directing council

PAN AMERICAN HEALTH ORGANIZATION

XIII Meeting

regional committee

WORLD HEALTH ORGANIZATION

XIII Meeting

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Tema 19: FINANCIAL OUTLAY REQUIRED TO FORMULATE A CONTINENTAL PLAN TO COMBAT TUBERCULOSIS

(Document presented by the Government of Mexico)

Mexican Requirements

FINANCIAL OUTLAY REQUIRED TO FORMULATE A CONTINENTAL PLAN TO COMBAT TUBERCULOSIS

- MEXICAN REQUIREMENTS -

The Ministry of Health and Social Welfare has 98 Tuberculosis Services (Chest clinics), the geographical distribution of which is shown in the attached map (Annex I).

Of these, 21 are in the Federal District and the other 77 in the Federal states and territories. A total of 3,777 beds is available for tuberculosis patients in 23 regional hospitals (Annex II).

The Tuberculosis Services are located in health centers and/or health and welfare units. The National Tuberculosis Campaign comes under the Public Health Department, and is thus one of the many activities of an over-all public health plan. In Mexico these activities are carried on in geographical areas of varying size. Depending on their topography, communications routes, and demographic, economic, and social conditions, etc., these areas contain in theory a population of between 100,000 and 500,000 in the Federal District and between 100,000 and 200,000 in the other administrative divisions (29 states and 2 territories), living in both urban and rural districts. Generally speaking, the health centers and health units have been set up in cities of over 40,000 inhabitants.

The infection is encountered relatively early in life, as is borne out by tuberculin tests, which showed that at age 14 45 per cent were reactors. The disease also occurs very early in life.

Owing to the high prevalence of tuberculosis infection in Mexico and to the probable presence of non-specific reactions, the tuberculin test cannot be relied upon as the diagnostic method of choice.

Nor is bacilloscopy alone a reliable method.

The population distribution of Mexico is shown in Annex III. The population living in small rural communities especially those with 1-499 inhabitants is generally considered the most difficult to reach. Of the 99,028 localities in the country (1950 census), 90,069 localities have under 500 inhabitants; that is to say, 6,825,251 persons, or 29.18 per cent, of a total of 25,791,017 are difficult to reach.

The performance of the Tuberculosis Services has not as yet reached its maximum for the following reasons: part-time staff; fixed x-ray units; lack of transportation; and difficult geographical conditions. As a result, the bulk of the care has been received by the urban population.

It is proposed to apply the following two schemes to the entire population of Mexico:

a) Periodic examination (every 3 years) of all persons over 15 years of age and referral of all suspect cases to the Tuberculosis Service for clinical examination. After two such cycles, i.e., after 6 years, these examinations can be made more selectively in special population groups.

b) Tuberculin testing of all inhabitants under 15 years of age and BCG vaccination of all non-reactors; the examination of hyper-reactors is to be complemented with chest x-ray and laboratory tests.

The campaign strategy should, we believe, be based on the following points:

I. The construction of simple, additional Tuberculosis Services in key communities of given geographical areas and the installation of such services in communities with from 10 thousand to 40 thousand inhabitants, since as a rule these services already exist in the larger communities. The new units are to serve a maximun of 150,000 persons of all ages, including rural inhabitants. The existing 98 Tuberculosis Services are each responsible for 150,000 persons on the average. Therefore, 124 additional Services must be created so that a total of 223 Services can serve the total population (33,000,000) of Mexico.

The equipping of the Services with mobile x-ray units would make it possible for them to make an average of 100 x-ray examinations per day, four days a week. These figures take into account the country's geographical conditions and communication routes, and the distribution of the rural population.

It is estimated that the number of persons that the 223 x-ray units could examine each year under these conditions would be 7,200,000 persons. This figure of 7,200,000 x-rays taken annually by all mobile units and Tuberculosis Services would, in three years, become 21,600,000, which, in round figures, is the number of persons over 15 years of age in the country.

II. Provision of mobile x-ray units (10 x 10 cm film) to these Services. These units will cover all the routine needs of a Tuberculosis Service. X-ray units would also have to be provid to the existing Services that do not have them. Provision of fluoroscopes to all new Services and also to any existing Services that do not have them.

III. Provision of at least one vehicle for the transportation of personnel and of another vehicle for the transportation of the x-ray unit. In certain areas other means of transportation will be needed.

IV. Installation of microscopy laboratories in each Service (Annex IV).

V. Establishment of at least 15 regional laboratories equipped for microscopy, cultures, and sensitivity tests (Annex IV).

VI. Establishment of a Central Laboratory (now being equipped) with the necessary equipment for microscopy, cultures, typing of bacilli, sensitivity tests and, ocasionally, animal inoculations (Annex V).

VII. Full-time staff, including a sufficient number of auxiliary nurses for home visits, since, for obvious reasons, patients will primarily have to be treated in their homes.

VIII. BCG vaccination should occupy a prominent place in the tuberculosis campaign of Mexico. The intracutaneous method is used and priority is given to the age group 1-20.

IX. Chemoprophylaxis of the infection is limited to children who are particularly exposed to infection and who for various reasons cannot be separated from the source of infection.

X. Chemoprophylaxis of the disease is also being used in Mexico on a small-scale.

XI. Increased production of biologicals (PPD and BCG) to meet the requirements of the nation-wide program.

XII. Creation of a pilot area for operational and applied research, which at the same time will be used for training personnel.

XIII. Installation of 500 surgical beds in inexpensive and functional types of construction which, when they have fulfilled their purpose, can be used for other purposes. The distribution of these beds will be dealt with in another report.

XIV. Installation of at least 3,200 beds in simple and inexpensive types of construction for advanced tuberculosis cases, the distribution of which is to be studied at a later date. This is considered to be essential to the program.

XV. At least one Rehabilitation Center in each political division of the country.

XVI. Special types of care for tuberculosis patients and their families must be studied.

XVII. Health education should be given special emphasis and all resources --personnel and equipment-- must be used for this purpose.

In view of Mexico's political and administrative organization it is proposed that in principle there should be one health education unit in each administrative division of the country (29 states and 2 territories) and, in addition, a health education section in each Tuberculosis Service in the Federal District. These units are to conduct educational programs adapted to local needs, under the direction of the Central Office and in coordination with the Department of Health Education.

The tuberculosis campaign in Mexico should be developed gradually and progressively so as to cover the geographical areas of the country sucessively. It is estimated that with good organization and adequate resources this can be done in the course of one year of preparatory work, at the end of which the activities could reach their fullest development.

Research problems could be handled (in addition to operational and applied research) by the Campaign staff, provided it had the necessary material and human resources at its disposal.

Owing to lack of information, no consideration has been given in this paper to the activities that could be developed by such institutions as the Mexican Social Security Institute, the Ministry of Public Education, the Ministry of Defense, and other agencies that in one form or another are concerned with tuberculosis control in Mexico.

Consideration would also have to be given to any activities that could be carried out by the Ministry of Agriculture and Livestock in the control of bovine tuberculosis.

In addition, a study should be made of milk pasteurization.

The enactment of special legislation is also considered essential for conducting the program.

To sum up, the financial outlay for a tuberculosis program in Mexico is as follows:

A. Construction of 125 new Tuberculosis Services, equipped with portable x-ray units; microscopy laboratories; at least two vehicles --one for the equipment and one for the staff; well paid full-time staff; equipment for tuberculin tests (Mantoux) and BCG vaccination; films; developers; dryers, etc.

B. Fifteen regional laboratories and one Central Laboratoy.

C. Sufficient technical staff at the central level, consisting of one medical officer to head the campaign, one chief epidemiologist, one chief epidemiologist for the department of medical and surgical care, and 15 assistant medical officers, either epidemiologists or tuberculosis specialists, whose primary function would be the planning, organization, supervision, and evaluation of tuberculosis control work.

D. Sufficient nurses, auxiliary nurses, social workers, statisticians, and administrative personnel to staff the central and peripheral offices.

E. Electrical and mechanical equipment for the perforation and processing of the statistical cards for tuberculosis cases.

F. Training of all technical and paratechnical personnel.

G. Increase in the production of the National BCG Laboratory.

H. Provision of the necessary amounts of drugs for treatment and chemoprophylaxis. The drugs routinely used in Mexico are INH and PAS in association. Streptomycin is used in special cases. INH is also used in chemoprophylaxis.

I. Provision of 500 surgical beds.

J. Construction of 32 shelters with 3,200 beds for advanced cases.

K. Construction of a Rehabilitation Center in each Federal division.

L. Establishment of a pilot area for the training of personnel and for operational and applied research.

M. Coordination with governmental, semi-autonomous, and private agencies.

N. Stimulation of the cooperation of voluntary organizations.

O. Special emphasis on health education.

México, D.F., 30 August 1961

ANNEX I *

GEOGRAPHICAL DISTRIBUTION OF TUBERCULOSIS SERVICES

(CHEST CLINICS)

* Annex I distributed separated.

ANNEX II

TUBERCULOSIS BEDS AND HOSPITAL AUTHORITY

REPUBLIC OF MEXICO

1958

AUTHORITY	NUMBER OF BEDS
Federal	1,021
State	363
Municipal	0
Semi-autonomous (descentralizado)	608
Private	110
Medical Services, Rural Cooperatives	32
Coordinated	47
PEMEX (Mexican Oil Co.)	0
Mexican Social Security Institute	248
Private foundations	147
Industrial	0
Social Security (Tuberculosis Unit)	285
Tampico Hospital (Tamaulipas State)	147
Campeche Tuberculosis Clinic	30
Parras Sanatorium (Coahuila State)	18
	3,777

ANNEX III

POPULATION DISTRIBUTION

1950 CENSUS

NUMBER OF INHABITANTS	POPULATION	TOTAL NUMBER OF LOCALITIES
1 - 99	1,772,256	65,090
100 - 499	5,752,995	24,979
500 - 999	3,406,603	4,940
1,000 - 2,499	3,858,445	2,598
2,500 - 4,999	2,063,467	609
5,000 - 9,999	1,472,397	215
10,000 - 19,999	1,259,484	92
20,000 - 29,999	545,806	22
30,000 - 39,999	323,135	10
40,000 - 49,999	507,855	11
50,000 - 74,999	653,303	11
75,000 - 99,999	274,703	3
100,000 - 249,999	955,335	7
250,000 - 499,999	710,438	2
500,000 and above	2,234,795	1
***		438
	25,791,017	99,028

*** Sections that make up Mexico City and are considered separate localities

Total estimated population 1960 34,625,903

Total estimated population 1964 38,159,851

ANNEX IV

EQUIPMENT REQUIRED FOR LOCAL LABORATORIES

The local laboratories will make smears of all specimens received, stain them and examine them microscopically.

Binocular microscope, with 10X, 43X, 97X objectives and 5X, 10X eye pieces.

Microscope lamp.

Centrifuge, International Clinical, with 12-place head for 15 ml. tubes

Electric refrigerator

Balance, semi-analytical. Sensitivity 0.01 g with weights 1 to 2,000 grs.

Balance, with weights 1 to 2,000 grs.

Furnace, Gas

Interval Timer, with Alarm

Bunsen burners

Needle-holder with platinum-iridium loop.

GLASSWARE:

Pipettes, Serological. Capacity, 10 ml. Calibration, 0.1 ml.

Pipettes, Serological. Capacity, 5 ml. Calibration, 0.1 ml.

Pipettes, Serological. Capacity, 1 ml. Calibration, 0.01 ml.

Flasks Erlenmeyer, graduated. Capacity, 50, 100, 500, 1,000 ml.

Flasks, volumetric. Capacity, 100, 500, 1,000 ml.

Centrifuge Tubes, conical. Graduation, 15 ml.

Slides, Cover Glasses.

Funnels. Diameter 8 cm.

Mortars. Diameter 12 cm.

Polyethylene boxes for the collection of specimens.

ANNEX IV (Cont.)

EQUIPMENT REQUIRED FOR REGIONAL LABORATORIES

The regional laboratories will be responsible for direct and concentrated smears, staining, and microscopy; cultures; and tests for sensitivity to drugs and antibiotics.

In addition to the material specified for local laboratories, they will need the following:

Oven Bacteriological. Constant Temperature. Automatic thermostat control.

Balance, Analytical, with weights 0.001 to 100 g.

Coagulator for culture media, temp. adjustable to 85ºC.

Two centrifuges, as specified above.

Two microscopes, as specified above.

Autoclave Vertical, Electrically Heated. Three-Heat.

Sterilizer, Hot Air. Electrically Heated.

GLASSWARE:

All of the glassware as specified above, plus:

250 Culture Tubes, Length 18 mm.

Salts.

Stains.

Reagents.

STAFF REQUIRED FOR THE LOCAL LABORATORIES

	Salaries
1 Laboratory chief	$ 2,000.00
1 Technical auxiliary	1,200.00
1 Aide	450.00

ANNEX IV (Cont.)

TECHNICAL STAFF REQUIRED FOR THE REGIONAL LABORATORIES

	Salaries
1 Laboratory chief	$ 2,500.00
2 Technical auxiliaries	1,200.00
1 Typist	670.00
1 Aide	450.00

ANNEX V

EQUIPMENT REQUIRED FOR THE CENTRAL LABORATORY

This laboratory will be responsible for direct and concentrated smears, staining, and microscopy; cultures; tests for sensitivity to drugs and antibiotics; typing of strains; and, occasionally, innoculation of laboratory animals.

2 Binocular microscopes, with 10X, 43X, 97X objectives and 5X, 10X eye pieces

2 Microscope lamps

3 Centrifuges, International, Clinical, with 12-place head for 15 ml. tubes

2 Electric refrigerators

1 Balance, Semi-analytical. Sensitivity, 0.01 g. with weights 1 to 2,000 g.

1 Balance, with weights 1 to 2,000 g.

1 Balance, Analytical, with weights 0.001 to 100 g.

2 Ovens Bacteriological, Constant Temperature, Automatic Thermostat Control

1 Coagulator for culture media, adjustable to 85ºC, 100-tube capacit

2 Autoclaves, Vertical, Electrically Heated, Three-Heat

1 Sterilizer, Hot-Air, Electrically Heated

1 Furnace, Gas

1 Photoelectric Colorimeter

Bunsen burners

Needle-holders, with platinum-iridium loop

Cages for laboratory animals

3 Interval Timers, with Alarm

ANNEX V (Cont.)

GLASSWARE:

Pipettes, Serological. Capacity, 10 ml. Calibration, 0.1 ml.

Pipettes, Serological. Capacity, 5 ml. Calibration, 0.1 ml.

Pipettes, Serological. Capacity, 1 ml. Calibration, 0.01 ml.

Flasks Erlenmeyer, Graduated. Capacity, 50, 100, 500, and 1,000 ml.

Flasks, Volumetric. Capacity, 100, 500, and 1,000 ml.

Centrifuge tubes, conical. Graduation, 15 ml.

Slides, Cover Glasses

Funnels. Diameter, 8 cm.

Mortars. Diameter, 12 cm.

250 Culture Tubes, Length 18 mm.

Polyethylene boxes for the collection of specimens

Salts

Stains

Reagents.

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ADDENDUM I
13 October 1961
ORIGINAL: SPANISH

Topic 19: FINANCIAL OUTLAY REQUIRED TO FORMULATE A CONTINENTAL PLAN TO COMBAT TUBERCULOSIS

(Document presented by the Government of Mexico on the situation in that country)

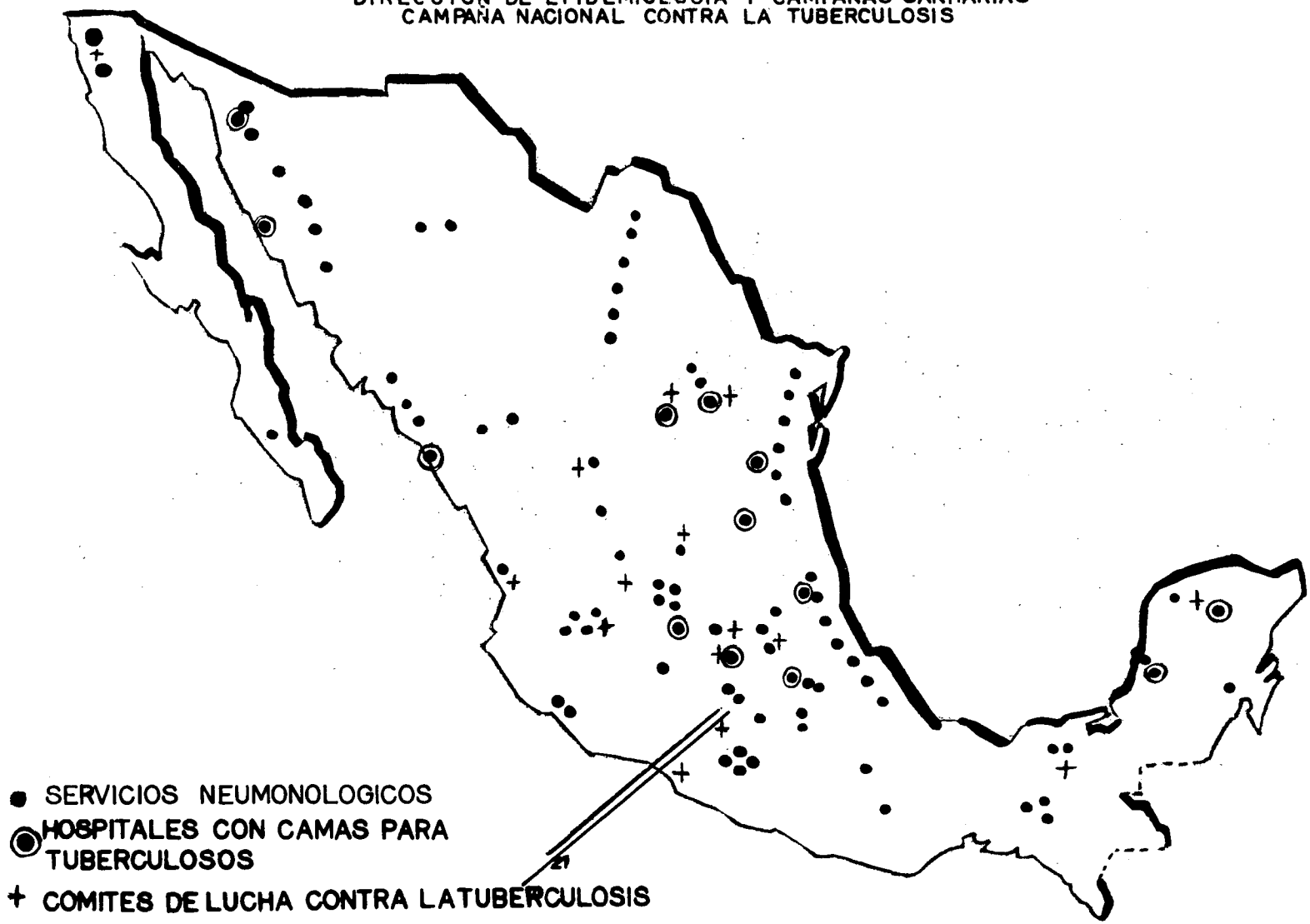
A N N E X I*

Geographical Distribution of Tuberculosis Services

(Chest Clinics)

* Document CD13/32, page 7

SECRETARIA DE SALUBRIDAD Y ASISTENCIA
DIRECCION DE EPIDEMIOLOGIA Y CAMPAÑAS SANITARIAS
CAMPAÑA NACIONAL CONTRA LA TUBERCULOSIS



Servicios Neumonológicos en la República Mexicana.. 98

Servicios Neumonológicos en el Distrito Federal..21

1. Acapulco, Gro. #1 °
2. Acapulco, Gro. #2 +
3. Alvarado, Ver. +
4. Aguascalientes, Ags. +
5. Atlacomulco, Méx. +
6. Campeche, Camp. +
7. Cananea, Son. °
8. Cd. Acuña, Coah. +
9. Cd. Mante, Tamps. -
10. Cd. Juárez, Chih. °
11. Cd. Obregón, Son. +
12. Cd. Victoria, Tamps. +
13. Celaya, Gto. +
14. Coatzacoalcos, Ver. +
15. Colima, Col. +
16. Culiacán, Sin. +
17. Cuernavaca, Mor. +
18. Chetumal, Q. R. +
19. Chihuahua, Chih. +
20. Chilpancingo, Gro. +
21. Durango, Dgo. +
22. Fresnillo, Zac. +
23. Gómez Palacio, Dgo. +
24. Guadalajara, Jal.#1 +
25. Guadalajara, Jal.#2 +
26. Guadalajara, Jal.#3 +
27. Guadalajara, Jal.#4 °
28. Guanajuato, Gto. +
29. Guaymas, Son. +
30. Hermosillo, Son. +
31. Iguala, Gro. +
32. Irapuato, Gto. +
33. Jalapa, Ver. +
34. La Paz, B. C. +
35. León, Gto. +
36. Los Mochis, Sin. +
37. Manzanillo, Col. -
38. Matamoros, Tamps. +
39. Mazatlán, Sin. -
40. Mérida, Yuc. +
41. Mexicali, B. C. +
42. Minatitlán, Ver. -
43. Monterrey, N. L. #1 +
44. Monterrey, N. L. #2 +
45. Morelia, Mich. +
46. Navojoa, Son. °
47. Nogales, Son. +
48. Nuevo Laredo, Tamps. +
49. Orizaba, Ver. °
50. Oaxaca, Oax. +
51. Pachuca, Hgo. +
52. Parras, Coah. °
53. Piedras Negras, Coah. °
54. Puebla, Pue. # 1 +
55. Puebla, Pue. # 2 -

Servicios Neumonológicos en los Estados..77

56. Querétaro, Gro. °
57. Cd. Reynosa, Tamps. +
58. Sabinas, Coah. °
59. Salina Cruz, Oax. +
60. Saltillo, Coah. +
61. San Andrés Tuxtla, Ver. +
62. San Cristóbal Las Casas, Chis. +
63. San Luis Potosí, S. L. P. +
64. Tampico, Tamps. +
65. Tapachula, Chis. +
66. Tepic, Nay. +
67. Tijuana, B. C. -
68. Tlaxcala, Tlax. +
69. Toluca, Méx. +
70. Torreón, Coah. +
71. Tula, Hgo. -
72. Tulancingo, Hgo. -
73. Tuxtla Gutiérrez, Chis. +
74. Veracruz, Ver. -
75. Villahermosa, Tab. +
76. Zacatecas, Zac. +
77. "Mensajero de la Salud", Tab. °

HOSPITALES CON CAMAS PARA ENFERMOS TUBERCULOSOS EN LA REPUBLICA MEXICANA - 23.

1. México, D. F. (10)
2. Campeche, Camp.
3. Cd. Mante, Tamps.
4. Parras, Coah.
5. Culiacán, Sin.
6. Guanajuato, Gto.
7. Hermosillo, Son.
8. Jalapa, Ver.
9. Mérida, Yuc.
10. Monterrey, N. L.
11. Navojoa, Son.
12. Pachuca, Hgo.
13. Tampico, Tamps.
14. Zoquipan, Jal.

COMITES ESTATALES EN LA REPUBLICA MEXICANA-15

1. Aguascalientes, Ags.
2. Chilpancingo, Gro.
3. Cuernavaca, Mor.
4. Durango, Dgo.
5. Guadalajara, Jal.
6. Guanajuato, Gto.
7. Mérida, Yuc.
8. Monterrey, N. L.
9. Pachuca, Hgo.
10. Querétaro, Qro.
11. Saltillo, Coah.
12. San Luis Potosí, S. L. P.
13. Tepic, Nay.
14. Tijuana, B. C.
15. Villahermosa, Tab.

\+ Anexos a Centros de Salud.
\- En Unidades de Salubridad y Asistencia.
° En edificio individual.