ABSTRACTS AND REPORTS

AN OVERVIEW OF LEADING TROPICAL DISEASE PROBLEMS IN THE AMERICAS

Introduction

The main element hindering implementation of tropical disease prevention and control programs in the Americas today is the absence of the concept of health in socioeconomic development. Moreover, there are still few training and research centers in the Americas where the necessary staff can be trained in epidemiology, administrative control, and management for the integrated prevention and control of tropical diseases.

The recent increase in morbidity from certain diseases such as malaria, American trypanosomiasis, and leishmaniasis has awakened concern about the problem among biological, medical, and social experts. Even though this concern is shared by the governments involved, however, it is not reflected in adoption of the sanitary policies needed to generate long-term human and financial resources for preventing, controlling, or eradicating these diseases. Nor has any integrated system of technical and financial cooperation been set up to make the most of the knowledge, experience, and resources of the various development programs under way in the countries themselves. Indeed, the development planning systems used in areas where major tropical diseases are transmitted give little or no priority to dealing with social practices that encourage the existence of these diseases. The result is a lack of the effective policies and community participation that could help to modify the social conditions giving rise to these health problems.

The intricacies of disease transmission by insect vectors demand extensive knowledge of the social, economic, ecologic, and biomedical factors that cause or interrupt transmission. Hence, the epidemiologic study of the diseases involved and the design and application of methods for their control and surveillance require investments on a large scale that are only possible within integrated systems.

The rising incidence of cases is associated with makeshift housing, overcrowding, and human migration. Concentration on agricultural development, extractive industries, new settlements,

dams, roads, and irrigation systems—often without making any provision for health protection—has aggravated the epidemiologic situation in some areas. Rapidly increasing, chaotic migration from endemic areas to urban and suburban centers has tended to make early diagnosis and treatment difficult and has overloaded the capacities of medical and sanitary services.

Malaria

The following is a summary of the main problems that the world antimalaria program has encountered in the Region of the Americas. An outline of the status of the disease in the countries and the numbers of cases from 1982 through 1985 are provided in Table 1.

Technical problems. Physiologic resistance of the vector *Anopheles albimanus* to available insecticides has proved a leading obstacle in El Salvador, Guatemala, Haiti, Honduras, and Nicaragua. In some parts of Haiti the vector was resistant to DDT. On the Pacific coast of the four Central American countries, the vector was resistant to almost every insecticide recommended for the malaria program. This latter circumstance rendered the highly efficient and economical mosquito control methodology ineffective; and so the affected countries had to resort to more costly and less efficient measures—such as larviciding, operations designed to reduce the number of breeding places, and mass administration of antimalarial drugs. These measures provided limited protection for some populations, as well as temporary respites from epidemics on some occasions, but they caused no substantial change in the overall malaria picture.

A. albimanus was also reported resistant to DDT in Panama (both in the Canal Zone and in the district of San Blas) and in Costa Rica (along the Pacific coast). This did not pose a serious problem, because transmission had already been interrupted in those areas by applications of propoxur and distribution of antimalarial drugs. Increased *A. albimanus* resistance to DDT was also found in the northwestern border region of the Dominican Republic (Dajabón). At one time vector resistance would not have created any difficulties in this latter region, since the area was virtually untouched by malaria; over the last few years, however, transmission has been on the rise, and the disease now poses a serious threat for the future.

In the southern states of Mexico, along the Balsas River, the vector *Anopheles pseudopunctipennis* has become resistant to DDT. Also, behavioral resistance (evasive behavior) of *Anopheles núñez-tovari* to DDT in western Venezuela and eastern Colombia has caused malaria transmission to remain a persistent problem.

Regarding the parasite, *P. falciparum* resistance to 4-aminoquinolines is a severe problem in some parts of South America, most notably Brazil and Colombia. However, it is not an insurmountable obstacle to the malaria control program, because alternative products (such as associations of dihydrofolate reductase inhibitors and quinolino-methanols) remain available, and other efficient measures can be taken against the vector.

TABLE 1. Malaria cases registered in the Americas, 1982–1985.

Countries affected, classified by group[a]	1985 population of the originally malarious areas (in thousands)[b]	Number of registered malaria cases			
		1982	1983	1984	1985
Group I:					
Chile, Cuba, Dominica, Grenada, Guadeloupe, Jamaica, Martinique, Puerto Rico, Saint Lucia, Trinidad and Tobago, United States, U.S. Virgin Islands	75,310	972	914	1,206	1,519
Group II:					
Argentina	3,833	567	535	437	774
Costa Rica	755	110	245	569	734
Panama	2,101	334	341	125	126
Paraguay	3,768	66	49	554	4,568
Group III:					
Brazil	57,633	221,939	297,687	378,257	401,904
French Guiana	80	1,143	1,051	1,021	512[c]
Guyana	790	1,700	2,102	3,017	7,900
Suriname	300	2,805	1,943	3,849	1,635
Group IV:					
Subregion A:					
Haiti	4,818	65,354	53,954	69,863	12,631[d]
Dominican Republic	6,200	4,654	3,801	2,370	816
Subregion B:					
Belize	160	3,868	4,595	4,117	2,800
El Salvador	4,132	86,202	65,377	66,874	44,473
Guatemala	3,104	77,375	64,024	74,132	54,958
Honduras	3,867	57,482	37,536	27,332	33,828
Mexico	41,639	49,993	75,029	85,501	116,016
Nicaragua	3,165	15,601	12,907	15,702	15,130
Subregion C:					
Bolivia	2,469	6,699	14,441	16,338	14,354
Colombia	18,600	78,601	105,360	55,268	55,791
Ecuador	5,276	14,633	51,606	78,599	68,989
Peru	6,361	20,483	28,563	32,621	35,026
Venezuela	13,156	4,269	8,400	11,127	9,718[d]
Total	257,517	714,850	830,460	928,879	884,202

[a] Group I = Countries or territories where malaria eradication has been certified.
Group II = Countries where transmission has been considerably reduced and where a favorable situation has been maintained
Group III = Countries where malaria has increased in the endemic areas
Group IV = Countries where considerable progress was made in the 1960s, but which have experienced significant setbacks since the late 1970s.

[b] Some figures for the populations of the originally malarious areas are estimates.

[c] Data for November 1985 not included

In general, these data point up the importance of the existing program directed at establishing a surveillance network to monitor parasite sensitivity to antimalarials and of vector sensitivity to insecticides, and for revising the treatments used in order to lessen the selective pressures favoring resistant strains and obtain the best possible results from the malaria program.

Development-related problems. Many of the socioeconomic development projects under way throughout the hemisphere are in geographic areas highly receptive to malaria. With the arrival of migrants and workers settling in makeshift conditions on recently cleared lands in these areas, severe outbreaks of malaria commonly occur. In fact, many localities where malaria is highly endemic today were still uninhabited 10 or 15 years ago. This is a common state of affairs in both Brazil and Colombia. Among the reasons why such outbreaks cannot always be averted are failure to inform the malaria service about the settlements early enough and funding for antimalaria work that is simply too little, too late, or nonexistent.

Sociopolitical and behavioral problems. These problems have made implementation of antimalaria programs increasingly difficult in recent years. It is not easy to express them quantitatively, but in many countries they have contributed much to a loss of operational and supervisory capabilities, and in consequence have made coverage inadequate and have sharply reduced the quality of operations. In some countries, low salaries have driven away professional personnel, especially those with the best qualifications.

Diseases transmitted by *Aedes aegypti*

In recent years, *Aedes aegypti* eradication as a regional program has made little progress for lack of motivation at the national level. The absence of urban yellow fever epidemics and the established effectiveness of 17D yellow fever vaccine have dispelled the fear that in past times was the chief incentive for eradication of *Aedes aegypti* from almost all countries of the Americas. Since 1977–1978, however, the situation created by a dengue epidemic striking most of the Caribbean countries, Central America, and Mexico, together with emergence in 1980 of a major hemorrhagic dengue outbreak in Cuba, has led to renewed interest in strengthening programs for the control or eradication of this mosquito.

It should be borne in mind that, in the absence of a vaccine against dengue, only countries free of *Aedes aegypti* can do anything to protect their populations from this disease. However, analysis of the problems hindering progress against *A. aegypti* has revealed many economic and technical difficulties that, although present for many years, are reaching such proportions in some cases as to entirely nullify the

effectiveness of the measures taken. The main problems are (1) insufficient funding or staffing for proper coverage of infested areas, owing to shifting government priorities; (2) personnel problems that lower the quality of field work; (3) reinfestation, especially from infested ports and airports; (4) inadequate surveillance services; and (5) the high cost of effective insecticides.

In a technical sense there is no obstacle to eradication of the mosquito. Growing progress in insecticide technology, the availability of high-performance equipment requiring little manpower, and the introduction of new methods represent resources which, if properly used, could eliminate *Aedes aegypti*. At the same time, *aegypti* reinfestations in countries once free of the vector, as well as its wider geographic distribution in infested countries, is drawing attention to the importance of maintaining effective surveillance systems and eliminating initial pockets of the vector before they spread. It should also be noted that *Aedes albopictus*, a potential vector of dengue and yellow fever, has been introduced in the states of Texas, Louisiana, and Florida in the United States, and there is evidence that it could spread further south, creating a situation with serious implications. Besides being able to share the peridomestic and domestic niche of *aegypti*, *albopictus* also breeds on the edge of forests and so is harder to control.

Leprosy

Aside from mainland Chile, leprosy is endemic everywhere in the Americas. Although the recording system is deficient and outdated, 318,001 cases were registered in 1984, 68% of them in Brazil. Overall, around 20,000 new cases are reported each year. The largest numbers of cases appear to occur in Argentina, Brazil, Colombia, Mexico, Paraguay, and some Caribbean countries.

Despite important progress in the understanding of leprosy immunity, much of the health staff in many countries is unacquainted with leprosy epidemiology or with leprosy control methods and lacks the means for diagnosing, treating, and monitoring cases. Moreover, the disease is still an object of social stigma in most communities, primarily because appropriate up-to-date information is lacking, and this circumstance hampers leprosy prevention, outpatient treatment, and rehabilitation.

Close to half of the cases diagnosed are contagious forms (lepromatous and dimorphous cases). In Central America the incidence is generally low, ranging from about 0.04 cases per 1,000 inhabitants per year in Guatemala to 0.22 per 1,000 in Costa Rica. Some Caribbean countries (Guyana, Guadeloupe, and Martinique) have relatively high rates—between 2 and 10 cases per 1,000 inhabitants—but the proportion of contagious cases (lepromatous and dimorphous) is lower than in most other countries. In the Amazon area and some parts of the Andes there are

foci of high endemicity where the prevalence can reach 30 cases or more per 1,000. The proportions of unspecified and tuberculoid cases vary widely from one country to another, but account for about 20% and 23%, respectively, of cases in the hemisphere as a whole. In an estimated 30% of the reported cases the disability involved is of grades II and III.

The current strategy for leprosy control is based on reduction of the sources of infection in the community through early detection of cases and the supervised administration of multidrug treatment. It is also necessary to provide for better implementation of control programs by making extensive use of the health services network.

Parasitic Diseases

The World Health Organization estimates that more than 10 million people in the Americas are infected with *Trypanosoma cruzi*, the agent of Chagas' disease. This illness has been most extensively studied in Argentina, Brazil, Chile, Uruguay, and Venezuela. In the other Latin American countries involved, studies still focus primarily on the distribution and prevalence of the disease.

Leishmaniasis exists in sylvatic foci everywhere in the Americas except Chile and Cuba. Humans are accidental hosts who typically contract the infection when they begin farming virgin land, participate in military training exercises in the jungle, or work on development projects in endemic rural areas. In 1984 the number of recorded cases of all forms of the disease (cutaneous, mucocutaneous, and visceral) was relatively high in Costa Rica (2,718 cases), Peru (2,400), Nicaragua (704), and Paraguay (200). In Brazil, the Superintendency of Public Health Campaigns (SUCAM) reported a total of 4,999 and 4,359 cases of cutaneous and mucocutaneous leishmaniasis in 1983 and 1984, respectively, and 1,150 cases of visceral leishmaniasis, most of them in the northeastern region of the country, in 1984. In the Dominican Republic, 23 cases of diffuse cutaneous leishmaniasis have been reported since 1974.

Although precise data on the prevalence of schistosomiasis in the Americas are not available, estimates received from various countries point to the existence of some 10 million cases in Brazil (concentrated mainly in the northeastern part of the country), about 5,000 cases in Suriname, another 10,000 in Venezuela, and 3,000 in the Dominican Republic. A few cases have been detected in Montserrat and Antigua; the disease is declining in Puerto Rico and Saint Lucia.

In 1980 a new pocket of onchocerciasis was discovered in Ecuador that involved an estimated 2,000 infected persons. The numbers of cases in other countries have been estimated as follows: Brazil, 1,500; Colombia, 100; Guatemala, 35,000; Mexico, 20,000; and Venezuela, 47,000.

Bancroft's filariasis, caused by *Wuchereria bancrofti,* occurs in some areas of several Latin American and Caribbean countries, but the real incidence of this disease is not yet known.

Parasitic infections with helminths and intestinal protozoa are highly prevalent throughout the Region, chiefly among children in poor areas—where enteroparasitoses occur side by side with malnutrition and other infectious diseases.

Source: Pan American Health Organization, Tropical Diseases Program, HPD/HPT.

EXTERNAL SUPPORT FOR WATER SUPPLY AND SANITATION IN THE AMERICAS: CURRENT RESOURCES AND FUTURE PLANS

Progress from 1961 to 1980

In 1961, the Governments of Latin America and the Caribbean committed themselves under the Charter of Punta del Este to providing water and sewerage services to 70% of the urban population and 50% of the rural population by 1971. The urban program was most satisfactory. As Figure 1 shows, by the end of 1971 more than 78% of all urban dwellers benefited from water services, and 38% had access to public sewerage. Coverage provided by rural water services doubled by 1971, but they still only reached 24% of the total rural population; and little headway was made with rural sanitation.

In 1972 the Ministers of Health of the Americas established new goals for the 1970s. In essence, these were (a) to provide water through house connections for 80% of the urban population and sewerage for 70%; and (b) to extend water supply and sewerage or excreta disposal services to 50% of the rural population.

Information provided by 26 countries as of 31 December 1980 (Figure 1) indicates that the progress made in the 1970s was considerable. As of 1980 these 26 countries had a total population of 344 million people, or approximately 97% of the population of Latin America and the Caribbean.

In all, water was being provided to 84% of the urban dwellers in these countries through house connections or public standpipes at the end of 1980, and sewerage or basic sanitation services were being provided to 59%. About 40% of the rural population had easy access to drinking-water, and 11% had basic sanitation services.

It should be noted that while overall coverage increased considerably, aside from the urban water supply goal the other targets established were not reached. Also, there were considerable dif-