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Malaria in the Americas

Introduction

In 1990 more than 40% of the world population was exposed to varying degrees of risk of contracting malaria[1]. Accurate information on the global incidence of malaria is difficult to obtain because reporting is particularly incomplete in areas known to be highly endemic. The global incidence of malaria is estimated to be approximately 120 million clinical cases each year, with nearly 300 million people carrying the parasite. Countries in tropical Africa are responsible for more than 80% of all clinical cases and more than 90% of all parasite carriers.

In recent years, reporting of malaria cases improved in Africa, although it remains fragmentary and irregular. In the other Regions of WHO, the total number of cases did not change much during recent years.

The variety and complexity of the technical, political, sociocultural, and economic factors that come together in order to maintain malaria transmission have demonstrated the need to change the simplistic approach of using a single control measure in all malarious areas without taking into account the risk factors that lead to varying degrees of endemicity. The diversity of epidemiological situations demands organized control based on realistic goals that include the application of diversified and complementary measures in accordance with local conditions, resources, and levels of development. Among the main obstacles for the control and prevention of malaria in areas with high transmission are: a) inadequate sanitation and precarious living conditions; b) lack of economic resources; c) lack of knowledge about the biology, ecology, and the measures to control vectors; d) expansion of the agriculture and of the mining and forestry industries into new areas, leading to migration, and e) insufficient or nonexistent health infrastructure in these new settlements.

[1]Based on the XL Annual Report on the Status of Malaria in the Americas for the year 1991. This report also summarizes the world malaria situation for the year 1990. This document is available upon request from the Communicable Diseases Program, PAHO.

Situation of Malaria in the Americas

In 1991 the population of the Region of the Americas was estimated at 721 million people, of whom 38.9% were living in areas in which ecological conditions were propitious for the transmission of malaria.

On the basis of the 1,230,671 reported cases of malaria confirmed parasitoscopically, an increase was recorded in morbidity from 375.4 cases per 100,000 exposed to malaria in 1990 to 437.8 cases per 100,000 in 1991.

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Since 1974 the epidemiological situation of malaria has continued to deteriorate, since in that year the Region registered an annual prevalence of 134.0 cases per 100,000.

In countries or territories without evidence of transmission, 1,144 cases of malaria were reported in an area with a total population of 440 million. The majority were imported cases.

In the 21 countries with evidence of malaria transmission, a potentially exposed population of 281 million live in originally malarious areas. Although the information is not complete for the entire year, 1,229,527 cases of malaria were registered, a figure that indicates an annual parasite index of 6.8 per 1,000 exposed in 1991. This pointed to an increase over 1990, in which the API was 5.1 per 1,000.

The relative stability of the maximum figure registered yearly of around 1 million cases brings to light certain questions that the malaria prevention and control programs are considering as part of the analysis and review of the structures and strategies for integrating the program into the local health services. The fact that the number of registered cases has reached a stable level suggests that the number of susceptibles exposed to transmission has been stabilized or that the capacity of the malaria control programs has reached its operational limits in carrying out parasitoscopic diagnosis and has not been able to overcome the current infrastructure conditions with regard to the human and material resources that would make complete coverage of transmission areas possible.

An argument in support of the first possibility is that the proportion of infections by *P. falciparum* diagnosed by the services was 33.0 per 1,000 in 1990 and 34.0 per 1,000 in 1991. This means that the measures taken to control transmission are not achieving their objective, either because of the opening of new areas of primary transmission or because transmission in existing areas are not being reduced. Furthermore, the fact that in 17 countries (except Haiti, French Guiana, Guyana, and Paraguay) with evidence of transmission a sufficient quantity of drugs has been consumed for complete treatment (1,500 mg of 4-aminoquinoline) of 5,600,575 cases of malaria infection. This figure might be taken as an indication that the parasitoscopically diagnosed cases represent only 21.9% of the cases treated. This means that the malaria prevention and control programs in the Americas used 4 to 6 times more 4-aminoquinoline than the number of confirmed cases would appear to require.

Considering that the excess 4-aminoquinoline used would have been consumed in part for *presumptive treatment* by administering 600 mg for every slide taken (8,502,259), there would still be excess administration of chloroquine sufficient for the complete treatment of 969,000 cases of malaria in the 17 reporting countries (Table 1).

Table 1. Antimalarial drugs used in 1991 in 17 reporting countries (in thousands of tablets).

Countries (by subregion)	4-aminoquinoline 150 mg base
Belize	65.0
Costa Rica	1,542.1
El Salvador	1,902.5
Guatemala	2,307.3
Honduras	2,235.0
Mexico	8,856.2
Nicaragua	8,000.0
Panama	427.0
Dominican Republic	1,378.5
Brazil	15,000.0
Suriname	86.0
Bolivia	1,060.0
Colombia	3,300.0
Ecuador	3,716.7
Peru	1,743.5
Venezuela	4,369.6
Argentina	12.7
Total	**56,002.1**

Since these figures do not include other malaria drugs used in the programs (fansidar, mefloquine, halofantrine, combined treatments, etc.) nor malaria drugs recorded in other units of the health sector or other sectors--including the private and military sector from which PAHO does not receive information that might provide a more accurate estimate--it could be concluded that the 1,230,671 registered cases represent only a small fraction of what might be at least 2.2 to 5.6 million cases (from 1.8 to 4.5 times as many) for the Region in 1991.

Another example of the operational limits of the national control programs is the case of Colombia, which in 1991 reported 184,156 cases, an increase of 85.1% in comparison with 1990 (99,489 cases). However, prior to 1991, the former Direct Campaigns Administration did not recognize the detection, diagnosis, and treatment of the cases carried out in the Department of Antioquia by the Sectional Health Service as reportable cases of malaria. Accordingly, the registration of almost twice the number of cases within a period of one year does not indicate a deterioration in the situation of malaria in the country; rather, it reflects the modernization of the program, which has been

achieved through the decentralization mandated by Colombia's new Constitution. (The cases reported by the Sectional Health Service of the provinces are now accepted).

In summary, the information contained in this report does not necessarily reflect the complete picture of the malaria distribution in the Region but rather the official reporting of cases of malaria that have been considered as such by the specialized programs in each country.

Prevention and Control Programs

From the total of cases of malaria diagnosed in 1991 in the Americas Brazil showed the highest number, with 49.9%, followed by the Andean Area, with 27.6%, and Central America, Panama, and Belize with 14.0%. However, the estimated risk of becoming ill with malaria, or the annual parasite index (API), points to a different order, since the highest risk was observed in Guyana and French Guiana, with an API of 41.0 per 1,000; followed by Brazil, 9.8; Central America, Panama and Belize, 8.9; and the Andean Area, 6.3 for each 1,000 inhabitants exposed.

Furthermore, the risk of dying from malaria is greater as the risk of being infected with *P. falciparum* increases. The Caribbean area, (essentially Haiti), followed by Guyana, French Guiana, and Brazil, are the countries with the highest percentages of *P. falciparum.*

The proportion of infection by *P. falciparum* has diminished in six of the 20 countries (Brazil, Ecuador, Guyana, Paraguay, Suriname, and Venezuela). Haiti and the Dominican Republic continue with 100% and 97.3% of infections by *P. falciparum.* They are followed by Suriname with 94.1%, Guyana with 55.44%, and French Guiana with 48.8% of infections by this parasite.

Of the total number of infections by *P. falciparum* registered in the Americas (417,864), 63.6% were notified in Brazil.

Status of the Sub Regions

Mexico, Central America, Belize and Panama

This sub region, which includes Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama--has a population of 60,347,000 living in areas considered to be malarious, a total of 21.5% of the population of the malarious area of the Region of the Americas.

Of the 199,037 cases registered 5,338 (2.8%) were diagnosed as *P. falciparum*; the remainder have been caused by *P. vivax*, the predominant species in the sub region. In Belize five infections were diagnosed as *P. malariae.*

Regarding the annual parasite index (API), great variability may be observed between the countries. Panama has an API of 0.5 cases per 1,000 inhabitants, while Mexico, El Salvador, Costa Rica, and Nicaragua, have an API of as high as 6.82 per 1,000. Guatemala, Belize, and Honduras had the highest APIs in the sub region of 16.8, 17.6, and 20.6 per 1,000, respectively.

The most striking deterioration has been registered in Costa Rica and Honduras, where the annual parasitic index has increased from 1.4 per 1,000 and 11.5 per 1,000 in 1990 to 3.8 per 1,000 and 20.6 per 1,000 in 1991, respectively.

The situation of Costa Rica is characterized by difficult access and communication with the Province of Limón as a result of the earthquake that occurred there on 22 April 1991 and the ensuing persistent rains. This has been compounded by a relaxation of compliance with social protection laws as a result of the recruitment of temporary workers in banana-growing areas in this region, which reduced the coverage of the malaria program. In addition, during the process of integrating the malaria services into the local health services, field mobility was lost with a consequent reduction in the coverage of the original malaria program.

Of the eight administrative regions into which Honduras is divided, only one demonstrated a substantial improvement in its API, moving from 21.7 per 1,000 in 1990 to 7.6 per 1,000 in 1991. Among the other seven regions, three showed the same API, and in the four remaining regions (including the metropolitan region) there was substantial deterioration.

The Caribbean Area

This sub region is made up of 23 countries or territories[2]. In 1991 there was a total population of 36,814,000 or 5.11% of the total population of the Hemisphere.

Most of this population lives in malaria-free areas; however, the greatest concern is the introduction of imported cases from other countries. Guadeloupe reported 24 cases and Trinidad and Tobago 15. Cuba and Puerto Rico are considered areas free of transmission; however, of 509,674 blood samples examined in Cuba, 201 were diagnosed as positive (191 imported cases and 10 introduced cases).

Malaria transmission continues in Haiti and the Dominican Republic, with *P. falciparum* the predominant parasite. The total population of the island represents 1.9% of the Hemisphere total, while

[2]Anguila, Antigua, Bahamas, Barbados, Cuba, Dominica, Grenada, Guadeloupe, Haiti, Cayman Islands, Turks and Caicos Islands, Virgin Islands (USA), Virgin Islands (UK), Jamaica, Martinique, Montserrat, Puerto Rico, Dominican Republic, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Saint Lucia, Trinidad and Tobago, Netherland Antilles.

infections by *P. falciparum* represent 7.11% of those registered in the Americas.

Andean Sub Region

This sub region includes Bolivia, Colombia, Ecuador, Peru, and Venezuela. The total population is 91,353,000, of whom 53,441,000 live in potentially malarious areas. In 1991 the sub region registered 339,118 cases of malaria, of which 94,208 (28%) were diagnosed as *P. falciparum* and 38.5% corresponded to Colombia, 23.3% to Ecuador, and 19.1% to Venezuela.

Transmission of malaria in the Andean sub region has traditionally been characterized by *P. falciparum* infections in the area of the tropical rain forest. However, a change is occurring in this serious form of infection which is concentrating toward the Pacific Coast. This has resulted in a high frequency of circulation of *P. falciparum* among the black population on the coasts of Colombia and Ecuador. In Bolivia, transmission continues in the jungle region along the borders with Brazil, northern Peru, and Paraguay, and transmission persists in the plains region between Colombia and Venezuela because of the increase in communication between the populations of these two countries.

Amazon Sub Region

This sub region is made up of the jungle transmission areas of Brazil, French Guiana, Guyana, and Suriname. It has a total population of 17,090,211, of whom 99.9% live in the Legal Amazon region of Brazil. Transmission in this sub region is influenced by the opening of new frontiers with the chaotic economic development occasioned mainly by the mining of surface gold. The highest APIs in the entire Hemisphere are found in the Guyanas, 32 per 1,000:French Guiana, with 49% of infections caused by *P. falciparum*; Guyana, with an API of 57 per 1,000, 55.5% of the infections caused by *P. falciparum;* and Suriname, with an API of 4.9 per 1,000, 94.1% of the infections caused by *P. falciparum.* An API of 30.7 per 1,000 was registered in the Legal Amazon region of Brazil, with 41% of the infections caused by *P. falciparum.*

Southern Cone Sub Region

This sub region, made up of northern Argentina, Paraguay and the Brazil border states of Sao Paulo, Paraná, Santa Catarina, Rio Grande do Sul and Mato Grosso do Sul, registered an API of 4.8 per 1,000, which represents 98,569 cases in a population of 20,719,935 living in endemic areas. In Argentina and Paraguay, at the end of the year, 803 and 2,983 cases respectively were reported (APIs of 0.2 and 0.8 per 1,000 inhabitants).

Decentralization and Integration of Services

The political situation in some of the Member Countries has increased the need for regionalization, and in many cases, the municipalization of political, administrative, and, occasionally, financial power. Malaria prevention and control programs have participated with variable vigor in this process of transformation and of political-administrative reorganization of the countries of the Region. In consequence, a brief analysis of the salient points relating to the programs is provided below.

The specialized health programs strengthened their regional units so that they could gradually assume responsibility for operational decision-making and thus be in a position to assume their functions fully when administrative decentralization took place. This resulted in the need for improving analytical methods and instruments to support a timely information system capable of supporting operational decision-making at the local level. For this reason, in recognition of the focal nature of malaria transmission, an attempt was made to improve the epidemiological stratification process, (See *Epidemiological Bulletin*, Vol. 12, No. 4, 1991) which will be useful to the malaria prevention and control programs in decentralizing operations at the local level based on the epidemiological characteristics of each stratum. However, the great variability in local characteristics, have precluded the complete analysis to reach the decision-making at the local level. In part, because epidemiological surveillance and data processing have remained verticalized, in its organizational structure.

The evolution of the process, already in progress, is to achieve the characterization of each stratum, based on the ranking order of exposure to local determinants of becoming ill or dying of malaria. Thus, providing essential information for the priorization of appropriated interventions to reduce or eliminate these risks factors in a rational way. Therefore, it will allow for the decision to be made at the local level with regard to the resources available in each locality.

In this process of decentralization, the integration of health care services at the local level, could be practical means for the dissemination of specialized knowledge in the general health services, in order to increase its resolutive capability. Currently, the specialized health services represent a great *missed opportunity* for the delivery of comprehensive health services.

The reports of 22 countries indicated (Table 2) that active case-finding was carried out in 5,524,515 febrile individuals who had contact with the specialized service. This resulted in a diagnosis of 541,651 cases of malaria, which meant that 9.8% of the demand was provided with malaria treatment. On the other hand, some 4,982,864 febrile patients--that is, 90.2%--who

Table 2. Comparative results of passive and active case detection from malaria programs in the Americas, 1991.

Countries by geographical sub-regions)	PASSIVE CASE DETECTION General Health Services and hospitals				ACTIVE CASE DETECTION Voluntary collaborators, Evaluators, Epidemiological investigations & follow-ups				TOTAL		
	Number of Inform. posts	Blood slides Examined	Blood slides Posi-tives	Blood slides %	Number of Inform. posts	Blood slides Examined	Blood slides Posi-tives	Blood slides %	Blood slides examined	Posi-tives	Percentage
Cuba	-	-	-	-	-	509,674	201	0.04	509,674	201	0.04
Chile	-	-	-	-	-	-	-	-	0	0	0
Dominica	-	-	-	-	-	-	-	-	0	0	0
United States of Am.	-	-	-	-	-	-	-	-	...	904	-
Grenada	-	-	-	-	-	-	-	-	...	...	...
Guadalupe	-	-	-	-	-	-	-	-	...	24	...
Jamaica	-	231	0	0.00	-	50	0	0.00	281	0	0.00
Martinique	-	-	-	-	-	...	...	...	...	...	..
Saint Lucia	-	-	-	-	-	...	4	-	...	...	...
Trinidad & Tobago	-	18,382	10	0.05	-	6.465	5	0.08	24,847	15	0.06
Mexico	13,174	...	...	...	55,032	...	...	...	1,596,427	26,565	1.66
Belize	41	3,792	133	3.51	...	21,489	3,184	14.82	25,281	3,317	13.12
Costa Rica a)	37	737	876	118.86	177	87,587	2,397	2.74	88,324	3,273	3.71
El Salvador	242	13,720	295	2.15	2,663	176,820	5,638	3.19	190,540	5,933	3.11
Guatemala	116	54,261	8,674	15.99	2,027	307,482	49,155	15.99	361,743	57,829	15.99
Honduras	...	23,440	3,668	15.65	5,924	445,371	69,684	15.65	468,811	73,352	15.65
Nicaragua	156	122,905	8,717	7.09	2,628	241,881	18,936	7.83	364,786	27,653	7.58
Panama	182	149,620	370	0.25	280	186,949	745	0.40	336,569	1,115	0.33
Haiti b)	...	...	...	...	...	...	...	...	81,763	25,511	31.20
Dominican Rep.	457	13,175	49	0.37	2,909	330,316	328	0.10	343,491	377	0.11
French Guiana	...	30,012	3,071	10.23	...	25,230	502	1.99	55,242	3,573	6.47
Guyana	73	114,492	...	...	98	26,554	...	...	141,046	42,204	29.92
Suriname	108	13,334	1,100	8.25	45	5,065	390	7.70	18,399	1,490	8.10
Brazil	3,673	1,076,668	355,419	33.01	15,144	2,206,348	259,012	11.74	3,283,016	614,431	18.72
Bolivia	265	25,225	8,542	33.86	3,915	100,284	10,489	10.46	125,509	19,031	15.16
Colombia	1,443	411,826	105,304	25.57	1,461	329,112	78,852	23.96	740,938	184,156	24.85
Ecuador	662	166,131	37,445	22.54	2,202	180,334	21,955	12.17	346,465	59,400	17.14
Peru c)	...	56,822	24,109	42.43	5,180	52,832	9,596	18.16	109,654	33,705	30.74
Venezuela d)	381	102,682	25,843	25.17	761	148,768	7,676	5.16	375,473	42,826	11.41
Argentina	20	4,742	390	8.22	73	12,102	413	3.41	16,844	803	4.77
Paraguay	88	4,005	494	12.33	1,396	123,802	2,489	2.01	127,807	2,983	2.33
Total	21,118	2,406,202	584,509	24.29	101,915	5,524,515	541,651	9.80	9,732,930	1,230,671	12.64

... Information not available

a) (HAI) Provisional and incomplete information, b) (PERU) Information up to November.

c) (VEN) Totals are for the whole year, information on passive and active case detection up to August.

were negative for malaria had contact with the specialized service. However, their demand remained *unsatisfied*, since they were not diagnosed and received no treatment or medical follow-up.

In spite of the limited resolutive capability of the general health services in regard to the diagnosis and treatment of malaria (passive case-finding) and the prevailing limited coverage, it was possible to carry out 2,406,202 screenings of febrile patients, of whom 24.3% were confirmed parasitoscopically, resulting in 584,509 cases of malaria. However, the 1,821,693 febrile patients without malaria, were able to receive the services they demanded for; diagnosis, treatment, and follow-up of the disease they suffered.

The intent in combining these basic concepts of the organization of health care services--*missed opportunity* and *unsatisfied demand*--is to integrate the specialized services into the general health services by joining together the greater active penetration of the specialized services to the limited coverage of the passive action of the general health services (reaction to the demand) and thus increase the coverage.

This could be visualized practically through a medical referral system using the resources of the malaria programs, which would standardize the discriminatory characteristics of malaria diagnosis in such a manner that each time a parasitoscopic examination is negative for malaria or when no improvement occurs from the use of malaria drugs (resistance to first-line drugs or mistaken clinical diagnosis), the patient would be automatically referred to the second level of care. Coverage would accordingly be expanded in areas in which the general health services are not equipped with formal infrastructure through the active penetration of the specialized malaria services, thereby improving the effectiveness of the general health services.

(*Source*: Communicable Diseases Program, PAHO.)

Cholera in Guyana

Guyana is the twentieth country in the Region of the Americas to report cases of cholera since the epidemic began in January 1991 in Peru.

As of 3 December, the Ministry of Health of Guyana had reported two hundred eighty-eight (288) cases of cholera with five (5) deaths. Less than twenty five percent of the reported cases had been hospitalized, and the disease had affected predominantly adults.

The laboratory at the Public Hospital in Georgetown isolated *V. cholerae 01* El Tor Inaba from stools of six patients. These results were confirmed by the Caribbean Epidemiology Center (CAREC).

The first case of cholera was registered on 5 November. All cases were residents of the western border with Venezuela. The following areas recorded the disease as part of the initial outbreak: Mabaruma, Wauna, Coomaka, Brooms Hill, Koraibo, Imbotero, Kamwatta, Barima Hill and the Cabbage Factory up in the Barima river. These communities are located along the Barima river, which flows into the Orinoco Basin in Venezuela, where a cholera outbreak occurred last August. This Region has a population of approximately 15,000. The city capital is Mabaruma with 5,000 inhabitants.

Subsequently, the disease spread along the rivers and more recently cases have been reported from Suddie and nearby islands located less than one hour from Georgetown.

A case-control study was conducted in the Mabaruma region to identify modes of transmission. Results of this study were not available at the time of this publication.

Outbreak control measures have been implemented by a health team mobilized to the area by the Ministry of Health.

Initial cases were treated at the Mabaruma hospital (30 beds). A surveillance system is in place, community education is ongoing and steps are being taken to improve water and sanitation in the villages and towns. A CAREC epidemiologist assisted the national authorities in the affected area.

(*Source*: Ministry of Health, Guyana, CAREC and Health Situation and Trend Assessment Program, PAHO.)

The Social Model of Health Practices

In the context of *promotion of leadership and advanced training in public health* and the quadrennial priorities of the Pan American Health Organization (PAHO) for the period 1987-1990, six critical areas for the development of health infrastructure were identified and studied during 1987 and 1988 (public policies, information systems and epidemiology, economy and financing, human resources, technological development, and health services systems). In 1989 the study was expanded to include functional aspects of the health system, not only those that form part of its administrative model but also, and especially, those involving the delivery of services for the population/environment in response to problems, needs, or health ideals in the various particular realities. In other words, this new dimension of the study focused on the Model of Health Services Delivery (MHSD) as its main concern.

The process outlined above has coincided with the renewal of efforts to reorient national health systems by strengthening and developing local systems. The results obtained so far in both processes indicate thematic areas that are important for the development of *leadership in the health sector.*

The study of the MHSD sponsored by PAHO jointly with the Latin American and Caribbean Association of Public Health Education (ALAESP) and the Association of Schools of Public Health of the United States (ASPH) used the overall health action strategies as entry points: curative (Lima, 20-24 November 1989), prevention (Sao Paulo, 30 April-4 May 1990), and promotion (Santiago, 6-10 August 1990).

This effort had four distinctive characteristics:

- The subject of observation. In recent years there has been increasing concern for the infrastructure and general functions of the health system to the detriment of its essential purpose. In the present case, the provision of services for the population and the environment has been viewed in a comprehensive manner, taking into account the new conceptual and methodological developments as to health activities.
- The perspective. In studying the health systems from the standpoint of the services they provide, an attempt was made to view the system from below and from its interface with the population--that is, from a perspective close to the people.
- The way of viewing the issue. The dynamic pursued is *problem-oriented* with regard to the provision of services--that is, an attempt has been made to arrive inductively at the implications based on identification of gaps and areas of difficulty in the current model.
- The participants. In selecting the participants a balance was sought between professional origin (balance between personnel from the services and from education and research), and geographic origin, given the variety of health situations in the countries (developing, relatively developed, and in transition).

Throughout the process, concepts, affirmations, methodologies, and proposals emerged, which, enriched by the group dynamics and the basic study documents, made it possible to identify certain innovative elements for the development of *leadership in the health sector and advanced training in public health* that can also be considered as valuable inputs for *development of the theory and practice of public health.*

In selecting the MHSD as a subject for study (taken to mean the clearly defined series of concrete actions that the health services system delivers to people and the environment) and choosing the interface between the services system and the population as the vantage point in ranking the functionality of the system and the services it provides as the point for implementation of the model, a dimension emerged that exceeded the boundaries of the formal component of the health sector. This showed the existence in society of a set of practices, habits, and behaviors that have a decisive influence on the health of individuals and on the population as a whole that form a new, more complex and less linear reality in the conception of health, which has been termed the Social Model of Health Practices.

Based on this evidence, the need arises to reformulate and expand the use of a broader approach, *from the perspective of the people,* in order to reaffirm its meaning and place.

In achieving such a perspective, important elements deserving of comment and analysis begin to emerge that contribute to the comprehension and operation of this Model. A first approximation makes it possible to visualize the separation between the formal component of the Model, which determines health needs, and the population's perception of those needs. Conflicts thus appear between the behavior and standards recommended by the sectoral experts and the patterns of behavior of the population, with a consequent deficit in the results in terms of the resources committed by the sector.

Many difficulties exist in the links between the health sector and the community, and a barrier of varying magnitude may be detected that is made up of a web of biases, routines, deficiencies in training and lack of

resources, interests, etc., that hinder the incorporation of technologies and procedures into the individual and community store of knowledge for future use.

Community aspirations, knowledge, and opinions do not significantly influence the MHSD. Whether because of deficient organizational capacity, a passive attitude with regard to sectors with greater formal power and greater resources, or a lack of political and organizational channeling, the members of the community fail to overcome the existing barriers so that their opinions can be heard and they can intervene in the design, development and evaluation of health programs or health services. In brief, no adequate opportunity arises for consensus between the formal and informal components.

An adequate critical attitude does not always exist for the acceptance of standards and services. The community has not effectively developed forms of defense and reaction to indiscriminate offers of benefits that have to do more with private interests than to priority needs for the health of the population and the environment.

This situation shows how the knowledge of the population, its culture, its models of social organization, and its forms of solidarity and assistance are devalued. On the other hand, the determination of responsibilities on the part of the population in terms of assuming its duties and exercising its rights appears to be confused.

Two main significant concepts are thus identified: Health ideals and citizenship. *Health ideals* are understood to mean the set of values, aspirations, representations, beliefs, and attitudes of a society that express the image of health it desires and its practices. This conception of health ideals entails the discussion and recognition of the distance existing between the formal and informal health systems, and the deficiencies of training in public health in terms of the limited incorporation of the tools of the social and political sciences--all of which shows how the various technical, administrative, and political rationales generate a conflict in which the power of the formal apparatus imposes its rationale upon other legitimate forms of perceiving the problem and its solution by the population.

The need was thus identified for drawing upon the social customs and practices of health protection and promotion based on the identification and recognition of valuable elements in the informal component. This supposes identifying the "health ideals" and observing the MHSD from "the perspective of the people."

This decision requires a transfer of knowledge and power from the formal component of the MHSD to the population so that it can participate actively in the recovery, protection, and promotion of its own health and the health of the environment. This also implies a return transfer of the health ideals, values, aspirations, and social relations that the population wishes to exercise upon the formal component. This valuation and strengthening of the informal elements of the formal model and the interaction that takes place between its formal and informal components has been termed **democratization of knowledge.**

With respect to *citizenship* it is equivocal to make a simple extrapolation of the realities prevailing in the countries of higher income levels in which the demand for services and benefits is covered by direct payment--through taxes or by insurance schemes--and in which the transgression against solidarity is sanctioned objectively and systematically regarding defined responsibilities. In the developing countries with precarious subsistence levels and ever-increasing difficulties, the "contribution" of the population is expressed in terms of disease and death and in deficient standards of living.

The need is all the more evident for affirming basic rights of access to goods and services, the lack of which would be a threat not only to health, but to personal and social dignity.

Personal responsibility is thus linked to the exercise of the individual's right to associate and petition so as to be able to attain personal fulfillment and social recognition, and to be guaranteed favorable contexts for this transition.

Transgressive behavior tends to be qualified as such from the perspective of different cultural realities, and the forms of solidarity can also be elementary defense mechanisms that are employed in situations of extreme hardship or injustice.

Neither of these two aspects of citizenship (exercise of rights and duties) are clearly defined nor their intermediate stages, thereby depriving the sector of the possibility of promoting behavior that provides for personal and community growth as the concrete expression of promotion, protection, or recovery of health.

Extreme responses and proposals simplify the alternatives, imposing means of achieving solidarity and exercising the rights and duties that are linked to the model of developed countries, or subjecting it to actions to protest grievances.

The relationship between the two levels, personal and institutional behavior, has not been clearly established. In brief, citizenship supposes the active participation of the citizens in government acts and programs through their taxes in the developed countries and in the search for social justice, the defense of human rights, and acceptable levels of quality of life in the developing countries.

Throughout the process, critical areas and necessary interventions were identified in the services system, in education, and in research that made it possible to perfect the model.

Inclusion of the **environment** as a subject for study on an equal footing with the population and the services

demanded an innovative approach that points to a long road of conceptualization and analysis that will make it possible to work on the population/environment from education and the services.

The concept utilized up to the present time that the environment is restricted to the physical, chemical, and biological environment in which people live should be updated to incorporate the social and human dimension.

The search for implementing the health concept and recognizing its transformation based on the new conceptions of prevention and promotion led to identifying it not as something absolute and indivisible but rather as something relating to space, population and history, inherent in life and with possibilities of promotion and protection of its components until death. This supposes the recognition of *positive health*, which, based on the new concepts of promotion, fundamental prevention, and use of the risk approach, is directed toward creating favorable contexts and conditions for the development of individuals, families, and communities and for the preservation and improvement of the environment in a task that should necessarily be multidisciplinary and intersectoral.

Elements such as the recognition of problems of functionality and residual harm caused by chronic pathologies, as well as the new modalities of care which accord a prominent role to self-help and community support groups geared toward specific health problems, call for a reorganization of sectoral resources.

An emerging core element in the analysis is the deficient assessment and development of **articulation of the health sector with the other sectors.**

A critical area of concern, and one that must be addressed in the short and medium term, is the deficient articulation with extrasectoral institutions, actors, and protagonists that share the stage and whose potential is not taken into account or utilized, and yet they compete for the population to be covered and the social space to be occupied.

The institutions define their own fields of responsibility and action, creating a partial relationship with a concrete reality (people, community, environment) that, even with regard to programming and evaluation, may be unaware of the presence of other actors with their own rationales, interests, and actions. This situation creates duplication of efforts and competition as far as actions and resources are concerned that fails to make proper use of the available potentials to attain common goals in the field of health.

Family and social disarticulation is an area of conflict that should be defined and overcome in the planning of actions on a geographic and population basis (geography-centered and population-centered).

One of the most significant deficiencies becomes evident here for the exercise of sectoral leadership, since such leadership can neither detect nor effectively influence extrasectoral decisions that affect health nor can it increase the contributions they make to improve the health situation of the population and the environment.

The health sector has lost ground in its ability to exert influence on the social decisions of international agencies, countries, and social groups in formulating and implementing policies and in fostering healthy individual and community behavior.

A two fold situation thus arises in which the health sector makes pronouncements as to what "should be" done in order to achieve a healthy society while at the same time it fails to provide the coverage or effectiveness needed to counteract the consequences of the policies and actions of other sectors and pressure groups (smoking, pollution and environmental deterioration, undernutrition, violence).

Even in the intrasectoral area the real assignment of social resources does not correspond to sectoral recommendations, nor does it reflect an internal logic with regard to available cost-benefit knowledge.

In order for the health sector to increase its influence on society it must develop its advocacy capacity--that is, based on the efforts of individuals and organized groups, it must seek to influence governments, corporations, and bureaucracies so that they become more attuned to the needs of voters, investors, consumers, and socially and economically disadvantaged population groups. The strategies used by advocacy focus on bureaucratic or institutional insufficiencies and are inherently political in nature. Such strategies include social action, case advocacy, legislative advocacy, and administrative advocacy.

Goals and actions were defined operationally that make it possible to develop aptitudes and attitudes in an atmosphere of changing scenarios and vested interests, which generate tensions and decisions that are not always consonant with the interests of health and its effects on the population and the environment.

Study of the services system and its transformation made it possible to assess the effectiveness of *population interventions* based on the influence of epidemiology on the design and implementation of health policies. Local health system development provided the opportunity to apply the study methodology proposed with a certain urgency and to generate teaching contents oriented to the training of human resources and community participation.

In brief, examination of the problem from *the perspective of the people*, in keeping with the Model of Health Services Delivery, prompted an innovative visualization that raised numerous issues, not the least of which were: the conception of the social model of health practices; recognition of the health ideals of the population; renewed emphasis on the concepts of citizenship and social control; the proposal of democratization of knowledge; the assessment of intersectoral articulation; population-oriented

intervention in health problems; questioning and application of the concept of health; the detection of instrumental deficiencies in the sector, for example with regard to the social sciences and communications; and the reappraisal of the very conception of public health.

With reference to this last point, the conception of public health either as the principles and methods leading to professionalization in the field of health, or as an activity of government, has been overcome by considering it the organized effort of a society to achieve its health ideals.

Although the origin of this process and its development make it difficult to present it as a fully perfected doctrine, it nevertheless indicates conceptual progress toward **development of the theory and practice of public health** and constitutes an innovative input for the **training of human resources, research, and the services.**

The strategies and lines of action defined in this process are an appropriate frame of reference for determining, from the fields of action identified and the objectives proposed, the development of theoretical contents, abilities/skills, and attitudes that should form--together with other elements--the curriculum for **advanced training in public health.**

This proposal makes it possible to complement the decision to *associate leadership and sectoral management with the need for advanced training in public health that is not strictly academic but rather is closely linked to the concrete situation being faced by the health sector.*

Application of this methodology of analysis to local realities will reveal its full value as a tool for change and as a contribution to **leadership in the health sector and advanced training in public health,** thereby providing courses of action that will contribute to development of the **theory and practice of public health.**

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Editorial Comment

Evaluation of the impact on health of the health services and of other actions on the people, the environment, and living conditions, and the evaluation of technology in terms of its safety and impact is one of the four broad groups of activities in which the field of epidemiological practice has been redefined (Meeting on the Uses and Prospects of Epidemiology, Buenos Aires, November 1983). However, limited progress in this regard has been made in recent years --as is also true of causal research--despite the changes that have taken place in the social determinants of health and its practices, the subsequent modification of health profiles, and the current development and revitalization of major action strategies.

The study of the model for health services delivery under discussion was conceived and carried out as a means of moving closer to the perspective of the population--of the people and of society. This approximation, essentially epidemiological in nature, attempts to scrutinize the appropriateness and specificity of the *what* and *how* of health actions and not only their *quantity* and *quality*.

The foregoing reaffirms and better defines certain aspects of the challenge involved in describing and explaining health and its practices at a time when a significant contribution must be made to current decision making and to the corresponding actions taken in the social field. Among those worthy of mention by virtue of the role of the epidemiological approach are the need for:

- continuous advancement from *cases and deaths* toward social needs, human needs, well-being, and quality of life;
- moving from problems and *normative* health needs toward *felt* needs, representations, and health ideals;
- shifting emphasis from disease/risk to the relationships between health/overall development and state/civil society;
- broadening of the concept of *care model* to models of health services delivery and social models of health practices; and
- moving closer to planning/administration, on the one hand, and to political sciences, anthropology, and ethics (especially macroethics) on the other.

The development of the theory and practice of public health required by the Region of the Americas in light of the crisis it currently faces demands parallel development of a more aggressive epidemiological approach than in the past if it is to become the keystone for promotion of sectoral leadership in health or, better yet, of revaluation of health in social terms on the American Continent. Such challenges oblige us to consider epidemiology not as the *discipline-synthesis* of the 1980s, but rather as the *transdiscipline* of the 1990s.

(*Source*: Health Manpower Development Program, PAHO.)

Tobacco or Health: Status in the Americas

Introduction

The Pan American Health Organization recently published *Tobacco or Health: Status in the Americas*[1]. The document is comprised of individual reports on smoking and health for nations, territories, and other political entities in the Region of the Americas. The purpose of this Report was to compile available information on tobacco use, tobacco related disease, and tobacco-use prevention and control efforts for each of these political entities as of late 1990.

The Region of the Americas is heterogeneous with respect to tobacco use, tobacco economics, tobacco-related disease impact, and tobacco control measures. However, several common themes emerge from the individual country reports. Although these common themes are covered in more detail in the 1992 Report of the Surgeon General on Tobacco and Health in the Americas *(1)*, some of them are summarized below.

Sociodemographic Changes

Several important sociodemographic changes are noted in each country, especially for the more developed ones. These include decreases in all-cause mortality rates, infant mortality rates, and fertility rates, as well as increases in life expectancy at birth and aging of the population. These changes result from general improvement of health conditions, control of infectious diseases, and progress against maternal and child health problems. They facilitate the emergence of chronic diseases as the dominant cause of disease, disability, and death in most countries of the Americas. In addition, urbanization, increased literacy, and the entry of women into the work force have facilitated the adoption of consumer patterns more akin to those in developed countries; these patterns include among others increased tobacco use. However, most countries, especially those in Central and South America, report severe economic crises in the late 1980s that may be associated with decreases in per capita consumption of manufactured cigarettes. It is clear that higher prices have reduced demand among smokers in South America and the Caribbean. In fact, the effects of increased prices on decreased consumption have been cited as the basis for including increased tobacco taxes as health policy in the Third World *(2)*.

The Tobacco Industry

It is clear that the multinational tobacco companies have established market dominance in most countries of the Americas and that recent sociodemographic changes in these countries have facilitated the expansion of markets for manufactured cigarettes. Prior to the widespread diffusion and adoption of manufactured cigarettes made with blond tobacco (for example, Virginia blend, bright tobacco, light tobacco, *tabaco rubio)*, the consumption of dark tobacco (for example, black tobacco, *tabaco negro)*, was dominant in the Americas. In most countries, particularly in South America, dark tobacco consumption is decreasing and that of blond tobacco is increasing. Cigarettes containing blond tobacco now dominate most markets in the Americas, and the marketing and advertising of manufactured cigarettes made with blond tobacco proliferated in the years of 1970s and 1980s.

Today, multinational tobacco companies saturate environments throughout the hemisphere with tobacco product advertising. In addition, tobacco companies use cultural and sports events, and even health care, to promote good will and product identification. Recently, some nations have moved to limit tobacco product advertising. Canada has banned all forms of advertising, but this ban is being challenged in the courts. Venezuela banned television advertising of tobacco products, but found it necessary to shut down television stations when indirect advertising (logo presentation without mentioning tobacco) was used by tobacco companies to subvert the intent of the regulation.

The economic impact of the tobacco industry in various countries ranges from negative, due to a negative balance of trade for tobacco products and goods used in tobacco production and manufacture, to substantial, for countries such as Brazil with major tobacco manufacturing and exporting industries. Most countries report minimal percentages of the agricultural and industrial work forces being involved in tobacco production and manufacturing. It is impossible to conduct cost-benefit analyses of tobacco use in countries of the Americas because the costs, in terms of health care for tobacco-related diseases, disability, premature mortality, lost productivity, and diversion of expenditures from other products, have not been examined fully.

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[1] *Tobacco or Health: Status in the Americas. A report of the Pan American Health Organization.* Washington, DC, PAHO Scientific Publication No. 536, 1992. ISBN 92 75 11536 2. Published also in Spanish (1992) under: *Tabaco o salud: Situación en las Américas. Un informe de la Organización Panamericana de la Salud.* OPS, Washington, DC(Publicación Científica 536) ISBN 92 75 31536 1.

Tobacco Use

Although PAHO sponsored a standardized survey of tobacco use and its determinants in eight cities of Latin America in 1971 *(3)*, few of such studies of adult and adolescent tobacco use are reported for the Americas outside of Canada and the United States. Most surveys cover individual cities, urban populations, or specific subgroups such as health department employees. Thus, few reported data are nationally representative or comparable. However, several general statements can be made regarding smoking in countries other than the United States and Canada. Smoking is more prevalent in urban as opposed to rural areas, is more common among groups in the upper socioeconomic level than among those with the least education and economic capability, and is decreasing somewhat among men but increasing substantially among women. In general, smokers in Latin America and the Caribbean smoke fewer cigarettes per day than do smokers in the United States and Canada. Cigarette consumption data reported by the United States Department of Agriculture *(4)* and other sources probably substantially underestimate true consumption because of unreported sales, illegal trade in cigarettes, and substantial duty-free sales (particularly in the Caribbean).

Few countries report nationally representative data on tobacco use among adolescents, and most surveys have been performed on school populations only. Tobacco use by adolescents is included on several drug use surveys by countries in Latin America and the Caribbean. In general, adolescents report low percentages of daily cigarette use. However, initiation and experimentation with cigarettes appear to be most common in the middle and late teenage years, just as in the United States and Canada.

In general, the few surveys that covered attitudes, beliefs, and knowledge about tobacco and its health effects in countries in the Americas other than Canada and the United States reported widespread knowledge of the health effects of smoking. However, a tolerance of smoking and a lack of concern for personal risk were also evident. For most countries of the Americas, smoking still appears to be socially acceptable.

Smoking and Health

Because of limitations in the quality of mortality data for many countries in Latin America and the Caribbean, trend analyses, proportionate mortality analyses, and smoking-attributable mortality calculations are difficult to interpret. When mortality data were adequate (such as in Uruguay and Canada), estimates of smoking-attributable mortality, that is the proportion of deaths preventable in the absence of smoking in a population, were found to be similar to those in the United States (where 20 percent of all deaths are attributable to smoking). Using cancer registry data, some countries or areas were able to demonstrate mortality rates increasing over time for lung and other cancers related to smoking. These patterns are typical of populations heavily exposed to tobacco during the previous 20 to 30 years.

Several countries reported lung cancer mortality rates for men and women aged 45 to 54 and 55 to 64. In these age groups, it is unlikely that anything but smoking caused lung cancer deaths. Thus, these data may help demonstrate the impact of smoking in populations where mortality reporting is incomplete or inaccurate. Most countries reporting such data show increasing lung cancer mortality rates for men but not for women.

Cardiovascular disease appears to be one of the most common causes of death in countries of the Americas. Much of this mortality is due to lifestyle factors such as smoking, but it is impossible to separate the effects of the various risk factors and improvements in medical management without longitudinal studies in defined populations. Nonetheless, past increases in cigarette use in the Americas contributed to the expression of these diseases in the 1980s, but to a lesser extent than to lung and other cancers. Mortality rates for cardiovascular disease are beginning to decrease in some Latin American countries and the Caribbean, as they have in the United States and Canada. The decline in cardiovascular disease mortality in the United States and Canada has been attributed to declines in smoking as well as to changes in other lifestyle related risk factors and to improvements in medical management *(5)*.

Smoking Prevention and Control Activities

For most countries of the Americas, tobacco use has not been assigned the same status as a public health problem as has the control of infectious diseases or maternal and child health problems. A few countries have established Government structures tor the control of tobacco use, but in general, these efforts have been poorly funded and staffed. In some cases, cigarette tax revenues have been used to fund research on or interventions against smoking. In many countries, NGOs such as medical associations, anticancer associations, and churches have provided leadership in policy, school-based education, and public information on tobacco-related issues. Specific evaluations of the effects of these programs have been rare, owing in part to the lack of data on tobacco use in targeted populations.

In general, most countries have in place a basic structure to assume a public health approach to tobacco prevention and control. Many have enacted laws designed to limit smoking in public places, tobacco product advertising, and access to tobacco by young persons. However, in general, compliance with these

laws is unsubstantiated. The very presence of these efforts to control tobacco use, whether educational or legislative, indicates a favorable environment for changing the current social norms that support smoking. Additional financial and personnel resources as well as improved data collection are essential to strengthen these efforts.

Summary and Recommendations

This Status Report has collected information from hundreds of individuals and documents that has never appeared before in a single publication. The process of data collection and collaboration by so many diverse agencies, Governments, and individuals has in itself served to increase the awareness that tobacco is one of the most important health issues in the Americas for the 1990s. In recent decades, the international public health community has focused most of its attention on communicable and childhood diseases, but it is clear from this Report that chronic noncommunicable diseases, especially those caused by smoking, will need to be addressed more aggressively by Governments and international health agencies.

This Report will serve as a baseline data source, particularly for Latin American and Caribbean nations as they address the complex issues involved in preventing and controlling tobacco use. Certainly the epidemic of lung cancer and other diseases caused by tobacco use that has been painfully evident in the United States and Canada does not need to be repeated throughout the hemisphere before primary prevention is enacted. Countries of the Americas can learn from each other, and they can join in combatting an industry that thrives on complacency and economic dependence.

Impressive progress against public health problems caused by infectious diseases and maternal and child health problems has been made in recent years in the Americas. However, these public health problems were never a source of profit for multinational corporations and governments, nor were they supported by extensive advertising expenditures and the promotion of social activities such as sports and cultural programs. It was relatively easy to identify these problems as harmful to national progress, personal well-being, and productivity. It is more difficult to identify tobacco use as a public health problem when positive images associated with smoking are common in television and radio advertising and on billboards, street signs, and kiosks throughout the hemisphere. Many governments, farmers, and retailers depend on taxes and profits from tobacco.

In several countries, individuals with the most education and income (including physicians), who are presumably the change agents for healthy lifestyles, smoke at higher rates than those in lower socioeconomic strata. The health consequences of smoking may not be as apparent in Latin America and the Caribbean because insufficient data are available to demonstrate the effects of smoking on the population's health. In addition, insufficient data are available to demonstrate changes in behaviors and attitudes necessary to diminish tobacco use. Finally, resources and personnel are not often assigned to the issue of tobacco and health, even when health indicators increasingly show the potential for substantial disease effects.

The Region of the Americas can use the information presented in this Status Report and the 1992 Report of the U.S. Surgeon General to build an international coalition against what may be the most important public health issue of the 1990s. Based on information in this Report, recommendations for action are as follows:

1. Data collection on behavior, attitudes, knowledge, and beliefs associated with tobacco use should be improved and standardized. These data should be published regularly and used to help support changes in public opinion and political action against tobacco use.

2. Data on mortality and morbidity should be improved, collected, and analyzed systematically in nations of the Americas to understand and communicate fully the current and future burden of smoking-related diseases. Without such data, policy makers and the public will not appreciate the public health burden of tobacco use.

3. Efforts to divert economic and human resources away from dependence on tobacco production and manufacture should be supported, even though short-term costs for this diversion may be appreciable.

4. Policies and legislation that prohibit smoking in public places, advertising and promotion of tobacco products, and access to tobacco by young persons should be strengthened and enforced. These actions serve to decrease the social acceptability of smoking and are essential to changing individual behavior.

5. Ad valorem taxes on cigarettes should be increased substantially and periodically as a means of decreasing consumption.

6. Public health agencies should increase monetary and personnel resources dedicated to the prevention and control of tobacco use. Increasing the stature of tobacco control efforts is essential to changing individual behavior and preventing chronic diseases associated with tobacco use.

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(Source: Summary prepared by Health Promotion Program, PAHO.)

Calendar of Courses and Meetings

International Course in Surveillance and Applied Epidemiology for HIV and AIDS

The Centers for Disease Control, United States Public Health Service is sponsoring the International Course in Surveillance and Applied Epidemiology for HIV and AIDS, to be held at the Center for Disease Control, in Atlanta, Georgia, USA, on 13 September through 1 October, 1993.

The purpose of this course is to develop basic skills in epidemiology, surveillance and the development of prevention strategies for HIV and AIDS. This course is designed for public health and medical officials from developing countries responsible for surveillance and epidemiologic assessment of HIV and AIDS.

The participants will train to understand the epidemiology of HIV and AIDS, and apply basic epidemiologic skills to organize and present scientific data; conduct surveillance of AIDS, including development and use of case definitions, establishment of a reporting system for notification of AIDS cases, and the analysis and interpretatrion of surveillance data; condut surveillance of HIV infection, including establishing a sentinel HIV surveillance system and the analysis and interpretation of surveillance data; carry out basic epidemiologic studies, including identification of risk factors and investigation of unusual episodes of infection and disease, and the monitoring and evaluations of surveillance and intervention programs; apply HIV and AIDS surveillance data in the development of prevention strategies. The course will be conducted in English. Working knowledge of English is necessary to enroll in the course.

All requests for application forms and communications concerning the course organization should be directed to: Yvonne Chrimes, Conference Planner, Pace Enterprises, 17 Executive Park Drive, Suite 200, Atlanta, Georgia, 30329, USA. Phone 404-633-8610, FAX 404-633-8745.

Thirteenth Scientific Meeting of the International Epidemiological Association

The International Epidemiological Association is conducting its Thirteenth Scientific Meeting of the International Epidemiological Association, in Sydney, Australia, from 26-29 September 1993.

The program is designed to bring participants up to date with the major international developments in epidemiology. The program will consist of plenary sessions on topics of major importance and interest delivered by speakers acknowledged to be experts in their field, and presentations to be selected by the Program Committee from submitted abstracts. The official language of the conference is English. All conference sessions will be conducted in that language without translation.

All enquiries and conference correspondence should be directed to: IEA Conference Secretariat, P.O. Box 746, Turramurra NSW, 2074, Australia. Telephone 612-449-1525, fax 612-488-7496.

Strengthening of Epidemiology in Central America

Pursuant to Resolution XIV of the VIII Meeting of the Health Sector of Central America, which dealt with the strengthening of epidemiology (see *Epidemiological Bulletin* Vol. 13, No. 3, 1992), a working group comprising representatives of the Central American countries was formed in Tegucigalpa, Honduras from 8 to 14 November 1992, in order to prepare a detailed program indicating the concrete activities to be carried out in the short term in each country and at the subregional level.

It was proposed that the following activities be carried out under each of the objectives established for the subregional level:

- To conduct an ongoing health situation analysis (HSA) at the various levels of the health services.

  Establishment of uniform criteria for the presentation of information from the HSA.

  Preparation of data bases at the Central American level.

  Presentation and dissemination of the HSAs carried out.

  Convening of a Central American Congress on Epidemiology for presentation of the HSA results and epidemiological research.
- To carry out epidemiological research.

  Inventory of the institutions that conduct research and the studies published in each country.

  Exchange of publications and technical cooperation.

  Preparation of collaborative research proposals in the Subregion in response to national needs.
- To review and update the epidemiological surveillance system.

  Establishment of criteria and qualitative and quantitative indicators for the evaluation of the epidemiological surveillance system.

  Dissemination of bulletins, reports and other technical documents in response to needs.

  Establishment of mechanisms to ensure timely dissemination of epidemiological information through appropriate technology.

  Incorporation of available technologies into epidemiological surveillance systems.

  Training of personnel in the use and maintenance of technological equipment.
- To improve the network for communicating epidemiological information within and between countries.

  Subregional workshops on epidemiology for the development of data bases, the standardization and updating of systems, and the creation of mechanisms of dissemination and exchange of information.

  Meeting with those responsible for control programs and border health authorities to incorporate the subject of surveillance into border technical meetings.
- To implement a plan for development of the network of public health laboratories to support epidemiological surveillance.

  Assessment of the current situation of the public health laboratory network, with the necessary technical advisory services.

  Establishment of a network of reference laboratories, taking into account accessibility and ability to respond in a timely fashion.
- To achieve continuing education of human resources in order to provide support for the development of epidemiology.

  Exchange and promotion of analyses and experiences in human resource development in epidemiology.

As an initial step toward strengthening epidemiological surveillance, it was agreed that during the first four-month period of 1993 a formal evaluation of the current systems of surveillance in each country will be carried out. For this purpose criteria will be developed at the subregional level on the methodology and the indicators to be utilized in order to then establish national groups who will carry out the evaluation at all levels.

There was consensus with regard to the advisability of incorporating analysis of the health situation as an epidemiological practice in the health services, especially at the local levels of the services system. In addition, it was felt that the best way to enhance this practice is through its constant use and review.

Finally, the group noted that the proposed program would be a process that would be carried out over several years and pointed out the need to organize core groups at the national level to accomplish the work with participation by the social security institutions, universities, research centers, and other appropriate institutions.

(*Source*: Health Situation and Trend Assessment Program, PAHO.)

Diseases Subject to the International Health Regulations

Yellow fever and plague cases and deaths reported in the Region of the Americas as of 31 December 1992.

Country and administrative subdivision	Yellow fever		Plague
	Cases	Deaths	cases
BOLIVIA	*14*	*8*[a]	-
Cochabamba	1	1	-
La Paz	8	7	-
Santa Cruz	5	-	-
BRAZIL	*10*	*6*	*8*
Bahia	-	-	8
Mato Grosso	2	2	-
Mato Grosso do Sul	8	4	-
ECUADOR	*11*	*9*	-
Napo	3	3	-
Pastaza	4	3	-
Sucumbios	4	3	-
UNITED STATES OF AMERICA	-	-	*13*
Arizona	-	-	4
California	-	-	1
Idaho	-	-	1
Nevada	-	-	1
New Mexico	-	-	4
Utah	-	-	1
Wyoming	-	-	1

[a]Cases known to date.

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