose a right to the protection of health if there were no assurances that such protection is something valuable for the individual and for society. Furthermore, it would be paradoxical to conceive health care as a means for achieving greater social equality if the services themselves were of unequal quality. The challenge, then, is not only to serve more people, but to serve all people better.

The Earthquakes: Effects and Response

As Mexico was struggling to get its new health policies under way, the country was suddenly faced, on the morning of September 19, 1985, with immense devastation. The impact of the earthquakes has altered the context for the overall development plans of the government and especially those of the health sector.

Damages Caused by the Earthquakes

The first of the two earthquakes that hit Mexico City was the strongest in this century. It was also one of the longest, lasting more than two minutes. The second earthquake occurred only 36 hours after the first. Although it was also quite strong, it would have caused little damage had it not acted upon buildings that were already weak from the first shock. To the strength, duration, and proximity of the two earthquakes, one must add the special characteristics of the subsoil in Mexico City, which caused resonance phenomena that compounded the destructive force of the tremors.

Close to 5,000 corpses were recovered from the debris. These represent the total of legally certified deaths. The number of people that are still unaccounted for, however, might raise the toll to twice that number. The figure is no doubt high in *absolute* terms. Nonetheless, it should be noted that, *relative* to

TABLE 2—Some Important Earthquakes in this Century

Year	Country	Richter Scale	Estimated Death Toll
1978	Iran	7.7	13,000
1976	China	8.0	242,000
1976	Guatemala	7.5	23,000
1970	Peru	7.8	66,000
1939	Chile	8.3	30,000
1935	India	7.5	30,000
1927	China	8.3	200,000
1923	Japan	8.3	43,000
1920	China	8.6	180,000
1908	Italy	7.5	75,000

*SOURCE: References 15, 16, and 17.

TABLE 3—Initial Assessment of Earthquake Effects on Buildings in Mexico City, 1985

Severity of Damage	Number of Buildings	Percentage of Total Buildings*
Mild	45,000	3.20
Medium	3,949	0.28
Severe	1,130	0.08
Collapsed	421	0.03
TOTAL	50,500	3.59

*Mexico City's construction registry reports a total number of 1,404,000 buildings in the city.

SOURCE: Assessments by experts of the government of the Federal District.

the magnitude of the earthquake and the density of the population at risk, this is probably one of the least deadly cataclysms in the recent history of the world (Table 2).

Part of the explanation for the relatively low death toll lies in the hour at which the first earthquake hit. At 7:19 am, many people were already awake but had not yet arrived at work or school; many others were in transit. Another factor was that the city as a whole resisted the shocks quite well. The vast majority of the buildings were unharmed (Table 3). Contrary to initial reports in the foreign press, damage was very localized to the central part of the city, where the subsoil is particularly vulnerable. Within those localized areas, however, the destruction was extensive. For example, 720,000 tons of debris were removed during the first six weeks after the earthquakes. In addition, many public services were disrupted (Table 4).

Although the largest housing areas of the city were not affected, 60,000 people were left homeless. Table 5 shows that one month after the earthquakes, there were still 29,000 people living in temporal housing and camps. On the other hand, the number of people without water supply had been dramatically reduced from more than six million to 90,000.

The area most severely hit by the earthquakes contained a major concentration of hospitals. Table 6 demonstrates that the absolute and relative losses of infrastructure were very high and may constitute the worst medical care disaster in history. It is important to recognize that the damages occurred mostly in secondary and tertiary hospitals.

The National Medical Center of the Mexican Institute of Social Security (IMSS) was considered the most important hospital complex in Latin America, with over 2,300 beds and

TABLE 4—Public Services Immediately Affected by 1985 Earthquakes in Mexico City

Type of Service	Number or Percentages	Characteristic of Damage
Schools	137	Collapsed
	301	Damaged
Markets	14	Collapsed
	46	Damaged
Water	117	Broken Sites in Primary Network
	2,800	Broken Sites in Secondary Network
	45%	Population without Intradomiciliary Water Supply
Electricity	40%	Population without Service
Telephone	70%	Interruption of Local Service
	95%	Interruption of Long Distance Service
Banks	10%	Out of Service
Traffic	40%	Interruption

TABLE 5—Population at Health Risk in Mexico City Immediately after September 1985 Earthquakes and One Month Later

Health Risk	Population as of Sept. 21, 1985	Population as of Oct. 21, 1985
Temporary Housing and Camps	33,000	29,000
Lack of Water Supply	6,150,000	90,000
At Risk of Mental Health Disorders		
High Risk*	603,520	
Medium Risk**	2,624,000	Under Study
Low Risk***	7,981,000	

*Population in the highly affected areas.
**Population in the neighboring districts.
***Population in the rest of the districts.

the largest medical library in the country. It had to be completely evacuated as almost all of its 25 buildings suffered severe damage. IMSS is the principal social security institution in the country. Most of the beds that it lost were devoted to tertiary, high-technology care. They represented one-third of the Institute's beds in the metropolitan area of Mexico City. Another large social security institution (ISSSTE), which serves federal employees, lost 867 beds, 36 per cent of its capacity.

As an immediate consequence of the earthquakes, it was necessary to close down 2,158 beds of the Ministry of Health (SSA), representing 43 per cent of its total in the metropolitan area. More than 700 of these beds were lost permanently with the collapse of the Juárez Hospital and of the gynecology-obstetrics tower of the General Hospital of Mexico, where the medical residence also was destroyed. In contrast, the network of 24 community general hospitals with 1,600 beds that belong to the city government (DDF) were not affected. All in all, the city suffered, in a single day, the loss of more than 4,000 public sector beds, which accounted for almost one-fourth of the total and included some of the most technologically sophisticated beds in the country. In addition, five of the most important private hospitals had to be evacuated, and scores of physicians lost their offices. A conservative initial estimate of the direct economic impact of the earthquake places the damage to the health sector at $300 million.

Tragically, more than 900 patients, physicians, nurses, paramedical workers, and medical students died in the hospitals. Because of the early hour of the first earthquake, the health professions were the only group that lost some of their members at work.

The loss of these hospitals has effects that go beyond the delivery of services. The training of future generations of physicians has also been threatened, since public hospitals are the main sites of both undergraduate and graduate medical education. As a result of the earthquakes, an estimated 305 residency positions were lost. The damaged hospitals had also been used to provide clinical training for more than 6,000 students from eight medical schools in the metropolitan area. In addition to the effects on education, important research laboratories suffered severe losses of equipment, and many of their projects had to be halted.

Immediate Medical Responses to the Earthquakes

Mexico City may not have suffered so much destruction since the time of the Conquest in the sixteenth century. During the past 50 years, the country has been spared the ravages of war, and its inland capital city has been protected

TABLE 6—Effect of Earthquakes on Medical Facilities in Mexico City

Facility		Agency				
		SSA	IMSS	ISSSTE	DDF	TOTAL
Hospitals	Total in Metropolitan Area	17	37	9	24	87
	Number Damaged	2	9	2	0	13 (15%)
Hospital beds	Total in Metropolitan Area	4,975	8,197	2,427	1,807	17,406
	Number Damaged	745*	2,775	867	0	4,387 (25%)
Outpatient units	Total in Metropolitan Area	220	175	112	191	698
	Number Damaged	39	4	7	0	50 (7%)
Medical offices	Total in Metropolitan Area	1,735	2,789	888	203	5,615
	Number Damaged	236	140	150	0	526 (9%)

SSA: Ministry of Health.
IMSS: Mexican Institute of Social Security.
ISSSTE: Institute of Social Security and Services for State Employees.
DDF: Government of the Federal District of Mexico.
*In addition, 1,413 beds of the General Hospital of Mexico were temporarily closed down because of damages to its infrastructure.
SOURCES: Reference 18 and data from the General Directorate of Epidemiology, Ministry of Health.

from disasters that affected coastal areas. The earthquakes, therefore, found a city that had only limited experience in dealing with sudden catastrophes.

Nevertheless, the response was quite swift. Considering that the damage occurred in a metropolitan area with almost 18 million people, there was a fairly fast mobilization of help. This response was possible in part because most of the city remained unharmed. However, this factor cannot be the sole explanation when one considers the large absolute number of collapsed buildings. Under such circumstances, the rapid response must have been a manifestation of the extraordinary solidarity of the population. Indeed, the disaster brought out feelings of brotherhood and compassion that are not common in a large megalopolis. Ordinary citizens spontaneously organized brigades to help in the rescue efforts and to provide food, clothing, and emotional support to the homeless. The feelings of solidarity extended beyond the borders of our city and of our country.

On the part of the health care system, an enormous organizational effort was made to meet the needs of the population despite the destruction suffered by the system itself. The actions that were carried out included:

- *Evacuation of the damaged hospitals*—This was a very delicate operation, since it was necessary to move patients that often were critically ill and to relocate them appropriately in safe hospitals. The majority of this effort involved the National Medical Center, where 1,900 patients were evacuated in just four hours, without any deaths.
- *Rescue and treatment of the injured*—More than 4,000 people were rescued alive from the debris. As shown in Table 7, almost 9,600 injured persons received medical treatment, including 1,879 who required hospitalization; 238 of those hospitalized died within the first month after the earthquakes. To create the capacity to take care of the injured, it was necessary to discharge patients admitted for elective surgery or other postponable care. Despite the loss of 5,000 beds, there was never a shortage of facilities for the injured. This was made possible by the coordination that the disaster forced upon the various medical care agencies, including the private hospitals. Indeed, during the weeks following the earthquakes Mexico City had, for the first time in its history, a health system that was unified *de facto*. Hopefully, this kind of coordination will continue after the acute phase, since there will be need for long-term care of those suffering from physical and psychological trauma caused by the earthquakes.
- *Epidemiological surveillance*—In the first few hours after the tremors, a surveillance operation was mounted to monitor the quality of the water, provide antitetanic vaccination, dispose of corpses, and control any possible disease outbreaks in the shelters that were set up for the homeless.[17]
- *Mental health program*—Almost 2,000 psychiatrists, psychologists, and social workers participated in a massive mental health program. More than 12,700 people in temporary housing and camps, plus 5,700 in other sites and 2,500 rescue workers, were provided with services. In addition, a telephone counseling service was established, which answered more than 4,500 calls.
- *Information to the public*—A major campaign was launched in order to inform the public about hygienic measures. In addition, it was necessary to dispell erroneous notions about nonexistent health hazards. For example, the large number of corpses had caused fear about possible epidemics of cholera or plague. Extensive information was also provided about available sources of care and about long-term measures for the injured.

Reconstruction: Options for the Future

The damage to the health care infrastructure reflects the vulnerability of a development model based on a double concentration: geographic and technological. In Mexico,

TABLE 7—Earthquake-related Medical Services in Mexico City, September 19–October 21, 1985

Institution	Number of Persons Treated	Number of Persons Hospitalized	Number of Persons Who Remained Hospitalized as of Oct. 21	Number of Hospital Deaths
Public Sector	8,762	1,510	423	209
Private Sector	835	369	30	29
TOTAL	9,597	1,879	453	238

health care facilities are concentrated in urban areas and, within those areas, resources are again concentrated in large clusters of hospitals in close proximity to each other.

Even before the earthquakes, many analysts of the Mexican health system had expressed reservations about such medical concentration, because of its low accessibility, unproved effectiveness, and high cost. Now we have also witnessed its disadvantages in terms of national security.

From the first days after the earthquakes, a broad consensus emerged to the effect that the reconstruction effort should not restore the *status quo* prior to September 19. Since different social groups were affected in different ways by the earthquakes, however, there are divergent views as to how the reconstruction effort should proceed. In principle, there are four possible strategies for reconstruction: rebuilding, rehabilitation, redistribution, and reorganization.

- *Rebuilding*—This option has been proposed by some of the personnel who worked in the damaged hospitals. It would essentially restore the lost capacity in the same places and with the same organizational format. Although rebuilding is a provisional step in the reconstruction effort, the serious problems that the existing health care model exhibited before and during the earthquake make this the least appropriate alternative for permanent reconstruction.
- *Rehabilitation*—This alternative involves restoring the lost capacity by adding the necessary beds, equipment, and personnel to hospitals and health centers that did not suffer major damages during the earthquakes. This is the option that can be implemented most rapidly and is therefore attractive for the short run. Thus, in the course of the first four months after the earthquakes, repairs were carried out in 45 facilities of the Ministry of Health. Because its point of departure—the existing distribution of resources—is known to be inequitable, this option must be accompanied by longer-term measures.
- *Redistribution*—The major goal of the redistribution strategy is to achieve a better balance of beds through networks of smaller hospitals that cover wider geographic areas. To this end, seven new general hospitals of 144 beds each are being built in a ring of previously unserved areas that surround Mexico City. In addition, the National Medical Center will be replaced by six regional centers providing tertiary care throughout the country. Access to care will thereby be improved and fewer patients will have to travel to an already congested city.
- *Reorganization*—This alternative includes redistribution, but goes beyond the problem of restoring the lost beds. Its guiding principle is that hospitals interact with other components of the health system. Hence, any attempt to address the damages to the hospitals must take the entire system into account. The purpose, therefore, is not simply to recover the previous bed capacity, but to develop a different configuration of resources with improved accessibility and quality. While Mexico City had an abundance of tertiary care beds before the earthquakes, many states have been traditionally deprived of advanced medical care. And in Mexico City itself primary care resources were lacking, so that secondary and tertiary hospitals were overburdened with cases that should be handled in less costly settings. Thus, reinforcing primary health care becomes an integral part of the reconstruction effort. For this reason, 12 new health centers are being built—four in the Federal District and eight in the larger metropolitan area. The strengthening of primary health care includes the definition of precise service areas for which each health center assumes responsibility.[19] This will require substantial community participation. It also will be necessary to assure that the health centers have the ability to solve common demands, such as normal deliveries, minor surgery, and basic emergency care. At the same time, an expeditious referral system will be implemented, so that the patients who do need hospital care can receive it in a more timely fashion. Greater technological balance among the three levels of care in Mexico City will be complemented by greater geographical balance among the states, achieved through the continuing process of decentralization.

These four strategies are not mutually exclusive. Obviously, there was need for immediate actions aimed at rebuilding and rehabilitation. In turn, redistribution is an essential ingredient of any attempt to achieve a permanent solution that produces greater equity. None of these strategies, however, can be implemented in isolation. Instead, they must all converge toward the reorganization of services, for only in this way will the reconstruction effort be a true renewal.

Conclusion

For decades, the benefits of development were concentrated in Mexico City, and the health system was no exception. In 1982, a health care reform was initiated based on a new model that gives the highest priority to decentralization and to primary health care.

The devastation of hospitals in Mexico City as a result of the 1985 earthquakes shows the vulnerability of the old model. If reconstruction simply replicated this model, we would be setting the clock backwards by many years, at a time when the country had finally realized the need for a more balanced regional development. Reconstruction must, therefore, proceed along the lines of a reorganization that is congruent with the ongoing health care reform. If we are able to build a better country, then some of the deaths caused by the earthquakes will have acquired greater meaning.

In sum, the changes that have been undertaken by Mexico during the past three years and those that will be forthcoming indicate that, even under conditions of economic and natural adversity, the health outlook may be quite bright. For this to happen, however, governments must be convinced that health care is not a luxury. On the contrary, the luxury that developing nations cannot afford is the lack of innovative and active programs to ensure universal access to health services. Through those programs, the more enlightened principle of citizenship will at last guide the way in which we think about health care and the manner in which we distribute its benefits.

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