PAN AMERICAN HEALTH ORGANIZATION WORLD HEALTH ORGANIZATION

*XXIV PAN AMERICAN SANITARY CONFERENCE*

*XLVI REGIONAL COMMITTEE MEETING*

WASHINGTON, D.C.
SEPTEMBER 1994

CSP24/INF/2 (Eng.)
30 August 1994
ORIGINAL: SPANISH

# STATUS OF MALARIA PROGRAMS IN THE AMERICAS XLII REPORT

## CONTENTS

## TABLES

## FIGURES



## COUNTRIES WITH ACTIVE MALARIA CONTROL PROGRAMS

# I. STATUS OF MALARIA IN THE AMERICAS

In 1993 the population of the Region of the Americas was estimated at 739.5 million, 39.2% of which lived in areas where ecological conditions were propitious for the transmission of malaria (Tables 1 and 2). During the year, 982,462 malaria cases were diagnosed and confirmed microscopically, which signified a decline in morbidity among the potentially exposed population (290 million), from 409.5 cases per 100,000 population in 1992 to 339.2 cases per 100,000 population in 1993. This decline marks a reversal in the epidemiological trend observed between 1974 and 1991, when malaria rates rose steadily (Table 3).

In the 28 countries and territories with no evidence of transmission (Table 2), approximately 84.8 million people live in areas that are ecologically conducive to malaria transmission. In seven of those countries, a total of 1,496 cases of malaria were reported, most of them imported (see Table 4).

The 21 countries with evidence of malaria transmission have a total population of approximately 417.0 million people, of whom 204.8 million (49.1% of the total) live in areas that are ecologically propitious for transmission. Nevertheless, not all of this group faces the same risk of becoming ill or dying of malaria. According to information reported by the countries (Tables 1 and 2) only 46.3 million people (16.0%) live in areas considered to be at high risk of transmission, while approximately 41.0 million live in areas with a moderate risk of transmission.

The criteria for classification of risk levels used in each country are similar but not necessarily identical. They are generally based on the annual parasite index (API) of each *municipio*/canton/district of each country. A detailed description of the situation in each country is presented in Section VII.

The steady decline in the numbers of people exposed to high risk of transmission since 1991 (Figure 1) reflects the changes in the methodology for conducting epidemiological analysis adopted by the countries of the Region following the meeting of directors-general and directors of malaria programs held in Bogotá, Colombia in 1987. At this meeting the countries agreed to reorient their malaria control programs, using epidemiology to identify the highest-risk areas and concentrating the bulk of the resources allocated for prevention and control on those areas. In addition, the countries agreed that available resources should be channeled into: (1) delivery of malaria diagnosis and treatment services, (2) gathering of epidemiological information by political-administrative area (*municipio*/canton/district), using ecological, social, and economic indicators that would make it possible to obtain an accurate picture of the situation in every locality.

A substantial increase in P. falciparum infections was noted during the period in Belize, Bolivia, Ecuador, and Peru. In general, the risk of acquiring any malarious infection also increased in those countries, as is shown in Table 5. Figure 2 indicates the evolution of annual parasite indexes over the last four years.

The total number of cases caused by P. falciparum in the Region declined from 408,323 in 1992 to 287,638 in 1993. However, this positive trend was not uniform in all the countries or regions. In eight countries, the number of P. falciparum infections rose (Belize, Bolivia, the Dominican Republic, Ecuador, French Guiana, Guatemala, Mexico, and Peru), while in Brazil, Colombia, Costa Rica, El Salvador, Guyana, Haiti, Honduras, Nicaragua, Panama, Paraguay, and Venezuela, the number of P. falciparum infections in relation to 1992 declined (Table 5).

An examination of the trend of the annual P. falciparum and P. vivax indexes (AFI and AVI, see Figure 3) reveals that the risk of contracting severe malaria is higher in Guyana and French Guiana, decreasing risk for Brazil, and the Andean Area.

## II. EPIDEMIOLOGICAL SITUATION

The lack of change or only slight improvement registered in malaria rates in the Region of the Americas is directly related to the phenomenon of continual population movements (migratory or circulatory) in undeveloped areas in which little protection for the population exists. Once settlements become established in an area and the jungle environment is modified for productive purposes, a level of social development compatible with the control of malaria transmission is rapidly achieved (2-3 years).

The total number of malaria cases reported in the Americas during 1993 was 983,536. As can be seen in Table 6 and in Figure 4, Brazil had the largest proportion of cases (47.40%) followed by the Andean Area (31.67%) and the subregion comprising Central America, Belize, and Panama (15.09%).

The epidemiological information system, part of the data for which is obtained from microscopic examination of blood slides, has not reflected the expected change of priority in the allocation of resources to priority areas in the countries. Table 7 reveals that a total of 8,355,554 blood slide examinations were performed. In 18 of the countries from which information was received (excluding Brazil and Peru), a total of 5,645,525 blood slides were examined, of which 42.3% were examined by national program personnel, 30.4% by voluntary collaborators in the communities, and 27.3% by general health services.

Unfortunately, the diagnostic yield of the resources allocated for active surveillance has been very low. Although national programs, through active case-finding, obtained and examined 42.3% of all the blood samples taken (2.4 million), these samples accounted for only 10.0% of the cases diagnosed microscopically. General health services and voluntary collaborators examined 27.3% and 30.4%, respectively, of all the blood slides obtained, but their diagnostic yield was significantly higher, given that these samples accounted for 38.5% and 43.5% of all the microscopically diagnosed cases in the Region. The diagnostic efficiency of active case-finding is 10 times lower (SPR = 1.77%) than that of the general health services (10.5%) and voluntary collaborators (10.6%).

The traditional activities of control programs--active case-finding, microscopic diagnosis, treatment of cases, epidemiological surveys of cases--which are still used by some specialized programs, were designed with a view to consolidating the eradication of malaria at a time (1940-1950) when it was considered possible to eliminate the diseases from the Neotropics without improving social and living conditions. Emphasis was placed on interrupting transmission through the vector-parasite relationship. These actions did not take into account the behavior and dynamics of human populations or the effect of technological advances in transportation, which facilitated the creation of favorable conditions for transmission and brought about a host of social and ecological changes, which were not taken into consideration in the traditional eradication strategy, either.

In addition, the insistence of malaria control programs on meeting the demand for detection, diagnosis, and treatment of cases diminished their ability to play a priority role in advising medical services on the correct clinical management of malaria cases at the various levels of general health care system. Moreover, the programs relinquished their responsibility to guide intersectoral social and infrastructure development activities in the countries so as to prevent epidemics or the reestablishment of endemic malaria.

Hence, national malaria control programs have had little success in detecting and treating cases in a timely manner but, more important, they have not succeeded in detecting and predicting malaria epidemics (for example, in Bolivia, Nicaragua, and Peru in 1993). General health services have generally been better prepared to carry out such detection, utilizing control strategies that have been tailored to the local situation.

## III. THE NEW GLOBAL MALARIA CONTROL STRATEGY

The countries of the Region are adopting the new Global Malaria Control Strategy, which proposes a change of emphasis through the integration of all malaria control activities into the activities of general health services, changing emphasis from basically vector control to prompt diagnosis and immediate treatment of malaria cases. Malaria prevention and control programs in the Region are making progress in early detection and immediate treatment of cases, but the integration of services continues to be a slow process for which the necessary specialized services support has been lacking.

Table 8 shows the various malaria drugs used during 1993. In the 20 countries with malaria programs from which information was received, a total of 4,638,653 complete malaria treatments were administered (Tables 9 and 9-A). This number is 4.7 times more than the number of microscopically positive cases reported.

The administration of 4.6 million complete treatments for 982,040 confirmed cases indicates that immediate treatment of cases is already a routine activity in the field. However, these treatments are not accompanied by a record of clinically diagnosed cases, nor are they

considered treatment of suspected cases. This fact should be borne in mind in the ongoing process of reorienting national programs. Focusing of the availability of complete treatment is essential in order to achieve a reduction in malaria morbidity.

This fact has been corroborated by various trials carried out in the Region in the last five years. Employing the baseline data used for the evaluation of the SPf66 vaccine, a controlled study was conducted to assess the protective effectiveness of the vaccine by comparing the annual parasite index (API) in the control population (treated with a placebo) before and after the intervention. The only intervention in the community studied was the availability of early diagnosis and immediate treatment. Of the six controlled trials carried out, in five of the six populations studied, the reduction in the API was significant, as indicated by the following data.

**ANNUAL P. FALCIPARUM INDEX (AFI)**

Before and after the implementation of a system of epidemiological surveillance and immediate treatment of positive cases in communities in which the protective effectiveness of the immunizing agent SPf.66 was evaluated (observation period 12-18 months)

| AUTHOR | LOCALE-COUNTRY | Initial AFI | Final AFI | NUMBER OF INDIVIDUALS OBSERVED |
|---|---|---|---|---|
| Noya(1) | Majadas, VEN | 100/1,000 | 46/1,000 | 3526 |
| Noya(*) | Aripao, VEN | 63/1,000 | 0/1,000 | 685 |
| Seimpertegui(2) | LaT, ECU | 120/1,000 | 60/1,000 | 624 |
| Valero(3) | La Tola, COL | 309/1,000 | 335/1,000 | 1548 |
| Patarroyo(*) | Rio Rosario, COL | 120/1,000 | 60/1,000 | 1275 |
| Restrepo(*) | Vigia del Fuerte, COL | 120/1,000 | 15/1,000 | 1280 |

(1) *J. Infec. Diseases* (in press).
(2) *Vaccine* 1994; 12(4).
(3) *Lancet* 1993: 341: 705-710.
(*) Personal communication

These data comes from areas considered to be at high risk for transmission of P. falciparum (AFI > 60 per 1,000 exposed population) and were obtained from population groups existing in the Region. Other characteristics of these areas were: hard-to-reach localities; low levels of social protection, education, and industrialization; subsistence economic production; and low levels of natural resource exploitation. Despite the foregoing, it was found that intervention, epidemiological surveillance, and treatment substantially reduced the risk level within a short period of time.

Because the specialized services have developed a great ability for making direct contact with the most remote community groups in rural areas--in contrast with the limited capacity of the general health services, with their passive nature for providing care--the integration of specialized services into the local programming of the general health services has obvious advantages.

Such integration can help to reduce or prevent mortality from malaria, as was demonstrated in Antioquia, Colombia, where a sectional plan for malaria control was implemented. Training in early diagnosis and immediate treatment was provided at 164 local health posts (*Bol. Epid. de Antioquia*, Vol. 15 (3), 1990). The local health posts at which training and equipment were provided examined nearly 150,000 slides per year, increasing the annual blood examination rate (ABER) from 17% to 82% in the areas classified as high-risk (Magdalena Medio, Bajo Cauca, Urabá, and Atrato Medio) in the department of Antioquia, Colombia. With the increase in coverage and more accurate identification of the highest-risk areas, the sectional plan produced the expected outcome: a rise in the annual parasite index (API), from 38 to 87 per 1,000 by the end of five years of operation throughout the Department of Antioquia, owing to increased precision in the detection of cases. However, the reduction in hospital case-fatality rates and specific mortality from malaria have been the indicators that best demonstrated the success of the sectional plan. The case-fatality rate declined from 95 per 100,000 hospitalized malaria cases to 2 per 100,000 during the five-year period. At the same time, specific mortality from malaria declined from 34 per 100,000 population to 2 per 100,000 population by the fifth year after the Sectional Plan was implemented.

Through this first step in confronting an emergency situation, high case-fatality rates and malaria mortality were substantially reduced by lessening the interval between detection of a suspected case and appropriate treatment of malaria. Nevertheless, this dramatic change in case-fatality and mortality rates was not accompanied by a reduction in morbidity, as measured by the API. The 164 local health posts in the Department of Antioquia are traditional health care facilities, which provide services only to the segment of the population that actually comes to the health post. They do not engage in active intervention in the general community. As a result, their actions cannot be expected to have much impact on the transmission of malaria.

Based on the information presented in the preceding table, it can be stated that immediate care reduces specific morbidity from malaria. For this reason, an effort is being made to ensure the presence of personnel and voluntary collaborators from the specialized malaria service in areas that lack local health posts.

Other issues that must be addressed are the integration of services and the reduction of the persistent unmet demand for care in the Region. In 1993 the specialized services and their voluntary collaborators had contact with a total of 4,104,939 individuals who were suffering or had recently suffered from a febrile illness. Of these, 225,365 (5.5%) were found to be microscopically positive for malaria and were treated accordingly. However, 94.5% (3,879,572) of the febrile individuals who made contact with the specialized service and were found to be negative never had their condition adequately diagnosed or treated by the lack of a functioning

medical referral scheme. Table 7 shows that the general health services carried out 1,540,588 examinations of febrile individuals, of whom 10.5% (162,091) were microscopically determined to have malaria. Nevertheless, the remaining 89.5% (1,378,497) of the individuals, who did not have malaria, did receive a diagnosis and were treated for the febrile illness that had caused them to seek attention from the general health services.

The situations described above coupled with the information presented in Tables 9 and 9-A, which indicate the availability of drugs for treatment of malaria, point up the urgent need to enhance the quality of the distribution of therapeutic resources. This aspect of malaria control would also be improved through functional and programmatic integration of the services.

The geographical areas at risk have been identified through macro-epidemiological stratification. The specialized programs should now resume their role of providing guidance for the general health services and through the integration of services increase this basic health care coverage, taking advantage of their greater ability to reach remote population groups, bringing them into the reach of the local health services.

The identification of the highest-risk areas, shown in Table 10, makes it possible to determine how priorities should be set in all the countries.

The approaches proposed under the new Global Malaria Control Strategy are being put into practice in the Region through: (a) an ongoing process of stratification of foci of transmission (Table 10), increasing the capacity for analysis and decision-making of local health services; (b) integration of the specialized services' capacity to reach a larger segment of the population through a referral and back-referral system with the local health system; (c) case definition in accordance with local clinical and parasitological characteristics; and (d) implementation, monitoring, and supervision of the effectiveness of the local treatment policy. Through these measures it should be possible to decrease the unmet demand of the population and at the same time increase the local health services' ability to respond to a growing need for health care of greater complexity. This, in turn, will enable the local services to expand their coverage, while improving the quality of care in response to the population's needs.

Residual insecticides continue to be used by malaria control programs to combat the disease. Tables 11 and 12 indicate the number of sprayings carried out during the year and the amount of the various insecticides used.

Table 1

## POPULATION OF MALARIOUS AREAS OF THE AMERICAS, 1958–1993
(in thousands)

| Year | Inhabitants in originally malarious areas | | | | | total Population |
|---|---|---|---|---|---|---|
| | Risk Malaria Transmission | | | Prep. phase or program not started | Total | |
| | Low | Moderate | High | | | |
| 1958 | 52,866 | 1,996 | 46,196 | 34,351 | 135,409 | 387,276 |
| 1959 | 52,856 | 9,349 | 56,292 | 27,423 | 145,920 | 394,606 |
| 1960 | 54,363 | 10,101 | 53,400 | 25,722 | 143,586 | 400,500 |
| 1961 | 56,979 | 17,879 | 39,021 | 33,413 | 147,292 | 416,008 |
| 1962 | 59,299 | 30,424 | 49,276 | 14,743 | 153,742 | 427,919 |
| 1963 | 56,546 | 33,901 | 31,910 | 29,664 | 152,021 | 434,950 |
| 1964 | 57,414 | 32,277 | 34,426 | 34,525 | 158,642 | 447,666 |
| 1965 | 60,975 | 34,731 | 38,575 | 12,108 | 146,389 | 455,527 |
| 1966 | 69,760 | 36,128 | 43,369 | 17,212 | 166,469 | 463,649 |
| 1967 | 70,720 | 41,581 | 44,766 | 12,834 | 169,901 | 474,868 |
| 1968 | 72,441 | 45,812 | 56,234 | 217 | 174,704 | 484,664 |
| 1969 | 72,757 | 46,987 | 56,375 | 206 | 176,325 | 491,483 |
| 1970 | 80,770 | 40,518 | 59,807 | 162 | 181,257 | 505,819 |
| 1971 | 81,306 | 43,644 | 60,396 | 146 | 185,492 | 513,544 |
| 1972 | 86,634 | 42,016 | 61,645 | 153 | 190,448 | 524,774 |
| 1973 | 87,969 | 45,535 | 61,915 | 109 | 195,528 | 535,109 |
| 1974 | 91,527 | 46,042 | 63,130 | 56 | 200,755 | 544,865 |
| 1975 | 99,405 | 44,633 | 61,834 | – | 205,872 | 555,676 |
| 1976 | 101,068 | 48,813 | 61,205 | – | 211,086 | 565,249 |
| 1977 | 104,567 | 50,610 | 60,373 | – | 215,550 | 576,942 |
| 1978 | 105,611 | 59,734 | 54,808 | – | 220,153 | 587,704 |
| 1979 | 113,092 | 57,280 | 55,989 | – | 226,361 | 600,263 |
| 1980 | 114,620 | 58,087 | 58,659 | – | 231,366 | 610,021 |
| 1981 | 117,042 | 59,962 | 62,256 | – | 239,260 | 627,375 |
| 1982 | 118,338 | 62,028 | 64,941 | – | 245,307 | 635,954 |
| 1983 | 119,175 | 66,970 | 63,182 | – | 249,327 | 639,212 |
| 1984 | 124,408 | 68,372 | 64,496 | – | 257,276 | 659,535 |
| 1985 | 124,086 | 67,092 | 68,659 | – | 259,837 | 665,777 |
| 1986 | 116,143 | 43,717 | 103,500 | – | 263,371 | 662,983 |
| 1987 | 117,310 | 42,334 | 108,633 | – | 268,277 | 672,384 |
| 1988 | 124,250 | 46,048 | 109,927 | – | 280,225 | 703,358 |
| 1989 | 126,666 | 45,309 | 113,419 | – | 285,394 | 715,994 |
| 1990 | 120,980 | 47,481 | 110,139 | – | 278,600 | 698,199 |
| 1991 | 143,239 | 66,504 | 71,381 | – | 281,124 | 721,256 |
| 1992 | 134,089 | 103,885 | 51,974 | – | 289,948 | 725,564 |
| 1993 | 202,329 | 41,030 | 46,225 | – | 289,584 | 739,561 |

Jun/23/94

Table 2

STATUS OF MALARIA PROGRAMS IN THE AMERICAS, 1993

| Countries (by geographical sub-regions) | Total population | Population of originally malarious areas | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Total malarious areas | | Areas under risk malaria transmission | | | | | |
| | | | | low risk | | moderate risk | | high risk | |
| | a) | Total | % | Total | % | Total | % | Total | % |
| Anguila | 8 b) | – | – | – | – | – | – | – | – |
| Antigua | 77 b) | – | – | – | – | – | – | – | – |
| Antillas Neerlandesas | 195 c) | – | – | – | – | – | – | – | – |
| Bahamas | 268 d) | – | – | – | – | – | – | – | – |
| Barbados | 260 d) | – | – | – | – | – | – | – | – |
| Bermuda | 58 c) | – | – | – | – | – | – | – | – |
| Canada | 27,755 d) | – | – | – | – | – | – | – | – |
| Cuba | 10,922 | 3,717 e) | 34.03 | 3,717 f) | 100.00 | – | – | – | – |
| Chile | 13,200 | 295 | 2.23 | 295 | 100.00 | – | – | – | – |
| Dominica | 71 | 18 e) | 25.35 | 18 f) | 100.00 | – | – | – | – |
| Estados Unidos de Amer. | 257,840 d) | 73,020 e) | 28.32 | 73,020 f) | 100.00 | – | – | – | – |
| Grenada | 94 b) | 34 e) | 36.17 | 34 f) | 100.00 | – | – | – | – |
| Guadalupe | 405 d) | 396 e) | 97.78 | 396 f) | 100.00 | – | – | – | – |
| Islas Caiman | 27 b) | – | – | – | – | – | – | – | – |
| Islas Malvinas | 2 b) | – | – | – | – | – | – | – | – |
| Islas Turcas y Caicos | 10 b) | – | – | – | – | – | – | – | – |
| Islas Virgenes (EUA) | 120 b) | 102 | 85.00 | 102 f) | 100.00 | – | – | – | – |
| Islas Virgenes (R. Unido) | 13 b) | – | – | – | – | – | – | – | – |
| Jamaica | 2,450 g) | 2,083 e) | 85.02 | 2,083 f) | 100.00 | – | – | – | – |
| Martinica | 371 d) | 224 e) | 60.38 | 224 f) | 100.00 | – | – | – | – |
| Montserrat | 11 b) | – | – | – | – | – | – | – | – |
| Puerto Rico | 3,626 d) | 3,626 e) | 100.00 | 3,626 f) | 100.00 | – | – | – | – |
| San Cristobal-Nevis | 44 b) | – | – | – | – | – | – | – | – |
| San Pedro y Miquelon | 6 c) | – | – | – | – | – | – | – | – |
| San Vicente | 120 b) | – | – | – | – | – | – | – | – |
| Santa Lucia | 140 | 122 e) | 87.14 | 122 f) | 100.00 | – | – | – | – |
| Trinidad y Tabago | 1,234 g) | 1,178 e) | 95.46 | 1,178 f) | 100.00 | – | – | – | – |
| Uruguay | 3,149 c) | – | – | – | – | – | – | – | – |
| México | 85,928 | 44,413 | 51.69 | 13,290 | 29.92 | 14,604 | 32.88 | 16,519 | 37.19 |
| Belize | 205 | 205 | 100.00 | – | – | – | – | 205 | 100.00 |
| Costa Rica | 3,233 | 1,010 | 31.24 | 353 | 34.95 | 503 | 49.80 | 154 | 15.25 |
| El Salvador | 5,457 | 4,951 | 90.73 | 2,884 | 58.25 | 834 | 16.85 | 1,233 | 24.90 |
| Guatemala | 10,029 | 3,500 | 34.90 | 1,034 | 29.54 | 1,026 | 29.31 | 1,440 | 41.14 |
| Honduras | 5,206 | 4,452 | 85.52 | 1,079 | 24.24 | 480 | 10.78 | 2,893 | 64.98 |
| Nicaragua | 4,252 | 4,252 | 100.00 | 741 | 17.43 | 677 | 15.92 | 2,834 | 66.65 |
| Panama | 2,428 | 1,763 | 72.61 | 1,459 | 82.76 | 304 | 17.24 | – | – |
| Haiti | 6,764 | 5,411 | 80.00 | – | – | – | – | 5,411 | 100.00 |
| Dominican Rep. | 7,715 | 7,550 | 97.86 | 7,394 | 97.93 | 53 | 0.70 | 103 | 1.36 |
| French Guiana | 115 | 45 | 39.13 | 34 | 75.56 | 2 | 4.44 | 9 | 20.00 |
| Guyana | 717 | 717 | 100.00 | 609 | 84.94 | 11 | 1.53 | 97 | 13.53 |
| Suriname | 446 d) | 321 e) | 71.97 | 284 | 88.47 | 6 | 1.87 | 31 | 9.66 |
| Brazil | 152,669 | 75,314 | 49.33 | 56,832 | 75.46 | 13,081 | 17.37 | 5,401 | 7.17 |
| Bolivia | 6,538 | 3,111 | 47.58 | 1,082 | 34.78 | 748 | 24.04 | 1,281 | 41.18 |
| Colombia | 34,838 | 24,161 | 69.35 | 18,915 | 78.29 | 1,905 | 7.88 | 3,341 | 13.83 |
| Ecuador | 10,454 | 5,999 | 57.38 | 3,453 | 57.56 | 878 | 14.64 | 1,668 | 27.80 |
| Peru | 22,128 | 7,643 | 34.54 | – | – | 5,186 | 67.85 | 2,457 | 32.15 |
| Venezuela | 20,712 | 719 | 3.47 | 342 | 47.57 | 252 | 35.05 | 125 | 17.39 |
| Argentina | 32,608 | 5,611 | 17.21 | 5,366 | 95.63 | – | – | 245 | 4.37 |
| Paraguay | 4,643 d) | 3,621 | 77.99 | 2,363 | 65.26 | 480 | 13.26 | 778 | 21.49 |
| Total | 739,561 | 289,584 | 39.16 | 202,329 | 69.87 | 41,030 | 14.17 | 46,225 | 15.96 |

a)Population in thousands. b) Provisional population of 1992, figures estimated by PAHO/Technical Information System.
c) Provisional population of 1990, estimated by PAHO/Technical Information System.
d) Provisional population of 1993 based on information from "UN/World Population prospects – UN Revision 1992"
e) Estimated figure based on the total population figure.
f)Population living in areas where malaria eradication has been certified by PAHO/WHO. g) Population based on 1992 estimates by the country.

Table 3

## MALARIA MORBIDITY IN THE AMERICAS
## 1958 – 1993

| YEAR | Population (in thousands) | | Blood slides | | | Morbidity per 100,000 inhabitants | |
|---|---|---|---|---|---|---|---|
| | Total countries | Malarious areas | Examined | Positives | Per-cent. | Total countries | Malarious areas |
| 1958 | 387,276 | 135,409 | 1,716,103 | 56,705 | 3.30 | 14.64 | 41.88 |
| 1959 | 394,606 | 145,920 | 2,749,117 | 75,612 | 2.75 | 19.16 | 51.82 |
| 1960 | 400,500 | 143,586 | 3,955,149 | 79,998 | 2.02 | 19.97 | 55.71 |
| 1961 | 416,008 | 147,292 | 5,341,004 | 99,639 | 1.87 | 23.95 | 67.65 |
| 1962 | 427,919 | 153,742 | 7,221,367 | 177,089 | 2.45 | 41.38 | 115.19 |
| 1963 | 434,950 | 152,021 | 7,903,156 | 227,026 | 2.87 | 52.20 | 149.34 |
| 1964 | 447,666 | 158,642 | 8,156,290 | 254,572 | 3.12 | 56.87 | 160.47 |
| 1965 | 455,527 | 146,389 | 9,069,950 | 241,462 | 2.66 | 53.01 | 164.95 |
| 1966 | 463,649 | 166,469 | 11,797,983 | 333,280 | 2.82 | 71.88 | 200.21 |
| 1967 | 474,868 | 169,901 | 11,609,228 | 369,388 | 3.18 | 77.79 | 217.41 |
| 1968 | 484,664 | 174,704 | 12,522,696 | 282,773 | 2.26 | 58.34 | 161.86 |
| 1969 | 491,483 | 176,325 | 12,179,190 | 323,782 | 2.66 | 65.88 | 183.63 |
| 1970 | 505,819 | 181,257 | 9,925,162 | 344,170 | 3.47 | 68.04 | 189.88 |
| 1971 | 513,544 | 185,492 | 10,134,212 | 338,416 | 3.34 | 65.90 | 182.44 |
| 1972 | 524,774 | 190,448 | 9,695,953 | 284,813 | 2.94 | 54.27 | 149.55 |
| 1973 | 535,109 | 195,528 | 9,400,682 | 280,276 | 2.98 | 52.38 | 143.34 |
| 1974 | 544,865 | 200,755 | 8,997,318 | 269,003 | 2.99 | 49.37 | 134.00 |
| 1975 | 555,676 | 205,872 | 9,276,878 | 356,692 | 3.84 | 64.19 | 173.26 |
| 1976 | 565,249 | 211,086 | 9,352,775 | 379,364 | 4.06 | 67.11 | 179.72 |
| 1977 | 576,942 | 215,550 | 9,274,480 | 398,925 | 4.30 | 69.14 | 185.07 |
| 1978 | 587,704 | 220,153 | 9,493,751 | 468,923 | 4.94 | 79.79 | 213.00 |
| 1979 | 600,263 | 226,361 | 8,630,653 | 515,271 | 5.97 | 84.47 | 227.63 |
| 1980 | 610,021 | 231,366 | 8,943,369 | 602,836 | 6.74 | 98.82 | 260.56 |
| 1981 | 627,375 | 239,260 | 9,100,529 | 629,629 | 6.92 | 100.36 | 263.16 |
| 1982 | 635,954 | 245,307 | 8,826,418 | 715,177 | 8.10 | 112.46 | 291.54 |
| 1983 | 639,212 | 249,327 | 9,113,611 | 830,700 | 9.11 | 129.96 | 333.18 |
| 1984 | 659,535 | 257,276 | 9,422,827 | 931,356 | 9.88 | 141.21 | 362.01 |
| 1985 | 665,777 | 259,838 | 9,485,203 | 910,917 | 9.60 | 136.82 | 350.57 |
| 1986 | 662,983 | 263,371 | 10,070,388 | 950,570 | 9.44 | 143.38 | 360.92 |
| 1987 a) | 672,941 | 268,217 | 9,764,285 | 1,018,864 | 10.43 | 151.40 | 379.87 |
| 1988 a) | 703,370 | 280,758 | 10,092,472 | 1,120,040 | 11.10 | 159.24 | 398.93 |
| 1989 a) | 715,994 | 285,394 | 9,638,847 | 1,113,764 | 11.55 | 155.55 | 390.25 |
| 1990 a) | 698,741 | 278,600 | 9,459,912 | 1,045,808 | 11.06 | 149.67 | 375.38 |
| 1991 a) | 721,256 | 281,124 | 9,732,930 | 1,230,671 | 12.64 | 170.63 | 437.77 |
| 1992 a) | 725,564 | 289,948 | 9,373,323 | 1,187,316 | 12.67 | 163.64 | 409.49 |
| 1993 a) | 739,561 | 289,584 | 9,633,125 | 983,536 | 10.21 | 132.99 | 339.64 |

a) Information of some countries is provisional and incomplete. Jun/28/94

TABLE 4

BLOOD SLIDES EXAMINED AND WITH PLASMODIA, BY GEOGRAPHICAL SUB-REGIONS ACCORDING TO LEVELS OF TRANSMISSION, 1993

| Countries (by geographic sub-region) * | TOTAL | | Low transmission | | Transmission controlled | | High risk transmission | | Non-malarious areas | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Blood slides examined | Positives | Blood slides examined | Positives | Blood slides examined | Positives | Blood slides examin. | Positivas | Blood slides examin. | Positives |
| Canada | 394 | 394 | – | – | – | – | – | – | 394 | 394 |
| Cuba | 276,085 | 10 | 276,085 | 10 | – | – | – | – | – | – |
| Chile | 2 | 2 | – | – | – | – | – | – | 2 | 2 |
| Dominica | 0 | 0 | 0 | 0 | – | – | – | – | – | – |
| Estados Unidos | 1,074 | 1,074 | – | – | – | – | – | – | 1,074 | 1,074 |
| Grenada | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Guadeloupe | 2 | 2 | 2 | 2 | – | – | – | – | – | – |
| Jamaica | 6 | 6 | 6 | 6 | – | – | – | – | – | – |
| Martinica | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Puerto Rico | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Lucia | – | – | – | – | – | – | – | – | – | – |
| Trinidad y Tabago | 8 | 8 | 8 | 8 | – | – | – | – | – | – |
| Virgin Islands. USA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mexico | 1,816,340 | 15,793 | 315,050 | 164 | 418,918 | 1,963 | 1,082,372 | 13,666 | – | – |
| Belize | 47,742 | 8,586 | – | – | 20,622 | 2,576 | 27,102 | 6,010 | ... | ... |
| Costa Rica | 140,435 | 5,033 | 9,522 | 358 | 74,525 | 1,571 | 56,330 | 3,046 | 58 | 58 |
| El Salvador | 172,624 | 3,887 | 12,460 | 191 | 29,973 | 511 | 123,730 | 3,057 | 6,461 | 128 |
| Guatemala | 276,343 | 41,868 | 22,109 | 3,350 | 38,688 | 5,861 | 215,546 | 32,657 | – | – |
| Honduras | 293,740 | 44,513 | 82,946 | 1,192 | 15,350 | 2,952 | 195,444 | 40,369 | – | – |
| Nicaragua a) | 429,134 | 44,037 | 51,529 | 856 | 105,867 | 10,633 | 271,738 | 32,548 | – | – |
| Panama | 278,557 | 481 | 93,257 | 36 | 185,300 | 445 | – | – | – | – |
| Haiti | 10,045 | 853 | – | – | – | – | 10,045 | 853 | – | – |
| Repub. Dominicana | 290,073 | 987 | 249,082 | 786 | 11,263 | 47 | 29,728 | 154 | – | – |
| Guay. Francesa | 49,993 | 3,974 | 6,844 | 192 | 3,188 | 127 | 29,308 | 3,295 | 10,653 | 360 |
| Guyana | 172,469 | 33,172 | 20,492 | 4,545 | 6,784 | 1,096 | 145,193 | 27,531 | – | – |
| Suriname | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Brasil b) | 2,551,704 | 466,190 | 603,774 | 3,910 | 591,906 | 68,825 | 1,355,154 | 393,153 | 870 | 312 |
| Bolivia | 125,721 | 27,475 | 17,133 | 2,100 | 34,960 | 3,265 | 73,628 | 22,110 | – | – |
| Colombia | 656,632 | 129,377 | 40,577 | 2,146 | 87,232 | 7,395 | 528,823 | 119,836 | – | – |
| Ecuador | 419,590 | 46,859 | 142,330 | 6,270 | 63,302 | 6,705 | 213,958 | 33,884 | – | – |
| Peru c) | 158,325 | 95,222 | ... | ... | ... | ... | ... | ... | ... | ... |
| Venezuela | 290,483 | 12,539 | 88,347 | 2,844 | 25,428 | 850 | 87,904 | 8,520 | 88,804 | 325 |
| Argentina | 11,389 | 758 | 7 | 7 | 4,954 | 109 | 6,428 | 642 | – | – |
| Paraguay | 164,215 | 436 | 58,960 | 14 | 49,818 | 84 | 55,368 | 334 | 69 | 4 |
| TOTAL | 8,633,125 | 983,536 | 2,090,520 | 28,987 | 1,768,078 | 115,015 | 4,507,799 | 741,665 | 107,991 | 2,657 |

* Countries without malaria transmission area included in one group, not by geographic region.

... No information available.

a) NIC provis. information b) BRA prelim. information. c) PER no information

Jun/20/94

Table 5

EPIDEMIOLOGICAL SITUATION OF 21 COUNTRIES
ACTIVE MALARIA PROGRAMS, 1993

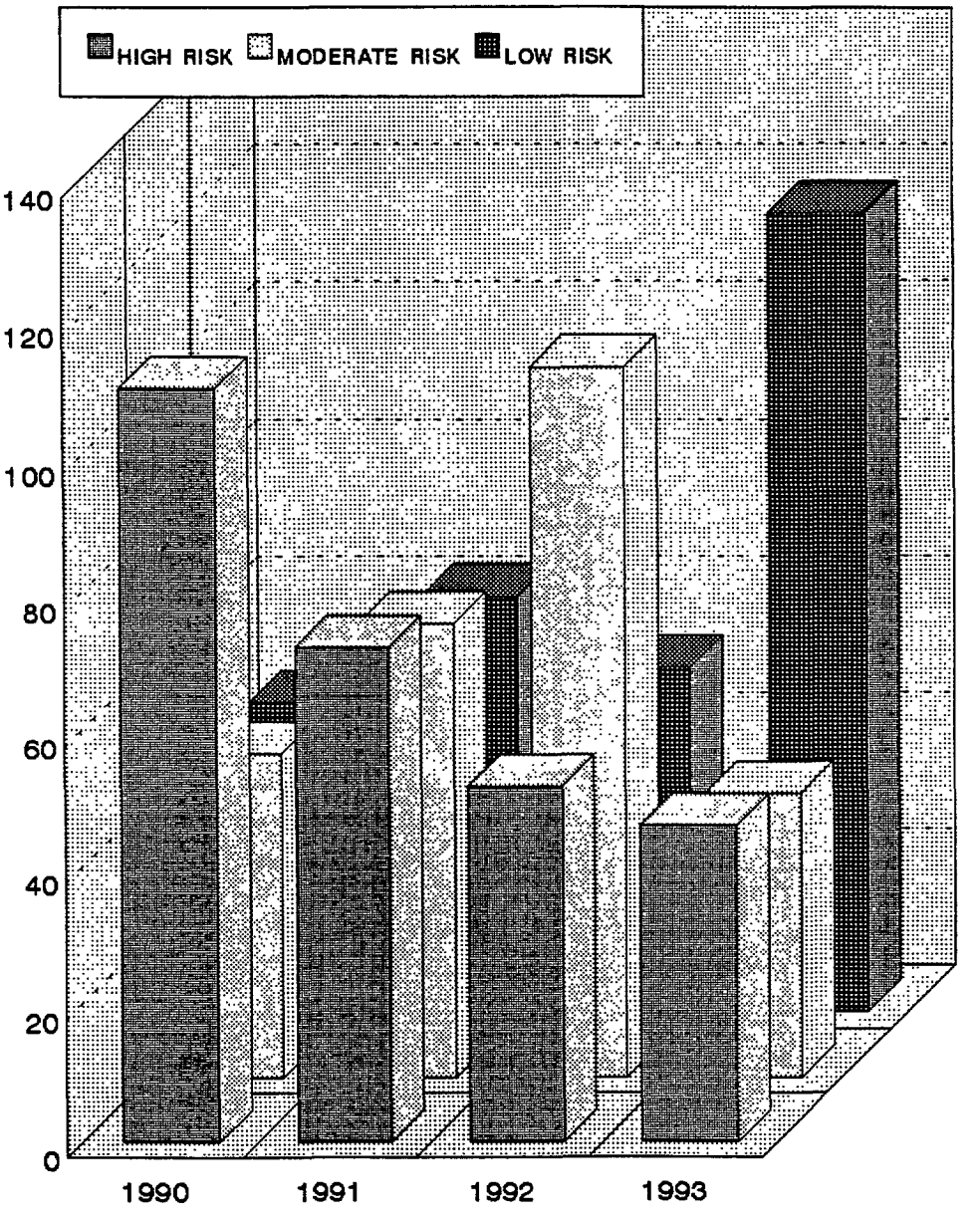
| Countries (by geographical sub-regions) | Population malarious areas (a) | Blood slides | | Specie of parasites | | | Epidemiological indicators * | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Examined | Positives | P.falc & mixed | P. vivax | P.mal. | ABER | SPR | API | % P.falc. & mixed |
| Mexico | 44,413 | 1,816,340 | 15,793 | 202 | 15,591 | – | 4.09 | 0.87 | 0.36 | 1.28 |
| Belize | 205 | 47,742 | 8,586 | 251 | 8,335 | – | 23.29 | 17.98 | 41.88 | 2.92 |
| Costa Rica | 1,010 | 140,435 | 5,033 | 8 | 5,025 | – | 13.90 | 3.58 | 4.98 | 0.16 |
| El Salvador | 4,951 | 172,624 | 3,887 | 4 | 3,883 | – | 3.49 | 2.25 | 0.79 | 0.10 |
| Guatemala | 3,500 | 276,343 | 41,868 | 2,094 | 39,774 | – | 7.90 | 15.15 | 11.96 | 5.00 |
| Honduras | 4,452 | 293,740 | 44,513 | 448 | 44,065 | – | 6.60 | 15.15 | 10.00 | 1.01 |
| Nicaragua d) | 4,252 | 429,134 | 44,037 | 2,492 | 41,545 | – | 10.09 | 10.26 | 10.36 | 5.66 |
| Panama | 1,763 | 278,557 | 481 | 20 | 461 | – | 15.80 | 0.17 | 0.27 | 4.16 |
| Sub-total | 20,133 | 1,638,575 | 148,405 | 5,317 | 143,088 | 0 | 8.14 | 9.06 | 7.37 | 3.58 |
| Haití | 5,411 | 10,045 | 853 | 853 | – | – | 0.19 | 8.49 | 0.16 | 100.00 |
| Rep. Dominicana | 7,550 | 290,073 | 987 | 983 | 4 | – | 3.84 | 0.34 | 0.13 | 99.59 |
| Sub-total | 12,961 | 300,118 | 1,840 | 1,836 | 4 | 0 | 2.32 | 0.61 | 0.14 | 99.78 |
| Guay. Francesa | 45 | 49,993 | 3,974 | 3,154 | 720 | 100 | 111.10 | 7.95 | 88.31 | 79.37 |
| Guyana | 717 | 172,469 | 33,172 | 18,091 | 15,081 | – | 24.05 | 19.23 | 46.26 | 54.54 |
| Suriname | 321 b) | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Sub-total | 1,083 | 222,462 | 37,146 | 21,245 | 15,801 | 100 | 20.54 | 16.70 | 34.30 | 57.19 |
| Brasil c) | 75,314 | 2,551,704 | 466,190 | 176,372 | 289,637 | 181 | 3.39 | 18.27 | 6.19 | 37.83 |
| Bolivia | 3,111 | 125,721 | 27,475 | 5,375 | 22,100 | – | 4.04 | 21.85 | 8.83 | 19.56 |
| Colombia | 24,161 | 656,632 | 129,377 | 42,508 | 86,816 | 53 | 2.72 | 19.70 | 5.35 | 32.86 |
| Ecuador | 5,999 | 419,590 | 46,859 | 21,646 | 25,213 | – | 6.99 | 11.17 | 7.81 | 46.19 |
| Peru | 7,643 | 158,325 | 95,222 | 9,634 | 85,504 | 84 | 2.07 | 60.14 | 12.46 | 10.12 |
| Venezuela | 719 | 290,483 | 12,539 | 3,501 | 8,988 | 50 | 40.40 | 4.32 | 17.44 | 27.92 |
| Sub-total | 41,633 | 1,650,751 | 311,472 | 82,664 | 228,621 | 187 | 3.97 | 18.87 | 7.48 | 26.54 |
| Argentina | 5,611 | 11,389 | 758 | 1 | 757 | – | 0.20 | 6.66 | 0.14 | 0.13 |
| Paraguay | 3,621 | 164,215 | 436 | 1 | 435 | – | 4.54 | 0.27 | 0.12 | 0.23 |
| Sub-total | 9,232 | 175,604 | 1,194 | 2 | 1,192 | 0 | 1.90 | 0.68 | 0.13 | 0.17 |
| TOTAL | 204,769 | 8,355,554 | 982,040 | 287,638 | 693,934 | 468 | 4.08 | 11.75 | 4.80 | 29.29 |

* ABER = Annual Blood Examination Rate. SPR = Slide Positive Rate. API = Annual Parasite Index. Jun/23/94

a) Population in thousand of inhabitants.
b) Estim. population according to the total of the country.
c) Provisional information
P. falc. = Plasmodium falciparum P. mal. = Plasmodium malariae.

## Figure 1

# POPULATION OF MALARIOUS AREAS * BY TRANSMISSION LEVEL, 1990-1993

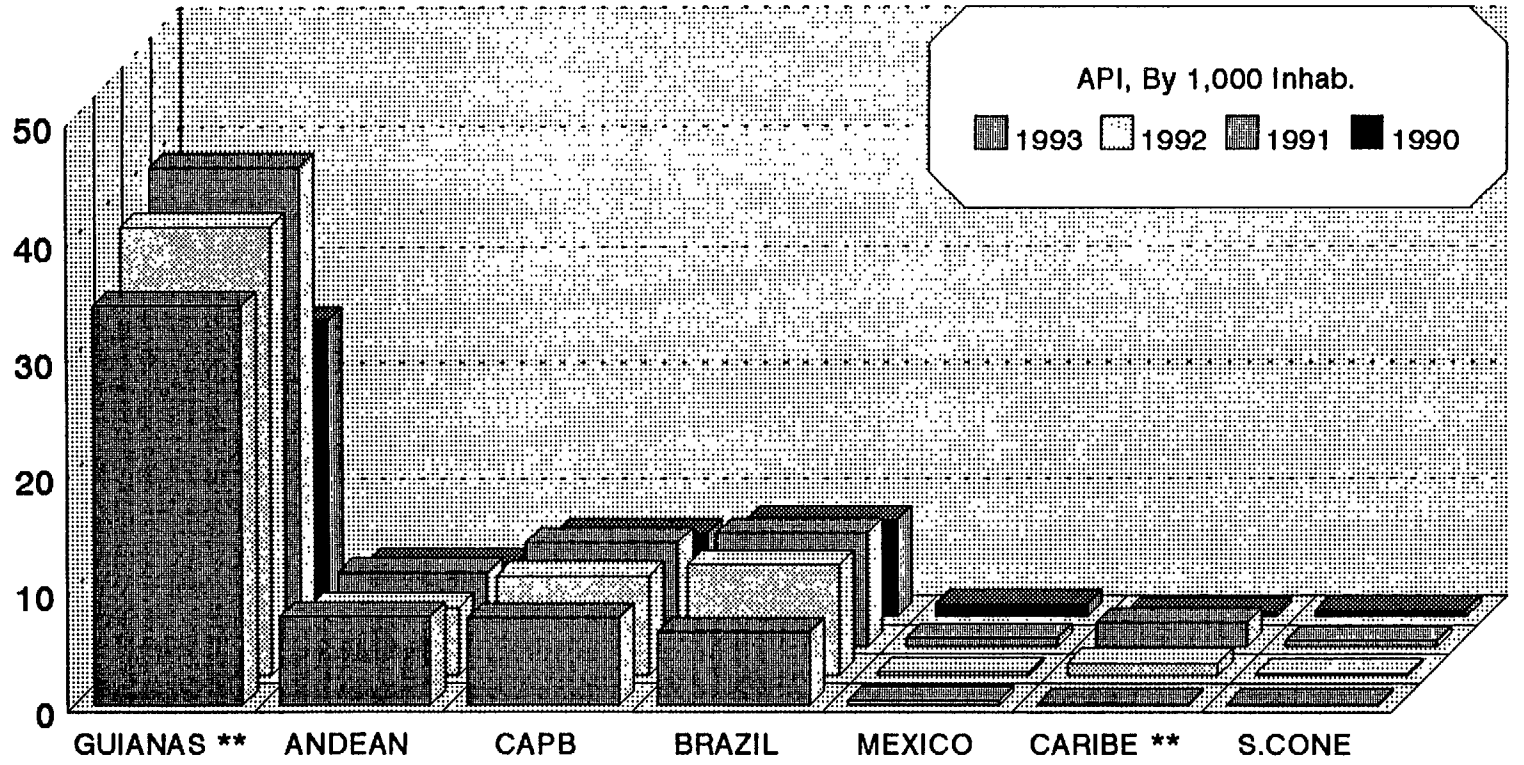



| | | | | |
|---|---|---|---|---|
| **LOW RISK** | 45.667 | 61.235 | 50.801 | 116.914 |
| **MODERATE RISK** | 47.481 | 66.504 | 103.885 | 41.631 |
| **HIGH RISK** | 110.139 | 72.381 | 51.974 | 46.225 |

* Population in thousand of inhabitants

**Figure 2**

# ANNUAL PARASITIC INDEXES, API * BY GEOGRAPHICAL REGIONS, 1990-1993



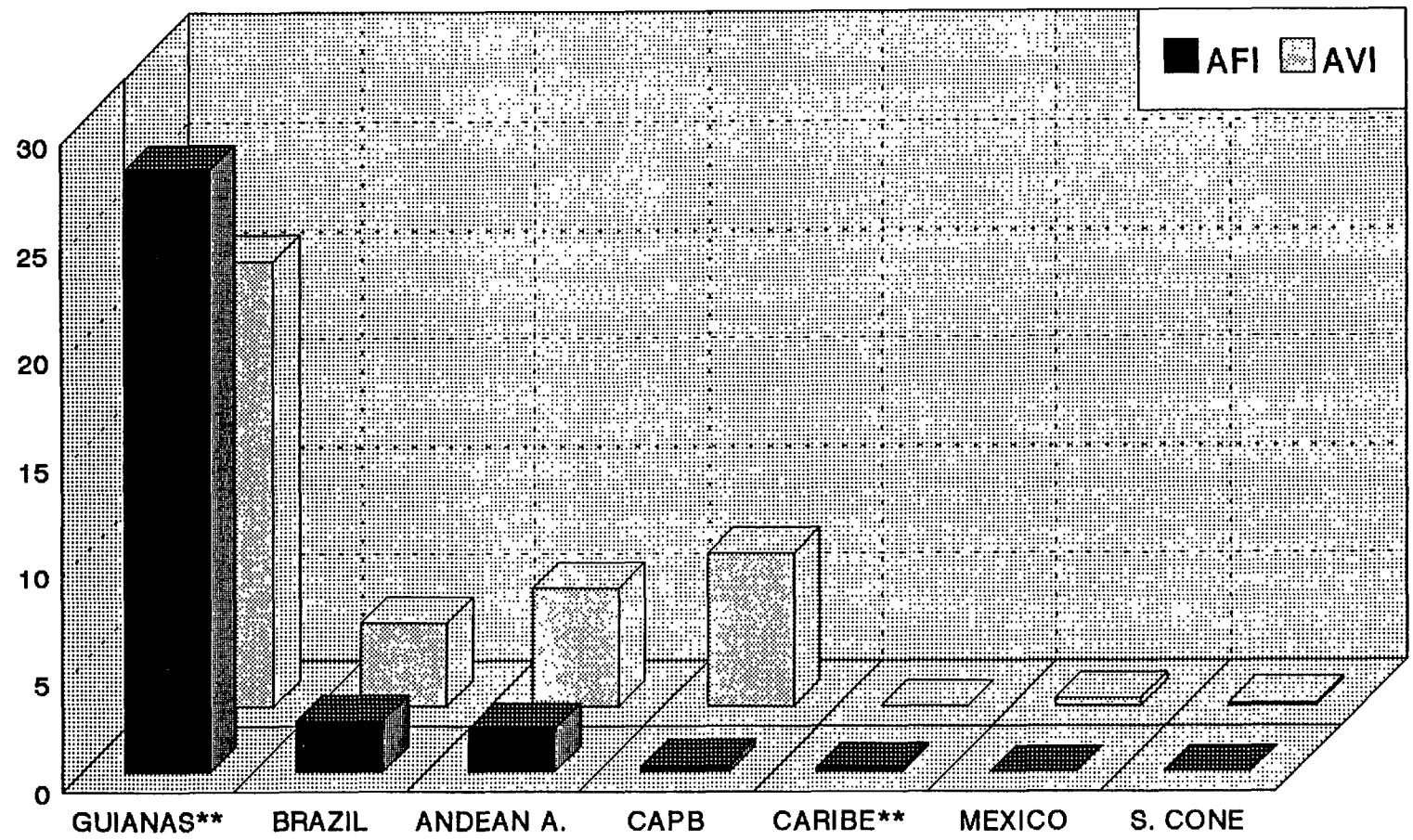

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1990 | 25.55 | 4.7 | 7.22 | 8.32 | 1.11 | 0.41 | 0.58 |
| 1991 | 40.99 | 6.33 | 8.92 | 9.76 | 0.65 | 2.01 | 0.47 |
| 1992 | 38.51 | 5.78 | 8.51 | 9.5 | 0.37 | 1.11 | 0.24 |
| 1993 | 34.3 | 7.48 | 7.37 | 6.19 | 0.36 | 0.14 | 0.13 |

* Based on population on malarious areas
** Caribe: Haiti & Dominican Rep.

** In 1993 Suriname is not included.

**Figure 3**

# DISTRIBUTION PARASITIC INDEXES, 1993 *
## BY GEOGRAPHICAL REGIONES




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| AVI | 20.74 | 3.85 | 5.49 | 7.11 | 0 | 0.35 | 0.13 |
| AFI | 27.88 | 2.34 | 1.99 | 0.26 | 0.14 | 0 | 0 |

* Based on Pop. malarious areas

** Guyana & French Guiana. CARIBE: Haiti & Dom Rep.

Table 6

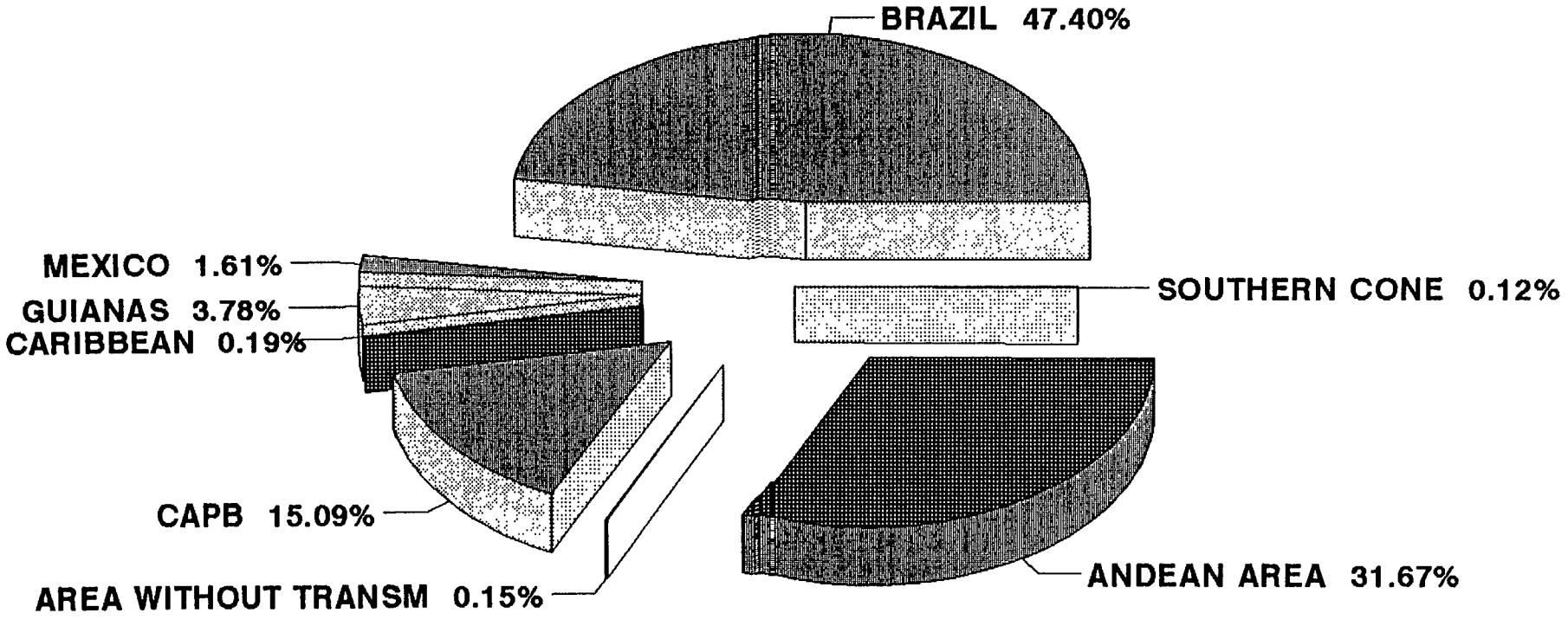
## MALARIA CASES REGISTERED IN THE REGION OF THE AMERICAS, 1990 – 1993

| Countries (by geographical sub–regions) | | Population 1993 a) Malarious areas | 1990 Registered cases | % | 1991 Registered cases | % | 1992 Registered cases | % | 1993 Registered cases | % |
|---|---|---|---|---|---|---|---|---|---|---|
| Countries without transmision and where eradication of malaria has been certified | | 84,815 b) | 1,739 b) | 0.17 | 1,144 b) | 0.09 | 1,263 b) | 0.11 | 1,496 | 0.15 |
| MEXICO | México | 44,413 | 44,513 | 4.26 | 26,565 | 2.16 | 16,170 | 1.36 | 15,793 | 1.61 |
| CAPB | Belize | 205 | 3,033 | | 3,317 | | 5,341 | | 8,586 | |
| | Costa Rica | 1,010 | 1,151 | | 3,273 | | 6,951 d) | | 5,033 | |
| | El Salvador | 4,951 | 9,269 | | 5,933 | | 4,539 | | 3,887 | |
| | Guatemala | 3,500 | 41,711 | | 57,829 | | 57,560 | | 41,868 | |
| | Honduras | 4,452 | 53,095 | | 73,352 | | 70,838 | | 44,513 | |
| | Nicaragua | 4,252 | 35,785 | | 27,653 | | 26,866 | | 44,037 b) | |
| | Panama | 1,763 | 381 | | 1,115 | | 727 | | 481 | |
| Sub–total | | 20,133 | 144,425 | 13.81 | 172,472 | 14.01 | 172,822 | 14.56 | 148,405 | 15.09 |
| CARIBE | Haiti | 5,411 | 4,806 | | 25,511 b) | | 13,457 e) | | 853 | |
| | Rep. Dominicana | 7,550 | 356 | | 377 | | 698 | | 987 | |
| Sub–total | | 12,961 | 5,162 | 0.49 | 25,888 | 2.10 | 14,155 | 1.19 | 1,840 | 0.19 |
| GUAYANAS | Guayana Francesa | 45 | 5,909 | | 3,573 b) | | 4,072 | | 3,974 | |
| | Guyana | 717 | 22,681 b) | | 42,204 b) | | 39,702 | | 33,172 | |
| | Suriname | 321 c) | 1,608 | | 1,490 | | 1,404 | | ... | |
| Sub–total | | 1,083 | 30,198 | 2.89 | 47,267 | 3.84 | 45,178 | 3.81 | 37,146 | 3.78 |
| BRAZIL | Brazil | 75,314 | 560,396 | 53.58 | 614,431 b) | 49.93 | 609,860 b) | 51.36 | 466,190 | 47.40 |
| AREA ANDINA | Bolivia | 3,111 | 19,680 | | 19,031 | | 24,486 | | 27,475 | |
| | Colombia | 24,161 | 99,489 | | 184,156 | | 184,023 | | 129,377 | |
| | Ecuador | 5,999 | 71,670 | | 59,400 | | 41,089 | | 46,859 | |
| | Peru | 7,643 | 28,882 f) | | 33,705 g) | | 54,922 d) | | 95,222 | |
| | Venezuela | 719 | 35,082 d) | | 42,826 | | 21,416 b) | | 12,539 | |
| Sub–total | | 41,633 | 254,803 | 24.36 | 339,118 | 27.56 | 325,936 | 27.45 | 311,472 | 31.67 |
| CONO SUR | Argentina | 5,611 | 1,660 | | 803 | | 643 | | 758 | |
| | Paraguay | 3,621 | 2,912 | | 2,983 | | 1,289 | | 436 | |
| Sub–total | | 9,232 | 4,572 | 0.44 | 3,786 | 0.31 | 1,932 | 0.16 | 1,194 | 0.12 |
| TOTAL | | 289,584 | 1,045,808 | 100.00 | 1,230,671 | 100.00 | 1,187,316 | 100.00 | 983,536 | 100.00 |

a) Population in thousands. b) Provisional e incomplete information. c) population of 1992. Jun/28/94
d) Information up to September. e) HAI Information up to June. f) PER Information up to October. g) PER Information up to November

Figure 4

# PERCENTAGE OF MALARIA CASES, AMERICAN REGION, 1993 *




* GUIANAS: Inc. Guyana & French Guiana
* CARIBE, Inc. Haití y Rep. Dominicana

**Table 7**
**COMPARATIVE RESULTS OF PASSIVE AND ACTIVE CASES DETECTION, 1993**

| Countries by geographical sub-regions) | PASSIVE CASE DETECTION General Health Services & hospitals | | | VOLUNTARY COLLABORATORS | | | ACTIVE CASE DETECTION Evaluators, Epid. Investigations and follow-ups | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Blood slides examined | Posi-tives | % | Blood slides examined | Posi-tives | % | Blood slide examined | Posi-tives | % | Blood slid examined | Posi-tives |
| Mexico | 499,730 | 4,749 | 0.95 | 241,062 | 7,559 | 3.14 | 1,075,548 | 3,485 | 0.32 | 1,816,340 | 15,793 |
| Belize | 24,313 | 7,331 | 30.15 | – | – | – | 23,429 | 1,255 | 5.36 | 47,742 | 8,586 |
| Costa Rica | 1,485 | 1,066 | 71.78 | 838 | 329 | 39.26 | 138,112 | 3,638 | 2.63 | 140,435 | 5,033 |
| El Salvador | 10,144 | 135 | 1.33 | 105,264 | 3,420 | 3.25 | 57,216 | 332 | 0.58 | 172,624 | 3,887 |
| Guatemala | 13,816 | 2,091 | 15.13 | 259,765 | 39,359 | 15.15 | 2,762 | 418 | 15.13 | 276,343 | 41,868 |
| Honduras | – | – | – | 293,740 | 44,513 | 15.15 | – | – | – | 293,740 | 44,513 |
| Nicaragua a) | 156,556 | 18,464 | 11.79 | 237,324 | 24,720 | 10.42 | 35,254 | 853 | 2.42 | 429,134 | 44,037 |
| Panama | 125,230 | 124 | 0.10 | 81 | 4 | 4.94 | 153,246 | 353 | 0.23 | 278,557 | 481 |
| Sub-total | 331,544 | 29,211 | 8.81 | 897,012 | 112,345 | 12.52 | 410,019 | 6,849 | 1.67 | 1,638,575 | 148,405 |
| Haiti | 10,045 | 853 | 8.49 | – | – | – | – | – | – | 10,045 | 853 |
| Dominican Rep. | 15,437 | 159 | 1.03 | 27,443 | 174 | 0.63 | 247,193 | 654 | 0.26 | 290,073 | 987 |
| Sub-total | 25,482 | 1,012 | 3.97 | 27,443 | 174 | 0.63 | 247,193 | 654 | 0.26 | 300,118 | 1,840 |
| French Guiana | 29,253 | 3,322 | 11.36 | – | – | – | 20,740 | 652 | 3.14 | 49,993 | 3,974 |
| Guyana b) | ... | ... | ... | 122,383 | ... | ... | 50,086 | ... | ... | 172,469 | 33,172 |
| Surinam | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Sub-total | 29,253 | 3,322 | 11 0 | 122,383 | 0 | 0 | 70,826 | 652 | 3 | 222,462 | 37,146 |
| Brazil c) | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2,551,704 | 466,190 |
| Bolivia | 38,101 | 15,353 | 40.30 | 17,900 | 6,218 | 34.74 | 69,720 | 5,904 | 8.47 | 125,721 | 27,475 |
| Colombia | 370,076 | 73,124 | 19.76 | 214,201 | 45,115 | 21.06 | 72,355 | 11,138 | 15.39 | 656,632 | 129,377 |
| Ecuador | 166,157 | 25,196 | 15.16 | 124,021 | 11,251 | 9.07 | 129,412 | 10,412 | 8.05 | 419,590 | 46,859 |
| Peru c) | ... | ... | ... | ... | ... | ... | ... | ... | ... | 158,325 | 95,222 |
| Venezuela | 74,217 | 9,816 | 13.23 | – | – | – | 216,266 | 2,723 | 1.26 | 290,483 | 12,539 |
| Sub-total | 648,551 | 123,489 | 19.04 | 356,122 | 62,584 | 17.57 | 487,753 | 30,177 | 6.19 | 1,650,751 | 311,472 |
| Argentina | 2,145 | 202 | 9.42 | 293 | 171 | 58.36 | 8,951 | 385 | 4.30 | 11,389 | 758 |
| Paraguay | 3,883 | 106 | 2.73 | 74,367 | 218 | 0.29 | 85,965 | 112 | 0.13 | 164,215 | 436 |
| Sub-total | 6,028 | 308 | 5.11 | 74,660 | 389 | 0.52 | 94,916 | 497 | 0.52 | 175,604 | 1,194 |
| Total | 1,540,588 | 162,091 | 10.52 | 1,718,682 | 183,051 | 10.65 | 2,386,255 | 42,314 | 1.77 | 8,355,554 | 982,040 |

... Information not available

Jun/28/94

a) Provisional information. b) GUY No information on distribution of the positives

c) BRA & PER did not notify by type of surveillance

## Table 8

## ANTIMALARIAL DRUGS USED IN 21 COUNTRIES, 1993

**(in thousands of tablets)**

| Countries (by geographical sub–regions | Chloroquine 150 mg. | Primaquine 15 mg. | Primaquine 5.0 mg. | Chloroquine/Primaquine combined | | Pyrimethamine 25 mg. | Sulfadoxina/ Pyrime Fansidar | Mefloquine |
|---|---|---|---|---|---|---|---|---|
| | | | | Adult doses | Infant doses | | | |
| México | 7,836.1 | 1,037.6 | 1,802.8 | – | – | – | – | – |
| Belize | 194.6 | 53.5 | 8.0 | – | – | – | – | – |
| Costa Rica | 1,365.0 | 570.0 | 119.4 | 1,090.0 | 82.0 | – | – | – |
| El Salvador | – | – | – | 1,553.2 | 171.6 | – | – | – |
| Guatemala | 2,300.0 | 789.7 | 819.2 | – | – | – | – | – |
| Honduras | 2,998.4 | 1,033.6 | 445.7 | – | – | – | – | – |
| Nicaragua | 6,970.0 | 3,252.6 | 836.4 | – | – | – | – | – |
| Panama | 208.0 | 125.0 | 36.0 | – | – | 448.0 | – | – |
| Haití a) | 200.0 | – | – | – | – | – | – | – |
| Dominican Rep. | 848.8 | 163.5 | 0.03 | – | – | – | – | – |
| French Guiana | 381.7 b) | – | – | – | – | – | 0.2 | 3.5 |
| Guyana | 278.4 b) | 316.8 | 170.6 | – | – | – | 114.6 | – |
| Suriname | ... | ... | ... | ... | ... | ... | ... | ... |
| Brazil | 6,138.0 | 3,080.0 | 1,270.0 | | | – | – | 243.5 |
| Bolivia | 612.9 | 970.2 | – | – | – | – | 32.7 | – |
| Colombia | 2,261.3 b) | 1,191.5 | 7.4 | – | – | 29.4 | 513.5 | – |
| Ecuador | 721.6 | 524.3 | 131.3 | – | – | – | – | – |
| Peru | 1,254.4 | 969.7 | – | – | – | – | 25.7 | – |
| Venezuela | 1,292.8 b) | 248.3 | 52.5 | 480.1 b) | 18.7 b) | 8.8 | 20.5 | – |
| Argentina | 13.6 | 6.5 | 3.5 | – | – | – | – | – |
| Paraguay | 497.0 | 4.2 | 1.8 | – | – | – | – | – |
| TOTAL | 36,372.6 | 14,337.0 | 5,704.6 | 3,123.3 | 272.3 | 486.2 | 707.2 | 247.0 |

... No information available

a) HAI – Partial figures. b) Includes Amodiaquine.

Jun/9/94

Table 8 (Pag.2)

## ANTIMALARIAL DRUGS USED IN 21 COUNTRIES IN 1993
(In thousands of tablets)

| Countries (by geographical sub–regions) | Quinine Sulfate (Tab. 500 mg.) | Quinine Dihydroch. Ampoules 300 mg. | Quinine capsules 300 mg) | Others |
|---|---|---|---|---|
| México | – | – | – | – |
| Belize | – | – | – | – |
| Costa Rica | – | – | – | – |
| El Salvador | – | – | – | – |
| Guatemala | – | – | – | – |
| Honduras | – | – | – | – |
| Nicaragua | – | – | – | – |
| Panama | – | – | – | – |
| Haiti | – | – | – | 200.0 a) |
| Dom.Rep | – | – | – | – |
| French Guiana | 12.0 | – | – | (b) |
| Guyana | – | 1.0 | – | 631.7 c) |
| Suriname | – | – | – | – |
| Brazil | 2,850.0 | 194.5 | 7.8 | (d) |
| Bolivia | 56.7 | – | 1.1 | – |
| Colombia | – | 10.4 | 10.2 | – |
| Ecuador | – | 0.3 | – | – |
| Perú | – | – | – | – |
| Venezuela | 13.0 | 1.6 | – | – |
| Argentina | – | – | – | – |
| Paraguay | 0.021 | – | – | – |
| TOTAL | 2,931.7 | 207.8 | 19.1 | 831.7 |

... No information available Jun/9/94

a) (HAI) Dihydrochloride of Quinine. b) They used 24,730 Comp. Halofantrin 25 mg. 2,128 Halofantrin and 734 Chloroquine syrup.

c) (GUY) Dihydr. of Quinine, 300 mg. d) (BRA) Also used 560,000 Tabs. of Tetracyclin 250 mg. y 1,560,000, 500 mg; 200 Amp. Chloroquine 50mg. y 13,000 Clindamicine 150 mg.

Table 9

FIRST LINE ANTIMALARIAL DRUGS USED BY THE MALARIA CONTROL PROGRAMS, 1993

| Countries by geographical sub-regions | Total 4-Aminoquinolines mg. | Completed treatments @ 1,500 mg. | Number of positives registered | Number of treatment for each registered case |
|---|---|---|---|---|
| Mexico | 1,175,415,000 | 783,610 | 15,793 | 49.62 |
| Belize | 29,197,500 | 19,465 | 8,586 | 2.27 |
| Costa Rica | 374,400,000 | 249,600 | 5,033 | 49.59 |
| El Salvador | 245,850,000 | 163,900 | 3,887 | 42.17 |
| Guatemala | 345,030,000 | 230,020 | 41,868 | 5.49 |
| Honduras | 449,760,000 | 299,840 | 44,513 | 6.74 |
| Nicaragua | 1,045,500,000 | 697,000 | 44,037 | 15.83 |
| Panama | 31,200,000 | 20,800 | 481 | 43.24 |
| Haití | 30,000,000 | 20,000 | 853 | 23.45 |
| Dominican Rep. | 127,320,000 | 84,880 | 987 | 86.00 |
| French Guiana | 57,255,000 | 38,170 | 3,974 | 9.60 |
| Guyana | 41,760,000 | 27,840 | 33,172 | 0.84 |
| Suriname | ... | ... | ... | ... |
| Brazil | 920,700,000 | 613,800 | 466,190 | 1.32 |
| Bolivia | 91,935,000 | 61,290 | 27,475 | 2.23 |
| Colombia | 339,195,000 | 226,130 | 129,377 | 1.75 |
| Ecuador | 108,240,000 | 72,160 | 46,859 | 1.54 |
| Peru | 188,160,000 | 125,440 | 95,222 | 1.32 |
| Venezuela | 266,215,500 | 177,477 | 12,539 | 14.15 |
| Argentina | 2,040,000 | 1,360 | 758 | 1.79 |
| Paraguay | 74,512,200 | 49,675 | 436 | 113.93 |
| TOTAL | 5,931,135,000 | 3,954,090 | 982,040 | 4.03 |

Jun/28/94

## TABLE 9–A

## SECOND LINE ANTIMALARIALS USED AS TREATMENT FOR P.falciparum INFECTIONS

## BY THE MALARIA CONTROL PROGRAMS IN THE AMERICAS, 1993

| Countries by geographical sub–regions | Sulfato, Clorhidrato y Biclorhidrato de Quin Total mg | Completed treatments @ 12,600 mg. | Fansidar Total mg. | Completed treatment @ 1,500 mg. | Mefloquina Total mg. | Treatments @ 1,000 mg. | Total administrated treatments | Infections by P. falcipar | Number of treatments for each infection |
|---|---|---|---|---|---|---|---|---|---|
| México | – | – | – | – | – | – | – | 202 | – |
| Belize | – | – | – | – | – | – | – | 251 | – |
| Costa Rica | – | – | – | – | – | – | – | 8 | – |
| El Salvador | – | – | – | – | – | – | – | 4 | – |
| Guatemala | – | – | – | – | – | – | – | 2,094 | – |
| Honduras | – | – | – | – | – | – | – | 448 | – |
| Nicaragua | – | – | – | – | – | – | – | 2,492 | – |
| Panama | – | – | – | – | – | – | – | 20 | – |
| Haití | 60,000,000 | 4,762 | – | – | – | – | 4,762 | 853 | 5.58 |
| Dominican Rep. | – | – | – | – | – | – | 0 | 983 | 0.00 |
| French Guiana | 6,000,000 | 476 | 100,000 | 67 | 875,000 | 875 | 1,418 | 3,154 | 0.45 |
| Guyana | 189,810,000 | 15,064 | 57,300,000 | 38,200 | – | – | 53,264 | 18,091 | 2.94 |
| Suriname | – | – | – | – | – | – | ... | ... | ... |
| Brazil | 1,485,690,000 | 117,912 | – | – | 60,875,000 | 60,875 | 178,787 | 176,372 | 1.01 |
| Bolivia | 28,680,000 | 2,276 | 16,350,000 | 10,900 | – | – | 13,176 | 5,375 | 2.45 |
| Colombia | 3,104,760,000 | 246,410 | 256,750,000 | 171,167 | – | – | 417,576 | 42,508 | 9.82 |
| Ecuador | 90,000 | 7 | – | – | – | – | 7 | 21,646 | 0.00 |
| Peru | – | – | 12,850,000 | 8,567 | – | – | 8,567 | 9,634 | 0.89 |
| Venezuela | 4,276,500 | 339 | 10,000,000 | 6,667 | – | – | 7,006 | 3,501 | 2.00 |
| Argentina | – | – | – | – | – | – | – | 1 | 0.00 |
| Paraguay | – | – | – | – | – | – | – | 1 | 0.00 |
| TOTAL | 4,879,306,500 | 387,247 | 353,350,000 | 235,567 | 61,750,000 | 61,750 | 684,563 | 287,638 | 2.38 |

Jun/28/94

Table 10

AREAS WITH HIGHER RISK OF TRANSMISSION AND PRIORITIZED FOR THE USE OF MALARIA CONTROL RESOURCES, 1993

| Countries & Areas (by geographical regions) | Population | km2 | Number of cases | Control activities | Main vectors | Reasons for transmission persistance |
|---|---|---|---|---|---|---|
| MEXICO | | | | | | |
| Campeche | 569,575 | 56,858 | 552 | Insecticide spraying, intradomiciliary, antilarval, spacial. Environmental sanitation, radical cure to individuals and communities. | A. albimanus<br>A. vestitipennis<br>A. pseudopunct | In rural areas: deficient self-care, poor housing, extradomiciliary transmission, migration, operational and administrative difficulties. |
| Chiapas | 3,086,960 | 75,665 | 4,075 | | | |
| Guerrero | 2,718,495 | 60,625 | 319 | | | |
| Michoacán | 2,701,448 | 57,309 | 651 | | | |
| Oaxaca | 2,925,328 | 84,444 | 5,222 | | | |
| Quintana Roo | 573,465 | 58,843 | 231 | | | |
| Sinaloa | 2,310,307 | 58,092 | 2,152 | | | |
| Tabasco | 1,633,379 | 24,661 | 444 | | | |
| Total | 16,518,957 | 476,497 | 13,646 | | | |
| BELIZE: | | | | | | |
| Corozal | 30,809 | ... | 1,067 | Intradomiciliary spraying, drug treatment | A. albimanus | Population movements, high deforestation, intense high rainfall. |
| Orange Walk | 33,207 | ... | 1,120 | | | |
| Belize | 61,733 | ... | 397 | | | |
| Cayo | 40,800 | ... | 3,193 | | | |
| Stann Creek | 19,575 | ... | 913 | | | |
| Toledo | 18,877 | ... | 1,778 | | | |
| Sub-total | 205,001 | 0 | 8,468 | | | |
| COSTA RICA: | | | | | | |
| Canton Los Chiles | 15,561 | 1,358 | 197 | Radical treatment and focal spraying. | A. albimanus | Intense population movements, environmental deterioration, lack of resources. |
| Canton Srapique | 25,199 | 2,140 | 289 | | | |
| Cantón Limón | 69,728 | 1,766 | 179 | | | |
| Cantón Talamanca | 15,956 | 2,810 | 459 | | | |
| Cantón Matina | 19,825 | 773 | 924 | | | |
| Guácimo | 8,139 | 576 | 98 | | | |
| Sub-total | 154,408 | 9,423 | 2,146 | | | |
| EL SALVADOR: | | | | | | |
| Costa del Pacífico (Area Hiperendémica) | 1,233,133 | 4,754 | 3,057 | Sprayings, drug treatment, larvicides, drainage works | A. albimanus | Poor housing, environmental deterioration, migration, social problems, poor living conditions. |
| GUATEMALA: | | | | | | |
| El Petén | 235,792 | 35,854 | 14,156 | Integrated control | A. albimanus<br>A. darlingi<br>A. pseudopunc<br>A. vestitipenis | Migration, poor health service coverage, poor living conditions, lack of community participation. |
| Alta Verapaz | 334,933 | 5,992 | 9,277 | | | |
| Izabal | 326,069 | 7,491 | 2,762 | | | |
| Quiché | 161,892 | 3,300 | 4,218 | | | |
| Escuintla | 300,279 | 4,102 | 2,200 | | | |
| Huehuetenango | 223,102 | 3,270 | 2,583 | | | |
| Sub-total | 1,582,067 | 60,009 | 35,196 | | | |
| HONDURAS | | | | | | |
| Región Sanitaria II | 528,650 | 10,050 | 9,923 | Sprayings and drug treatments.<br>In the Region VI, integrated measures. | A. albimanus | Lack of stratification of the problem, migration and technical, administrative, and social problems. |
| Región Sanitaria III | 1,481,493 | 14,324 | 14,643 | | | |
| Región Sanitaria VI | 503,172 | 16,512 | 5,604 | | | |
| Región Sanitaria VII | 338,777 | 23,821 | 9535 | | | |
| Región Sanitaria VIII | 40763 | 16630 | 664 | | | |
| Sub-total | 2,892,855 | 81,337 | 40,369 | | | |

Jun/28/94

Table 10 (Pag. 2)

AREAS WITH HIGHER RISK OF TRANSMISSION AND PRIORITIZED FOR THE USE OF MALARIA CONTROL RESOURCES

| Countries & Areas (by geographical regions) | Population | km2 | Number of cases | Control activities | Main vectors | Reasons por transmission persistance |
|---|---|---|---|---|---|---|
| NICARAGUA: | | | | | | |
| Chinandega | 356,690 | 4,926 | 11,252 | | | |
| Managua | 1,184,671 | 3,672 | 10,374 | | | |
| León | 372,296 | 5,107 | 4,683 | Treatment of cases, antimalarial drugs, antilarval masures, spacial spraying. | A. albimanus<br>A. pseudopunct. | Financial problems, poor living conditions and new population settlements, migration, operational and administrative difficulties. |
| Jinotega | 189,401 | 9,755 | 2,846 | | | |
| Nueva Segovia | 140,499 | 3,123 | 2,571 | | | |
| R.A.A.N | 114,899 | 32,159 | 1,846 | | | |
| R.A.A.S | 72,248 | 27,407 | 1,740 | | | |
| R. San Juan | 37,506 | 7,473 | 1,577 | | | |
| Matagalpa | 402,530 | 8,523 | 3,272 | | | |
| Sub-total | 2,870,740 | 102,145 | 40,161 | | | |
| PANAMA | | | | | | |
| Bocas del Toro | 21,154 | 2,123 | 211 | | | |
| Changuinola | 62,032 | 2,281 | 86 | Intradomiciliary Spraying, drug treatment. | | Population movements. |
| Sub-total | 83,186 | 4,404 | 297 | | | |
| HAITI: | ... | ... | ... | ... | ... | ... |
| DOMINICAN REP.: | | | | | | |
| Comendador | 24,935 | ... | 25 | | | |
| Bánica | 11,547 | ... | 5 | | | |
| El Llano | 9,914 | ... | 4 | Treatment to immigrants, treatment of cases. | A. albimanus | Migrations. |
| Pedernales | 13,189 | ... | 19 | | | |
| Dajabón | 24,229 | ... | 76 | | | |
| Partido | 5,529 | ... | – | | | |
| Sub-total | 89,343 | 0 | 129 | | | |
| FRENCH GUIANA: | | | | | | |
| Maroni | 6,793 | ... | 2,873 | Intradomiciliary spraying, active surveillance, impregnated bednets. | A. darlingi<br>A. aquasalis<br>A. brasiliensis<br>A. nuñeztovari | Population movements, poor housing, poor living conditions. |
| Camopi Trois Sauts | 746 | ... | 218 | | | |
| Oyapock | 1,605 | ... | ... | | | |
| Sub-total | 9,144 | 0 | 3,091 | | | |
| GUYANA: | | | | | | |
| Regiones 1 y 2 y Regiones 7, 8 y 9 | 95,535 | 151,529 | 27,531 | ... | A. darlingi<br>A. aquasalis | Poor housing, population movements, interruption of treatment. |
| BRAZIL: | | | | | | |
| Acre | 153,159 | 57,980 | 14,673 | | | |
| Amapá | 105,598 | 28,055 | 4,486 | | | |
| Amazonas | 1,407,925 | 461,246 | 46,237 | | | |
| Maranhao | 1,295,136 | 104,770 | 11,599 | Integrated control | A. darlingi | Ecological risk factors associated with new population settlements. |
| Mato Grosso | 264,877 | 220,070 | 115,443 | | | |
| Pará | 1,265,355 | 601,929 | 97,155 | | | |
| Rondonia | 567,143 | 102,078 | 86,508 | | | |
| Roraima | 259,166 | 230,104 | 16,249 | | | |
| Tocantins | 82,343 | 67,405 | 803 | | | |
| Sub-total | 5,400,702 | 1,873,637 | 393,153 | | | |

Table 10 (Pag. 3)

AREAS WITH HIGHER RISK OF TRANSMISSION AND PRIORITIZED FOR THE USE OF MALARIA CONTROL RESOURCES, 1993

| Countries & Areas (by geographical regions) | Population | km2 | Number of cases | Control activities | Main vectors | Reasons for transmission persistance |
|---|---|---|---|---|---|---|
| BOLIVIA: | | | | Insecticide spraying, radical treatment, breeding sites' source reduction, sanitary education. | A. darlingi<br>A. pseudopunct | Financial problems, change of national authorities, change of DDT for pirethoids, changes vector behavior. |
| Depto. Beni | 30,473 | 22,434 | 7,609 | | | |
| Depto. Pando | 1,810 | 35,661 | 1,500 | | | |
| Sub-total | 32,283 | 58,095 | 9,109 | | | |
| COLOMBIA: | | | | Intradomiciliary spraying, water drainage works, impregtated bednets. | A. albimanus<br>A. nuñeztovari<br>A. darlingi<br>A. punctimacula<br>A. evansae | Socio-politic problems, mining exploitation, vector behavior, colonization, migrations. |
| Bajo Cauca | 457,431 | 35,000 | 62,836 | | | |
| Pacífico | 923,974 | 80,000 | 23,356 | | | |
| Orinoquia | 556,871 | 90,063 | 14,678 | | | |
| Uraba | 497,984 | 20,000 | 13,374 | | | |
| Amazonia | 472,628 | 110,000 | 8,801 | | | |
| Sub-total | 2,908,888 | 335,063 | 123,045 | | | |
| ECUADOR | | | | Intradomiciliary spraying, early diagnosis and treatment, radical treatment, spacial spraying of insecticides, larvirous fish, impregnated bednets. | A. albimanus<br>A. punctimacula<br>A. pseudopunct<br>A. rangeli<br>A. trincae | Lack of resources, failure to apply control measures, migration, population movements, laboral problems, poor living conditions. |
| Cañar | 37,472 | 750 | 912 | | | |
| Cotopaxi | 23,345 | 233 | 401 | | | |
| Chimborazo | 6,085 | 200 | 69 | | | |
| El Oro | 133,262 | 2,054 | 3,209 | | | |
| Esmeraldas | 383,863 | 14,597 | 12,529 | | | |
| Guayas | 248,722 | 2,540 | 3,602 | | | |
| Loja | 9,723 | 222 | 243 | | | |
| Los Rios | 203,329 | 2,520 | 2,712 | | | |
| Manabi | 554,213 | 9,572 | 9,113 | | | |
| Pastaza | 11,810 | 23,236 | 190 | | | |
| Sucumbios | 55,645 | 10,050 | 904 | | | |
| Sub-total | 1,667,469 | 65,974 | 33,884 | | | |
| PERU | | | | | A. pseudopunct<br>A. rangeli<br>A. trinkae<br>A. albimanus<br>A. calderoni<br>A. oswaldoi<br>A. benarrochi | Ecological changes, rain, self-medication, migration, social problems, poor housing, poor living conditions, lack of access to health services. |
| La Mar | 66979 | 4392 | 678 | | | |
| Manu | 12337 | 27717 | 475 | | | |
| Chanchamayo | 114639 | 4723 | 1189 | | | |
| Jaen | 168138 | 5233 | 8128 | | | |
| Condorcanqui | 30520 | 17865 | 2866 | | | |
| Rioja | 69231 | 1040 | 2967 | | | |
| Piura | 560907 | 12581 | 16675 | | | |
| Tambopata | 241465 | 36268 | 1855 | | | |
| Sullana | 241465 | 5424 | 7841 | | | |
| Zarumilla | 26806 | 734 | 901 | | | |
| Moyobamba | 68730 | 2096 | 1946 | | | |
| Bolivar | 16915 | 1719 | 438 | | | |

Table 10 (Pag. 4)

AREAS WITH HIGHER RISK OF TRANSMISSION AND PRIORITIZED FOR THE USE OF MALARIA CONTROL RESOURCES

| Countries & Areas (by geographical regions) | Population | km2 | Number of cases | Control activities | Main vectors | Reasons for transmission persistance |
|---|---|---|---|---|---|---|
| PERU (Cont.) | | | | | | |
| Bagua | 69339 | 5746 | 1989 | ... | | |
| Morropon | 169285 | 3818 | 4188 | ... | | |
| Padre Abad | 34898 | 8832 | 372 | ... | | |
| Tahuamanu | 6350 | 21197 | 147 | ... | | |
| San Ignacio | 111070 | 4990 | 2031 | ... | | |
| C. Portillo | 242913 | 36826 | 4243 | ... | | |
| Tumbes | 116643 | 1800 | 2215 | ... | | |
| Utcubamba | 100891 | 3860 | 1347 | ... | | |
| Puerto Inca | 30162 | 9914 | 389 | ... | | |
| Perreñafe | 89921 | 1705 | 1365 | ... | | |
| Bolognesi | 27867 | 3065 | 368 | ... | | |
| Casma | 34844 | 2661 | 383 | ... | | |
| Sub-total | 2652315 | 224206 | 64996 | | | |
| VENEZUELA: | | | | | | |
| Amazonas: Atures | 57,163 | ... | 2,283 | | | |
| Atabapo | 4,476 | ... | 784 | | | |
| Rio Negro | 1,242 | ... | 12 | | | |
| Casiquiare | 959 | ... | 28 | | | |
| Bolivar: Ascención Farreras | 1,706 | ... | 36 | | | |
| Dalla Costa | 5,584 | ... | 2,130 | Intradomiciliary spraying, completed treatments, elimination of presuntive treatments. | A. darlingi A. albitarsis | Population movements. |
| La Paragua | 4,650 | ... | 323 | | | |
| La Urbana | 1,222 | ... | 180 | | | |
| Tumeremo | 14,154 | ... | 1,064 | | | |
| Delta Amacuro: Antonio Diaz | 1,849 | ... | 148 | | | |
| Pedernales | 2,731 | ... | 36 | | | |
| Tucupita | 13,796 | ... | 140 | | | |
| sub-total | 109,532 | | 7,164 | | | |
| ARGENTINA: | | | | | | |
| Tartagal y Orán | 244,741 | 11,275 | 642 | Surveillance and insecticide spraying. | A. pseudopunct | Intense migrations, limited accessibility for climate factors, economic and finance problems. |
| PARAGUAY | | | | | | |
| Alto Paraná | 403,858 | 14,895 | 211 | | | |
| San Pedro | 277,110 | 20,002 | 94 | | | |
| Caaguazú | 383,319 | 11,474 | 73 | Insecticide spraying to houses, radical and presuntive treatment. | A. darlingi | Residual focus, native inhabitants, migration. |
| Canindeyu | 96,826 | 14,667 | 29 | | | |
| Sub-total | 1,161,113 | 61,038 | 407 | | | |

## Table 11

## SPRAYING WITH RESIDUAL INSECTICIDES APPLIED IN 1993

| Countries (by geographical sub-regions | (Hydro Chlorides) DDT | Organophosphates | | Carbam | Pirethroids | |
|---|---|---|---|---|---|---|
| | | Malathion | Fenitrothion | Bendiocarb | Deltametrina | ICON |
| Mexico | 1,465,980 | – | – | – | – | – |
| Belize | 4,999 | – | – | – | – | – |
| Costa Rica | – | 4,157 | – | – | – | – |
| El Salvador | – | – | – | 56,891 | – | – |
| Guatemala | – | – | 51,956 a) | – | (a) | – |
| Honduras | – | – | 119,008 | – | – | – |
| Nicaragua | – | – | 902 | – | 14,813 | – |
| Pamama | – | – | 32,272 | – | – | – |
| Haiti | – | – | – | – | – | – |
| Dominican Rep. | – | – | 1,319 | – | – | – |
| French Guiana | – | – | – | – | 5,896 | – |
| Guyana | – | – | – | – | – | – |
| Suriname | ... | ... | ... ... | ... | ... | – |
| Brazil b) | 770,730 | – | – | – | 9,704 | 45,157 |
| Bolivia | 17,721 c) | – | – | – | (b) | – |
| Colombia | 151,897 d) | – | – | – | – | – |
| Ecuador | 171,334 | 101,611 | – | – | – | – |
| Peru | ... | ... | ... | ... | ... | – |
| Venezuela | 30,096 e) | (e) | – | – | (d) | – |
| Argentina | 30,177 f) | – | – | – | – | – |
| Paraguay | 59,243 g) | – | – | – | – | – |
| TOTAL | 2,702,177 | 105,768 | 205,457 | 56,891 | 30,413 | 45,157 |

... Information not available

May/28/94

a) (GUA) Includes spraying with Deltametrin, Propoxur and Fenitrothion. b) (BRA) Partial information.
c) Includes spraying with DDT, ICON and Deltametrin.d) Includes sprayings with Fenitrothion and with Lambdacyalotrin.
e) Includes spraying with DDT, Fenitrothion and Deltame f) Includes spraying with DDT and K'otrin.
g) Includes spraying with DDT y Lambdacyalotrin.

Table 12

## INSECTICIDES USED IN MALARIA PROGRAMS, 1993 AND ESTIMATED FOR 1994

| Country | DDT (Kg) | | | | Malathion 50 % | | Propoxur 50% (Kg.) | | Fenitrothion 40% (Kg.) | | Others | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1993 | | 1994 (Est.) | | 1993 | 1994 (Est) | 1993 | 1994 (Est.) | 1993 | 1994 | 1993 | 1994 |
| | 100% | 75% | 100% | 75% | | | | | | | | |
| Mexico | 899,513 | 17,798 | 808,185 | 31,300 | 109,704 | 82,215 | – | – | – | – | 62,999 a) | 38,960 a) |
| Belize | 5,000 | 8,000 | 5,000 | 8,000 | 972 b) | 1,080 b) | – | | – | – | 3,850 c) | ... |
| Costa Rica | – | – | – | – | 3,442 | 4,000 | 369 | 500 | – | – | 3,328 d) | 4,000 d) |
| El Salvador | – | – | – | – | – | – | – | – | – | – | 19,087 e) | 13,750 e) |
| Guatemala | – | – | – | – | – | – | 6,344 | 8,000 | 908 | 5,000 | 25,356 f) | 41,000 f) |
| Honduras | – | – | – | – | – | – | – | – | 53,155 | 56,000 | 12,123 g) | 70,000 g) |
| Nicaragua | – | – | – | – | – | – | – | – | 21,200 | 19,000 | 59,300 h) | 178,982 h) |
| Panama | – | – | – | – | – | – | – | – | 25,736 | 42,236 | 1,141 i) | 1,500 i) |
| Haiti | – | – | – | – | – | – | – | – | – | – | – | – |
| Dominican Rep. | – | – | – | – | – | – | – | | 510 | 2,040 | – | – |
| French Guiana | – | – | – | – | – | – | – | – | – | – | 500 j) | ... |
| Guyana | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Suriname | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Brazil | 33,085 | 600,117 | 35,000 | 610,000 | 5,697 | 7,000 | – | – | – | – | 18,588 k) | 21,000 k) |
| Bolivia | – | 8,753 | ... | ... | 102 | 800 | – | – | – | – | 161 l) | ... |
| Colombia | 256 | 141,687 | ... | 50,000 | – | – | – | – | 38,306 | 100,000 | 1,242 m) | 195,400 m) |
| Ecuador | 895 | 106,140 | 2,000 | 240,000 | 82,894 | 53,000 | – | – | – | – | 24,600 n) | 25,000 n) |
| Peru | – | 66,360 | ... | ... | ... | ... | ... | ... | ... | ... | 7,275 o) | ... |
| Venezuela | 5,669 | 71,453 | 6,200 | 78,600 | – | – | – | – | 24,563 | 15,530 | 47,230 p) | 52,000 p) |
| Argentina | 319 | 6,244 | 1,000 | 10,000 | – | – | – | – | – | – | 1,475 q) | ... |
| Paraguay | – | 15,151 | ... | ... | – | – | – | – | – | – | 6,005 r) | 51,000 r) |
| Total | 944,737 | 1,041,703 | 857,385 | 1,027,900 | 202,811 | 148,095 | 6,713 | 8,500 | 164,378 | 239,806 | 294,260 | 692,592 |

Jun/28/94

... Information not available.

a) (MEX) Larvicides in 1993: 2.314 Lt. Temephos 500; 23.821 kg. Temephos granules; 36,864 kg. Baytex powder. Istimate for 1994 respectively, 1,760 lt. y 34.200 & 3.000 kg.

b) (BEL) Gal. malathion 96%. c) Kg. Abate 1%. d) (COR) Incluye en 1993: 2,628 lt. malatión 95% y 700 lt. Oko. Para 1994 3.000 y 1.000 respectivamente. e) (ELS) Inc. en 1993 5.180 kg. of Bendiocarb, 1.607 Gal. of Permetrin, 10.975 kg. Temephos 1%, 1.120 kg. Temephos 5% y 205 Gal. Temephos 44%. f) (GUT) En 1993 Inc. 4576 kg. Deltam., 19,059 kg. Baytex y 1,721 lt. Baytex and for 1994, 6.000 and 30.000 kg. and 5.000 lt. respectily. g) (HON) En 1993 Inc. 6774 Lt. Deltam. y 5.349 Lb. BTI y para 1994, 18.000 lt. y 52.000 Lb. respectivamente.

h) (NIC) In 1994 Inc. 5.000 kg and 4.000 lt de Deltam. and 50.000 kg and 300 lt. de Fenthion. For 1994 Inc. 8.300 kg. & 8.000 lt. Deltam. & 162.000 kg. & 682 lt. Fenti) (PAN) Lt. Fenitrotión 50%.

j) (FRG) Lt. K'otrin 25mg. k) (BRA) Inc. 13.573 lt. Icon 10%, 5,015 lt. K'otrin 50%, and for 1994, 15.000 & 6.000 respectively. l) (BOL) 176 kg. Lamdacihalotrina 10% y 85 Lt. Deltam.

m) (COL) In 1993 Inc. 1042 kg. Lambdacyalotrin & 200 lt. Deltam. For 1994, 190.000 kg. & 400 respectively, also, 5.000 Permetrin. n) (ECU) Lt. malatión 96%.

o) (PER) 7275 kg. Abate. p) (VEN) In 1993 inc. 15530 lt. Fenit. 50%, 6375 kg. & 18.263 lt. Deltam. & 7062 lt. Lambdacyialotrin. & in 1994 17100, 7000, 20100 & 7800 respectively.

q) (ARG) Lt. K'otrin. r) (PAR) In 1993 inc. 1721 kg. Lambdacyalotrin & 4284 lt. Biolarvicide, & in 1994 50000 & 1000 respectively.

## IV. SITUATION BY GEOGRAPHICAL SUBREGION

### Mexico, Central America, Belize, and Panama

In Mexico, the potentially exposed population numbers 44.4 million. As a result of application of the new strategy and strengthening of the national malaria program since 1989, the annual number of cases was reduced from 101,241 in 1989 to 15,793 in 1993. The annual parasite index, however, remained unchanged: 0.37 per 1,000 population in 1992 and 0.36 in 1993.

In Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama) 97% of the cases diagnosed were P. vivax infections. In four of the seven countries of the subregion, malaria is one of the five leading causes of morbidity.

Transmission of malaria is not distributed uniformly. The highest incidence levels are found among economically disadvantaged populations with limited access to health care services.

Malariometric rates in Central America have historically shown an oscillating pattern. This situation has been the result mainly of two factors. The first is a high level of specific financing for traditional malaria eradication activities, as was the case in Honduras and Nicaragua. The second factor, which has produced slower and more progressive fluctuations in malariometric figures, is the improvement of general socioeconomic conditions in countries such as Costa Rica and Panama.

This historical oscillating pattern--created by the practice of mobilizing large quantities of resources, which have been used to bring about temporary reductions in malaria morbidity throughout Central America--provided the foundation for a proposal designed to address the new epidemiological model of malaria transmission that has emerged in the subregion during the 1990s with the establishment of new settlements along its less-developed Atlantic coast. In cooperation with the Swedish International Development Agency (SIDA) and the Finnish International Development Agency (FINNIDA), in 1991 PAHO invited representatives of the seven countries of the Central American isthmus to attend a technical advisory meeting for the purpose of formulating common strategies and measures for addressing the challenges of the postwar period in the subregion. At this meeting the directors of malaria control programs agreed to reorient the objectives of national malaria programs and strengthen the ability of local health services to participate in disease control efforts.

As a result, the strategy for malaria control has evolved from an approach of circumscribed activities (specific to one disease) and case accounting as a universal method of action, to a more integrated methodology that provides for the incorporation of malaria control into the routine programming and monitoring activities of local health systems. The new strategy consists of supporting the transformation of the national program, with special attention to immediate treatment of malaria, thus strengthening incipient local health services.

Varying degrees of success have been achieved in bringing about this change. In Nicaragua, local health services have been given full responsibility for dealing with the malaria problem in priority areas. In Costa Rica, in contrast, the specialized national program has become more centralized.

At the same time that national programs were being reoriented and permanent links were being established with general health services, the incidence of malaria in the subregion rose considerably during the period 1990-1992. This increase was the result mainly of two factors: (1) the peace-making process, which brought with it greater migration and circulation of the population; and (2) the increased capacity of coverage of the malaria control program, which since 1990 has operated through the health services.

The increase in the incidence of malaria, therefore, did not constitute a failure of the new malaria control efforts, but rather was an outcome of the process of broadening the scope of the general health services. In this context, for the first time, personnel from the malaria control services and general health personnel worked together toward the same objectives, expanding coverage and succeeding in measuring the real magnitude of transmission.

**Andean Region**

In 1993 the total population of the Andean Region, which consists of Bolivia, Colombia, Ecuador, Peru, and Venezuela, was estimated at 94.7 million. Of that number, 41.6 million people (44%) were living in areas that were ecologically propitious for the transmission of malaria. Of this potentially at-risk population, 23.8 million lived in areas classified as low-risk, 9.0 million lived in medium-risk areas, and the remaining 21.4 million--that is 22% of the total population of the subregion--lived in areas in which they were at high risk of contracting malaria (Table 3).

This subregion recorded 311,472 malaria cases, 82,664 of which were P. falciparum infections. The risk of contracting the disease increased, as was reflected in the annual parasite index, which rose from 5.78 per 1,000 population in 1992 to 7.48 in 1993. Moreover, the number of P. falciparum infections increased in Bolivia, Ecuador, and Peru, which raised the prospect of a parallel increase in mortality.

The malarious area now stretches all along the Pacific Coast of Colombia and the northern coast of Ecuador and has extended into Peru (Tumbes and Piura), where new settlements are developing at a rapid pace. This situation has led to a continuous increase in the API in the subregion (see Figure 2).

In Bolivia, the number of P. falciparum infections in the Amazon region of Pando, the northern part of the department of Beni, and the region of Guayaramirin (Santa Cruz) is now six to seven times higher than it was in 1990. As can be seen in Figure 2, the annual parasite index (API) of the Andean area has surpassed the API of Brazil's endemic area.

**Caribbean Subregion**

Of the countries or territories located in the Caribbean, conditions are propitious for the transmission of malaria only in Haiti and the Dominican Republic, which share the Island of Hispaniola. In these two countries a total of 12.9 million people are at risk of contracting malaria.

In the Dominican Republic the API rose from 0.09 in 1992 to 0.13 in 1993. Haiti reported 853 malaria cases in 1993; all were assumed to be P. falciparum infections, although political conditions in the country made verification impossible.

**Amazon Subregion**

In this subregion, which includes the jungle transmission areas of Brazil, French Guiana, Guyana and Suriname, the population living in areas conducive to malaria transmission totals 19.8 million. The risk of contracting malaria in the Amazon region is variable, however. Through epidemiological stratification the countries of the subregion have determined that 5.4 million people are at high risk of transmission, 13.1 million are at medium risk, and 1 million are at low risk.

The high level of malaria transmission in this subregion continues to be influenced by migration into jungle areas for the purpose of exploiting natural resources. The migrants practice small-scale mining, establishing permanent or temporary settlements, which are generally characterized by disorganized social development. As in previous years, the annual parasite indexes (API) registered in this region are the highest in the Hemisphere: 24.9 per 1,000 population living in high-risk areas in Brazil, 79.7 per 1,000 in French Guiana, and 233.8 per 1,000 in Guyana. It should also be noted that the proportions of these cases caused by P. falciparum were 37.2%, 80.0%, and 54.1%, respectively, which raised the risk of death from lack of early diagnosis and immediate treatment.

## VI. INVESTMENT FOR MALARIA CONTROL*

Table 13 shows the national funds allocated to the health sector, public health, and malaria programs in 1993. The amounts budgeted for program execution in 17 of the 21 countries with evidence of malaria transmission totaled US$ 166 million. In addition, US$13 million in extrabudgetary funds were obtained.

## VII. RESEARCH

Investment for research on malaria in the Region amounted to US$ 20 million (Table 14). It is noteworthy, however, that the US$ 18 million was from non-endemic countries (the United States and Canada), while the endemic countries invested US$ 2.8 million. Fifty-eight percent of this amount was contributed by Colombia.

The non-endemic countries benefitted from a contribution of funds totaling $1,977,417 from the WHO Special Program for Research and Training in Tropical Diseases (TDR), while only US$ 532,580 was invested in the endemic countries.

## VIII. SPECIFIC SITUATION BY COUNTRY

Table 15 and Figures 5 and 6 show the epidemiological situation of the 21 countries with active programs, according to malariometric rates. Also presented are a table and a graph containing data for the period 1960-1993 and a brief description of the malaria situation in every country. The malariometric rates are based on the total population of the country, as this makes comparison more feasible.

In addition, a table is presented for each country showing the distribution of diagnosis and treatment activities according to the level of risk of contracting malaria. For some countries, maps are also included that show *municipios*, cantons, or districts, depending on the political division of each country.

---

* No figures are included for Paraguay because those available have not been confirmed.

Table 13

## NATIONAL FUNDS ASSIGNED FOR HEALTH SECTOR, PUBLIC HEALTH AND MALARIA PROGRAMS, 1993

(Amounts in US dollars) *

| (by geographical sub-regions) | Budget for Health Sector | Budget for Public Health | Porcentage assigned for Public Health | Budget for Malaria Programs | % of Health Sector | Loans or Grants for Malaria Programs |
|---|---|---|---|---|---|---|
| Mexico | 13,376,794,032 | 1,494,709,452 | 11.17 | 28,441,613 | 0.21 | - |
| Belize | 9,717,172 | 1,655,934 | 17.04 | 477,919 | 4.92 | 100,000 b) |
| Costa Rica | 1,166,108,757 | 50,479,687 | 4.33 | 1,714,017 | 0.15 | 344,310 c) |
| El Salvador | 887,956,536 | 84,883,721 | 9.56 | 1,220,930 | 0.14 | 1,023,255 b) |
| Guatemala | 134,204,319 | 93,324,434 | 69.54 | 2,434,719 | 1.81 | 166,985 d) |
| Honduras | 805,829,807 | 83,904,586 | 10.41 | 2,016,013 | 0.25 | 283,072 c) |
| Nicaragua d) | ... | ... | ... | ... | ... | 301,647 c) |
| Panama | 344,163,190 | 172,081,595 | 50.00 | 3,719,976 | 1.08 | 71,000 d) |
| Haití | 973,600 | ... | ... | 20,000 | 2.05 | 250,000 e) |
| Dominican Rep. | ... | ... | ... | 599,334 | ... | 517,815 f) |
| French Guiana | ... | ... | ... | 538,535 | ... | - |
| Guyana | ... | ... | ... | 91,973 | ... | - |
| Suriname | ... | ... | ... | ... | ... | ... |
| Brazil | ... | 1,130,947,000 | ... | 97,124,000 | ... | 5,500,000 g) |
| Bolivia | 96,404,722 | 35,846,246 | 37.18 | 187,066 | 0.19 | - |
| Colombia | ... | 738,829,332 | ... | 13,524,381 | ... | - |
| Ecuador | 2,046,632,124 | 100,307,839 | 4.90 | 4,963,244 | 0.24 | - |
| Peru | 5,380,095,982 | ... | ... | ... | ... | - |
| Venezuela | 10,735,841,686 | 851,385,818 | 7.93 | 6,976,914 | 0.06 | 4,600,000 h) |
| Argentina | ... | .... | ... | 1,826,000 | ... | - |
| Paraguay | 225,233,859,410 | 83,547,789,813 | 37.09 | 6,405,522 | 0.003 | - |
| Total | 260,218,581,338 | 88,386,145,456 | 33.97 | 172,282,156 | 0.066 | 13,158,084 |

Jun/28/94

*) Dollar conversion based on United Nations exchange rates as of 31 Dec.1993
b) (BLZ & ELS) information from the country; includes funds from Sweeden (SIDA)
c) (COR) Funds from Sweden and Finland (SIDA/FINNIDA)
d) (HON & PAN) Funds from Sweden (SIDA). e) (HAI) Funds from AID. f) (DOR) did not informed source of funds.
g) (BRA) Funds from World Bank (PCMAN).
h) (VEN) Funds from World Bank

Table 14

## FUNDS FROM COUNTRY AND INTERNATIONAL AGENCIES FOR MALARIA RESEARCH IN THE AMERICAN REGION, 1985–1993 *

| | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 |
|---|---|---|---|---|---|---|---|---|
| International Development Research Center, Canada, x) | ... | ... | 364,157 | 53,831 | 254,264 | 239,545 a) | 140,950 b) | 219,111 b) |
| Board on Science and Technology for Intern. Development. Institute of Medicine/Nat, Academy of Science, USA, x) | 228,900 | 187,604 | 97,012 | 44,132 | 28,004 | 25,000 c) | – | – |
| National Institute of Allergy and Infectious Disease, National Inst. of Health (NIH),USA, +), d) | 5,993,424 | 6,122,927 | 6,803,213 | 7,842,896 | 7,783,157 | 7,376,839 | 9,175,164 | 13,400,000 |
| Agency for International Development, USA, +), e) | 9,900,000 | 12,000,000 | 10,000,000 | 8,500,339 | 8,550,000 | 8,550,000 | 9,684,000 | 8,822,000 |
| US Army and USA Navy, +), e) | 8,240,000 | 8,611,000 | 8,631,000 | 6,303,000 | 6,014,000 | 10,163,000 | 19,600,000 | ... |
| Pan American Health Organization World Health Organization, PAHO/WHO) x) | 488,125 | 741,400 | 99,883 | 454,000 | 490,614 | 400,000 | 367,176 | 150,000 |
| Special Program for Research and Training in Tropical Diseases UNDP/World Bank (TDR) x) | 1,364,449 | 1,446,211 | 1,746,119 | 2,120,128 | 2,519,634 | 2,849,100 | 3,074,292 | 2,509,997 f) |
| Brazil ** x) | 250,000 | 759,248 | 50,000 | 532,930 | 30,000 | 261,072 g) | ... | 170,215 |
| Colombia ** x) | 25,000 | 80,000 | ... | ... | ... | ... | 1,287,203 | 1,687,500 |
| Mexico ** x) | 50,000 | 270,000 | 339,337 | 812,528 | 426,546 | 583,839 | 815,765 | 884,676 |

* In US dollars, except otherwise indicated.
x) Calendar year, 1993. +) Fiscal year, Oct/1992–Oct/1993. Jun/30/94
a) Canadian dollars, Project in Peru. b) Canadian dollars, Project in Brazil
c) Field Research on mosquitoes in Venezuela
d) Funds for Institutions in the USA.
e) Most of the funds for institutions in the USA
f) Funds invested in 62 projects, 45 of those in Canada and USA, ($1,977,417), 17 in 9 countries of the American Region ($532,580)
g) Funds from CNPq, FAPESP and FNS.
** Funds converted to US dollars, according to the annual average official exchange

Table 15

MALARIOMETRIC RATES OF 21 COUNTRIES OF THE AMERICAS
WITH ACTIVE MALARIA CONTROL PROGRAMS

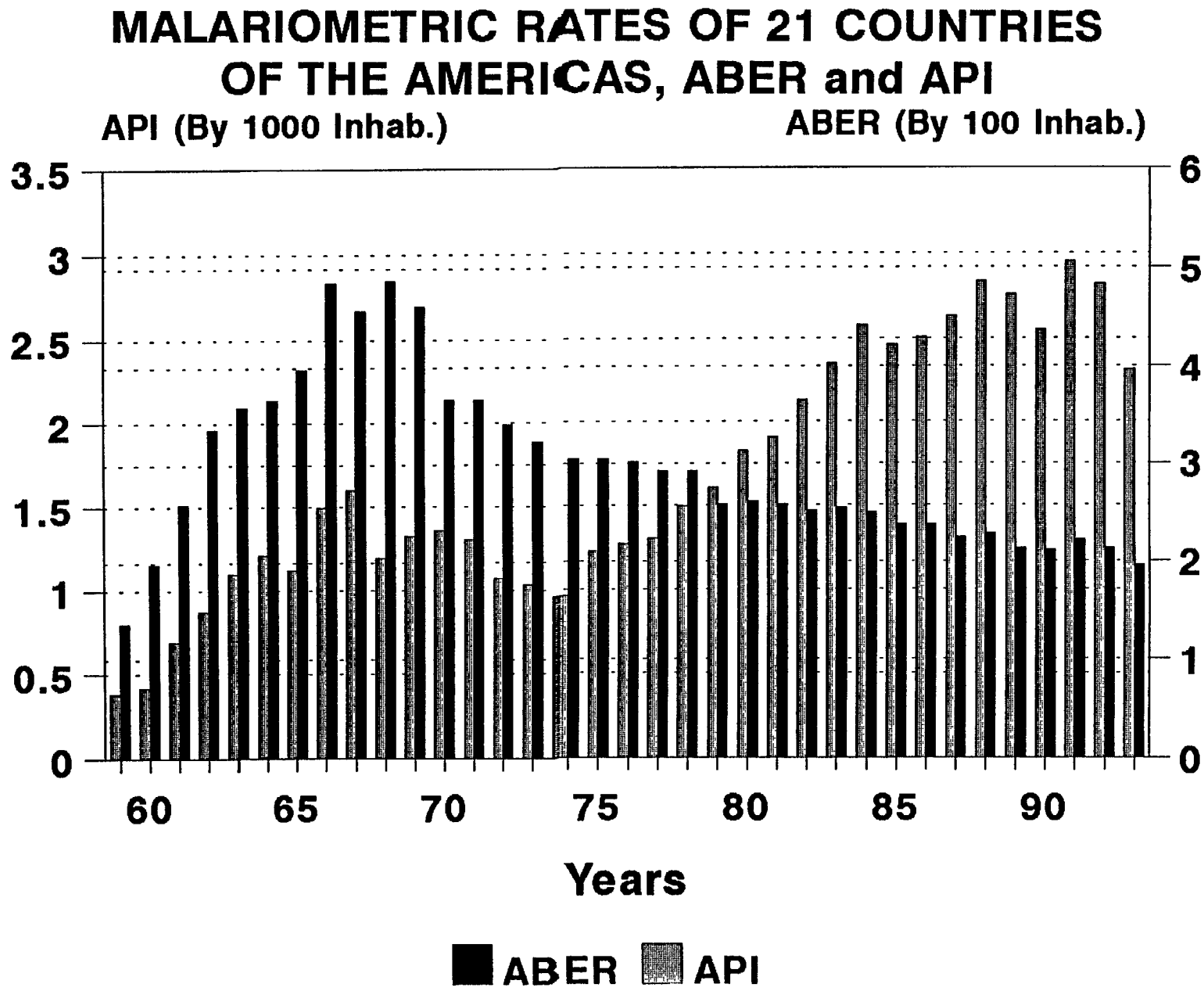
| Year | Total population | Blood Slides Examined | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | AFI | P.falc. & Asoc. | AFI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| | 183,770 | 2,531,566 | 1.38 | 71,138 | 0.39 | 19,879 | 0.11 | 13,148,306 | 71.55 |
| 1960 | 187,952 | 3,713,353 | 1.98 | 79,048 | 0.42 | 22,668 | 0.12 | 13,726,707 | 73.03 |
| | 193,493 | 5,019,034 | 2.59 | 133,161 | 0.69 | 31,681 | 0.16 | 12,170,333 | 62.90 |
| | 199,273 | 6,703,183 | 3.36 | 173,570 | 0.87 | 49,932 | 0.25 | 13,922,121 | 69.86 |
| | 205,362 | 7,388,147 | 3.60 | 225,731 | 1.10 | 81,743 | 0.40 | 14,968,414 | 72.89 |
| | 210,859 | 7,737,428 | 3.67 | 255,130 | 1.21 | 76,937 | 0.36 | 13,995,317 | 66.37 |
| 1965 | 216,906 | 8,635,009 | 3.98 | 243,259 | 1.12 | 82,372 | 0.38 | 12,363,227 | 57.00 |
| | 222,629 | 10,813,817 | 4.86 | 332,599 | 1.49 | 98,597 | 0.44 | 11,498,910 | 51.65 |
| | 228,762 | 10,464,355 | 4.57 | 366,346 | 1.60 | 98,932 | 0.43 | 13,363,486 | 58.42 |
| | 235,068 | 11,473,186 | 4.88 | 280,063 | 1.19 | 80,816 | 0.34 | 14,293,242 | 60.80 |
| | 241,652 | 11,178,193 | 4.63 | 320,383 | 1.33 | 90,506 | 0.37 | 15,065,288 | 62.34 |
| 1970 | 250,465 | 9,184,108 | 3.67 | 339,825 | 1.36 | 86,757 | 0.35 | 16,697,301 | 66.67 |
| | 257,600 | 9,449,291 | 3.67 | 335,290 | 1.30 | 104,643 | 0.41 | 15,656,006 | 60.78 |
| | 264,763 | 9,036,489 | 3.41 | 284,180 | 1.07 | 106,658 | 0.40 | 17,486,151 | 66.04 |
| | 271,756 | 8,778,033 | 3.23 | 280,044 | 1.03 | 118,764 | 0.44 | 16,209,949 | 59.65 |
| | 279,501 | 8,500,069 | 3.04 | 268,700 | 0.96 | 88,702 | 0.32 | 14,070,933 | 50.34 |
| 1975 | 290,670 | 8,863,987 | 3.05 | 356,196 | 1.23 | 101,307 | 0.35 | 13,296,870 | 45.75 |
| | 298,121 | 9,005,812 | 3.02 | 378,651 | 1.27 | 113,828 | 0.38 | 11,423,543 | 38.32 |
| | 305,682 | 8,929,851 | 2.92 | 398,290 | 1.30 | 149,063 | 0.49 | 10,185,057 | 33.32 |
| | 313,091 | 9,143,761 | 2.92 | 468,038 | 1.49 | 141,259 | 0.45 | 9,963,092 | 31.82 |
| | 320,522 | 8,280,680 | 2.58 | 514,110 | 1.60 | 178,807 | 0.56 | 9,589,074 | 29.92 |
| 1980 | 328,492 | 8,576,170 | 2.61 | 599,959 | 1.83 | 194,485 | 0.59 | 9,545,805 | 29.06 |
| | 338,202 | 8,622,478 | 2.55 | 635,877 | 1.88 | 207,309 | 0.61 | 8,084,109 | 23.90 |
| | 346,237 | 8,453,319 | 2.44 | 713,878 | 2.06 | 223,617 | 0.65 | 5,905,423 | 17.06 |
| | 354,187 | 8,969,388 | 2.53 | 829,546 | 2.34 | 311,161 | 0.88 | 4,771,231 | 13.47 |
| | 362,266 | 9,006,858 | 2.49 | 929,891 | 2.57 | 292,422 | 0.81 | 4,458,556 | 12.31 |
| 1985 | 370,194 | 8,781,416 | 2.37 | 909,162 | 2.46 | 283,019 | 0.76 | 4,824,022 | 13.03 |
| | 379,376 | 8,972,835 | 2.37 | 948,906 | 2.50 | 323,194 | 0.85 | 4,670,077 | 12.31 |
| | 386,635 | 8,675,158 | 2.24 | 1,016,327 | 2.63 | 371,002 | 0.96 | 4,712,369 | 12.19 |
| | 394,965 | 8,990,281 | 2.28 | 1,118,132 | 2.83 | 409,526 | 1.04 | 5,775,247 | 14.62 |
| | 403,349 | 8,595,096 | 2.13 | 1,111,732 | 2.76 | 357,730 | 0.89 | 5,482,588 | 13.59 |
| 1990 | 409,143 | 8,647,095 | 2.11 | 1,044,069 | 2.55 | 365,934 | 0.89 | 4,933,155 | 12.06 |
| | 416,830 | 9,198,128 | 2.21 | 1,229,527 | 2.95 | 417,864 | 1.00 | 4,576,866 | 10.98 |
| | 420,553 | 8,943,263 | 2.13 | 1,186,053 | 2.82 | 408,323 | 0.97 | 4,432,398 | 10.54 |
| 1993 * | 425,428 | 8,355,554 | 1.96 | 982,040 | 2.31 | 287,638 | 0.68 | 1,752,297 | 4.12 |

a) PAHO estimated population in thousands of inhabitants, Technical Inf. System. Jun/30/94
The population of the last years for some countries was based on the "UN Population Division of the UN Secretariat. World Population Prospects: The 1992 Revision."
b) Number of thick blood films examined during the year.
c) ABER = Annual Blood Examination Rate, per 100 inhabitants.
d) Number of positive slides.
e) API = Annual Blood Parasite Index, per 1.000 inhabitants.
f) Number of slides showing P.falciparum and other associated plasmodia.
g) AFI = Annual P.falciparum Index during the year, per 1000 inhabitants.
h) Number of house sprayings during the year, including cycles and insecticides.
i) HSR = House Spray Rate, per 1000 inhabitants.
* Information of 20 countries. Suriname is not included.

Figure 5


MALARIOMETRIC RATES OF 21 COUNTRIES OF THE AMERICAS, 1960-1993
API, AFI, HSR/1000 Inhab.
ABER/100 Inhab.
100
10
1
0.1
10
1
60
65
70
75
80
85
90
ABER
API
AFI
HSR

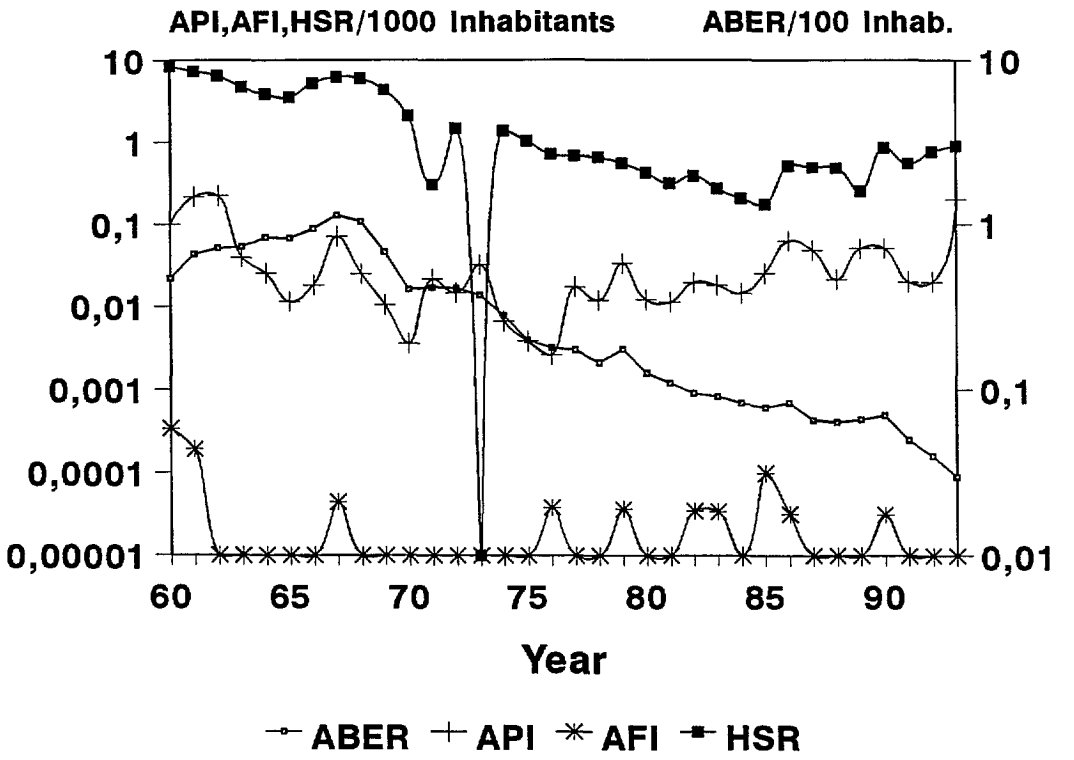
Figure 6


MALARIOMETRIC RATES OF 21 COUNTRIES OF THE AMERICAS, ABER and API
API (By 1000 Inhab.)
ABER (By 100 Inhab.)
3.5
3
2.5
2
1.5
1
0.5
0
6
5
4
3
2
1
0
60
65
70
75
80
85
90
Years
ABER
API

# COUNTRIES WITH ACTIVE MALARIA CONTROL PROGRAMS

# ARGENTINA - Malariometric rates

## 1960-1993




Argentina has reported only the location of the areas in the country at risk of Plasmodium vivax transmission. These areas are situated along the borders with Bolivia (provinces of Salta and Jujuy) and Paraguay (provinces of Misiones and Corrientes). Despite continual contact between the border countries, little headway has been made in carrying out joint malaria control activities.

## ARGENTINA – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| | 20,476 | 21,868 | 0.11 | 1,094 | 0.05 | – | 1,094 | – | 0.00 | 0.05 | 57,995 | 2.83 |
| 1960 | 20,611 | 96,629 | 0.47 | 2,039 | 0.10 | 7 | 2,032 | – | 0.00 | 0.10 | 173,008 | 8.39 |
| | 20,930 | 137,859 | 0.66 | 4,541 | 0.22 | 4 | 4,537 | – | 0.00 | 0.22 | 152,725 | 7.30 |
| | 21,245 | 152,151 | 0.72 | 4,708 | 0.22 | – | 4,705 | 3 | 0.00 | 0.22 | 136,994 | 6.45 |
| | 21,558 | 157,410 | 0.73 | 845 | 0.04 | – | 843 | 2 | 0.00 | 0.04 | 101,369 | 4.70 |
| | 21,868 | 181,722 | 0.83 | 554 | 0.03 | – | 554 | – | 0.00 | 0.03 | 84,402 | 3.86 |
| 1965 | 22,179 | 182,881 | 0.82 | 254 | 0.01 | – | 249 | 5 | 0.00 | 0.01 | 78,664 | 3.55 |
| | 22,488 | 211,281 | 0.94 | 411 | 0.02 | – | 410 | 1 | 0.00 | 0.02 | 117,704 | 5.23 |
| | 22,800 | 259,335 | 1.14 | 1,620 | 0.07 | 1 | 1,618 | 1 | 0.00 | 0.07 | 142,013 | 6.23 |
| | 23,113 | 240,859 | 1.04 | 579 | 0.03 | – | 579 | – | 0.00 | 0.03 | 138,248 | 5.98 |
| | 23,428 | 159,178 | 0.68 | 247 | 0.01 | – | 247 | – | 0.00 | 0.01 | 101,738 | 4.34 |
| 1970 | 23,748 | 95,410 | 0.40 | 86 | 0.00 | – | 86 | – | 0.00 | 0.00 | 50,000 | 2.11 |
| | 24,068 | 99,695 | 0.41 | 518 | 0.02 | – | 517 | 1 | 0.00 | 0.02 | 7,368 | 0.31 |
| | 24,392 | 99,806 | 0.41 | 359 | 0.01 | – | 359 | – | 0.00 | 0.01 | 36,048 | 1.48 |
| | 24,820 | 92,241 | 0.37 | 805 | 0.03 | – | 805 | – | 0.00 | 0.03 | – | 0.00 |
| | 25,620 | 71,168 | 0.28 | 171 | 0.01 | – | 171 | – | 0.00 | 0.01 | 35,156 | 1.37 |
| 1975 | 26,052 | 52,015 | 0.20 | 100 | 0.00 | – | 100 | – | 0.00 | 0.00 | 27,105 | 1.04 |
| | 26,483 | 47,610 | 0.18 | 70 | 0.00 | 1 | 69 | – | 0.00 | 0.00 | 18,951 | 0.72 |
| | 26,915 | 46,841 | 0.17 | 463 | 0.02 | – | 463 | – | 0.00 | 0.02 | 18,330 | 0.68 |
| | 27,349 | 39,922 | 0.15 | 325 | 0.01 | – | 325 | – | 0.00 | 0.01 | 17,918 | 0.66 |
| | 27,789 | 48,945 | 0.18 | 936 | 0.03 | 1 | 935 | – | 0.00 | 0.03 | 15,440 | 0.56 |
| 1980 | 28,237 | 35,501 | 0.13 | 341 | 0.01 | – | 341 | – | 0.00 | 0.01 | 11,960 | 0.42 |
| | 28,694 | 31,431 | 0.11 | 323 | 0.01 | – | 323 | – | 0.00 | 0.01 | 9,005 | 0.31 |
| | 29,157 | 27,803 | 0.10 | 567 | 0.02 | 1 | 566 | – | 0.00 | 0.02 | 11,393 | 0.39 |
| | 29,625 | 27,020 | 0.09 | 535 | 0.02 | 1 | 534 | – | 0.00 | 0.02 | 8,057 | 0.27 |
| | 30,094 | 24,943 | 0.08 | 437 | 0.01 | – | 436 | 1 | 0.00 | 0.01 | 6,199 | 0.21 |
| 1985 | 30,331 | 23,611 | 0.08 | 774 | 0.03 | 3 | 770 | 1 | 0.00 | 0.03 | 5,374 | 0.18 |
| | 31,737 | 26,345 | 0.08 | 2,000 | 0.06 | 1 | 1,999 | – | 0.00 | 0.06 | 16,381 | 0.52 |
| | 31,138 | 20,419 | 0.07 | 1,521 | 0.05 | – | 1,521 | – | 0.00 | 0.07 | 15,312 | 0.49 |
| | 31,536 | 20,028 | 0.06 | 666 | 0.02 | – | 664 | 2 | 0.00 | 0.03 | 15,262 | 0.48 |
| | 31,930 | 21,080 | 0.07 | 1,620 | 0.05 | – | 1,620 | – | 0.00 | 0.08 | 8,165 | 0.26 |
| 1990 | 32,322 | 22,624 | 0.07 | 1,660 | 0.05 | 1 | 1,659 | – | 0.00 | 0.07 | 27,865 | 0.86 |
| 1991 | 32,712 | 16,844 | 0.05 | 803 | 0.02 | 3 | 800 | – | 0.00 | 0.05 | 18,031 | 0.55 |
| 1992 m) | 33,100 | 13,619 | 0.04 | 643 | 0.02 | – | 643 | – | 0.00 | 0.05 | 25,331 | 0.77 |
| 1993 n) | 33,487 | 11,389 | 0.03 | 758 | 0.02 | 1 | 757 | – | 0.00 | 0.07 | 30,177 | 0.90 |

Aug/2/94

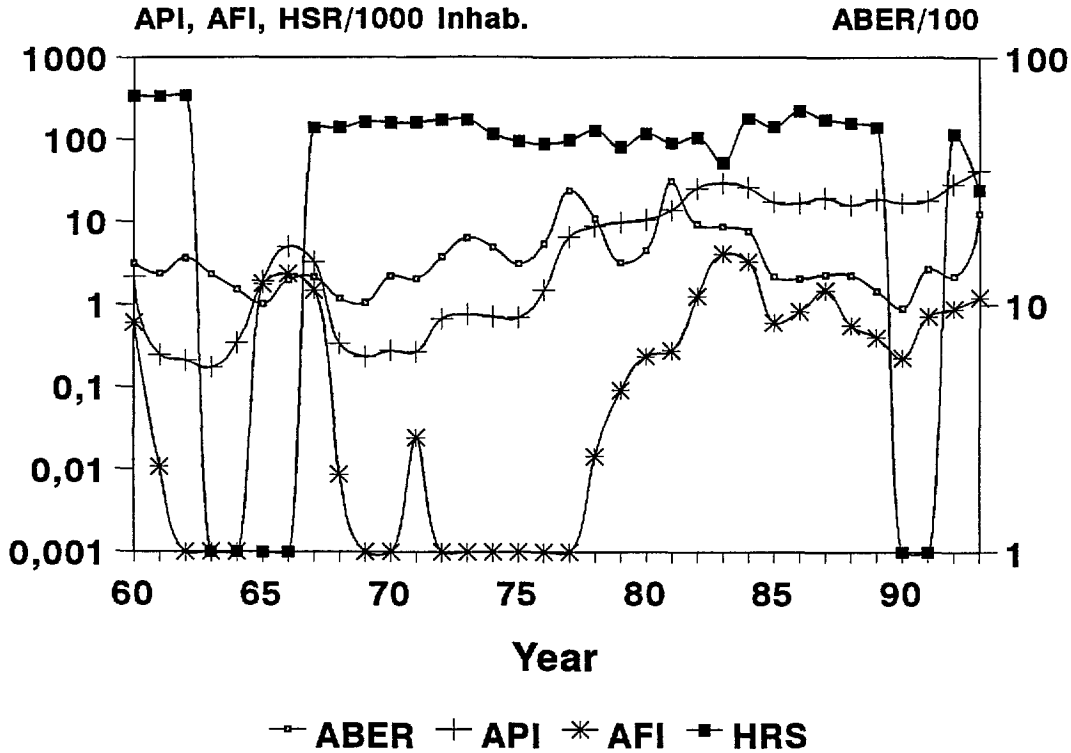
a) Population in thousands, estimated by PAHO Technical Information System.
b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.
f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.
n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

ARGENTINA – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| **Municipalities or "Cantones":** | ... | ... | ... | ... | ... |
| **Slides** | | | | | |
| **Examined:** | 6,428 | – | 4,954 | 7 | 11,389 |
| **Positives:** | 643 | – | 109 | 7 | 759 |
| **(P.falciparum):** | – | – | – | (1) | (1) |
| **4–Aminoquinolines** | | | | | |
| **Complete Treatments:** | 1,061 | – | 305 | | 1,366 |
| **Administered treatments for each case:** | 1.65 | – | 2.80 | | 1.80 |

# BELIZE - Malariometric Rates

## 1960-1993




Belize has reported significant deterioration in its malaria situation, as measured by the API, which doubled between 1992 and 1993. This increase resulted from more effective epidemiological surveillance, which was possible thanks to a contribution of financial resources from the Subregional Program for Malaria Control as part of PAHO's technical cooperation. Epidemiological surveillance has doubled and the definition of priority areas has indicated the manner in which available resources should be redistributed. Previously 53 localities were considered to be at medium risk, while 282 were defined as high-risk (mainly those reporting P. falciparum infections in the districts of Corozal and Orange Walk). The priority situation of these districts, which are located along the border with Mexico, has given rise to an agreement for the coordination of activities between the two countries.

## BELIZE – MALARIOMETRIC RATES

| Year | Total Population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| | 88 | 11,307 | 12.85 | 1,019 | 11.58 | 712 | 211 | 96 | 8.09 | 2.40 | 22,526 | 255.98 |
| 1960 | 91 | 13,307 | 14.62 | 196 | 2.15 | 55 | 138 | 3 | 0.60 | 1.52 | 31,008 | 340.75 |
| | 93 | 12,355 | 13.28 | 23 | 0.25 | 1 | 22 | – | 0.01 | 0.24 | 31,410 | 337.74 |
| | 95 | 14,556 | 15.32 | 20 | 0.21 | – | 20 | – | 0.00 | 0.21 | 32,566 | 342.80 |
| | 99 | 13,085 | 13.22 | 17 | 0.17 | – | 17 | – | 0.00 | 0.17 | – | 0.00 |
| | 103 | 11,826 | 11.48 | 35 | 0.34 | – | 35 | – | 0.00 | 0.34 | – | 0.00 |
| 1965 | 107 | 10,787 | 10.08 | 206 | 1.93 | 188 | 18 | – | 1.76 | 0.17 | – | 0.00 |
| | 111 | 13,920 | 12.54 | 552 | 4.97 | 260 | 292 | – | 2.34 | 2.63 | – | 0.00 |
| | 115 | 14,773 | 12.85 | 375 | 3.26 | 170 | 205 | – | 1.48 | 1.78 | 15,820 | 137.57 |
| | 116 | 12,271 | 10.58 | 39 | 0.34 | 1 | 38 | – | 0.01 | 0.33 | 16,095 | 138.75 |
| | 120 | 12,194 | 10.16 | 28 | 0.23 | – | 28 | – | 0.00 | 0.23 | 19,593 | 163.28 |
| 1970 | 120 | 15,522 | 12.94 | 33 | 0.28 | – | 33 | – | 0.00 | 0.28 | 19,215 | 160.13 |
| | 124 | 15,703 | 12.66 | 33 | 0.27 | 3 | 30 | – | 0.02 | 0.24 | 20,132 | 162.35 |
| | 128 | 19,835 | 15.50 | 86 | 0.67 | – | 86 | – | 0.00 | 0.67 | 22,298 | 174.20 |
| | 132 | 24,414 | 18.50 | 99 | 0.75 | – | 99 | – | 0.00 | 0.75 | 23,080 | 174.85 |
| | 136 | 23,100 | 16.99 | 96 | 0.71 | – | 96 | – | 0.00 | 0.71 | 15,890 | 116.84 |
| 1975 | 131 | 19,116 | 14.59 | 90 | 0.69 | – | 90 | – | 0.00 | 0.69 | 12,379 | 94.50 |
| | 134 | 23,513 | 17.55 | 199 | 1.49 | – | 199 | – | 0.00 | 1.49 | 11,752 | 87.70 |
| | 136 | 39,151 | 28.79 | 894 | 6.57 | – | 894 | – | 0.00 | 6.57 | 13,300 | 97.79 |
| | 139 | 30,818 | 22.17 | 1,218 | 8.76 | 2 | 1,216 | – | 0.01 | 8.75 | 17,768 | 127.83 |
| | 142 | 20,952 | 14.75 | 1,391 | 9.80 | 13 | 1,378 | – | 0.09 | 9.70 | 11,399 | 80.27 |
| 1980 | 145 | 23,925 | 16.50 | 1,529 | 10.54 | 34 | 1,495 | – | 0.23 | 10.31 | 16,835 | 116.10 |
| | 148 | 46,460 | 31.39 | 2,041 | 13.79 | 41 | 2,000 | – | 0.28 | 13.51 | 13,353 | 90.22 |
| | 152 | 31,945 | 21.02 | 3,868 | 25.45 | 191 | 3,677 | – | 1.26 | 24.19 | 15,954 | 104.96 |
| | 155 | 31,889 | 20.57 | 4,595 | 29.65 | 634 | 3,961 | – | 4.09 | 25.55 | 8,046 | 51.91 |
| | 158 | 31,146 | 19.71 | 4,117 | 26.06 | 521 | 3,596 | – | 3.30 | 22.76 | 28,228 | 178.66 |
| 1985 | 161 | 20,905 | 12.98 | 2,800 | 17.39 | 97 | 2,703 | – | 0.60 | 16.79 | 22,935 | 142.45 |
| | 164 | 20,859 | 12.72 | 2,779 | 16.95 | 136 | 2,643 | – | 0.83 | 16.12 | 36,452 | 222.27 |
| | 168 | 22,139 | 13.18 | 3,258 | 19.39 | 248 | 3,004 | 6 | 1.48 | 17.88 | 29,324 | 174.55 |
| | 171 | 22,403 | 13.10 | 2,725 | 15.94 | 95 | 2,617 | 13 | 0.56 | 15.30 | 27,163 | 158.85 |
| | 175 | 19,806 | 11.32 | 3,285 | 18.77 | 70 | 3,208 | 7 | 0.40 | 18.33 | 24,460 | 139.77 |
| 1990 | 178 | 17,204 | 9.67 | 3,033 | 17.04 | 40 | 2,987 | 6 | 0.22 | 16.78 | ... | 0.00 |
| 1991 | 182 | 25,281 | 13.89 | 3,317 | 18.23 | 131 | 3,181 | 5 | 0.72 | 17.48 | ... | 0.00 |
| 1992 m) | 186 | 24,135 | 12.98 | 5,341 | 28.72 | 165 | 5,175 | 1 | 0.89 | 27.82 | 21,760 | 116.99 |
| 1993 n) | 205 | 47,742 | 23.29 | 8,586 | 41.88 | 251 | 8,332 | – | 1.22 | 40.64 | 4,999 | 24.39 |

Aug/2/94

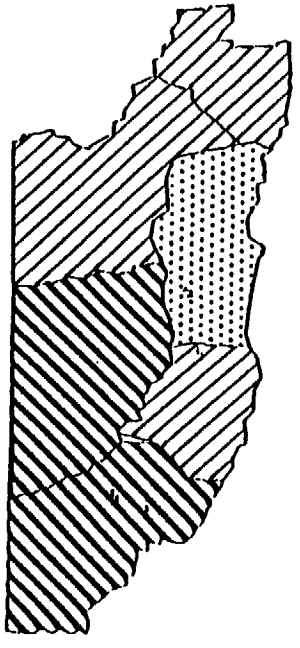
a) Population in thousands, estimated by PAHO Technical Information System.
b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.
f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.
n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

BELIZE – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| **Municipalities or "Cantones":** | 282 | 53 | – | – | 335 |
| **Slides** | | | | | |
| **Examined:** | 27,102 | 20,622 | – | – | 47,724 |
| **Positives:** | 6,010 | 2,576 | – | – | 8,586 |
| **(P.falciparum):** | (222) | (29) | – | – | (251) |
| **4–Aminoquinolines** | | | | | |
| **Complete Treatments:** | 13,620 | 5,840 | | | 19,460 |
| **Administered treatments for each case:** | 2.27 | 2.27 | | | 2.27 |

# BELIZE

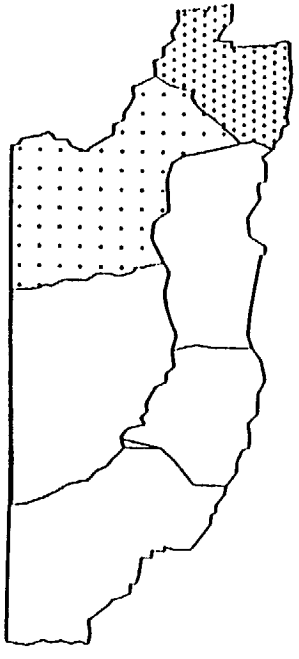
## ANNUAL PARASITE INDEX (API) BY DEPARTMENTS



**Risk Criteria**

| | | |
|---|---|---|
| 0 - 5 | Low |
| 5 - 15 | Moderate |
| 15 - 50 | High |
| 50 - 94 | Very high |

## ANNUAL P.falciparum INDEX (AFI) BY DISTRICTS

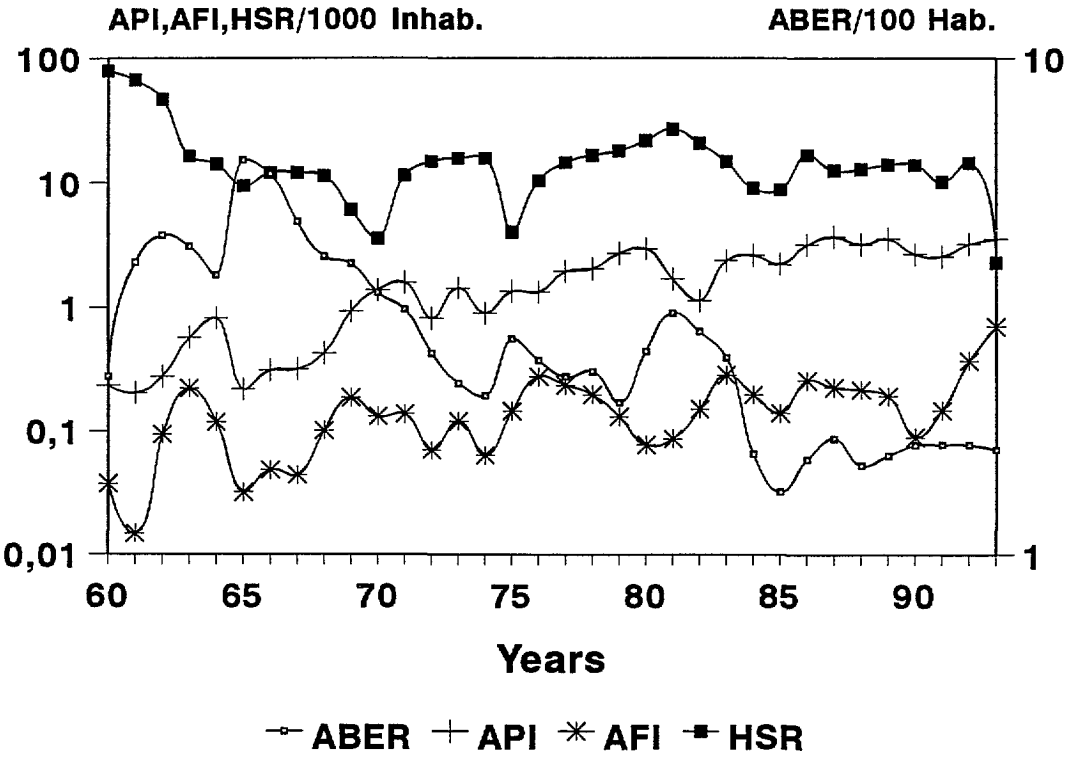


**Risk Criteria**

| | |
|---|---|
| 0.09 a 0.10 | |
| 0.11 a 0.45 | |

# BOLIVIA - Malariometric Rates

## 1960-1993




An increase in the P. falciparum infection rate was registered in 1993, mainly in newly developed jungle areas in the provinces of Pando and Beni in the north of the country.

Economic difficulties have prevented the country from procuring the basic materials needed for malaria control. The national malaria program has been hampered by lack of funds. However, the program benefitted from the assistance provided by the country's general health services, which diagnosed 56% of the cases reported and examined 30.3% of the blood samples taken in the country.

Bolivia is in the process of revising and implementing new guidelines for malaria control, which will be consonant with the new Global Malaria Control Strategy. It is expected that the limited resources of the national program will be utilized to expand the coverage of the general health services.

# BOLIVIA - MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| | 3.616 | 83.762 | 2,32 | 1.970 | 0,54 | 243 | 1.419 | 308 | 0,07 | 0,39 | 286.827 | 79,32 |
| 1960 | 3.825 | 87.775 | 2,29 | 893 | 0,23 | 143 | 621 | 129 | 0,04 | 0,16 | 301.995 | 78,95 |
| | 3.920 | 153.008 | 3,90 | 796 | 0,20 | 58 | 725 | 13 | 0,01 | 0,18 | 262.670 | 67,01 |
| | 4.019 | 177.528 | 4,42 | 1.110 | 0,28 | 378 | 721 | 11 | 0,09 | 0,18 | 188.193 | 46,83 |
| | 4.121 | 173.019 | 4,20 | 2.345 | 0,57 | 910 | 1.435 | - | 0,22 | 0,35 | 67.510 | 16,38 |
| | 4.226 | 155.540 | 3,68 | 3.454 | 0,82 | 497 | 2.955 | 2 | 0,12 | 0,70 | 59.669 | 14,12 |
| 1965 | 4.334 | 270.754 | 6,25 | 941 | 0,22 | 138 | 801 | 2 | 0,03 | 0,18 | 40.991 | 9,46 |
| | 4.446 | 260.145 | 5,85 | 1.373 | 0,31 | 214 | 1.159 | - | 0,05 | 0,26 | 53.591 | 12,05 |
| | 4.561 | 214.537 | 4,70 | 1.442 | 0,32 | 200 | 1.242 | - | 0,04 | 0,27 | 54.987 | 12,06 |
| | 4.680 | 187.635 | 4,01 | 1.998 | 0,43 | 472 | 1.526 | - | 0,10 | 0,33 | 53.214 | 11,37 |
| | 4.770 | 185.299 | 3,88 | 4.425 | 0,93 | 891 | 3.534 | - | 0,19 | 0,74 | 29.035 | 6,09 |
| 1970 | 4.931 | 167.265 | 3,39 | 6.862 | 1,39 | 651 | 6.211 | - | 0,13 | 1,26 | 17.797 | 3,61 |
| | 5.063 | 158.786 | 3,14 | 8.080 | 1,60 | 699 | 7.381 | - | 0,14 | 1,46 | 58.251 | 11,51 |
| | 5.195 | 132.750 | 2,56 | 4.275 | 0,82 | 364 | 3.911 | - | 0,07 | 0,75 | 77.492 | 14,92 |
| | 5.331 | 118.417 | 2,22 | 7.696 | 1,44 | 640 | 7.056 | - | 0,12 | 1,32 | 84.406 | 15,83 |
| | 5.470 | 114.805 | 2,10 | 4.936 | 0,90 | 349 | 4.586 | 1 | 0,06 | 0,84 | 86.477 | 15,81 |
| 1975 | 4.894 | 133.605 | 2,73 | 6.615 | 1,35 | 711 | 5.903 | 1 | 0,15 | 1,21 | 19.867 | 4,06 |
| | 5.021 | 124.101 | 2,47 | 6.714 | 1,34 | 1.383 | 5.331 | - | 0,28 | 1,06 | 52.055 | 10,37 |
| | 5.151 | 118.002 | 2,29 | 10.106 | 1,96 | 1.211 | 8.895 | - | 0,24 | 1,73 | 75.191 | 14,60 |
| | 5.286 | 124.082 | 2,35 | 10.897 | 2,06 | 1.042 | 9.855 | - | 0,20 | 1,86 | 88.449 | 16,73 |
| | 5.426 | 110.235 | 2,03 | 14.873 | 2,74 | 710 | 14.163 | - | 0,13 | 2,61 | 98.409 | 18,14 |
| 1980 | 5.570 | 143.648 | 2,58 | 16.619 | 2,98 | 432 | 16.187 | - | 0,08 | 2,91 | 122.018 | 21,91 |
| | 5.720 | 176.235 | 3,08 | 9.774 | 1,71 | 496 | 9.278 | - | 0,09 | 1,62 | 154.572 | 27,02 |
| | 5.874 | 166.124 | 2,83 | 6.699 | 1,14 | 885 | 5.814 | - | 0,15 | 0,99 | 122.384 | 20,83 |
| | 6.034 | 151.187 | 2,51 | 14.441 | 2,39 | 1.713 | 12.728 | - | 0,28 | 2,11 | 89.551 | 14,84 |
| | 6.200 | 99.003 | 1,60 | 16.338 | 2,64 | 1.218 | 15.120 | - | 0,20 | 2,44 | 56.145 | 9,06 |
| 1985 | 6.371 | 85.378 | 1,34 | 14.354 | 2,25 | 890 | 13.454 | - | 0,14 | 2,11 | 56.205 | 8,82 |
| | 6.547 | 101.878 | 1,56 | 20.993 | 3,21 | 1.674 | 19.319 | 9 | 0,26 | 2,95 | 109.926 | 16,79 |
| | 6.730 | 115.512 | 1,72 | 24.891 | 3,70 | 1.512 | 23.379 | - | 0,22 | 3,47 | 84.588 | 12,57 |
| | 6.918 | 104.888 | 1,52 | 22.258 | 3,22 | 1.494 | 20.764 | - | 0,22 | 3,00 | 89.348 | 12,92 |
| | 7.113 | 112.770 | 1,59 | 25.367 | 3,57 | 1.363 | 24.004 | - | 0,19 | 3,37 | 99.640 | 14,01 |
| 1990 m | 7.171 | 121.743 | 1,70 | 19.680 | 2,74 | 652 | 19.028 | - | 0,09 | 2,65 | 99.989 | 13,94 |
| 1991 m | 7.346 | 125.509 | 1,71 | 19.031 | 2,59 | 1.103 | 17.928 | 0 | 0,15 | 2,44 | 75.115 | 10,23 |
| 1992 m | 7.524 | 125 414 | 1,67 | 24.486 | 3,25 | 2.757 | 21.729 | 0 | 0,37 | 2,89 | 109.168 | 14,51 |
| 1993 n) | 7.705 | 125.721 | 1,63 | 27.475 | 3,57 | 5.375 | 22.100 | 0 | 0,70 | 2,87 | 17.721 | 2,30 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.

d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.

f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

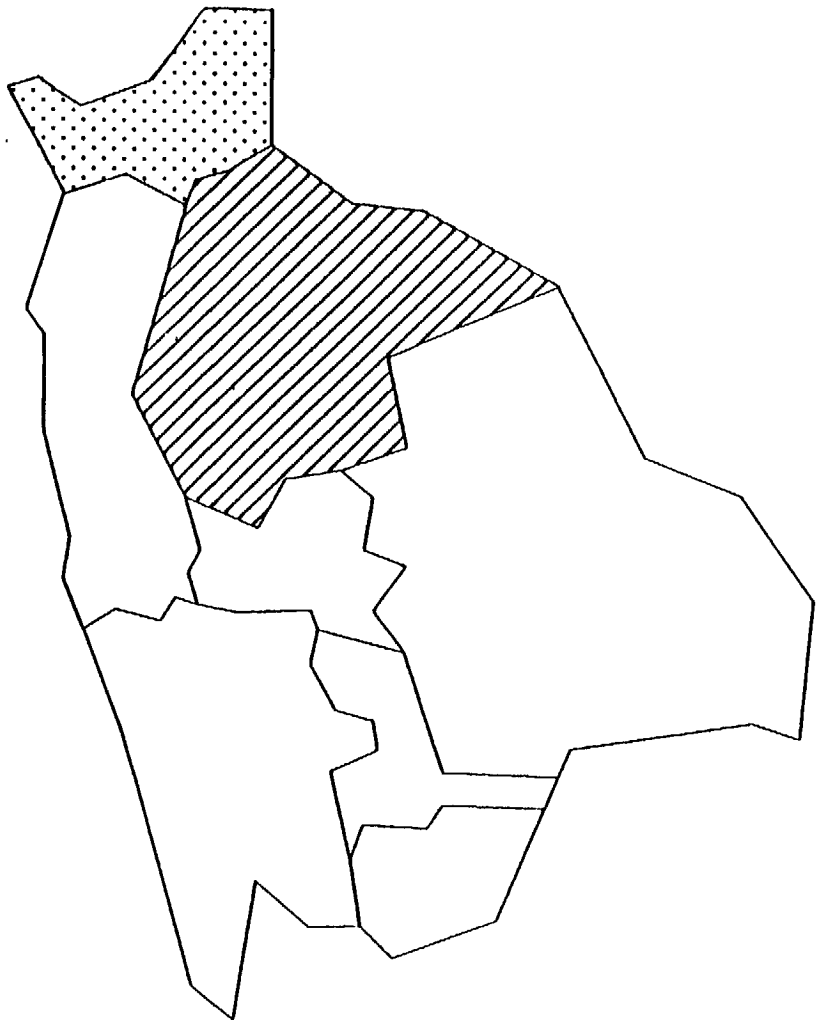
n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

BOLIVIA – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| Municipalities or "Cantones": | ... | ... | ... | ... | ... |
| Slides | | | | | |
| Examined: | 73,628 | 34,960 | 17,133 | – | 125,721 |
| Positives: | 22,110 | 3,265 | 2,100 | – | 27,475 |
| (P.falciparum): | (5.104) | (264) | (7) | – | (5.375) |
| 4–Aminoquinolines | | | | | |
| Complete Treatments: | ... | ... | ... | ... | 61,286 |
| Administered treatments for each case: | ... | ... | ... | ... | 2.23 |
| No. of treatments with 2nd line antimalarial drugs | ... | ... | ... | ... | 13,176 |

# B O L I V I A

## CASES OF MALARIA BY DEPARTMENTS
### High risk areas, 1993



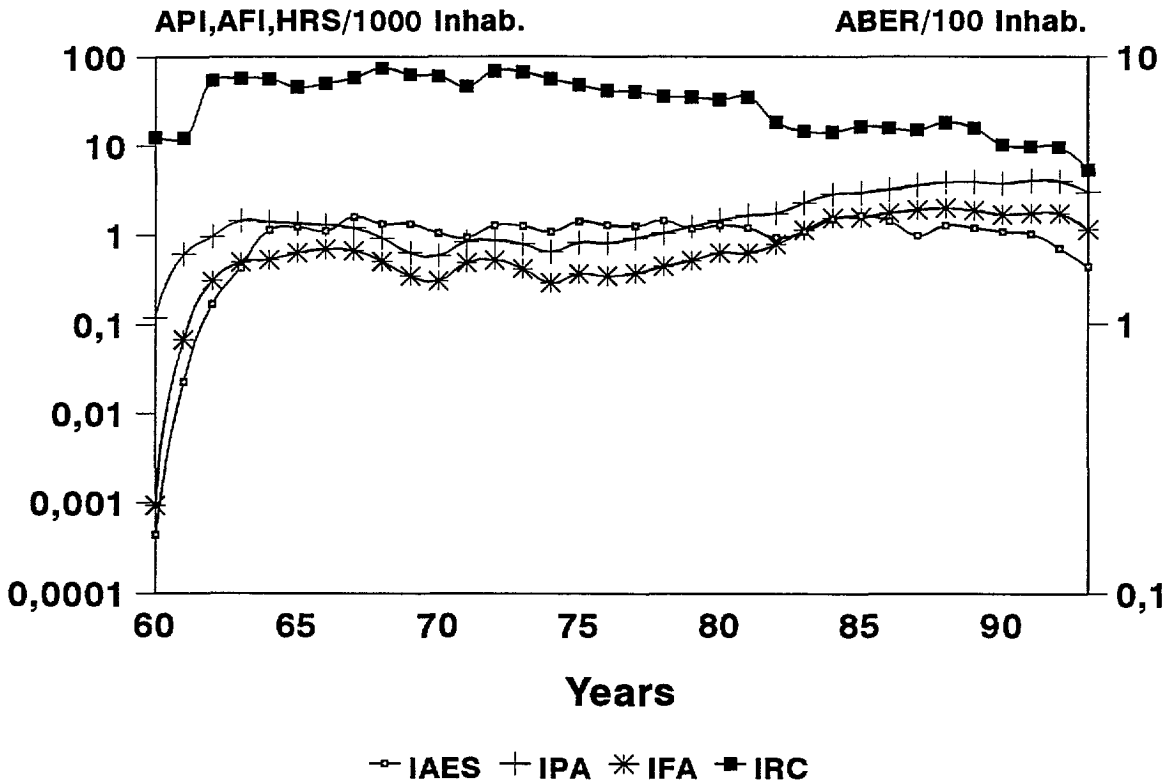
**Number of cases**

1,500 - 5,000

5,001 +

# BRAZIL - Malariometric Rates

1960-1993




Brazil has reported that its efforts to municipalize malaria control activities continues. This new program orientation it is in the implementation phase in high- and medium-risk areas, which encompass 651 *municipios* located in 6 of the 9 states of the Amazon region (Amazonas, Maranhão, Mato Grosso, Pará, Rondônia, and Roraima). In the other three states (Acre, Amapá, and Tocantins) the process of municipalization began in 1994. Outside the Amazon region, 3,895 *municipios* in which ecological conditions are conducive to malaria transmission have been incorporated into the epidemiological surveillance system of the general health services. In such areas, the National Health Foundation (FNS) allocates resources to the states for the implementation of measures to prevent the establishment of malaria foci in the event of epidemics.

The objectives of malaria control activities under the new program orientation coincide with those of the Global Malaria Control Strategy, i.e. to prevent mortality and reduce morbidity and the social costs and economic consequences of the disease through the gradual development of municipal health services.

BRAZIL – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| **Municipalities or "Cantones":** | 115 | 536 | 3,895 | 428 | 4,974 |
| **Slides** | | | | | |
| **Examined:** | 1,355,154 | 591,906 | 603,774 | 870 | 2,551,704 |
| **Positives:** | 393,153 | 68,815 | 3,910 | 312 | 466,190 |
| **(P.falciparum):** | (154.116) | (20.969) | (1.180) | (107) | (176.372) |
| **4–Aminoquinolines** | | | | | |
| **Complete Treatments:** | 521,800 | – | 92,000 | – | 613,800 |
| **Administered treatments for each case:** | 1.33 | – | 23.53 | – | 1.32 |
| **No. of treatments with 2nd line antimalarial drugs** | 143,597 | – | 35,190 | | 178,787 |

The cornerstones of this new orientation are: (1) early diagnosis and immediate treatment of cases; (2) use of vector-control measures tailored to the characteristics of each persistent focus of transmission; (3) early detection and immediate control of epidemics; and (4) constant monitoring of the epidemiological situation in the country.

The activities carried out jointly with the health services under this orientation in the 115 high-risk *municipios*, located in the six states of the Amazon region, helped to substantially decrease malaria morbidity in the country, reducing the number of cases by about 100,000.

Intense transmission of malaria in the Amazon region, as is illustrated on the map below, is concentrated in northern Mato Grosso, southern Pará (along the trans-Amazon highway and the road between Guiabá and San Loren, as well as in the valleys of the Tapajos and Jamauzyn rivers and the Araguaia and Xingre rivers), in the northern and northwestern regions of the state of Rondônia (*municipios* of Porto Velho, Ariquemes, and Machadinho), the western portion of the state of Roraima (in the Yanomami Indian reserve), the southern and western parts of the state of Acre along the border with Peru, and in the state of Amapá along the border with French Guiana.

The effort at municipalization and epidemiological stratification in Brazil has made it possible to more precisely delimit the areas in which the population is at highest risk of malaria infection. This greater precision has reduced the demand for examination of blood samples from all over the country, enabling health officials to concentrate on obtaining blood samples in the highest-risk *municipios*. However, in 1993 these *municipios* still had less availability of therapeutic resources than low-risk areas, as is evident from the following table, which shows the distribution of diagnostic and treatment activities. Less than one treatment with first-line drugs was administered for each diagnosed case in high- and medium-risk areas, while in low-risk areas 23 first-line treatments were administered for each diagnosed case.

This imbalance between supply and demand in the administration of treatment was even more acute in the case of the P. falciparum infections diagnosed. Of the 1,180 such infections diagnosed in the 3,895 low-risk *municipios*, 35,190 treatments with second-line drugs were administered, while in the high- and medium-risk areas, 1.2 treatment with second-line drugs were administered for each P. falciparum case diagnosed.

With the consolidation of plans for integrating the program into municipal health services, an effort is being made to increase the coverage of the services in priority malaria control regions. Ensuring greater coverage of high-risk areas is expected to reduce the disproportions in the availability of treatment suited to the epidemiological situation.

## BRAZIL – MALARIOMETRIC RATES

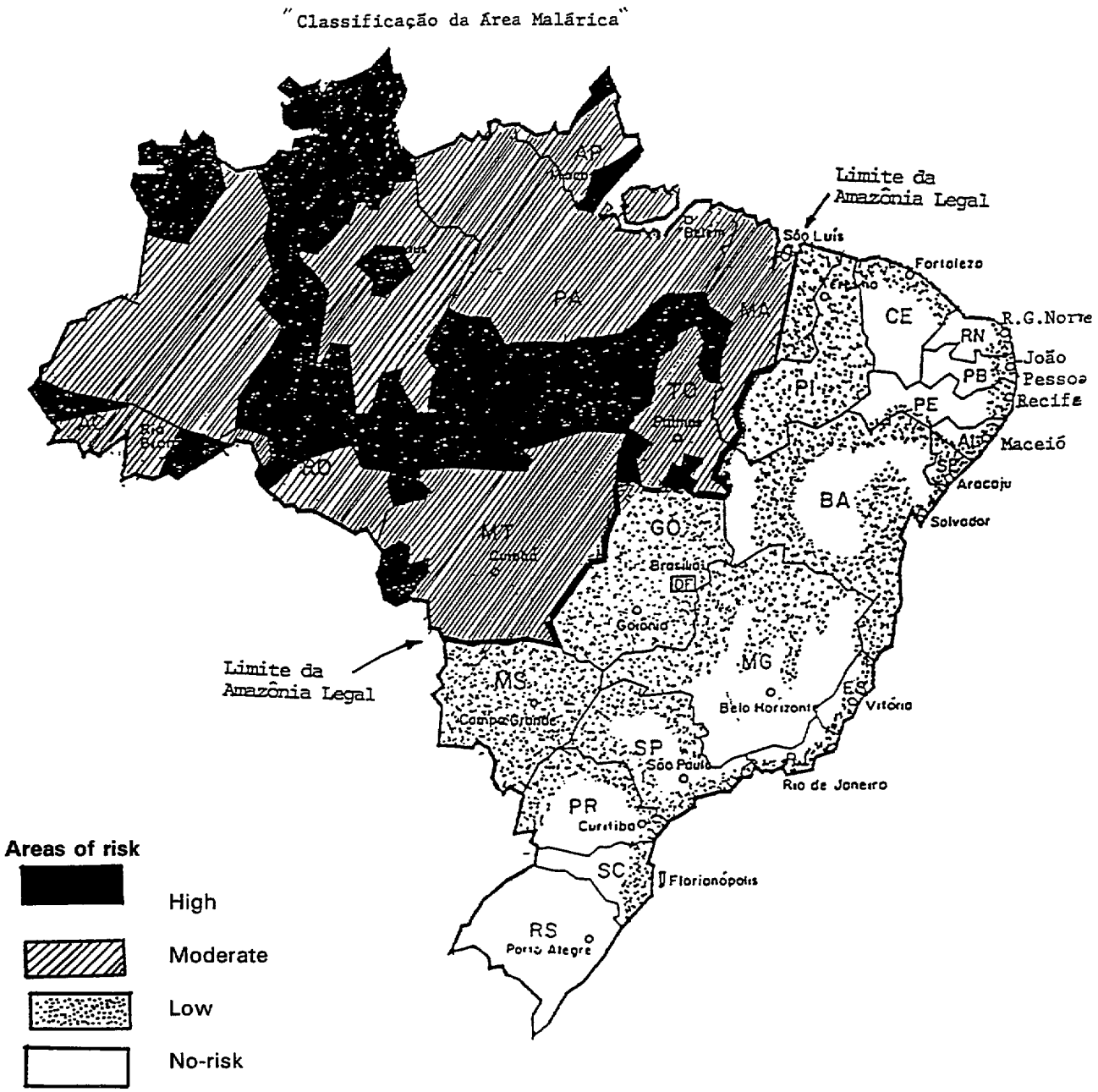
| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| 1960 | 69,720 | 114,622 | 0.16 | 8,297 | 0.12 | 66 | 8,230 | 1 | 0.00 | 0.12 | 873,746 | 12.53 |
| | 71,868 | 438,707 | 0.61 | 44,188 | 0.61 | 4,883 | 39,300 | 5 | 0.07 | 0.55 | 881,920 | 12.27 |
| | 74,096 | 884,434 | 1.19 | 72,060 | 0.97 | 22,910 | 49,142 | 8 | 0.31 | 0.66 | 4,081,914 | 55.09 |
| | 76,526 | 1,245,674 | 1.63 | 111,417 | 1.46 | 37,929 | 73,388 | 100 | 0.50 | 0.96 | 4,419,463 | 57.75 |
| | 78,730 | 1,775,864 | 2.26 | 111,278 | 1.41 | 42,041 | 69,180 | 57 | 0.53 | 0.88 | 4,481,579 | 56.92 |
| 1965 | 81,006 | 1,874,955 | 2.31 | 110,306 | 1.36 | 51,273 | 58,925 | 108 | 0.63 | 0.73 | 3,757,685 | 46.39 |
| | 82,930 | 1,854,939 | 2.24 | 108,630 | 1.31 | 57,728 | 50,654 | 248 | 0.70 | 0.61 | 4,222,505 | 50.92 |
| | 85,240 | 2,151,470 | 2.52 | 102,842 | 1.21 | 57,266 | 45,348 | 228 | 0.67 | 0.53 | 5,006,241 | 58.73 |
| | 87,620 | 2,081,679 | 2.38 | 81,324 | 0.93 | 44,289 | 36,799 | 236 | 0.51 | 0.42 | 6,584,083 | 75.14 |
| | 90,070 | 2,139,885 | 2.38 | 56,951 | 0.63 | 31,346 | 25,454 | 151 | 0.35 | 0.28 | 5,725,743 | 63.57 |
| 1970 | 92,520 | 2,030,459 | 2.19 | 54,644 | 0.59 | 28,557 | 25,935 | 152 | 0.31 | 0.28 | 5,642,025 | 60.98 |
| | 95,170 | 2,012,625 | 2.11 | 80,293 | 0.84 | 46,605 | 33,597 | 91 | 0.49 | 0.35 | 4,462,581 | 46.89 |
| | 97,850 | 2,291,682 | 2.34 | 85,325 | 0.87 | 51,420 | 33,845 | 60 | 0.53 | 0.35 | 6,826,559 | 69.77 |
| | 99,920 | 2,329,563 | 2.33 | 79,161 | 0.79 | 42,002 | 37,107 | 52 | 0.42 | 0.37 | 6,724,621 | 67.30 |
| | 102,400 | 2,271,691 | 2.22 | 66,481 | 0.65 | 29,997 | 36,393 | 91 | 0.29 | 0.36 | 5,761,532 | 56.26 |
| 1975 | 108,032 | 2,617,755 | 2.42 | 88,630 | 0.82 | 39,572 | 49,020 | 38 | 0.37 | 0.45 | 5,282,378 | 48.90 |
| | 110,592 | 2,600,871 | 2.35 | 89,765 | 0.81 | 38,397 | 51,331 | 37 | 0.35 | 0.46 | 4,648,871 | 42.04 |
| | 113,197 | 2,638,765 | 2.33 | 104,436 | 0.92 | 42,027 | 62,381 | 28 | 0.37 | 0.55 | 4,643,422 | 41.02 |
| | 115,849 | 2,825,890 | 2.44 | 121,577 | 1.05 | 51,568 | 69,983 | 26 | 0.45 | 0.60 | 4,191,780 | 36.18 |
| | 118,545 | 2,691,966 | 2.27 | 147,630 | 1.25 | 60,916 | 86,693 | 21 | 0.51 | 0.73 | 4,180,295 | 35.26 |
| 1980 | 121,286 | 2,838,643 | 2.34 | 176,237 | 1.45 | 75,920 | 100,302 | 15 | 0.63 | 0.83 | 4,016,014 | 33.11 |
| | 124,070 | 2,839,488 | 2.29 | 205,544 | 1.66 | 77,779 | 119,431 | 2 | 0.63 | 0.96 | 4,382,444 | 35.32 |
| | 126,895 | 2,672,904 | 2.11 | 221,939 | 1.75 | 98,999 | 122,934 | 6 | 0.78 | 0.97 | 2,334,628 | 18.40 |
| | 129,757 | 2,881,660 | 2.22 | 297,687 | 2.29 | 147,504 | 150,169 | 14 | 1.14 | 1.16 | 1,900,883 | 14.65 |
| | 132,648 | 3,277,492 | 2.47 | 378,257 | 2.85 | 206,414 | 171,836 | 7 | 1.56 | 1.30 | 1,888,740 | 14.24 |
| 1985 | 135,564 | 3,452,943 | 2.55 | 401,904 | 2.96 | 214,193 | 187,706 | 5 | 1.58 | 1.38 | 2,241,251 | 16.53 |
| | 138,502 | 3,363,962 | 2.43 | 443,627 | 3.20 | 243,761 | 199,857 | 9 | 1.76 | 1.44 | 2,190,413 | 15.82 |
| | 141,459 | 3,034,540 | 2.15 | 508,864 | 3.60 | 270,458 | 238,403 | 3 | 1.91 | 1.69 | 2,127,939 | 15.04 |
| | 144,427 | 3,373,283 | 2.34 | 559,535 | 3.87 | 287,750 | 271,784 | 1 | 1.99 | 1.88 | 2,626,667 | 18.19 |
| | 147,399 | 3,368,564 | 2.29 | 577,520 | 3.92 | 275,674 | 301,841 | 5 | 1.87 | 2.05 | 2,332,347 | 15.82 |
| 1990 m) | 149,042 | 3,294,234 | 2.21 | 560,396 | 3.76 | 252,191 | 308,184 | 21 | 1.69 | 2.07 | 1,527,169 | 10.25 |
| 1991m | 151,602 | 3,283,016 | 2.17 | 614,431 | 4.05 | 265,597 | 348,722 | 112 | 1.75 | 2.30 | 1,483,100 | 9.78 |
| 1992 m | 154,113 | 2,955,196 | 1.92 | 609,860 | 3.96 | 267,054 | 342,650 | 156 | 1.73 | 2.22 | 1,481,507 | 9.61 |
| 1993 n) | 156,578 | 2,551,704 | 1.63 | 466,190 | 2.98 | 176,372 | 289,637 | 156 | 1.13 | 1.85 | 825,591 | 5.27 |

Aug/2/94

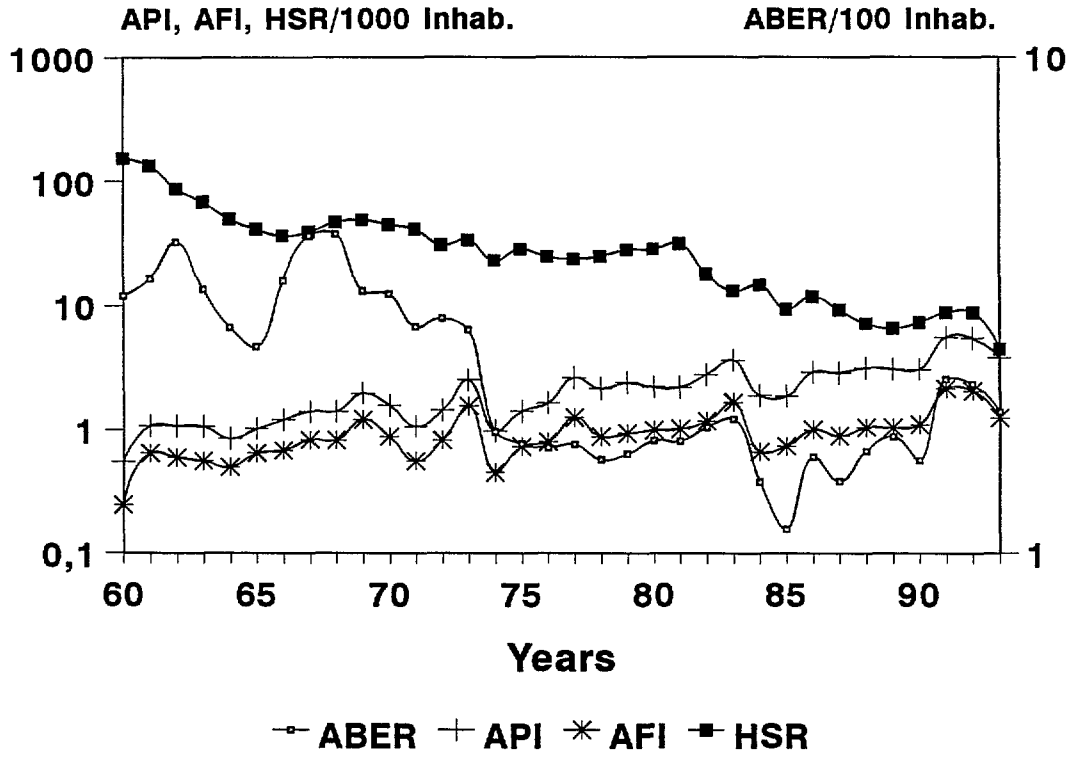
a) Population in thousands, estimated by PAHO Technical Information System.
b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.
f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.
n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

# BRAZIL

## AREAS OF RISK
## 1993



# COLOMBIA - Malariometric Rates
## 1960-1993




In Colombia 130 *municipios*, with a total population of six million, have been classified as high-risk. In response to changes introduced in the public health models in use in the country, a thorough revision of the traditional eradication-oriented strategy has been undertaken and special importance has been assigned to prevention and control programs that incorporate modern elements such as epidemiological stratification, community participation, prevention through health education, reduction in human-vector contact, early diagnosis, and timely treatment. Among its objectives the Ministry of Health has prioritized decentralization of the vertical program, in keeping with the general process of decentralization under way in the health sector. Law 10, enacted in 1990, provided for the establishment of local health systems. This law includes specific articles regulating the decentralization direct campaigns against specific diseases (malaria, dengue, yaws, and yellow fever). Law 60 of 1993 determined the distribution of national resources to each *municipio*. This law identifies the department as the political subdivision that adapts policies set at the national level before they are implemented at the municipal level, assigning it a role of articulation and coordination.

COLOMBIA – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| Municipalities or "Cantones": | 130 | 81 | 483 | 331 | 1,025 |
| Slides | | | | | |
| Examined: | 528,823 | 87,232 | 40,577 | – | 656,632 |
| Positives: | 119,836 | 7,395 | 2,146 | – | 129,377 |
| (P.falciparum): | (39.584) | (2.447) | (477) | – | (42.508) |
| 4–Aminoquinolines | | | | | |
| Complete Treatments: | 212,984 | 10,466 | 2,682 | – | 226,132 |
| Administered treatments for each case: | 1.78 | 1.42 | 1.25 | – | 1.75 |
| No. of treatments with 2nd line antimalarial drugs | 417,577 | – | – | – | 417,577 |

In 1992 the Minister of Health, pursuant to Decree 2164, initiated a restructuring process aimed at adapting the national level to the new Functional Organic Structure. As part of this process, a special unit was created to administer direct campaigns against specific diseases. Law 100 of 24 December 1993 redefined the model of health services delivery in the country.

The activities carried out thus far include:

1. Preparation of a plan for decentralization.

2. National workshops to assess the situation in the various regions in preparation for the implementation of the new strategy.

3. Training of health coordinators to participate in malaria control efforts.

4. Organic and functional restructuring in accordance with Decrees 2266 and 2267 of 29 December 1993, which eliminated certain agencies and positions, thereby freeing up resources. These funds were used to raise the salaries of operational personnel by 35%, a measure intended to put malaria control personnel on a par with health service personnel working in the field.

5. Preparation, negotiation, and agreement on an inter-administrative contract, by means of which resources and personnel are transferred from the national to the departmental level, and the departments assume responsibility for prevention and control activities.

6. Decentralization of the first medium- and low-risk departments.

7. Initiation of the process of training, education, and dissemination of information about the process.

The new orientation of the malaria control program in Colombia, which is based on epidemiological stratification, has resulted in more precise identification of the risk areas in the country. In 1993 the distribution of therapeutic resources was determined to be in accord with the needs of each epidemiological stratum (see table showing distribution of diagnostic and treatment activities).

## COLOMBIA – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| 1960 | 15,416 | 509,920 | 3.31 | 8,426 | 0.55 | 3,758 | 4,642 | 26 | 0.24 | 0.30 | 2,358,989 | 153.02 |
| | 15,908 | 570,160 | 3.58 | 16,974 | 1.07 | 10,235 | 6,694 | 45 | 0.64 | 0.42 | 2,127,057 | 133.71 |
| | 16,417 | 697,245 | 4.25 | 17,497 | 1.07 | 9,718 | 7,745 | 34 | 0.59 | 0.47 | 1,431,774 | 87.21 |
| | 16,941 | 577,406 | 3.41 | 17,898 | 1.06 | 9,375 | 8,499 | 24 | 0.55 | 0.50 | 1,163,280 | 68.67 |
| | 17,485 | 499,523 | 2.86 | 14,729 | 0.84 | 8,648 | 6,058 | 23 | 0.49 | 0.35 | 871,294 | 49.83 |
| 1965 | 17,996 | 470,708 | 2.62 | 18,277 | 1.02 | 11,593 | 6,668 | 16 | 0.64 | 0.37 | 744,002 | 41.34 |
| | 18,468 | 655,897 | 3.55 | 22,135 | 1.20 | 12,512 | 9,610 | 13 | 0.68 | 0.52 | 677,228 | 36.67 |
| | 18,956 | 827,511 | 4.37 | 26,633 | 1.40 | 15,626 | 10,944 | 63 | 0.82 | 0.58 | 741,895 | 39.14 |
| | 19,462 | 858,857 | 4.41 | 27,333 | 1.40 | 15,964 | 11,344 | 25 | 0.82 | 0.58 | 916,892 | 47.11 |
| | 19,984 | 676,866 | 3.39 | 39,435 | 1.97 | 24,092 | 15,326 | 17 | 1.21 | 0.77 | 980,578 | 49.07 |
| 1970 | 20,527 | 685,412 | 3.34 | 32,272 | 1.57 | 17,975 | 14,280 | 17 | 0.88 | 0.70 | 922,943 | 44.96 |
| | 21,088 | 604,773 | 2.87 | 22,402 | 1.06 | 11,722 | 10,675 | 5 | 0.56 | 0.51 | 873,910 | 41.44 |
| | 21,668 | 646,399 | 2.98 | 30,997 | 1.43 | 17,709 | 13,282 | 6 | 0.82 | 0.61 | 671,412 | 30.99 |
| | 22,343 | 631,563 | 2.83 | 56,494 | 2.53 | 34,635 | 21,855 | 4 | 1.55 | 0.98 | 754,124 | 33.75 |
| | 22,981 | 404,120 | 1.76 | 22,406 | 0.97 | 10,275 | 12,127 | 4 | 0.45 | 0.53 | 533,332 | 23.21 |
| 1975 | 23,177 | 385,691 | 1.66 | 32,690 | 1.41 | 16,880 | 16,880 | 10 | 0.73 | 0.73 | 663,863 | 28.64 |
| | 23,672 | 386,897 | 1.63 | 39,022 | 1.65 | 18,827 | 20,185 | 10 | 0.80 | 0.85 | 589,367 | 24.90 |
| | 24,183 | 401,621 | 1.66 | 63,888 | 2.64 | 30,344 | 33,496 | 48 | 1.25 | 1.39 | 573,765 | 23.73 |
| | 24,707 | 381,978 | 1.55 | 53,412 | 2.16 | 21,741 | 31,600 | 71 | 0.88 | 1.28 | 618,052 | 25.02 |
| | 25,245 | 401,005 | 1.59 | 60,957 | 2.41 | 23,621 | 37,267 | 69 | 0.94 | 1.48 | 714,348 | 28.30 |
| 1980 | 25,794 | 436,275 | 1.69 | 57,346 | 2.22 | 25,658 | 31,663 | 25 | 0.99 | 1.23 | 738,538 | 28.63 |
| | 27,497 | 463,864 | 1.69 | 60,972 | 2.22 | 27,909 | 33,047 | 16 | 1.01 | 1.20 | 872,088 | 31.72 |
| | 28,088 | 505,220 | 1.80 | 78,601 | 2.80 | 32,916 | 45,650 | 35 | 1.17 | 1.63 | 506,585 | 18.04 |
| | 28,680 | 535,962 | 1.87 | 105,360 | 3.67 | 47,957 | 57,362 | 41 | 1.67 | 2.00 | 380,043 | 13.25 |
| | 29,277 | 407,627 | 1.39 | 55,268 | 1.89 | 19,411 | 35,776 | 81 | 0.66 | 1.22 | 429,845 | 14.68 |
| 1985 | 29,879 | 334,062 | 1.12 | 55,791 | 1.87 | 21,921 | 34,291 | 86 | 0.73 | 1.15 | 280,988 | 9.40 |
| | 30,488 | 477,503 | 1.57 | 89,251 | 2.93 | 30,526 | 58,612 | 113 | 1.00 | 1.92 | 362,410 | 11.89 |
| | 31,103 | 434,646 | 1.40 | 90,014 | 2.89 | 27,749 | 62,250 | 15 | 0.89 | 2.00 | 287,152 | 9.23 |
| | 31,723 | 510,526 | 1.61 | 100,850 | 3.18 | 33,106 | 67,689 | 55 | 1.04 | 2.13 | 228,323 | 7.20 |
| | 32,348 | 557,129 | 1.72 | 100,286 | 3.10 | 33,540 | 66,691 | 55 | 1.04 | 2.06 | 213,854 | 6.61 |
| 1990 m) | 32,300 | 496,087 | 1.54 | 99,489 | 3.08 | 35,490 | 63,855 | 144 | 1.10 | 1.98 | 237,053 | 7.34 |
| 199 t m) | 32,861 | 740,938 | 2.25 | 184,156 | 5.60 | 70,868 | 113,173 | 115 | 2.16 | 3.44 | 291,012 | 8.86 |
| 1992 m) | 33,424 | 736,498 | 2.20 | 184,023 | 5.51 | 69,274 | 114,690 | 59 | 2.07 | 3.43 | 294,351 | 8.81 |
| 1993 n) | 33,985 | 656,632 | 1.93 | 129,377 | 3.81 | 42,508 | 86,816 | 53 | 1.25 | 2.55 | 151,897 | 4.47 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.

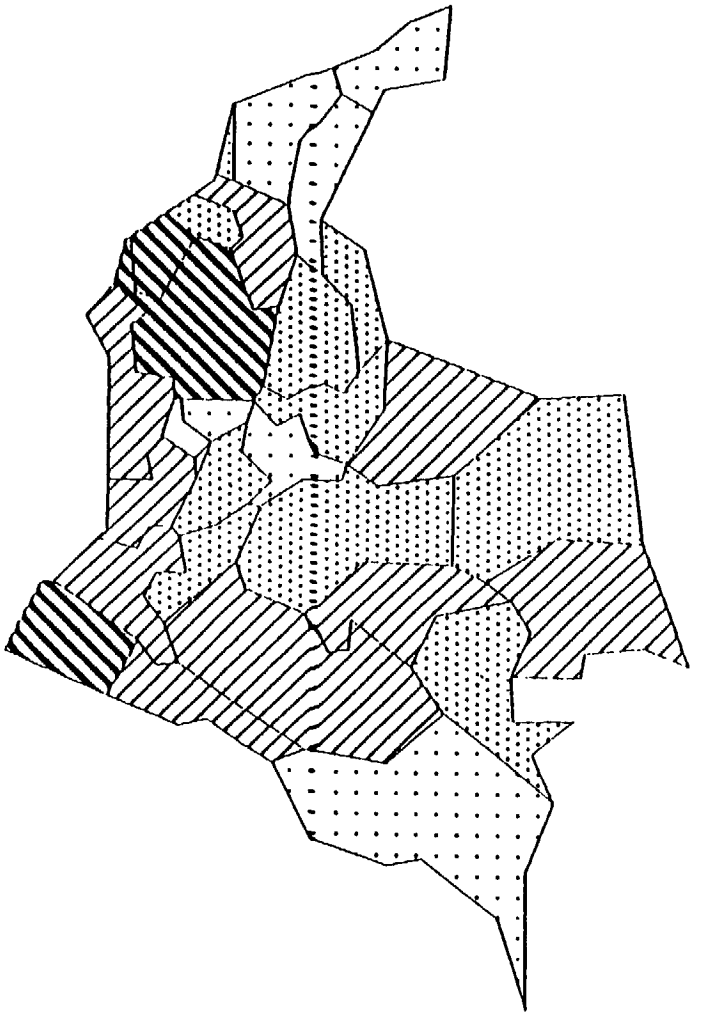
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.

f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

# COLOMBIA

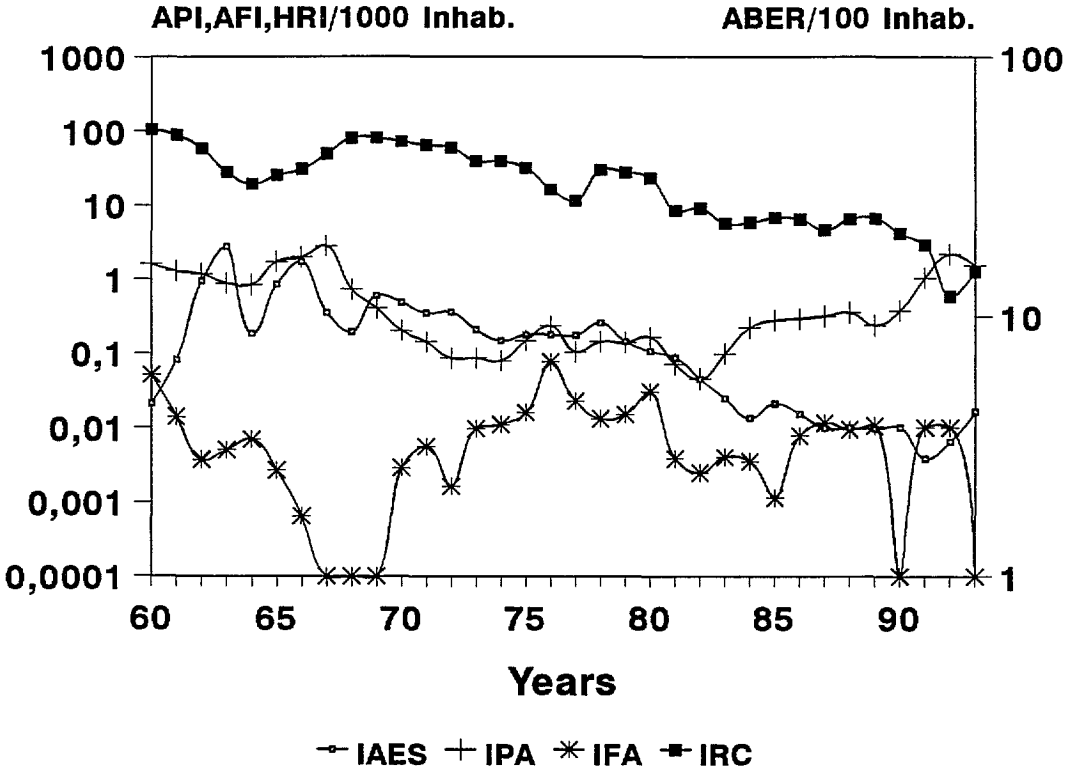
## CASES OF MALARIA BY DEPARTMENTS
## 1993



**Number of cases**

- 4 - 100
- 101 - 1,000
- 1,001 - 10,000
- 10,001 - 64,151

# COSTA RICA- Malariometric Rates
## 1960-1993




In Costa Rica the number of malaria cases reported in 1993 totaled 5,033, which was 28% less than in 1992. Only eight of these cases were P. falciparum infections, all imported. The rest were P. vivax infections. The province with largest number of cases continues to be Limón, where 3,126 cases were reported--38% less than in 1992. The cantons of Matina and Limón continue to register the highest incidence, with 924 and 1,079 cases, respectively. The API also rose in the province of Alajuela, which had 737 cases, 15% of the total number. The province of Heredia, with 296 cases, accounted for 6% of the total. The province of Puntarenas experienced the largest increase in the incidence of the disease--125%--and reported 450 cases, which was 9% of the total.

Financial and technical support from the Swedish government and from PAHO has made it possible to strengthen activities at the local level in priority areas. Unfortunately, the program's impact has been diminished by social, economic, and natural factors that have altered the supply-demand relationship and thwarted efforts to expand coverage in agricultural production areas such as the Central Norte and Huertar Atlántica regions. Even though the banana companies have participated in case-finding, adjacent populations and those on the plantations have not been covered. In addition, it has been difficult to implement effective control measures among the population of these areas, which consists largely of migrant workers.

COSTA RICA – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| Municipalities or "Cantones": | 6 | 11 | 18 | 46 | 81 |
| Slides | | | | | |
| Examined: | 56,330 | 74,583 | 9,464 | 58 | 140,435 |
| Positives: | 3,046 | 1,571 | 358 | 58 | 5,033 |
| (P.falciparum): | – | (8) | – | – | (8) |
| 4–Aminoquinolines | | | | | |
| Complete Treatments: | 218,650 | 27,141 | 3,809 | – | 249,600 |
| Administered treatments for each case: | 71.78 | 17.28 | 10.64 | – | 49.59 |

Malaria control activities are carried out in the framework of national health policies, which are oriented toward decentralization and deconcentration of health services. The aim of *these polices is to strengthen decision-making capacity at the local levels of the health care* system and to incorporate vector control activities into comprehensive health services, which include attention to both people and the environment. For the population, emphasis is placed on timely diagnosis and treatment of vector-borne disease and promotion of self-protection of health through continuing education. With regard to environmental management, the preventive measures envisaged are aimed at mitigating or eliminating the environmental factors or determinants that favor the continual or seasonal transmission of diseases.

The lack of integration of the malaria control service with local health services has led to considerable waste of resources on ineffective epidemiological surveillance and malaria control efforts among the population. Of the 138,112 blood slides taken by the malaria control program (active case-finding, see Table 7), only 2.6% turned out positive, in contrast to the diagnostic efficiency of the general health services, which found 71.8% slide positivity. Moreover, the amounts of malaria drugs administered were excessive in relation to the number of positive slides obtained through active case-finding, as can be seen from the data in the table showing the distribution of diagnostic and treatment activities. In the high-risk areas, comprising only six cantons, 71.8 complete treatments were administered for every case of malaria diagnosed.

## COSTA RICA – MALARIOMETRIC RATES COSTA RICA

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| 1960 | 1,254 | 57,603 | 4.59 | 2,000 | 1.59 | 64 | 1,936 | – | 0.05 | 1.54 | 131,942 | 105.22 |
| | 1,298 | 87,889 | 6.77 | 1,673 | 1.29 | 18 | 1,655 | – | 0.01 | 1.28 | 115,513 | 88.99 |
| | 1,343 | 183,642 | 13.67 | 1,583 | 1.18 | 5 | 1,577 | 1 | 0.00 | 1.17 | 78,386 | 58.37 |
| | 1,391 | 257,850 | 18.54 | 1,228 | 0.88 | 7 | 1,221 | – | 0.01 | 0.88 | 39,456 | 28.37 |
| | 1,439 | 123,285 | 8.57 | 1,212 | 0.84 | 10 | 1,202 | – | 0.01 | 0.84 | 28,088 | 19.52 |
| 1965 | 1,490 | 197,751 | 13.27 | 2,563 | 1.72 | 4 | 2,559 | – | 0.00 | 1.72 | 38,049 | 25.54 |
| | 1,541 | 250,135 | 16.23 | 3,047 | 1.98 | 1 | 3,046 | – | 0.00 | 1.98 | 47,683 | 30.94 |
| | 1,590 | 164,109 | 10.32 | 4,443 | 2.79 | 0 | 4,443 | – | 0.00 | 2.79 | 78,646 | 49.46 |
| | 1,634 | 142,029 | 8.69 | 1,191 | 0.73 | 0 | 1,191 | – | 0.00 | 0.73 | 132,618 | 81.16 |
| | 1,685 | 202,362 | 12.01 | 688 | 0.41 | 0 | 688 | – | 0.00 | 0.41 | 138,241 | 82.04 |
| 1970 | 1,727 | 195,484 | 11.32 | 350 | 0.20 | 5 | 344 | 1 | 0.00 | 0.20 | 125,344 | 72.58 |
| | 1,798 | 185,011 | 10.29 | 257 | 0.14 | 10 | 247 | – | 0.01 | 0.14 | 116,907 | 65.02 |
| | 1,843 | 191,152 | 10.37 | 159 | 0.09 | 3 | 156 | – | 0.00 | 0.08 | 110,578 | 60.00 |
| | 1,873 | 166,355 | 8.88 | 161 | 0.09 | 18 | 143 | – | 0.01 | 0.08 | 74,048 | 39.53 |
| | 1,922 | 154,656 | 8.05 | 152 | 0.08 | 21 | 131 | – | 0.01 | 0.07 | 75,629 | 39.35 |
| 1975 | 1,965 | 166,814 | 8.49 | 290 | 0.15 | 31 | 259 | – | 0.02 | 0.13 | 62,454 | 31.78 |
| | 2,022 | 171,753 | 8.49 | 473 | 0.23 | 155 | 318 | – | 0.08 | 0.16 | 33,194 | 16.42 |
| | 2,083 | 175,973 | 8.45 | 217 | 0.10 | 47 | 170 | – | 0.02 | 0.08 | 24,083 | 11.56 |
| | 2,148 | 202,284 | 9.42 | 307 | 0.14 | 28 | 285 | – | 0.01 | 0.13 | 64,545 | 30.05 |
| | 2,213 | 176,219 | 7.96 | 308 | 0.14 | 33 | 274 | – | 0.01 | 0.12 | 61,800 | 27.93 |
| 1980 | 2,279 | 166,894 | 7.32 | 376 | 0.16 | 69 | 307 | – | 0.03 | 0.13 | 53,205 | 23.35 |
| | 2,354 | 162,861 | 6.92 | 168 | 0.07 | 9 | 159 | – | 0.00 | 0.07 | 19,868 | 8.44 |
| | 2,424 | 139,019 | 5.74 | 110 | 0.05 | 6 | 104 | – | 0.00 | 0.04 | 21,821 | 9.00 |
| | 2,496 | 120,116 | 4.81 | 245 | 0.10 | 10 | 235 | – | 0.00 | 0.09 | 14,155 | 5.67 |
| | 2,569 | 103,987 | 4.05 | 569 | 0.22 | 9 | 560 | – | 0.00 | 0.22 | 14,994 | 5.84 |
| 1985 | 2,642 | 121,456 | 4.60 | 734 | 0.28 | 3 | 731 | – | 0.00 | 0.28 | 17,814 | 6.74 |
| | 2,716 | 113,720 | 4.19 | 790 | 0.29 | 21 | 768 | – | 0.01 | 0.28 | 17,559 | 6.47 |
| | 2,791 | 103,456 | 3.71 | 883 | 0.32 | 32 | 851 | – | 0.01 | 0.30 | 12,899 | 4.62 |
| | 2,866 | 106,611 | 3.72 | 1,016 | 0.35 | 27 | 989 | – | 0.01 | 0.35 | 18,725 | 6.53 |
| | 2,940 | 108,614 | 3.69 | 699 | 0.24 | 31 | 668 | – | 0.01 | 0.23 | 19,664 | 6.69 |
| 1990 m) | 3,035 | 113,167 | 3.73 | 1,151 | 0.38 | 5 | 1,146 | – | 0.00 | 0.38 | 12,709 | 4.19 |
| 1991(m) | 3,113 | 88,324 | 2.84 | 3,273 | 1.05 | 22 | 3,251 | – | 0.01 | 1.04 | 9,088 | 2.92 |
| 1992(m) | 3,192 | 105,131 | 3.29 | 6,951 | 2.18 | 16 | 6,935 | – | 0.01 | 2.17 | 1,880 | 0.59 |
| 1993(n) | 3,270 | 140,435 | 4.29 | 5,033 | 1.54 | 8 | 5,025 | – | 0.00 | 1.54 | 4,157 | 1.27 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.

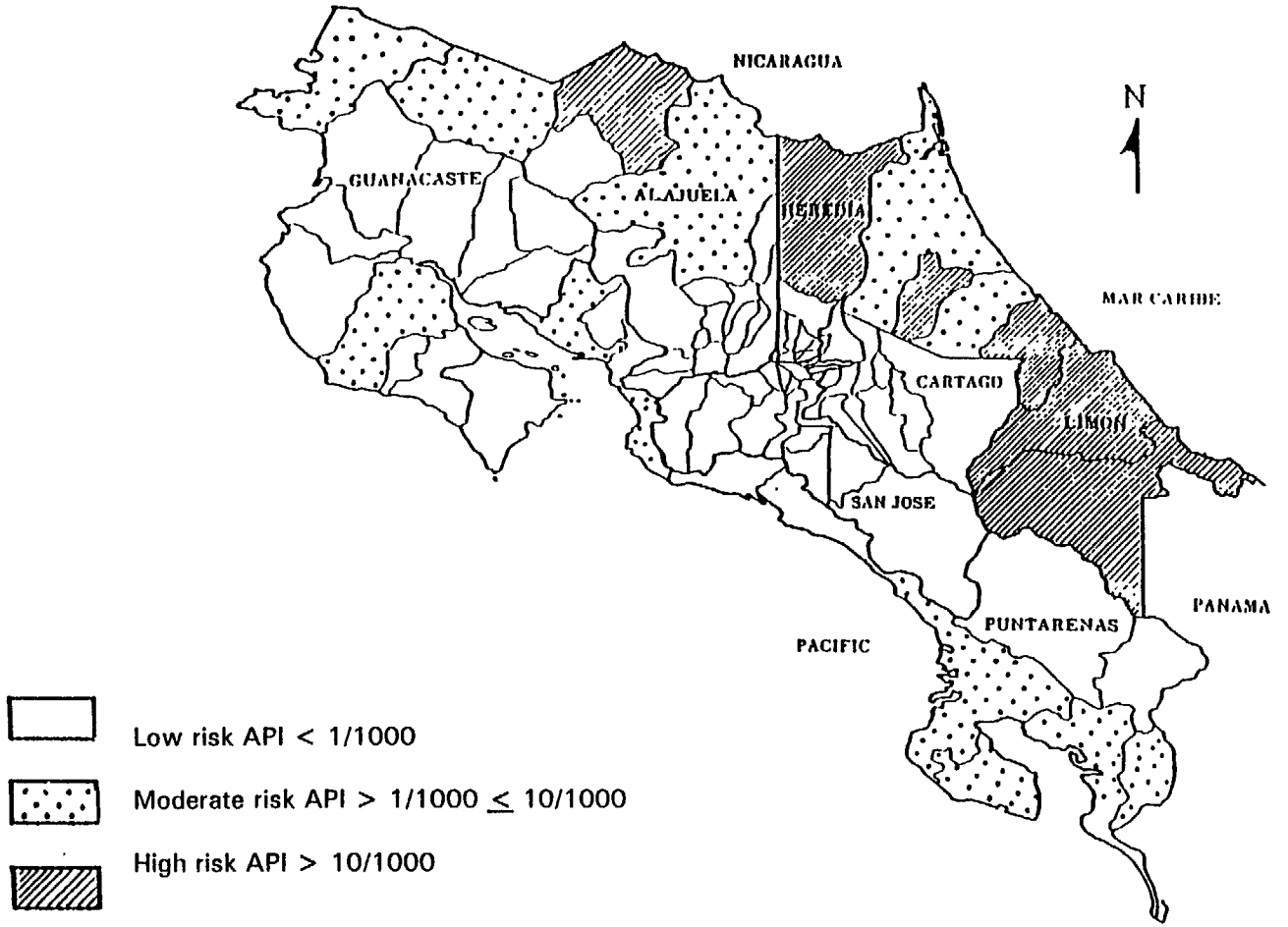
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.

f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

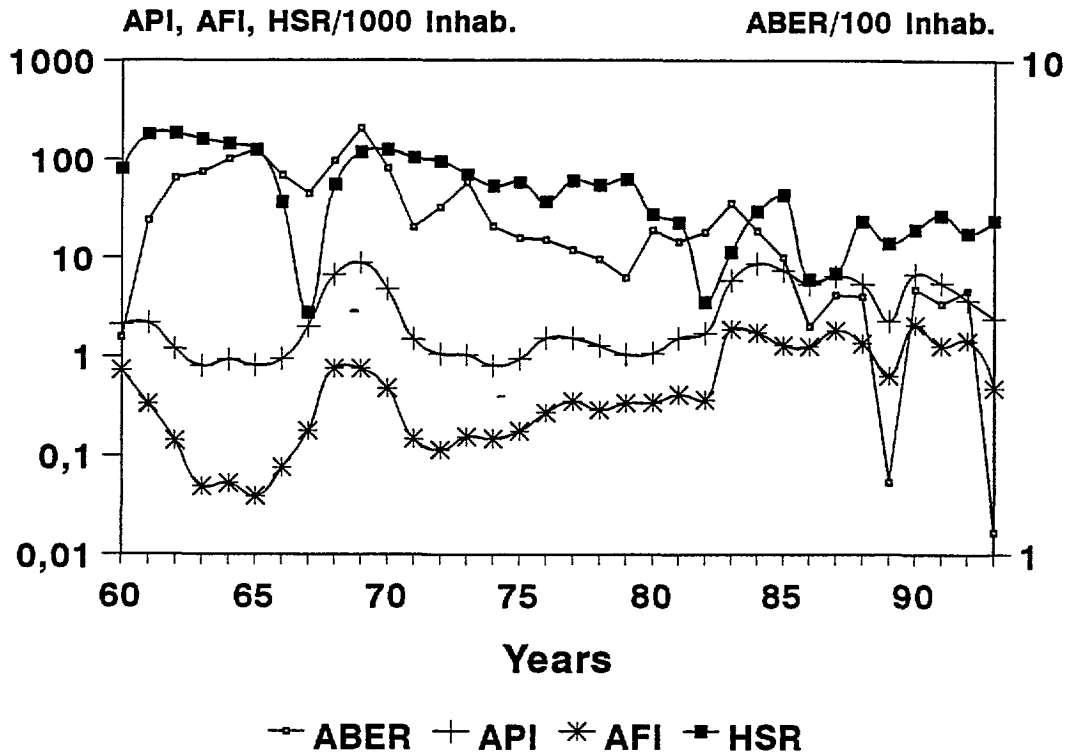
n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

# COSTA RICA

## STATUS OF MALARIA, 1993



# ECUADOR - Malariometric Rates
## 1960-1993




The malaria control program in Ecuador continues to suffer from inadequate operating capacity and has limited epidemiological impact despite large investments of funds. Several factors are responsible for this situation:

1. Irregularity in the execution of vector-control operations (household spraying).
2. Failure to meet goals owing to lack of insecticide.
3. Ineffective application of control measures, possibly because the real transmission areas have not been accurately identified.
4. Stratification using the API as the only parameter, which does not reveal the true epidemiological situation.
5. Lack of study of the ecological conditions in malarious areas and of risk factors.
6. Limited involvement of official health units.
7. Lack of interinstitutional and community involvement.
8. The document setting out the new global approach to malaria control has only recently been introduced and it has not yet been adequately studied or considered by the national malaria service and the agencies concerned with its implementation.

ECUADOR – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| Municipalities or "Cantones": | 39 | 22 | 83 | – | 144 |
| Slides Examined: | 213,958 | 63,302 | 142,330 | – | 419,590 |
| Positives: | 33,884 | 6,705 | 6,270 | | 46,859 |
| (P.falciparum): | (16.647) | (2.320) | (2.679) | – | (21.646) |
| 4–Aminoquinolines Complete Treatments: | 53,998 | 9,387 | 8,778 | – | 72,163 |
| Administered treatments for each case: | 1.59 | 1.40 | 1.40 | – | 1.54 |
| No. of treatments with 2nd line antimalarial drugs | 7 | – | – | – | 7 |

In response to this situation, the Program has proposed the following activities for the future:

1. Increase the number of diagnostic laboratories and locate them strategically.

2. Keep medical and paramedical personnel informed of the evolution of the endemic.

3. Keep all health units supplied with malaria drugs.

4. Train voluntary collaborators to administer clinical treatment, with chloroquine only, to persons suspected of having malaria.

5. Ensure that funds are allocated in the budget of the malaria service for epidemiological and operations research and for the study of risk factors that influence transmission.

6. Ensure that, as soon as possible, the malaria control service studies and programs malaria control actions in accordance with the document on the new Global Malaria Control Strategy.

7. Request that PAHO/WHO evaluate and advise on the advances achieved through application of the new strategy.

## ECUADOR – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| 1960 | 4,358 | 119,562 | 2.74 | 9,084 | 2.08 | 3,158 | 5,906 | 20 | 0.72 | 1.36 | 349,331 | 80.16 |
| | 4,501 | 213,169 | 4.74 | 9,733 | 2.16 | 1,489 | 8,243 | 1 | 0.33 | 1.83 | 806,254 | 179.13 |
| | 4,655 | 269,004 | 5.78 | 5,531 | 1.19 | 658 | 4,868 | 5 | 0.14 | 1.05 | 856,598 | 184.02 |
| | 4,814 | 286,453 | 5.95 | 3,857 | 0.80 | 237 | 3,599 | 21 | 0.05 | 0.75 | 773,026 | 160.58 |
| | 4,979 | 314,700 | 6.32 | 4,628 | 0.93 | 264 | 4,363 | 1 | 0.05 | 0.88 | 720,136 | 144.63 |
| 1965 | 5,150 | 340,127 | 6.60 | 4,179 | 0.81 | 203 | 3,976 | – | 0.04 | 0.77 | 645,198 | 125.28 |
| | 5,326 | 311,821 | 5.85 | 4,976 | 0.93 | 406 | 4,570 | – | 0.08 | 0.86 | 194,823 | 36.58 |
| | 5,400 | 289,660 | 5.36 | 10,756 | 1.99 | 956 | 9,809 | – | 0.18 | 1.82 | 14,832 | 2.75 |
| | 5,580 | 350,183 | 6.28 | 37,043 | 6.64 | 4,196 | 32,835 | 12 | 0.75 | 5.88 | 307,305 | 55.07 |
| | 5,770 | 421,650 | 7.31 | 50,957 | 8.83 | 4,317 | 46,634 | 6 | 0.75 | 8.08 | 680,266 | 117.90 |
| 1970 | 5,960 | 360,879 | 6.06 | 28,375 | 4.76 | 2,828 | 25,539 | 8 | 0.47 | 4.29 | 745,376 | 125.06 |
| | 6,170 | 283,114 | 4.59 | 9,171 | 1.49 | 909 | 8,261 | 1 | 0.15 | 1.34 | 643,967 | 104.37 |
| | 6,380 | 321,611 | 5.04 | 6,707 | 1.05 | 727 | 5,982 | – | 0.11 | 0.94 | 611,398 | 95.83 |
| | 6,600 | 374,151 | 5.67 | 6,810 | 1.03 | 1,014 | 5,796 | – | 0.15 | 0.88 | 464,693 | 70.41 |
| | 6,830 | 314,685 | 4.61 | 5,481 | 0.80 | 1,003 | 4,470 | 8 | 0.15 | 0.65 | 366,261 | 53.63 |
| 1975 | 7,035 | 306,917 | 4.36 | 6,555 | 0.93 | 1,235 | 5,319 | 1 | 0.18 | 0.76 | 409,442 | 58.20 |
| | 7,242 | 313,053 | 4.32 | 10,974 | 1.52 | 1,945 | 9,020 | 9 | 0.27 | 1.25 | 267,971 | 37.00 |
| | 7,454 | 307,540 | 4.13 | 11,275 | 1.51 | 2,612 | 8,662 | 1 | 0.35 | 1.16 | 449,096 | 60.25 |
| | 7,671 | 303,139 | 3.95 | 9,815 | 1.28 | 2,205 | 7,609 | 1 | 0.29 | 0.99 | 416,546 | 54.30 |
| | 7,894 | 285,597 | 3.62 | 8,207 | 1.04 | 2,648 | 5,559 | – | 0.34 | 0.70 | 488,113 | 61.83 |
| 1980 | 8,123 | 367,129 | 4.52 | 8,748 | 1.08 | 2,755 | 5,993 | – | 0.34 | 0.74 | 222,997 | 27.45 |
| | 8,354 | 357,855 | 4.28 | 12,745 | 1.53 | 3,427 | 9,318 | – | 0.41 | 1.12 | 189,742 | 22.71 |
| | 8,590 | 384,792 | 4.48 | 14,633 | 1.70 | 3,126 | 11,507 | – | 0.36 | 1.34 | 30,206 | 3.52 |
| | 8,829 | 453,067 | 5.13 | 51,606 | 5.85 | 16,515 | 35,091 | – | 1.87 | 3.97 | 100,230 | 11.35 |
| | 9,072 | 408,465 | 4.50 | 78,599 | 8.66 | 15,637 | 62,962 | – | 1.72 | 6.94 | 266,068 | 29.33 |
| 1985 | 9,317 | 370,998 | 3.98 | 68,989 | 7.40 | 11,998 | 57,061 | – | 1.29 | 6.12 | 401,160 | 43.06 |
| | 9,565 | 275,865 | 2.88 | 51,430 | 5.38 | 11,985 | 39,445 | – | 1.25 | 4.12 | 57,253 | 5.99 |
| | 9,816 | 327,653 | 3.34 | 63,503 | 6.47 | 17,849 | 45,654 | – | 1.82 | 4.65 | 67,571 | 6.88 |
| | 10,070 | 333,918 | 3.32 | 53,607 | 5.32 | 13,561 | 40,046 | – | 1.35 | 3.98 | 234,233 | 23.26 |
| | 10,327 | 144,851 | 1.40 | 23,274 | 2.25 | 6,569 | 16,705 | – | 0.64 | 1.62 | 144,346 | 13.98 |
| 1990 | 10,587 | 363,080 | 3.43 | 71,670 | 6.77 | 21,871 | 49,799 | – | 2.07 | 4.70 | 204,252 | 19.29 |
| 1991 m) | 10,800 | 346,465 | 3.21 | 59,400 | 5.50 | 13,868 | 45,532 | 0 | 1.28 | 4.22 | 290,500 | 26.90 |
| 1992 m) | 11,055 | 377,321 | 3.41 | 41,089 | 3.72 | 15,970 | 25,119 | 0 | 1.44 | 2.27 | 196,315 | 17.76 |
| 1993 n) | 11,310 | 419,590 | 3.71 | 46,859 | 4.14 | 21,646 | 25,213 | 0 | 1.91 | 2.23 | 272,945 | 24.13 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.

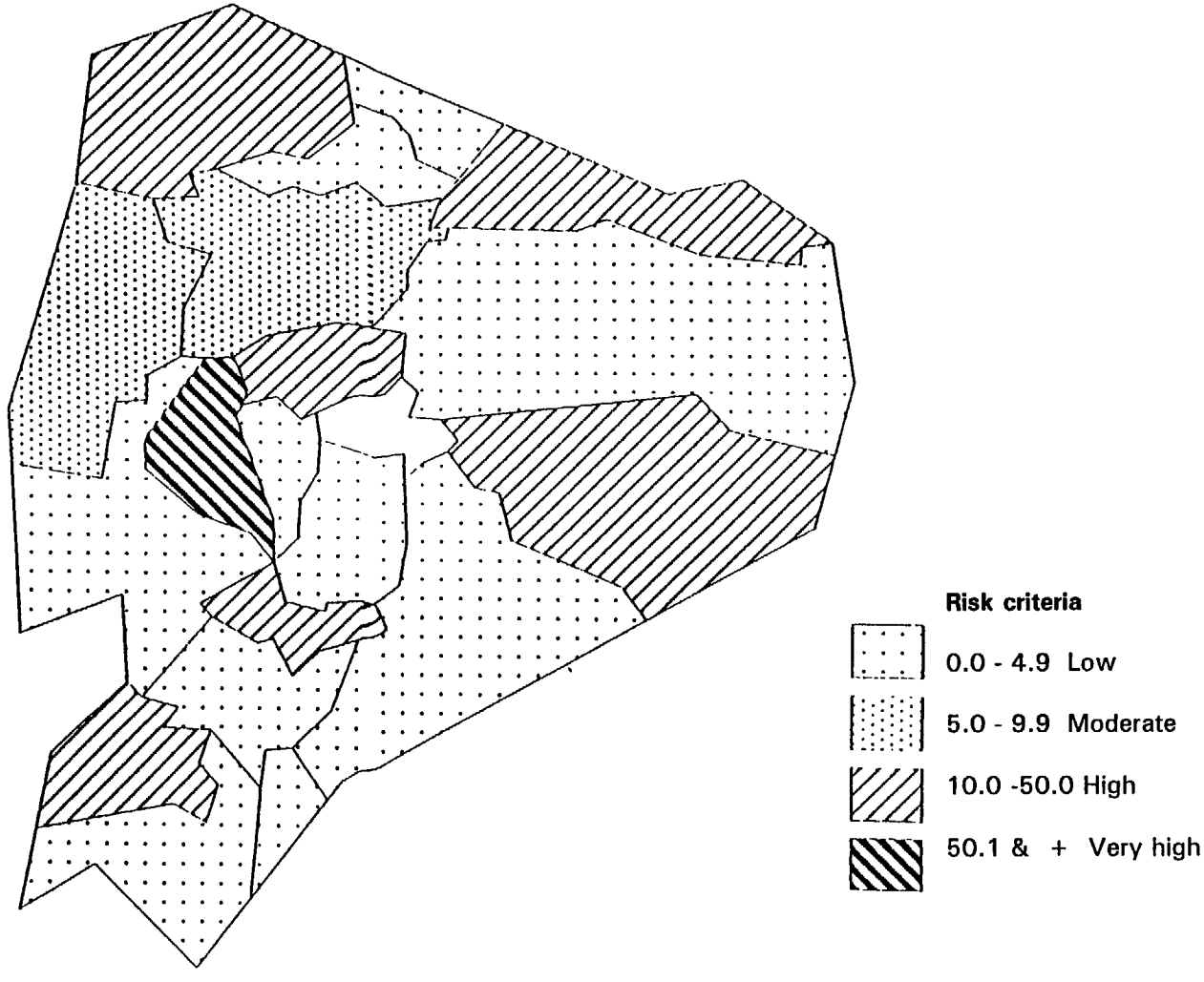
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.

f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

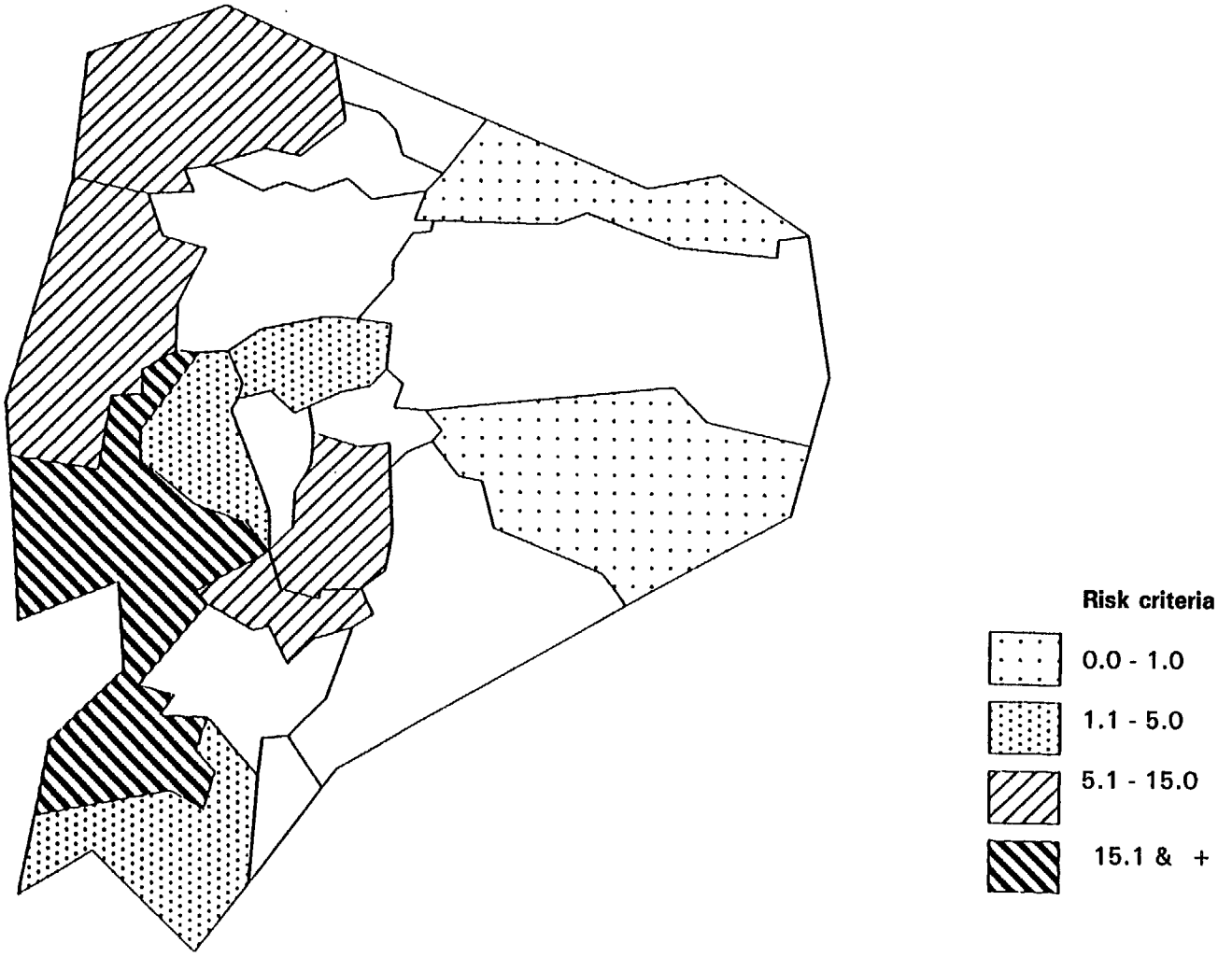
# E C U A D O R

## ANNUAL PARASITE INDEX BY DEPARTMENTS
## 1993



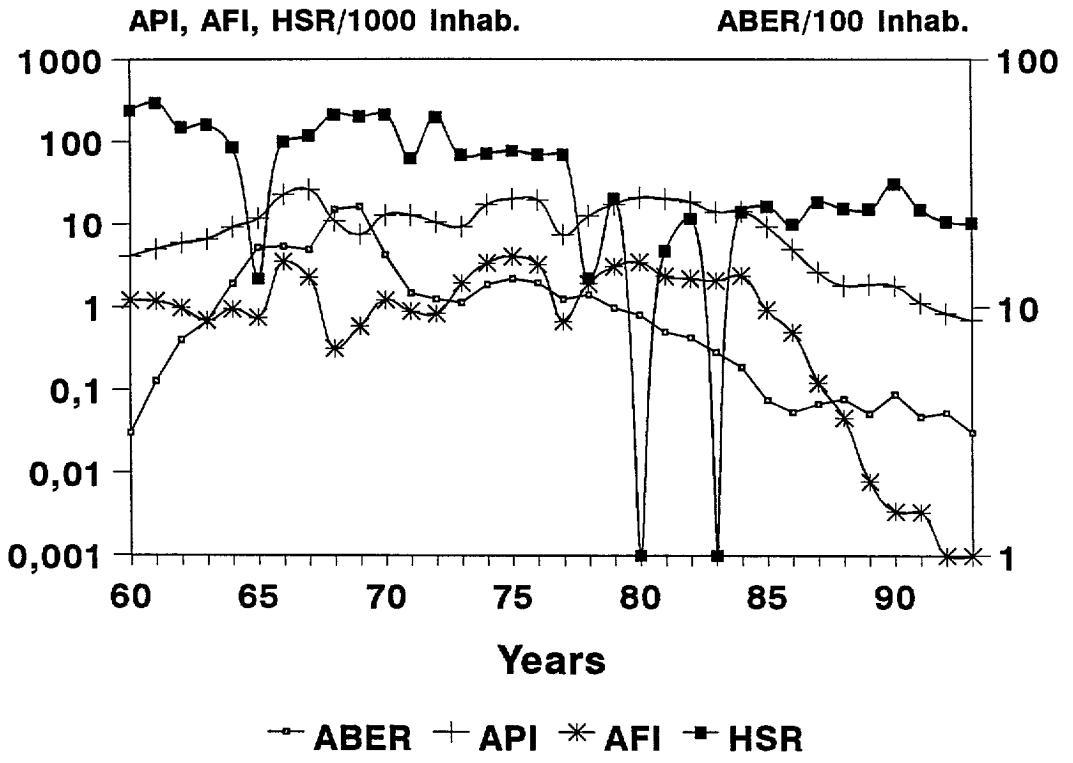
# E C U A D O R

## ANNUAL P.falciparum INDEX BY DEPARTMENTS
## 1993



# EL SALVADOR - Malariometric Rates

## 1960-1993




The malaria control program in El Salvador has been assigned priority due to the high potential for malaria transmission in the country. The program has been decentralized and is gradually being absorbed by health services at the local level in the different regions. The ten control measures developed by the program are applied in comprehensive and timely fashion using an epidemiological approach based on stratification of the various risk areas. The bulk of the control efforts are directed toward the hyperendemic area, which is responsible for 80% of the total cases reported in the country.

During 1993 the decline of the endemic observed since 1980 continued. A total of 3,887 cases were reported, of which only 4 were P. falciparum infections and the rest were caused by P. vivax. The incidence was 0.79 cases per 1,000 population, the lowest registered in the last 35 years. It should be noted that the program has enhanced its capacity for case management through a network of voluntary collaborators, the utilization of an efficient computerized epidemiological surveillance system as an aid for decision-making, and the implementation of comprehensive control measures, with particular emphasis on physical works as a means of permanently reducing vector habitats and diminishing dependence on insecticides.

EL SALVADOR – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| Municipalities or "Cantones": | 62 | 61 | 73 | 66 | 262 |
| Slides | | | | | |
| Examined: | 123,730 | 29,973 | 12,460 | 6,461 | 172,624 |
| Positives: | 3,057 | 511 | 191 | 128 | 3,887 |
| (P.falciparum): | (3) | – | – | (1) | (4) |
| 4–Aminoquinolines | | | | | |
| Complete Treatments: | 117,544 | 28,386 | 18,021 | – | 163,951 |
| Administered treatments for each case: | 38.45 | 55.55 | 94.35 | – | 42.18 |

The figures on treatment of malaria cases, which appear in the preceding table showing the distribution of diagnostic and treatment activities, indicate that between 38 and 94 treatments are administered for each case diagnosed in the various areas of the country. Due consideration should be given to the effects of this use of medication without apparent need. Moreover, the system of administering immediate treatment for all suspected cases (in the absence of a clinical case definition) seems only to have succeeded in suppressing latent malaria. This fact is apparent from the broad distribution of cases among 73.3% of the cantons in the country. This constant production of cases without a defined pattern of localization suggests that the basic conditions necessary for the interruption of transmission have not been achieved, even after 14 years of pharmacological suppression of malaria in the country.

## EL SALVADOR – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| 1960 | 2.454 | 76.287 | 3,11 | 10.066 | 4,10 | 2.959 | 7.064 | 1 | 1,21 | 2,88 | 581.562 | 236,99 |
| | 2.527 | 127.293 | 5,04 | 12.563 | 4,97 | 2.960 | 9.594 | 4 | 1,17 | 3,80 | 749.266 | 296,50 |
| | 2.627 | 194.069 | 7,39 | 15.433 | 5,87 | 2.557 | 12.873 | 4 | 0,97 | 4,90 | 389.910 | 148,42 |
| | 2.721 | 238.791 | 8,78 | 17.846 | 6,56 | 1.879 | 15.962 | 5 | 0,69 | 5,87 | 436.369 | 160,37 |
| | 2.824 | 350.843 | 12,42 | 25.827 | 9,15 | 2.661 | 23.195 | 1 | 0,94 | 8,21 | 240.295 | 85,09 |
| 1965 | 2.928 | 506.442 | 17,30 | 34.070 | 11,64 | 2.186 | 31.884 | – | 0,75 | 10,89 | 6.393 | 2,18 |
| | 3.037 | 530.357 | 17,46 | 68.562 | 22,58 | 10.703 | 57.859 | – | 3,52 | 19,05 | 302.112 | 99,48 |
| | 3.151 | 535.494 | 16,99 | 82.960 | 26,33 | 7.227 | 75.734 | – | 2,29 | 24,03 | 372.167 | 118,11 |
| | 3.266 | 805.311 | 24,66 | 35.831 | 10,97 | 1.025 | 34.808 | – | 0,31 | 10,66 | 693.150 | 212,23 |
| | 3.390 | 858.916 | 25,34 | 25.299 | 7,46 | 1.994 | 23.344 | – | 0,59 | 6,89 | 681.157 | 200,93 |
| 1970 | 3.534 | 572.373 | 16,20 | 45.436 | 12,86 | 4.286 | 41.234 | – | 1,21 | 11,67 | 749.747 | 212,15 |
| | 3.647 | 414.331 | 11,36 | 46.858 | 12,85 | 3.235 | 43.623 | 1 | 0,89 | 11,96 | 227.668 | 62,43 |
| | 3.668 | 394.935 | 10,77 | 38.335 | 10,45 | 3.059 | 35.276 | – | 0,83 | 9,62 | 720.592 | 196,45 |
| | 3.771 | 393.110 | 10,42 | 35.095 | 9,31 | 7.286 | 27.809 | – | 1,93 | 7,37 | 258.027 | 68,42 |
| | 3.887 | 478.553 | 12,31 | 66.691 | 17,16 | 13.133 | 53.558 | – | 3,38 | 13,78 | 276.703 | 71,19 |
| 1975 | 4.143 | 538.909 | 13,01 | 83.100 | 20,06 | 16.816 | 66.284 | – | 4,06 | 16,00 | 319.126 | 77,03 |
| | 4.265 | 533.610 | 12,51 | 83.290 | 19,53 | 13.820 | 69.470 | – | 3,24 | 16,29 | 294.620 | 69,08 |
| | 4.392 | 471.109 | 10,73 | 32.243 | 7,34 | 2.934 | 29.300 | – | 0,67 | 6,67 | 302.401 | 68,85 |
| | 4.524 | 507.237 | 11,21 | 56.533 | 12,50 | 8.634 | 47.899 | – | 1,91 | 10,59 | 10.000 | 2,21 |
| | 4.388 | 434.475 | 9,90 | 75.657 | 17,24 | 13.391 | 62.266 | – | 3,05 | 14,19 | 88.092 | 20,08 |
| 1980 | 4.581 | 425.264 | 9,28 | 95.835 | 20,92 | 15.782 | 80.053 | – | 3,45 | 17,48 | – | 0,00 |
| | 4.625 | 367.447 | 7,94 | 93.187 | 20,15 | 10.878 | 82.309 | – | 2,35 | 17,80 | 21.600 | 4,67 |
| | 4.665 | 351.426 | 7,53 | 86.202 | 18,48 | 10.263 | 75.939 | – | 2,20 | 16,28 | 54.000 | 11,58 |
| | 4.665 | 306.648 | 6,57 | 65.377 | 14,01 | 9.696 | 55.681 | – | 2,08 | 11,94 | – | 0,00 |
| | 4.710 | 270.156 | 5,74 | 66.874 | 14,20 | 11.172 | 55.292 | – | 2,37 | 11,74 | 65.873 | 13,99 |
| 1985 | 4.768 | 201.177 | 4,22 | 44.473 | 9,33 | 4.373 | 40.100 | – | 0,92 | 8,41 | 77.497 | 16,25 |
| | 4.840 | 182.622 | 3,77 | 23.953 | 4,95 | 2.395 | 21.558 | – | 0,49 | 4,45 | 47.684 | 9,85 |
| | 4.927 | 200.654 | 4,07 | 12.834 | 2,60 | 598 | 12.236 | – | 0,12 | 2,48 | 90.766 | 18,42 |
| | 5.026 | 213.518 | 4,25 | 9.095 | 1,81 | 230 | 8.975 | – | 0,05 | 1,79 | 77.529 | 15,43 |
| | 5.135 | 190.995 | 3,72 | 9.605 | 1,87 | 40 | 9.565 | – | 0,01 | 1,86 | 77.631 | 15,12 |
| 1990 m) | 5.172 | 230.246 | 4,45 | 9.269 | 1,79 | 18 | 9.251 | – | 0,00 | 1,79 | 159.108 | 30,76 |
| 1991 m) | 5.281 | 190.540 | 3,61 | 5.933 | 1,12 | 18 | 5.915 | – | 0,00 | 1,12 | 78.980 | 14,96 |
| 1992 m) | 5.396 | 202.446 | 3,75 | 4.539 | 0,84 | 6 | 4.533 | – | 0,00 | 0,84 | 57.900 | 10,73 |
| 1993 n) | 5.517 | 172.624 | 3,13 | 3.887 | 0,70 | 4 | 3.883 | – | 0,00 | 0,70 | 56.891 | 10,31 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.

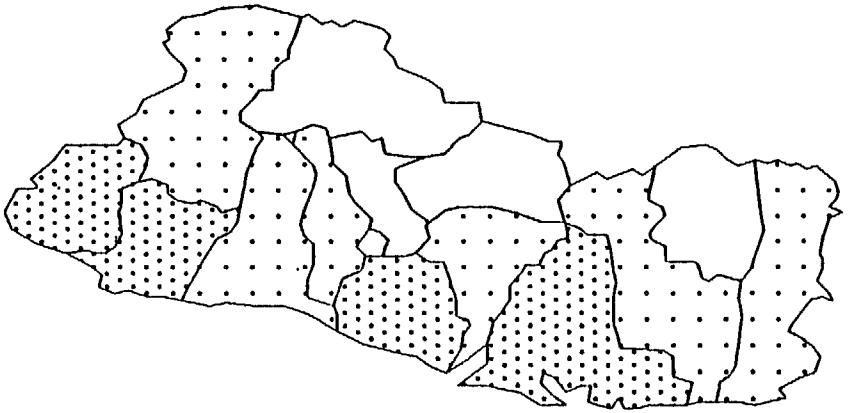
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.

f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

# E L  S A L V A D O R

## ANNUAL PARASITE INDEX BY DEPARTMENTS
## 1993

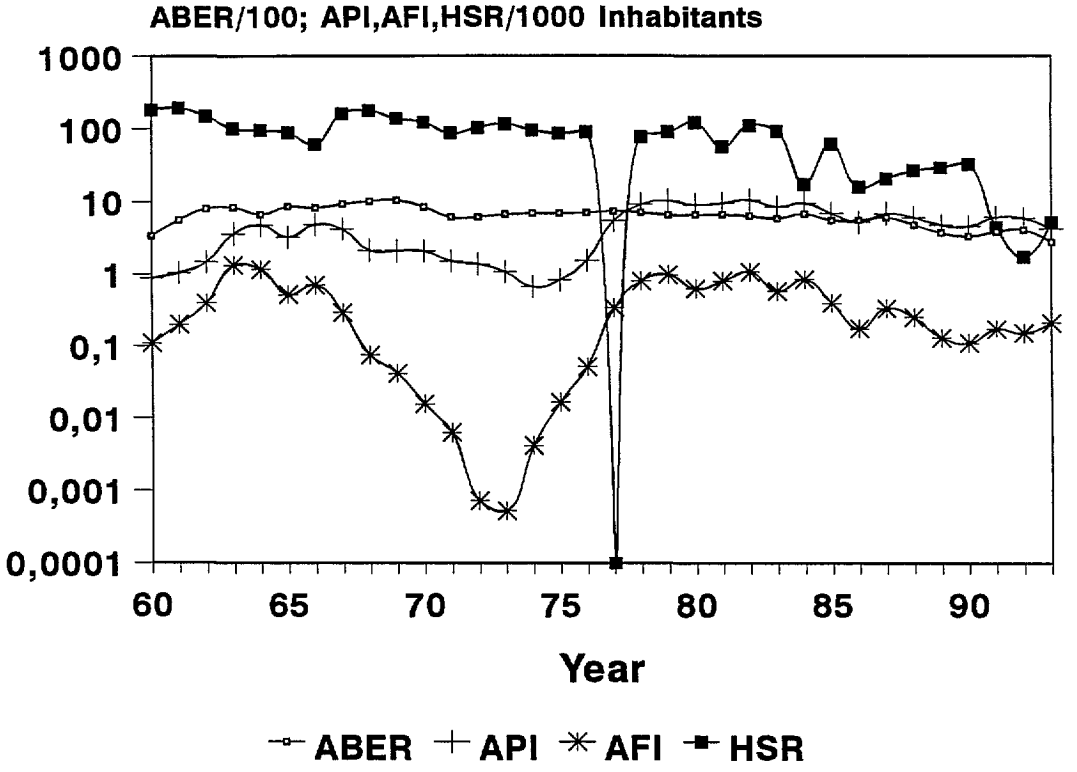


**Risk criteria**

0.0 - 1 Very low

1.1 - 3 Low

# GUATEMALA - Malariometric Rates
## 1960-1993




Malaria remains a serious public health problem in Guatemala and figures among the five communicable diseases causing the highest morbidity. The trend of the disease in general has been progressively upward, especially in the northern area, where poverty is most acute. Among the factors that have influenced the current situation of the malaria program are a critical lack supplies, an insufficient and outdated budget, poor administration and the prevailing state of institutional crisis, lack of managerial organization, outmoded standards and occupational profiles, as well as the lack of involvement of the health services. An attempt is being made to overcome these obstacles through integration of malaria control services into the general health services at the national level, as well as training of personnel at all levels and strengthening of the epidemiological approach in order to design more appropriate prevention and control strategies.

**GUATEMALA – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993**

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| **Municipalities or "Cantones":** | 56 | 75 | 71 | 128 | 330 |
| **Slides** | | | | | |
| **Examined:** | 215,546 | 38,688 | 22,109 | – | 276,343 |
| **Positives:** | 32,657 | 5,861 | 3,350 | – | 41,868 |
| **(P.falciparum):** | (1632) | (294) | (168) | – | (2094) |
| **4–Aminoquinolines** | | | | | |
| **Complete Treatments:** | 179,416 | 32,203 | 18,402 | – | 230,020 |
| **Administered treatments for each case:** | 5.49 | 5.49 | 5.49 | – | 5.49 |

The Program, which received technical and financial cooperation from the Swedish Government through PAHO, has initiated the process of redistributing available resources in accordance with the epidemiological stratification presented in the table showing the distribution of diagnostic and treatment activities, which indicates that 40% of the country's 330 *municipios* are classified as high-risk areas. These areas are located in Alta Verapaz, Baja Verapaz, and Petén, all in the northern part of the country.

This classification takes on greater significance when it is considered that, based on the traditional operational analysis carried out by the program, up to 1992 Guatemala devoted more than 95% of available resources to control efforts in the Pacific coastal area.

## GUATEMALA – MALARIOMETRIC RATES

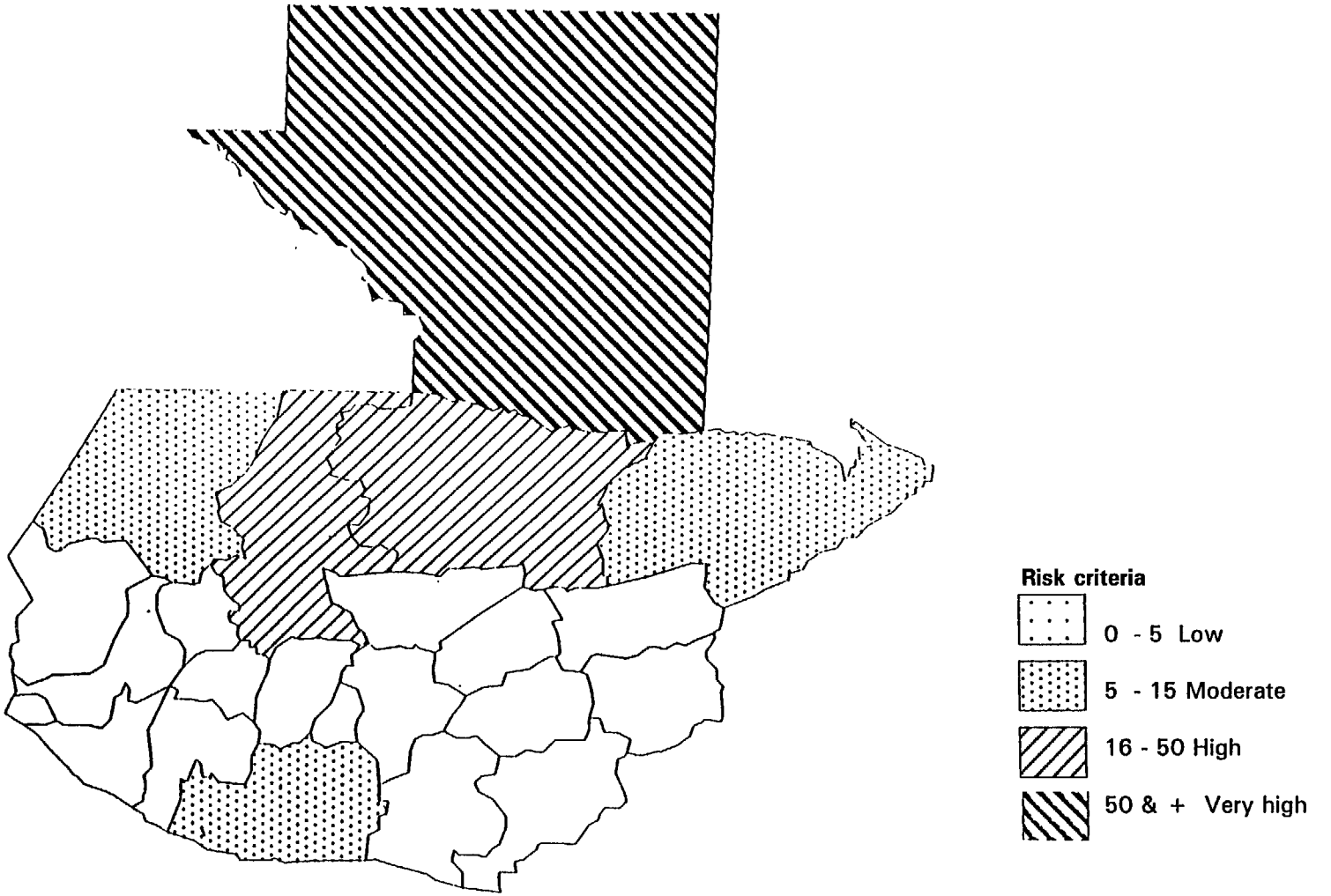
| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| 1960 | 3,810 | 129,742 | 3.41 | 3,387 | 0.89 | 417 | 2,969 | 1 | 0.11 | 0.78 | 697,557 | 183.09 |
| | 3,928 | 218,628 | 5.57 | 4,083 | 1.04 | 780 | 3,298 | 5 | 0.20 | 0.84 | 756,185 | 192.51 |
| | 4,051 | 323,373 | 7.98 | 5,996 | 1.48 | 1,601 | 4,375 | 20 | 0.40 | 1.08 | 606,853 | 149.80 |
| | 4,185 | 348,866 | 8.34 | 15,116 | 3.61 | 5,557 | 9,522 | 37 | 1.33 | 2.28 | 427,022 | 102.04 |
| | 4,305 | 289,058 | 6.71 | 20,401 | 4.74 | 5,003 | 15,358 | 40 | 1.16 | 3.57 | 411,234 | 95.52 |
| 1965 | 4,438 | 380,562 | 8.58 | 14,472 | 3.26 | 2,313 | 12,157 | 2 | 0.52 | 2.74 | 393,924 | 88.76 |
| | 4,565 | 376,439 | 8.25 | 22,045 | 4.83 | 3,230 | 18,812 | 3 | 0.71 | 4.12 | 278,804 | 61.07 |
| | 4,698 | 439,186 | 9.35 | 19,684 | 4.19 | 1,377 | 18,306 | 1 | 0.29 | 3.90 | 752,620 | 160.20 |
| | 4,837 | 492,940 | 10.19 | 10,407 | 2.15 | 364 | 10,043 | – | 0.08 | 2.08 | 858,960 | 177.58 |
| | 4,966 | 521,336 | 10.50 | 10,494 | 2.11 | 209 | 10,284 | 1 | 0.04 | 2.07 | 687,708 | 138.48 |
| 1970 | 5,270 | 449,706 | 8.53 | 11,044 | 2.10 | 83 | 10,961 | – | 0.02 | 2.08 | 648,392 | 123.03 |
| | 5,420 | 332,531 | 6.14 | 8,280 | 1.53 | 34 | 8,245 | 1 | 0.01 | 1.52 | 476,143 | 87.85 |
| | 5,580 | 345,156 | 6.19 | 7,750 | 1.39 | 4 | 7,746 | – | 0.00 | 1.39 | 584,258 | 104.71 |
| | 5,740 | 386,026 | 6.73 | 6,182 | 1.08 | 3 | 6,179 | – | 0.00 | 1.08 | 674,310 | 117.48 |
| | 6,050 | 421,240 | 6.96 | 4,030 | 0.67 | 25 | 4,005 | – | 0.00 | 0.66 | 583,575 | 96.46 |
| 1975 | 6,023 | 418,749 | 6.95 | 4,979 | 0.83 | 100 | 4,879 | – | 0.02 | 0.81 | 518,531 | 86.09 |
| | 6,191 | 435,097 | 7.03 | 9,616 | 1.55 | 320 | 9,296 | – | 0.05 | 1.50 | 557,844 | 90.11 |
| | 6,364 | 472,297 | 7.42 | 34,907 | 5.49 | 2,159 | 32,748 | – | 0.34 | 5.15 | 0 | 0.00 |
| | 6,543 | 463,794 | 7.09 | 59,755 | 9.13 | 5,234 | 54,521 | – | 0.80 | 8.33 | 504,664 | 77.13 |
| | 6,727 | 440,712 | 6.55 | 69,039 | 10.26 | 6,631 | 62,408 | – | 0.99 | 9.28 | 605,403 | 90.00 |
| 1980 | 6,917 | 456,784 | 6.60 | 62,657 | 9.06 | 4,361 | 58,296 | – | 0.63 | 8.43 | 840,518 | 121.51 |
| | 7,113 | 475,777 | 6.69 | 67,994 | 9.56 | 5,718 | 62,276 | – | 0.80 | 8.76 | 407,716 | 57.32 |
| | 7,315 | 468,430 | 6.40 | 77,375 | 10.58 | 7,841 | 69,534 | – | 1.07 | 9.51 | 805,968 | 110.18 |
| | 7,524 | 442,745 | 5.88 | 64,024 | 8.51 | 4,356 | 59,668 | – | 0.58 | 7.93 | 695,933 | 92.50 |
| | 7,740 | 526,694 | 6.80 | 74,132 | 9.58 | 6,535 | 67,597 | – | 0.84 | 8.73 | 132,682 | 17.14 |
| 1985 | 7,963 | 441,757 | 5.55 | 54,958 | 6.90 | 3,125 | 51,833 | – | 0.39 | 6.51 | 494,653 | 62.12 |
| | 8,195 | 453,401 | 5.53 | 42,609 | 5.20 | 1,425 | 41,184 | – | 0.17 | 5.03 | 129,627 | 15.82 |
| | 8,434 | 511,445 | 6.06 | 57,662 | 6.84 | 2,804 | 54,858 | – | 0.33 | 6.50 | 175,161 | 20.77 |
| | 8,681 | 413,216 | 4.76 | 52,561 | 6.05 | 2,165 | 50,396 | – | 0.25 | 5.81 | 231,676 | 26.69 |
| | 8,935 | 331,675 | 3.71 | 42,453 | 4.75 | 1,155 | 41,298 | – | 0.13 | 4.62 | 260,681 | 29.18 |
| 1990 | 9,197 | 305,791 | 3.32 | 41,711 | 4.54 | 1,008 | 40,703 | – | 0.11 | 4.43 | 297,471 | 32.34 |
| 1991 | 9,467 | 361,743 | 3.82 | 57,829 | 6.11 | 1,616 | 56,070 | – | 0.17 | 5.92 | 42,206 | 4.46 |
| 1992 m) | 9,745 | 396,171 | 4.07 | 57,560 | 5.91 | 1,480 | 56,080 | – | 0.15 | 5.75 | 16,905 | 1.73 |
| 1993 n) | 10,029 | 276,343 | 2.76 | 41,868 | 4.17 | 2,094 | 39,774 | – | 0.21 | 3.97 | 51,956 | 5.18 |

Aug/2/94

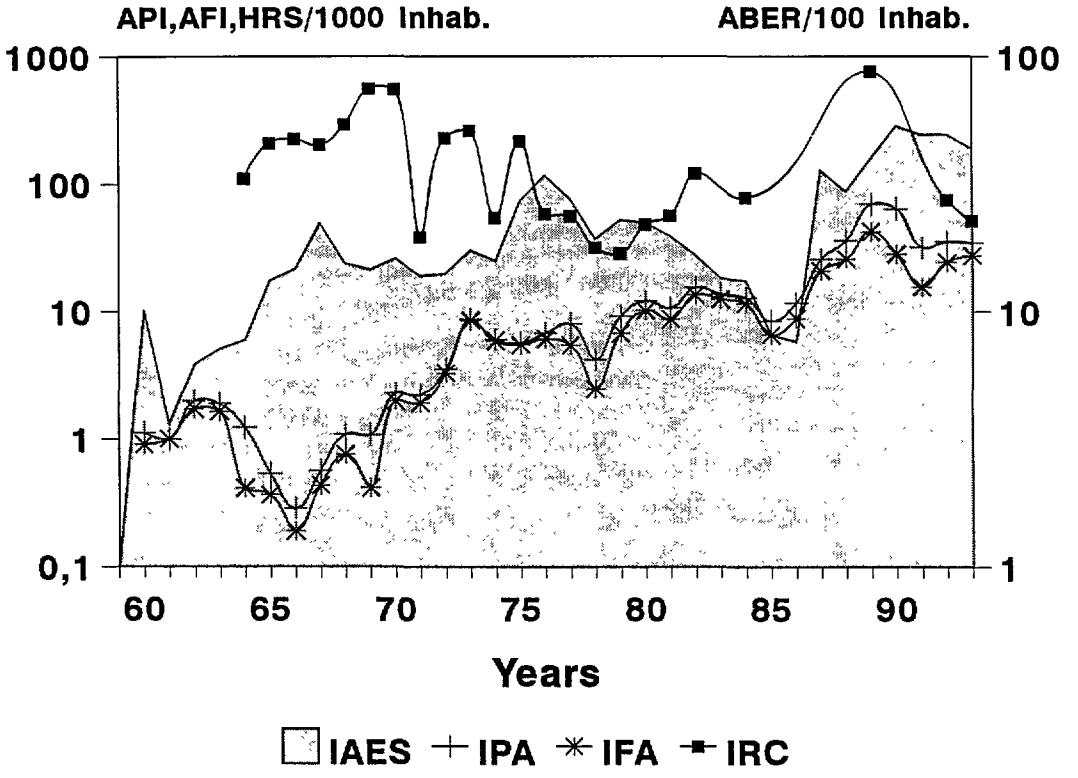
a) Population in thousands, estimated by PAHO Technical Information System.
b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.
f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.
n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

# G U A T E M A L A

## ANNUAL PARASITE INDEX BY DEPARTMENTS
## 1993



# FRENCH GUIANA - Malariometric Rates
## 1960-1993




In 1993 an increase in malaria transmission was observed in the Maroni river valley along the border with Suriname. This increase confirmed predictions made in 1992, which were based on an increase (epidemic peak) registered in this region during the last months of that year. The situation in this border area is particularly worrisome owing to the high proportion of cases caused by P. falciparum and the lack of local health care services capable of treating complications. The malaria control program has access to only one side of the river, which diminishes the effectiveness of any control measures. The situation is further complicated by the constant circulation of people across the border. In order to enhance the effectiveness of control efforts, a common control strategy for the health regions on both sides of the border is being sought.

A substantial reduction in malaria transmission was registered in the lower Oyapock river region. However, this improvement in the epidemiological situation can be attributed more to the establishment of stable, organized communities in this area than to the improvement of malaria control services. The Cayenne focus has been controlled. This phenomenon has been accompanied by a reduction in the migration of population toward the Brazilian border and the introduction of environmental sanitation measures such as clearing of brush and weeds and clean-up of environmental pollution.

FRENCH GUIANA – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| Municipalities or "Cantones": | 7 | 2 | 7 | 6 | 22 |
| Slides | | | | | |
| Examined: | 29,308 | 3,188 | 6,844 | 10,653 | 49,993 |
| Positives: | 3,295 | 127 | 192 | 360 | 3,974 |
| (P.falciparum): | (2845) | (16) | (79) | 214 | (3.154) |
| 4–Aminoquinolines | | | | | |
| Complete Treatments: | 16,850 | 2,280 | 19,044 | – | 38,174 |
| Administered treatments for each case: | 5.11 | 17.95 | 99.19 | – | 9.61 |
| No. of treatments with 2nd line antimalarial drugs | – | – | – | 1,418 | 1,418 |

## FRENCH GUIANA – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| 1960 | 33 | 3,343 | 10.13 | 37 | 1.12 | 30 | 6 | 1 | 0.91 | 0.18 | – | – |
| | 33 | 1,197 | 3.63 | 33 | 1.00 | 33 | – | – | 1.00 | 0.00 | – | – |
| | 35 | 2,183 | 6.24 | 70 | 2.00 | 60 | 10 | – | 1.71 | 0.29 | – | – |
| | 37 | 2,648 | 7.16 | 70 | 1.89 | 61 | 9 | – | 1.65 | 0.24 | – | – |
| | 39 | 3,025 | 7.76 | 48 | 1.23 | 16 | 32 | – | 0.41 | 0.82 | 4,298 | 110.21 |
| 1965 | 41 | 5,424 | 13.23 | 22 | 0.54 | 15 | 7 | – | 0.37 | 0.17 | 8,564 | 208.88 |
| | 42 | 6,180 | 14.71 | 12 | 0.29 | 8 | 4 | – | 0.19 | 0.10 | 9,432 | 224.57 |
| | 44 | 9,811 | 22.30 | 25 | 0.57 | 19 | 6 | – | 0.43 | 0.14 | 8,926 | 202.86 |
| | 46 | 7,132 | 15.50 | 50 | 1.09 | 35 | 14 | 1 | 0.76 | 0.30 | 13,464 | 292.70 |
| | 48 | 7,000 | 14.58 | 52 | 1.08 | 20 | 32 | – | 0.42 | 0.67 | 26,861 | 559.60 |
| 1970 | 51 | 8,237 | 16.15 | 117 | 2.29 | 101 | 16 | – | 1.98 | 0.31 | 27,967 | 548.37 |
| | 52 | 7,176 | 13.80 | 116 | 2.23 | 100 | 16 | – | 1.92 | 0.31 | 1,996 | 38.38 |
| | 54 | 7,597 | 14.07 | 192 | 3.56 | 178 | 14 | – | 3.30 | 0.26 | 12,361 | 228.91 |
| | 56 | 9,739 | 17.39 | 484 | 8.64 | 477 | 7 | – | 8.52 | 0.13 | 14,650 | 261.61 |
| | 58 | 9,153 | 15.78 | 351 | 6.05 | 343 | 8 | – | 5.91 | 0.14 | 3,160 | 54.48 |
| 1975 | 56 | 15,250 | 27.23 | 319 | 5.70 | 308 | 11 | – | 5.50 | 0.20 | 12,020 | 214.64 |
| | 58 | 19,854 | 34.23 | 394 | 6.79 | 354 | 40 | – | 6.10 | 0.69 | 3,400 | 58.62 |
| | 61 | 16,908 | 27.72 | 488 | 8.00 | 333 | 146 | 9 | 5.46 | 2.39 | 3,400 | 55.74 |
| | 63 | 12,147 | 19.28 | 266 | 4.22 | 156 | 102 | 8 | 2.48 | 1.62 | 2,000 | 31.75 |
| | 66 | 15,114 | 22.90 | 604 | 9.15 | 446 | 157 | 1 | 6.76 | 2.38 | 1,876 | 28.42 |
| 1980 | 69 | 15,462 | 22.41 | 831 | 12.04 | 700 | 131 | – | 10.14 | 1.90 | 3,315 | 48.04 |
| | 72 | 14,249 | 19.79 | 769 | 10.68 | 627 | 142 | – | 8.71 | 1.97 | 4,074 | 56.58 |
| | 74 | 12,319 | 16.65 | 1,143 | 15.45 | 997 | 145 | 1 | 13.47 | 1.96 | 8,925 | 120.61 |
| | 77 | 10,391 | 13.49 | 1,051 | 13.65 | 964 | 87 | – | 12.52 | 1.13 | ... | ... |
| | 80 | 10,587 | 13.23 | 1,021 | 12.76 | 919 | 102 | – | 11.49 | 1.28 | 6,240 | 78.00 |
| 1985 | 82 | 6,664 | 8.13 | 691 | 8.43 | 540 | 142 | – | 6.59 | 1.73 | ... | ... |
| (*) | 84 | 6,436 | 7.66 | 979 | 11.65 | 738 | 241 | – | 8.79 | 2.87 | ... | ... |
| (*) | 86 | 30,761 | 35.77 | 2,221 | 25.83 | 1,798 | 423 | – | 20.91 | 4.92 | ... | ... |
| (*) | 88 | 26,145 | 29.71 | 3,188 | 36.23 | 2,284 | 904 | – | 25.95 | 10.27 | ... | ... |
| | 90 | 35,993 | 39.99 | 6,284 | 69.82 | 3,831 | 2,391 | – | 42.57 | 26.57 | 68,000 | 755.56 |
| 1990 | 92 | 49,192 | 53.47 | 5,909 | 64.23 | 2,607 | 3,292 | 10 | 28.34 | 35.78 | – | – |
| 1991 ** | 112 | 55,242 | 49.32 | 3,573 | 31.90 | 1,745 | 1,663 | 71 | 15.58 | 14.85 | – | – |
| 1992 ** | 115 | 56,925 | 49.50 | 4,072 | 35.41 | 2,796 | 1,151 | 125 | 24.31 | 10.01 | 8,600 | 74.78 |
| 1993 *** | 115 | 49,993 | 43.47 | 3,974 | 34.56 | 3,154 | 720 | 100 | 27.43 | 6.26 | 5,896 | 51.27 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

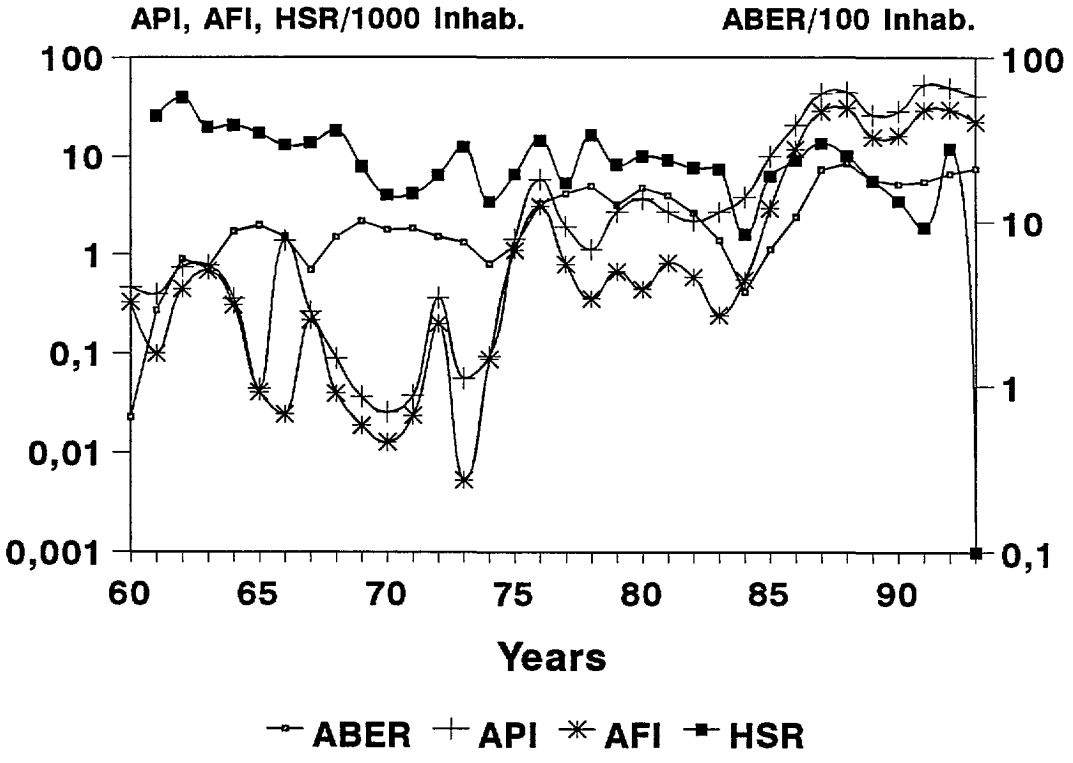
b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.

d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.

f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

* incompleted information. **Population estimated for the country. ***Population 1993 est. for the country.

# GUYANA - Malariometric Rates
## 1960-1993




In 1993, the malaria control program revised its eradication-oriented strategy of action, which had remain unchanged for more than 40 years. In recent decades the specialized program has reduced its human resources from 189 to 98 in 1993. Of these 98, 60% are assigned to Georgetown, where there is no malaria transmission. Of the nine health regions in the country, five are classified as high-risk areas. Because 54.5% of the malaria cases diagnosed in the country are caused by P. falciparum, it is considered extremely important to provide immediate treatment for persons with malaria.

Of the country's total population, 13.5% lives in high-risk areas where the annual parasite index is more than 430 per 1,000, which constitutes the highest risk situation in the Americas.

**GUYANA – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993**

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| **Municipalities or "Cantones":** | 5 | 2 | 2 | – | 9 |
| **Slides** | | | | | |
| **Examined:** | 145,193 | 6,784 | 20,495 | – | 172,472 |
| **Positives:** | 27,531 | 1,096 | 4,545 | – | 33,172 |
| **(P.falciparum):** | (14.964) | (47) | (782) | – | (18.091) |
| **4–Aminoquinolines** | | | | | |
| **Complete Treatments:** | 18,600 | 4,433 | 7,913 | – | 30,946 |
| **Administered treatments for each case:** | 0.68 | 4.04 | 1.74 | – | 0.93 |
| **No. of treatments with 2nd line antimalarial drugs** | 35,547 | 3,791 | 13,909 | – | 53,247 |

The health sector information system is not fully operational in Guyana; however, the information available confirms that the malaria problem in the country is severe. Seventy percent of the microscopically diagnosed cases have occurred in men between 14 and 29 years of age. Sporadic epidemiological surveys carried out in the interior of health region 8, however, show equal parasite rates among men, women, and children.

The prospects for the future are discouraging. Because access to diagnostic services is generally available only to those who are strongest (men aged 14-29), women and children often fail to receive adequate diagnosis and treatment. It is not known what happens to them. Do they get well spontaneously? Do they die undiagnosed?

In response to these circumstances, the government has decided: (1) to redefine the objectives of the malaria control program, bringing them into line with the Global Malaria Control Strategy; (2) to restructure the functions of the health units; and (3) to develop a strategy for sharing prevention and control responsibilities with the private sector, which has undergone rapid development in high-transmission areas.

## GUYANA – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| | 550 | 3,754 | 0.68 | 176 | 0.32 | 63 | 100 | 13 | 0.11 | 0.18 | ... | ... |
| 1960 | 565 | 3,674 | 0.65 | 263 | 0.47 | 184 | 67 | 12 | 0.33 | 0.12 | ... | ... |
| | 585 | 16,889 | 2.89 | 231 | 0.39 | 58 | 168 | 5 | 0.10 | 0.29 | 15,107 | 25.82 |
| | 600 | 35,446 | 5.91 | 446 | 0.74 | 266 | 180 | – | 0.44 | 0.30 | 23,808 | 39.68 |
| | 617 | 32,255 | 5.23 | 476 | 0.77 | 418 | 58 | – | 0.68 | 0.09 | 12,231 | 19.82 |
| | 630 | 55,185 | 8.76 | 225 | 0.36 | 192 | 33 | – | 0.30 | 0.05 | 13,072 | 20.75 |
| 1965 | 643 | 61,507 | 9.57 | 28 | 0.04 | 26 | 2 | – | 0.04 | 0.00 | 11,121 | 17.30 |
| | 659 | 53,669 | 8.14 | 910 | 1.38 | 16 | 894 | – | 0.02 | 1.36 | 8,618 | 13.08 |
| | 674 | 34,163 | 5.07 | 175 | 0.26 | 145 | 29 | 1 | 0.22 | 0.04 | 9,242 | 13.71 |
| | 686 | 55,217 | 8.05 | 61 | 0.09 | 27 | 34 | – | 0.04 | 0.05 | 12,508 | 18.23 |
| | 694 | 70,121 | 10.10 | 25 | 0.04 | 13 | 12 | – | 0.02 | 0.02 | 5,477 | 7.89 |
| 1970 | 710 | 63,623 | 8.96 | 18 | 0.03 | 9 | 9 | – | 0.01 | 0.01 | 2,883 | 4.06 |
| | 725 | 65,967 | 9.10 | 27 | 0.04 | 17 | 9 | 1 | 0.02 | 0.01 | 3,049 | 4.21 |
| | 741 | 59,931 | 8.09 | 266 | 0.36 | 147 | 119 | – | 0.20 | 0.16 | 4,770 | 6.44 |
| | 758 | 56,420 | 7.44 | 42 | 0.06 | 4 | 38 | – | 0.01 | 0.05 | 9,343 | 12.33 |
| | 774 | 42,549 | 5.50 | 72 | 0.09 | 67 | 5 | – | 0.09 | 0.01 | 2,676 | 3.46 |
| 1975 | 780 | 55,758 | 7.15 | 1,116 | 1.43 | 854 | 262 | – | 1.09 | 0.34 | 5,137 | 6.59 |
| | 796 | 102,815 | 12.92 | 4,642 | 5.83 | 2,456 | 2,186 | – | 3.09 | 2.75 | 11,479 | 14.42 |
| | 812 | 121,075 | 14.91 | 1,563 | 1.92 | 640 | 923 | – | 0.79 | 1.14 | 4,364 | 5.37 |
| | 830 | 137,114 | 16.52 | 927 | 1.12 | 293 | 633 | 1 | 0.35 | 0.76 | 13,578 | 16.36 |
| | 847 | 107,232 | 12.66 | 2,294 | 2.71 | 564 | 1,730 | – | 0.67 | 2.04 | 6,974 | 8.23 |
| 1980 | 865 | 139,433 | 16.12 | 3,202 | 3.70 | 380 | 2,822 | – | 0.44 | 3.26 | 8,602 | 9.94 |
| | 766 | 110,993 | 14.49 | 2,065 | 2.70 | 620 | 1,443 | 2 | 0.81 | 1.88 | 7,025 | 9.17 |
| | 773 | 87,525 | 11.32 | 1,700 | 2.20 | 451 | 1,249 | – | 0.58 | 1.62 | 5,905 | 7.64 |
| | 780 | 59,940 | 7.68 | 2,102 | 2.69 | 188 | 1,912 | 2 | 0.24 | 2.45 | 5,777 | 7.41 |
| | 786 | 29,207 | 3.72 | 3,017 | 3.84 | 431 | 2,585 | 1 | 0.55 | 3.29 | 1,257 | 1.60 |
| 1985 | 790 | 53,276 | 6.74 | 7,900 | 10.00 | 2,336 | 5,564 | – | 2.96 | 7.04 | 4,982 | 6.31 |
| | 792 | 84,763 | 10.70 | 16,388 | 20.69 | 9,336 | 7,052 | – | 11.79 | 0.08 | 7,179 | 9.06 |
| | 793 | 165,230 | 20.84 | 34,142 | 43.05 | 22,638 | 11,504 | – | 28.55 | 0.07 | 10,668 | 13.45 |
| | 793 | 181,067 | 22.83 | 35,470 | 44.73 | 24,327 | 11,143 | – | 30.68 | 0.06 | 7,965 | 10.04 |
| | 794 | 143,599 | 18.09 | 20,822 | 26.22 | 12,390 | 8,432 | – | 15.60 | 0.06 | 4,490 | 5.65 |
| 1990 | 796 | 135,260 | 16.99 | 22,681 | 28.49 | 12,907 | 9,777 | – | 16.21 | 0.07 | 2,793 | 3.51 |
| 1991(m) | 801 | 141,046 | 17.61 | 42,204 | 52.69 | 23,397 | 18,807 | – | 29.21 | 0.13 | 1,502 | 1.88 |
| 1992(m) | 808 | 159,108 | 19.69 | 39,702 | 49.14 | 23,871 | 15,831 | – | 29.54 | 0.10 | 9,665 | 11.96 |
| 1993 n) | 816 | 172,469 | 21.14 | 33,172 | 40.65 | 18,091 | 15,081 | – | 22.17 | 0.09 | – | 0.00 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.

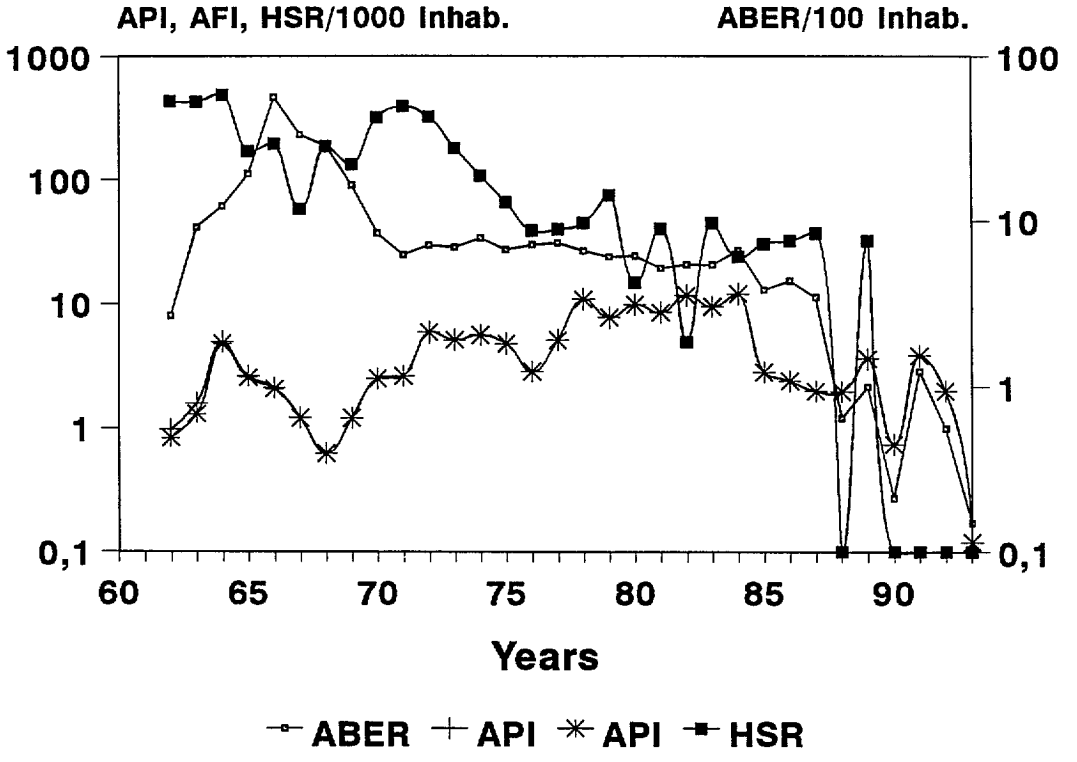
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.

f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

# HAITI - Malariometric Rates

## 1962-1993




In 1988 health authorities decided to adopt a new strategy, incorporating malaria control as a part of primary health care in lieu of the malaria eradication program. This new strategy took effect in 1989.

The country is undergoing a period of political instability, which has made it difficult to continue normal malaria control activities, and at present there is no national malaria program at the level of the Ministry of Health. An effort is being made, with funds provided by the UNDP, to train personnel (in the public and private sectors, as well as NGOs) with a view to facilitating the integration of malaria control activities into the activities of the general health services.

During 1993 epidemiological surveillance activities were limited and only partial data mortality and morbidity were obtained. As a result, no projections regarding future trends of malaria in Haiti can be made.

HAITI – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| Municipalities or "Cantones": | ... | – | – | – | 135 |
| Slides | | | | | |
| Examined: | 10,045 | – | – | – | 10,045 |
| Positives: | 853 | – | – | – | 853 |
| (P.falciparum): | (853) | – | – | – | (853) |
| 4–Aminoquinolines | | | | | |
| Complete Treatments: | 20,000 | – | – | – | 20,000 |
| Administered treatments for each case: | 23.45 | – | – | – | 23.45 |

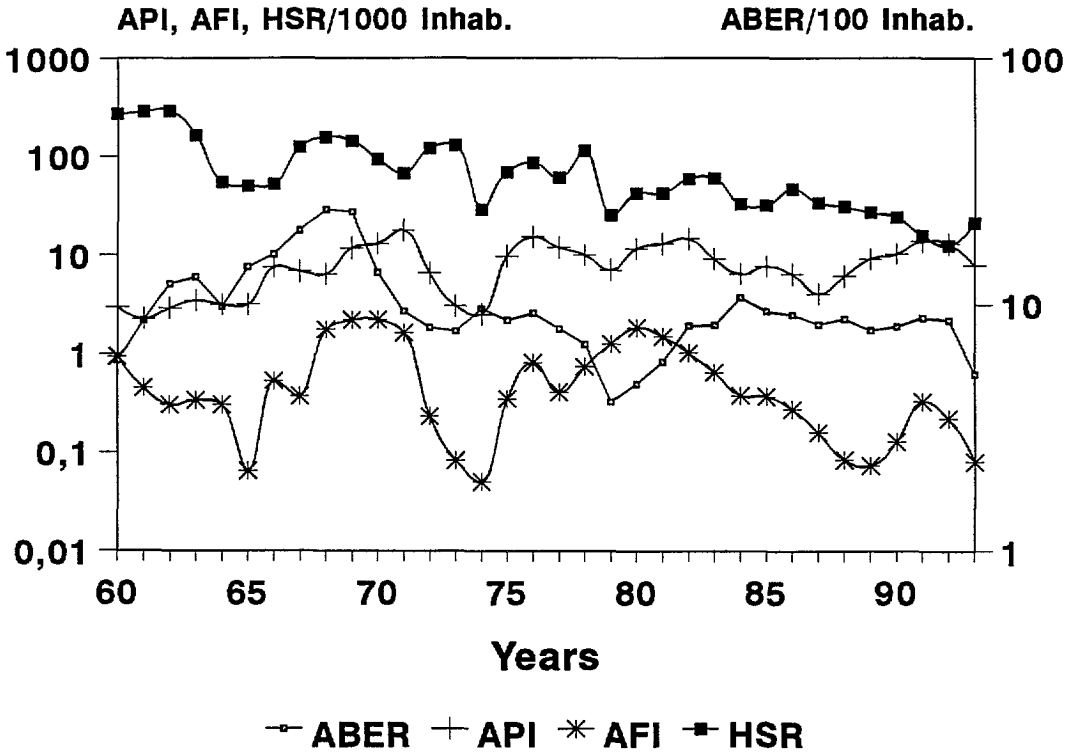
## HAITI – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| 1960 | 3,991 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| | 4,067 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| | 4,145 | 111,142 | 2.68 | 4,033 | 0.97 | 3,441 | 20 | 572 | 0.83 | 0.00 | 1,792,395 | 432.42 |
| | 4,226 | 386,657 | 9.15 | 6,662 | 1.58 | 5,464 | 12 | 1,186 | 1.29 | 0.00 | 1,817,027 | 429.96 |
| | 3,850 | 473,297 | 12.29 | 19,170 | 4.98 | 18,422 | 24 | 724 | 4.78 | 0.01 | 1,883,520 | 489.23 |
| 1965 | 3,910 | 752,284 | 19.24 | 10,304 | 2.64 | 9,997 | 20 | 287 | 2.56 | 0.01 | 664,572 | 169.97 |
| | 3,970 | 2,239,469 | 56.41 | 8,378 | 2.11 | 8,208 | 35 | 138 | 2.07 | 0.01 | 772,513 | 194.59 |
| | 4,030 | 1,343,796 | 33.34 | 4,871 | 1.21 | 4,840 | 3 | 28 | 1.20 | 0.00 | 233,513 | 57.94 |
| | 4,100 | 1,173,905 | 28.63 | 2,562 | 0.62 | 2,556 | 3 | 3 | 0.62 | 0.00 | 760,385 | 185.46 |
| | 4,160 | 686,167 | 16.49 | 5,005 | 1.20 | 4,999 | 1 | 5 | 1.20 | 0.00 | 549,869 | 132.18 |
| 1970 | 4,235 | 357,366 | 8.44 | 10,658 | 2.52 | 10,654 | – | 4 | 2.52 | – | 1,354,700 | 319.88 |
| | 4,315 | 270,695 | 6.27 | 11,347 | 2.63 | 11,345 | 2 | – | 2.63 | 0.00 | 1,697,187 | 393.32 |
| | 4,368 | 313,368 | 7.17 | 25,961 | 5.94 | 25,961 | – | – | 5.94 | – | 1,411,027 | 323.04 |
| | 4,440 | 309,482 | 6.97 | 22,858 | 5.15 | 22,857 | – | 1 | 5.15 | – | 801,247 | 180.46 |
| | 4,514 | 357,546 | 7.92 | 25,441 | 5.64 | 25,441 | – | – | 5.64 | – | 487,658 | 108.03 |
| 1975 | 5,157 | 346,934 | 6.73 | 24,733 | 4.80 | 24,732 | 1 | – | 4.80 | – | 337,874 | 65.52 |
| | 5,279 | 380,184 | 7.20 | 15,087 | 2.86 | 15,078 | 7 | 2 | 2.86 | 0.00 | 205,767 | 38.98 |
| | 5,405 | 400,024 | 7.40 | 27,679 | 5.12 | 27,646 | 28 | 5 | 5.11 | 0.01 | 213,796 | 39.56 |
| | 5,535 | 365,202 | 6.60 | 60,472 | 10.93 | 60,471 | 1 | – | 10.93 | 0.00 | 247,095 | 44.64 |
| | 5,295 | 321,456 | 6.07 | 41,252 | 7.79 | 41,252 | – | – | 7.79 | – | 396,595 | 74.90 |
| 1980 | 5,413 | 333,157 | 6.15 | 53,478 | 9.88 | 53,478 | – | – | 9.88 | – | 80,244 | 14.82 |
| | 5,466 | 283,978 | 5.20 | 46,703 | 8.54 | 46,703 | – | – | 8.54 | – | 219,512 | 40.16 |
| | 5,566 | 303,118 | 5.45 | 65,354 | 11.74 | 65,354 | – | – | 11.74 | – | 27,683 | 4.97 |
| | 5,669 | 308,075 | 5.43 | 53,954 | 9.52 | 53,954 | – | – | 9.52 | – | 253,177 | 44.66 |
| | 5,777 | 385,400 | 6.67 | 69,863 | 12.09 | 69,862 | 1 | – | 12.09 | 0.00 | 138,174 | 23.92 |
| 1985 | 5,889 | 226,887 | 3.85 | 16,662 | 2.83 | 16,662 | – | – | 2.83 | – | 179,230 | 30.43 |
| | 6,006 | 262,582 | 4.37 | 14,363 | 2.39 | 14,363 | – | – | 2.39 | – | 194,512 | 32.39 |
| | 6,127 | 212,989 | 3.48 | 12,134 | 1.98 | 12,120 | 14 | – | 1.98 | 0.00 | 227,813 | 37.18 |
| (*) | 6,252 | 40,321 | 0.64 | 12,306 | 1.97 | 12,306 | – | – | 1.97 | 0.00 | 0 | 0.00 |
| | 6,381 | 63,528 | 1.00 | 23,231 | 3.64 | 23,231 | – | – | 3.64 | 0.00 | 206,541 | 32.37 |
| 1990 m) | 6,486 | 13,743 | 0.21 | 4,806 | 0.74 | 4,806 | – | – | 0.74 | 0.00 | 0 | 0.00 |
| 1991(m) | 6,619 | 81,763 | 1.24 | 25,511 | 3.85 | 25,511 | – | – | 3.85 | 0.00 | 0 | 0.00 |
| 1992(m) * | 6,755 | 37,957 | 0.56 | 13,457 | 1.99 | 13,457 | – | – | 1.99 | 0.00 | 0 | 0.00 |
| 1993(n) | 6,893 | 10,045 | 0.15 | 853 | 0.12 | 853 | – | – | 0.12 | 0.00 | 0 | 0.00 |

Aug/2/94

a) Population in thousands, estimated by PAHO Technical Information System.
b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.
f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.
n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.
* incompleted information

# HONDURAS - Malariometric Rates
## 1960-1993




As can be seen from the map and the table showing the distribution of diagnostic and treatment activities, 64% of the 292 *municipios* into which Honduras is divided are classified as medium- and high-risk areas for malaria. Seventy-five percent of the country's population lives in these areas.

In 1993 the epidemiological situation of malaria improved. There was a decline in the absolute number of cases with respect to 1992, from 72,054 to 44,513 (38.2% decrease). The annual parasite index (API) decreased from 18.05 per 1,000 population in 1992 to 10.0 per 1,000 in 1993. The malaria problem is concentrated in five health regions. Region II accounted for 22.3% of the total cases, Region III for 32.9%, Region VI for 12.6%, Region VII for 21.4%, and Region VIII for 1.5%. In total, the five regions reported 90.7% of all the cases recorded during 1993. Ninety-nine percent of the cases reported were P. vivax infections.

**HONDURAS – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993**

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| **Municipalities or "Cantones":** | 148 | 39 | 104 | 1 | 292 |
| **Slides** | | | | | |
| **Examined:** | 195,444 | 15,350 | 82,946 | – | 293,740 |
| **Positives:** | 40,369 | 2,952 | 1,192 | – | 44,513 |
| **(P.falciparum):** | (421) | (24) | (3) | – | (448) |
| **4–Aminoquinolines** | | | | | |
| **Complete Treatments:** | 199,352 | 87,665 | 12,823 | – | 299,840 |
| **Administered treatments for each case:** | 4.94 | 29.70 | 10.76 | – | 6.74 |

Although improvements have been made in the malaria control program--including the design during the past year of comprehensive programs in two of the regions with the highest incidence of the disease--it has been difficult to carry out intervention measures simultaneously, owing to factors of an administrative nature.

Cooperation projects funded by the Nordic countries have made it possible to continue the process of restructuring and integration of the program for malaria prevention and control into the general health services, which has improved the capacity to respond to the problem at the local level.

## HONDURAS – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | AFI | AVI | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | | | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| | 1,880 | 66,391 | 3.53 | 6,675 | 3.55 | 3,170 | 3,504 | 1 | 1.69 | 1.86 | 236,963 | 126.04 |
| 1960 | 1,849 | 109,677 | 5.93 | 5,517 | 2.98 | 1,737 | 3,780 | – | 0.94 | 2.04 | 496,758 | 268.66 |
| | 1,910 | 164,965 | 8.64 | 4,334 | 2.27 | 861 | 3,472 | 1 | 0.45 | 1.82 | 543,766 | 284.69 |
| | 1,973 | 239,655 | 12.15 | 5,750 | 2.91 | 597 | 5,153 | – | 0.30 | 2.61 | 575,450 | 291.66 |
| | 2,040 | 264,131 | 12.95 | 7,077 | 3.47 | 688 | 6,389 | – | 0.34 | 3.13 | 336,144 | 164.78 |
| | 2,109 | 207,000 | 9.82 | 6,673 | 3.16 | 641 | 6,032 | – | 0.30 | 2.86 | 115,153 | 54.60 |
| 1965 | 2,181 | 310,301 | 14.23 | 6,952 | 3.19 | 141 | 6,811 | – | 0.06 | 3.12 | 109,162 | 50.05 |
| | 2,256 | 360,760 | 15.99 | 17,127 | 7.59 | 1,204 | 15,923 | – | 0.53 | 7.06 | 118,142 | 52.37 |
| | 2,333 | 465,598 | 19.96 | 16,144 | 6.92 | 872 | 15,272 | – | 0.37 | 6.55 | 288,253 | 123.55 |
| | 2,413 | 584,696 | 24.23 | 15,666 | 6.49 | 4,281 | 11,385 | – | 1.77 | 4.72 | 382,068 | 158.34 |
| | 2,495 | 591,544 | 23.71 | 29,584 | 11.86 | 5,528 | 24,056 | – | 2.22 | 9.64 | 360,416 | 144.46 |
| 1970 | 2,640 | 357,436 | 13.54 | 34,537 | 13.08 | 5,875 | 28,662 | – | 2.23 | 10.86 | 248,440 | 94.11 |
| | 2,720 | 255,773 | 9.40 | 48,586 | 17.86 | 4,444 | 44,142 | – | 1.63 | 16.23 | 184,027 | 67.66 |
| | 2,810 | 226,578 | 8.06 | 18,651 | 6.64 | 652 | 17,999 | – | 0.23 | 6.41 | 340,011 | 121.00 |
| | 2,900 | 226,231 | 7.80 | 8,862 | 3.06 | 239 | 8,621 | 2 | 0.08 | 2.97 | 376,655 | 129.88 |
| | 2,990 | 287,842 | 9.63 | 7,503 | 2.51 | 150 | 7,353 | – | 0.05 | 2.46 | 86,626 | 28.97 |
| 1975 | 3,093 | 266,923 | 8.63 | 30,289 | 9.79 | 1,078 | 29,210 | 1 | 0.35 | 9.44 | 213,792 | 69.12 |
| | 3,202 | 295,128 | 9.22 | 48,804 | 15.24 | 2,603 | 46,201 | – | 0.81 | 14.43 | 276,375 | 86.31 |
| | 3,318 | 264,233 | 7.96 | 39,414 | 11.88 | 1,355 | 38,059 | – | 0.41 | 11.47 | 202,920 | 61.16 |
| | 3,438 | 236,650 | 6.88 | 34,554 | 10.05 | 2,539 | 32,013 | 2 | 0.74 | 9.31 | 389,642 | 113.33 |
| | 3,563 | 143,485 | 4.03 | 25,297 | 7.10 | 4,505 | 20,792 | – | 1.26 | 5.84 | 90,500 | 25.40 |
| 1980 | 3,691 | 175,591 | 4.76 | 43,009 | 11.65 | 6,789 | 36,220 | – | 1.84 | 9.81 | 154,362 | 41.82 |
| | 3,798 | 221,822 | 5.84 | 49,377 | 13.00 | 5,667 | 43,710 | – | 1.49 | 11.51 | 160,536 | 42.27 |
| | 3,939 | 322,802 | 8.20 | 57,482 | 14.59 | 4,019 | 53,463 | – | 1.02 | 13.57 | 233,702 | 59.33 |
| | 4,086 | 336,879 | 8.24 | 37,536 | 9.19 | 2,640 | 34,896 | – | 0.65 | 8.54 | 243,669 | 59.64 |
| | 4,234 | 452,184 | 10.68 | 27,332 | 6.46 | 1,589 | 25,743 | – | 0.38 | 6.08 | 138,174 | 32.63 |
| 1985 | 4,383 | 410,720 | 9.37 | 33,828 | 7.72 | 1,616 | 32,212 | – | 0.37 | 7.35 | 140,793 | 32.12 |
| | 4,531 | 411,150 | 9.07 | 29,130 | 6.43 | 1,238 | 27,892 | – | 0.27 | 6.16 | 211,214 | 46.62 |
| | 4,680 | 388,509 | 8.30 | 19,095 | 4.08 | 743 | 18,352 | – | 0.16 | 3.92 | 158,386 | 33.84 |
| | 4,830 | 421,474 | 8.73 | 29,737 | 6.16 | 405 | 29,332 | – | 0.08 | 6.07 | 148,736 | 30.79 |
| * | 4,982 | 391,250 | 7.85 | 45,922 | 9.22 | 367 | 45,555 | – | 0.07 | 9.14 | 134,593 | 27.02 |
| 1990 | 5,138 | 418,513 | 8.15 | 53,095 | 10.33 | 659 | 52,436 | – | 0.13 | 10.21 | 123,963 | 24.13 |
| '1991 | 5,298 | 468,811 | 8.85 | 73,352 | 13.85 | 1,731 | 71,621 | – | 0.33 | 13.52 | 83,217 | 15.71 |
| 1992(m) | 5,462 | 471,950 | 8.64 | 70,838 | 12.97 | 1,216 | 69,622 | – | 0.22 | 12.75 | 68,524 | 12.55 |
| 1993(n) | 5,628 | 293,740 | 5.22 | 44,513 | 7.91 | 448 | 44,065 | – | 0.08 | 7.83 | 119,008 | 21.15 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.

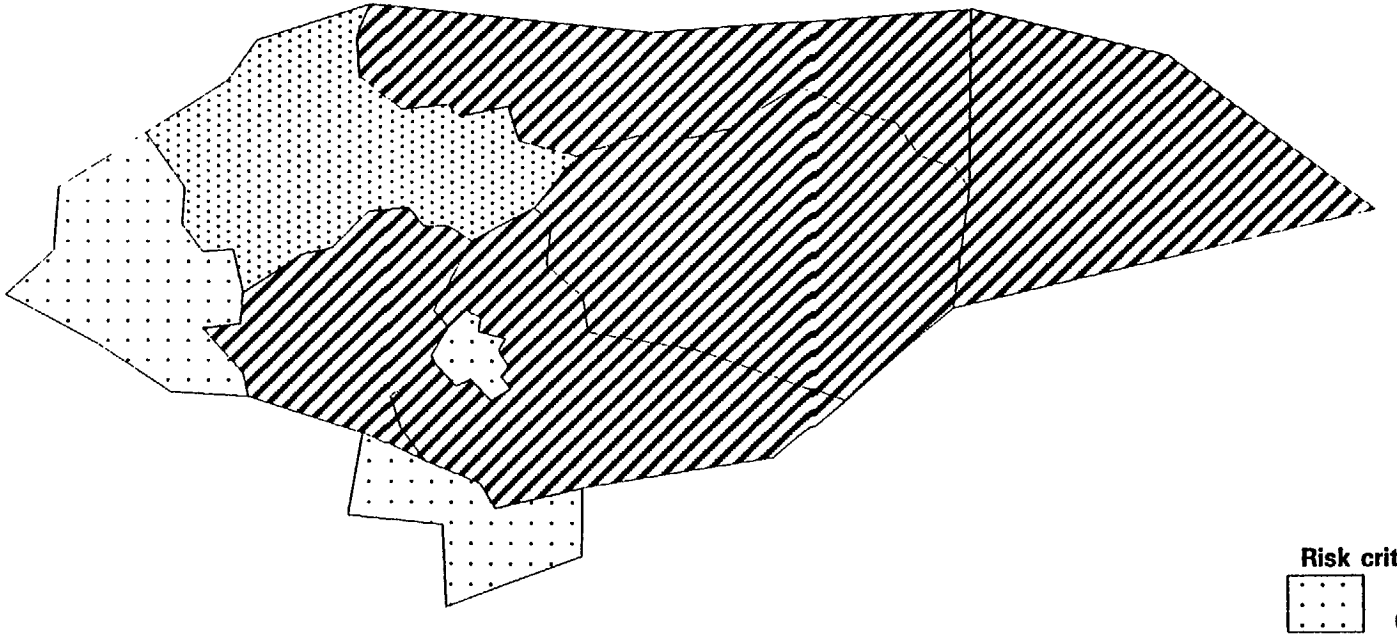
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.

f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

# HONDURAS

## ANNUAL PARASITE INDEX BY REGIONS OF HEALTH
## 1993

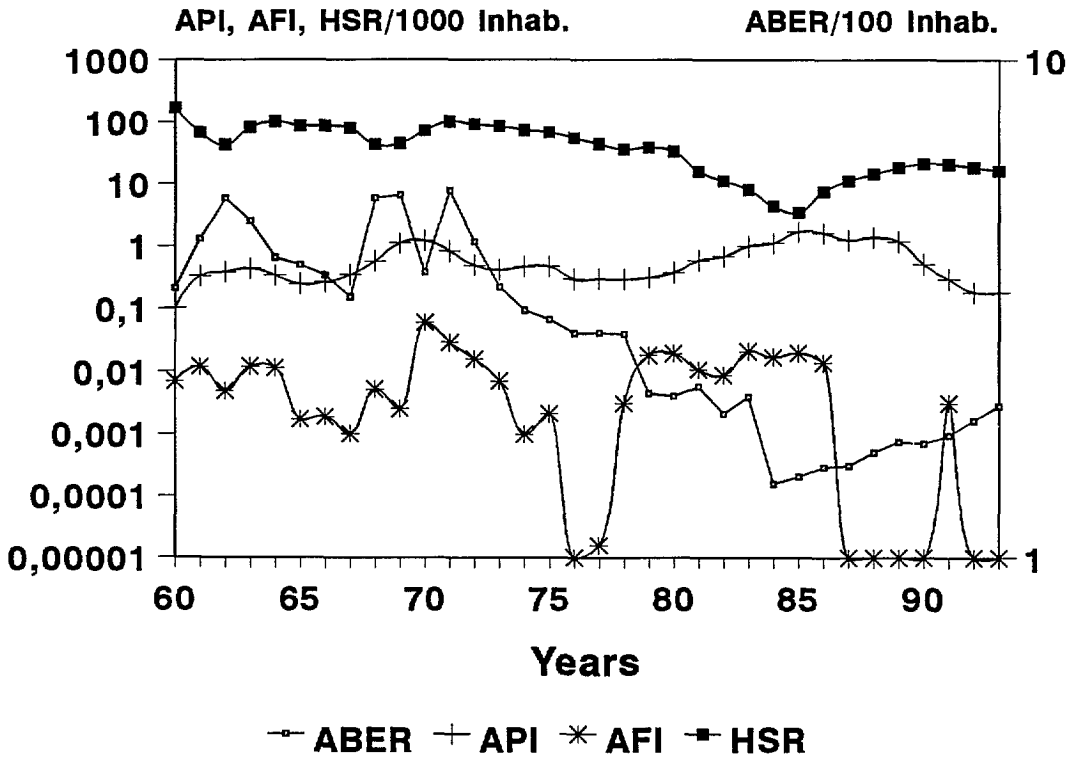


**Risk criteria**

- 0.24 - 5.00 Low
- 5.01 - 10.00 Moderate
- 10.01 - 26.70 High

# MEXICO - Malariometric Rates

## 1960-1993




Conditions are conducive to malaria transmission in 58% of the national territory. The exposed population totals 44 million. The risk areas include regions along the coast of the Pacific Ocean and the Gulf of Mexico in the Yucatán Peninsula and river basins in the interior, where most of the agricultural, livestock, fishing, oil, and tourist centers are located.

In 1989, the Ministry of Health initiated a process of strengthening interinstitutional and intersectoral coordination, modernizing, and investing funds in the malaria program with a view to implementing a plan of intensive and simultaneous action in the persistent foci, most of which were located along the Pacific coast, where 75% of the cases were originating. The plan was launched in the states of Oaxaca, Guerrero, and Michoacán, and was subsequently extended to Chiapas and Sinaloa.

During the period 1989-1993, through this strategy and the measures taken to strengthen the program in the rest of the country, the number of cases declined gradually, dropping from 101,241 in 1989 to 15,793 in 1993 (an 84.4% reduction). At the same time, the number of positive localities decreased from 16,102 to 4,621 (a 71.3% decline), and the number of blood slides examined rose from 1,668,729 to 1,816,340.

**MEXICO – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993**

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| **Municipalities or "Cantones":** | 874 | 417 | 415 | 699 | 2,405 |
| **Slides** | | | | | |
| **Examined:** | 1,082,372 | 418,918 | 315,050 | – | 1,816,340 |
| **Positives:** | 13,666 | 1,963 | 164 | – | 15,793 |
| **(P.falciparum):** | (199) | (1) | (2) | – | (202) |
| **4–Aminoquinolines** | | | | | |
| **Complete Treatments:** | 527,471 | 171,951 | 84,090 | | 783,511 |
| **Administered treatments for each case:** | 38.60 | 67.60 | 512.74 | | 49.61 |

Over the five-year period 1989-1993 the principal achievements in malaria prevention and control in Mexico were:

a) Modernization of the control program and adoption of the objectives of prevention and control in the various states, as well as the programming strategies of regionalization, epidemiological and socioeconomic stratification, institutional coordination, and decentralization of activities.

b) Improved morale among health personnel and enhancement of their performance at the various organizational levels.

c) Control of malaria transmission in tourist centers, with a decline in the number of reported cases from 2,251 in 1989 to 191 in 1993 (a 91.5% reduction). Of the 191 cases, 175 (92%) occurred in the vicinity of the hotel zone near Huatulco Bay in the region of Pochutla, Oaxaca.

d) Increase in the annual blood examination rate (ABER) from 3.6 in 1989 to 4.4 per 100 population in malarious areas in 1993.

e) Reduction of the slide positivity rate from 8.4 in 1988 to 0.9 in 1993.

f) Reduction of the annual parasite index (API) from 2.5 to 0.4 per 1,000 population in malarious areas in 1993.

g) Maintenance of the elimination of the endemic in fourteen states.

h) Maintenance of low endemicity in ten more states.

i) Abatement of transmission in five states with persistent foci having a high malariogenic potential.

j) Increase in the efficiency of programming and completion of activities, making available one worker per 1,000 population in malarious areas.

k) Generation of the financial investment required to sustain the program, at a cost of three new pesos per inhabitant in malarious areas.

## MEXICO – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| | 34,851 | 821,598 | 2.36 | 3,202 | 0.09 | 443 | 2,705 | 54 | 0.01 | 0.08 | 6,560,183 | 188.24 |
| 1960 | 34,994 | 1,212,770 | 3.47 | 3,569 | 0.10 | 245 | 3,251 | 73 | 0.01 | 0.09 | 5,918,572 | 169.13 |
| | 36,158 | 1,574,267 | 4.35 | 11,849 | 0.33 | 428 | 11,287 | 134 | 0.01 | 0.31 | 2,434,790 | 67.34 |
| | 37,367 | 1,967,392 | 5.27 | 14,279 | 0.38 | 182 | 14,027 | 70 | 0.00 | 0.38 | 1,608,147 | 43.04 |
| | 38,623 | 1,832,551 | 4.74 | 16,741 | 0.43 | 462 | 16,215 | 64 | 0.01 | 0.42 | 3,182,640 | 82.40 |
| | 39,928 | 1,595,323 | 4.00 | 13,405 | 0.34 | 454 | 12,929 | 22 | 0.01 | 0.32 | 4,068,291 | 101.89 |
| 1965 | 41,284 | 1,595,503 | 3.86 | 10,113 | 0.24 | 70 | 10,033 | 10 | 0.00 | 0.24 | 3,580,140 | 86.72 |
| | 42,694 | 1,572,042 | 3.68 | 11,212 | 0.26 | 80 | 11,121 | 11 | 0.00 | 0.26 | 3,714,522 | 87.00 |
| | 44,161 | 1,471,843 | 3.33 | 15,163 | 0.34 | 44 | 15,110 | 9 | 0.00 | 0.34 | 3,515,375 | 79.60 |
| | 45,686 | 2,406,837 | 5.27 | 26,040 | 0.57 | 236 | 25,669 | 135 | 0.01 | 0.56 | 1,973,112 | 43.19 |
| | 47,274 | 2,524,060 | 5.34 | 52,126 | 1.10 | 119 | 51,958 | 119 | 0.00 | 1.10 | 2,136,772 | 45.20 |
| 1970 | 50,695 | 1,889,877 | 3.73 | 61,158 | 1.21 | 3,026 | 58,083 | 49 | 0.06 | 1.15 | 3,666,055 | 72.32 |
| | 52,452 | 2,859,253 | 5.45 | 42,978 | 0.82 | 1,501 | 41,432 | 45 | 0.03 | 0.79 | 5,350,655 | 102.01 |
| | 54,273 | 2,329,667 | 4.29 | 26,216 | 0.48 | 852 | 25,324 | 40 | 0.02 | 0.47 | 4,965,198 | 91.49 |
| | 56,161 | 1,959,139 | 3.49 | 23,176 | 0.41 | 393 | 22,760 | 23 | 0.01 | 0.41 | 4,836,154 | 86.11 |
| | 58,118 | 1,822,307 | 3.14 | 26,800 | 0.46 | 57 | 26,718 | 25 | 0.00 | 0.46 | 4,293,265 | 73.87 |
| 1975 | 60,153 | 1,805,782 | 3.00 | 27,925 | 0.46 | 126 | 27,784 | 15 | 0.00 | 0.46 | 4,053,426 | 67.39 |
| | 61,990 | 1,749,778 | 2.82 | 18,153 | 0.29 | – | 18,139 | 14 | 0.00 | 0.29 | 3,397,260 | 54.80 |
| | 63,827 | 1,804,367 | 2.83 | 18,851 | 0.30 | 1 | 18,842 | 8 | 0.00 | 0.30 | 2,817,470 | 44.14 |
| | 65,668 | 1,845,554 | 2.81 | 19,080 | 0.29 | 200 | 18,865 | 15 | 0.00 | 0.29 | 2,354,162 | 35.85 |
| | 67,522 | 1,446,946 | 2.14 | 20,983 | 0.31 | 1,208 | 19,760 | 15 | 0.02 | 0.29 | 2,609,171 | 38.64 |
| 1980 | 69,393 | 1,467,695 | 2.12 | 25,734 | 0.37 | 1,329 | 24,402 | 3 | 0.02 | 0.35 | 2,298,366 | 33.12 |
| | 72,162 | 1,593,697 | 2.21 | 42,104 | 0.58 | 762 | 41,336 | 6 | 0.01 | 0.57 | 1,141,083 | 15.81 |
| | 73,938 | 1,440,806 | 1.95 | 49,993 | 0.68 | 637 | 49,242 | 114 | 0.01 | 0.67 | 828,311 | 11.20 |
| | 75,739 | 1,595,180 | 2.11 | 75,029 | 0.99 | 1,554 | 73,472 | 3 | 0.02 | 0.97 | 613,268 | 8.10 |
| | 77,554 | 1,093,953 | 1.41 | 85,501 | 1.10 | 1,283 | 84,214 | 4 | 0.02 | 1.09 | 338,538 | 4.37 |
| 1985 | 79,376 | 1,156,831 | 1.46 | 133,698 | 1.68 | 1,537 | 132,160 | 1 | 0.02 | 1.66 | 276,785 | 3.49 |
| | 81,204 | 1,237,260 | 1.52 | 131,014 | 1.61 | 1,105 | 129,909 | – | 0.01 | 1.60 | 612,395 | 7.54 |
| | 83,040 | 1,275,010 | 1.54 | 102,984 | 1.24 | 332 | 102,651 | 1 | 0.00 | 1.24 | 927,461 | 11.17 |
| (*) | 84,884 | 1,385,626 | 1.63 | 116,238 | 1.37 | 152 | 116,086 | – | 0.00 | 1.37 | 1,219,319 | 14.36 |
| ** | 86,737 | 1,484,565 | 1.71 | 101,241 | 1.17 | 85 | 101,127 | – | 0.00 | 1.17 | 1,583,090 | 18.25 |
| 1990 | 88,598 | 1,503,208 | 1.70 | 44,513 | 0.50 | 62 | 44,451 | – | 0.00 | 0.50 | 1,857,765 | 20.97 |
| 1991 | 90,467 | 1,596,427 | 1.76 | 26,565 | 0.29 | 278 | 26,287 | – | 0.00 | 0.29 | 1,887,062 | 20.86 |
| 1992(m) | 88,153 | 1,668,729 | 1.89 | 16,170 | 0.18 | 129 | 16,041 | – | 0.00 | 0.18 | 1,633,522 | 18.53 |
| 1993 n) | 89,998 | 1,816,340 | 2.02 | 15,793 | 0.18 | 202 | 15,591 | – | 0.00 | 0.17 | 1,465,980 | 16.29 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.

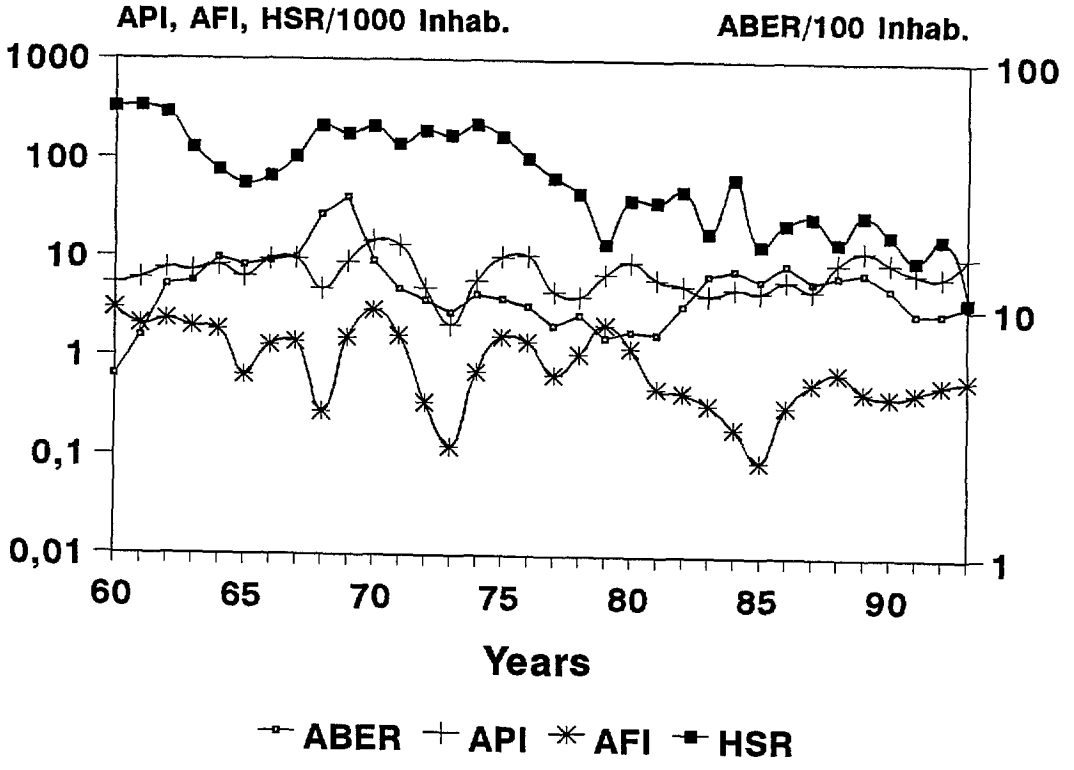
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.

f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

* Estimated information ** In 1989 there are included 29 cases without species discrimination.

# NICARAGUA - Malariometric Rates
## 1960-1993




In 1993 the country had a total of 44,037 positive blood samples, which represented an increase of 64.0% with respect to 1992. At the same time, blood sampling increased 12.4%.

The distribution of cases by parasite species was 94.3% P. vivax and 5.7% P. falciparum, a change from the previous year, when P. falciparum accounted 8% of all the cases. The annual parasite index (API) at the national level increased from 6.5 per 1,000 population in 1992 to 10.4 per 1,000 population in 1993 (see following table and graph). Of the total number of malaria cases in the country, 95% were concentrated in 12 of the 19 comprehensive local health systems (SILAIS). The two SILAIS with the largest number of cases were Chinandega and Managua, which together had almost 50% of the cases. Although Chinandega continued to be the most malarious SILAIS, in 1993 Managua registered the greatest increase in number of cases--three times more than in the previous year.

Although overall malaria morbidity increased in 1993, it is important to note that the number of P. falciparum infections declined (one of the objectives set by the control program), as a result of which malaria deaths decreased by more than 42% with respect to 1992.

NICARAGUA – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| **Municipalities or "Cantones":** | 77 | 32 | 31 | – | 140 |
| **Slides** | | | | | |
| **Examined:** | 271,738 | 105,867 | 51,529 | – | 429,134 |
| **Positives:** | 32,548 | 10,633 | 856 | – | 44,037 |
| **(P.falciparum):** | (1,882) | (603) | (7) | – | (2,492) |
| **4–Aminoquinolines** | | | | | |
| **Complete Treatments:** | 477,888 | 185,770 | 33,340 | – | 696,998 |
| **Administered treatments for each case:** | 14.68 | 17.47 | 38.95 | – | 15.83 |

The comprehensive local health systems that carried out specific plans aimed at reducing P. falciparum malaria in order to lower mortality were the following:

| SILAIS | P.FALCIPARUM CASES | | | MALARIA DEATHS | | |
|---|---|---|---|---|---|---|
| | 1991 | 1992 | 1993 | 1991 | 1992 | 1993 |
| Chontales | 420 | 558 | 277 | 8 | 4 | 3 |
| Jinotega | 19 | 215 | 60 | 0 | 3 | 0 |
| Matagalpa | 329 | 318 | 237 | 7 | 5 | 3 |
| Río San Juan | 93 | 55 | 12 | 1 | 2 | 1 |

The most affected groups were those aged 5-14, with a rate of 9.7 per 1,000 (11,568 cases), followed by the group aged 1-4, with a rate of 9.3 per 1,000 (5,416 cases).

During 1993 specific plans of action were carried out in the comprehensive local health systems considered to be priority malaria control areas. Among these plans were:

1. The "Lake Managua" plan, implemented by the three SILAIS of Managua, with the principal objective of reducing mosquito breeding sites on the banks of the Lake, in addition to complementary measures designed to protect the population at risk.

2. Mass drug administration plans, accompanied by spraying operations (ULV) in localities with high incidence of P. falciparum in the comprehensive local health systems in the center of the country (Chontales, Matagalpa, and Jinotega), with the direct involvement of health workers and brigade members.

3. Plan to strengthen local capacity in the SILAIS of Chinandega, with comprehensive actions based on multisectoral coordination and community participation, adopting as epidemiological stratification and the risk approach as strategies.

## NICARAGUA – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| | 1,370 | 38,965 | 2.84 | 1,907 | 1.39 | 649 | 1,258 | – | 0.47 | 0.92 | 425,575 | 310.64 |
| 1960 | 1,411 | 74,074 | 5.25 | 7,528 | 5.34 | 4,217 | 3,311 | – | 2.99 | 2.35 | 460,554 | 326.40 |
| | 1,453 | 109,283 | 7.52 | 8,722 | 6.00 | 3,001 | 5,721 | – | 2.07 | 3.94 | 490,912 | 337.86 |
| | 1,496 | 181,727 | 12.15 | 11,359 | 7.59 | 3,454 | 7,904 | 1 | 2.31 | 5.28 | 435,155 | 290.88 |
| | 1,541 | 194,087 | 12.59 | 11,155 | 7.24 | 3,034 | 8,121 | – | 1.97 | 5.27 | 197,715 | 128.30 |
| | 1,579 | 247,611 | 15.68 | 13,016 | 8.24 | 2,908 | 10,108 | – | 1.84 | 6.40 | 122,046 | 77.29 |
| 1965 | 1,619 | 238,467 | 14.73 | 10,275 | 6.35 | 1,039 | 9,236 | – | 0.64 | 5.70 | 91,614 | 56.59 |
| | 1,660 | 254,497 | 15.33 | 15,647 | 9.43 | 2,128 | 13,519 | – | 1.28 | 8.14 | 109,931 | 66.22 |
| | 1,701 | 269,395 | 15.84 | 16,321 | 9.59 | 2,353 | 13,968 | – | 1.38 | 8.21 | 177,422 | 104.30 |
| | 1,744 | 411,544 | 23.60 | 8,250 | 4.73 | 479 | 7,771 | – | 0.27 | 4.46 | 374,418 | 214.69 |
| | 1,788 | 498,119 | 27.86 | 16,050 | 8.98 | 2,732 | 13,318 | – | 1.53 | 7.45 | 322,777 | 180.52 |
| 1970 | 1,833 | 281,386 | 15.35 | 27,260 | 14.87 | 5,348 | 21,912 | – | 2.92 | 11.95 | 390,083 | 212.81 |
| | 1,889 | 223,098 | 11.81 | 25,303 | 13.39 | 3,041 | 22,262 | – | 1.61 | 11.79 | 269,794 | 142.82 |
| | 1,954 | 208,232 | 10.66 | 9,595 | 4.91 | 666 | 8,929 | – | 0.34 | 4.57 | 376,056 | 192.45 |
| | 2,015 | 191,361 | 9.50 | 4,246 | 2.11 | 251 | 3,989 | 6 | 0.12 | 1.98 | 348,622 | 173.01 |
| | 2,084 | 233,941 | 11.23 | 12,167 | 5.84 | 1,452 | 10,715 | – | 0.70 | 5.14 | 463,391 | 222.36 |
| 1975 | 2,408 | 259,675 | 10.78 | 24,692 | 10.25 | 3,798 | 20,894 | – | 1.58 | 8.68 | 408,839 | 169.78 |
| | 2,478 | 250,582 | 10.11 | 26,228 | 10.58 | 3,513 | 22,715 | – | 1.42 | 9.17 | 253,158 | 102.16 |
| | 2,546 | 215,093 | 8.45 | 11,584 | 4.55 | 1,671 | 9,913 | – | 0.66 | 3.89 | 167,367 | 65.74 |
| | 2,616 | 243,450 | 9.31 | 10,633 | 4.06 | 2,798 | 7,835 | – | 1.07 | 3.00 | 118,468 | 45.29 |
| | 2,690 | 203,475 | 7.56 | 18,418 | 6.85 | 5,669 | 12,749 | – | 2.11 | 4.74 | 37,887 | 14.08 |
| 1980 | 2,771 | 222,427 | 8.03 | 25,465 | 9.19 | 3,424 | 22,041 | – | 1.24 | 7.95 | 108,157 | 39.03 |
| | 2,859 | 223,473 | 7.82 | 17,434 | 6.10 | 1,396 | 16,038 | – | 0.49 | 5.61 | 107,362 | 37.55 |
| | 2,955 | 300,001 | 10.15 | 15,601 | 5.28 | 1,291 | 14,310 | – | 0.44 | 4.84 | 142,931 | 48.37 |
| | 3,056 | 412,858 | 13.51 | 12,907 | 4.22 | 1,018 | 11,889 | – | 0.33 | 3.89 | 56,271 | 18.41 |
| | 3,162 | 451,943 | 14.29 | 15,702 | 4.97 | 615 | 15,087 | – | 0.19 | 4.77 | 205,494 | 64.99 |
| 1985 | 3,272 | 424,681 | 12.98 | 15,130 | 4.62 | 298 | 14,840 | – | 0.09 | 0.03 | 45,356 | 13.86 |
| | 3,385 | 510,289 | 15.08 | 20,308 | 6.00 | 1,096 | 19,212 | – | 0.32 | 0.04 | 77,423 | 22.87 |
| | 3,502 | 448,314 | 12.80 | 17,011 | 4.86 | 1,928 | 15,083 | – | 0.55 | 0.03 | 93,573 | 26.72 |
| | 3,622 | 490,145 | 13.53 | 33,047 | 9.12 | 2,575 | 30,472 | – | 0.71 | 0.06 | 54,267 | 14.98 |
| | 3,745 | 523,700 | 13.98 | 45,982 | 12.28 | 1,720 | 44,262 | – | 0.46 | 0.08 | 105,454 | 28.16 |
| 1990 | 3,871 | 465,830 | 12.03 | 35,785 | 9.24 | 1,568 | 34,217 | – | 0.41 | 0.07 | 68,348 | 17.66 |
| 1991(m) | 3,807 | 364,786 | 9.58 | 27,653 | 7.26 | 1,702 | 25,951 | – | 0.45 | 0.07 | 37,836 | 9.94 |
| 1992(m) | 3,955 | 381,715 | 9.65 | 26,866 | 6.79 | 2,192 | 24,674 | – | 0.55 | 0.06 | 65,400 | 16.54 |
| 1993(n) | 4,114 | 429,134 | 10.43 | 44,037 | 10.70 | 2,492 | 41,545 | – | 0.61 | 0.10 | 15,715 | 3.82 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.

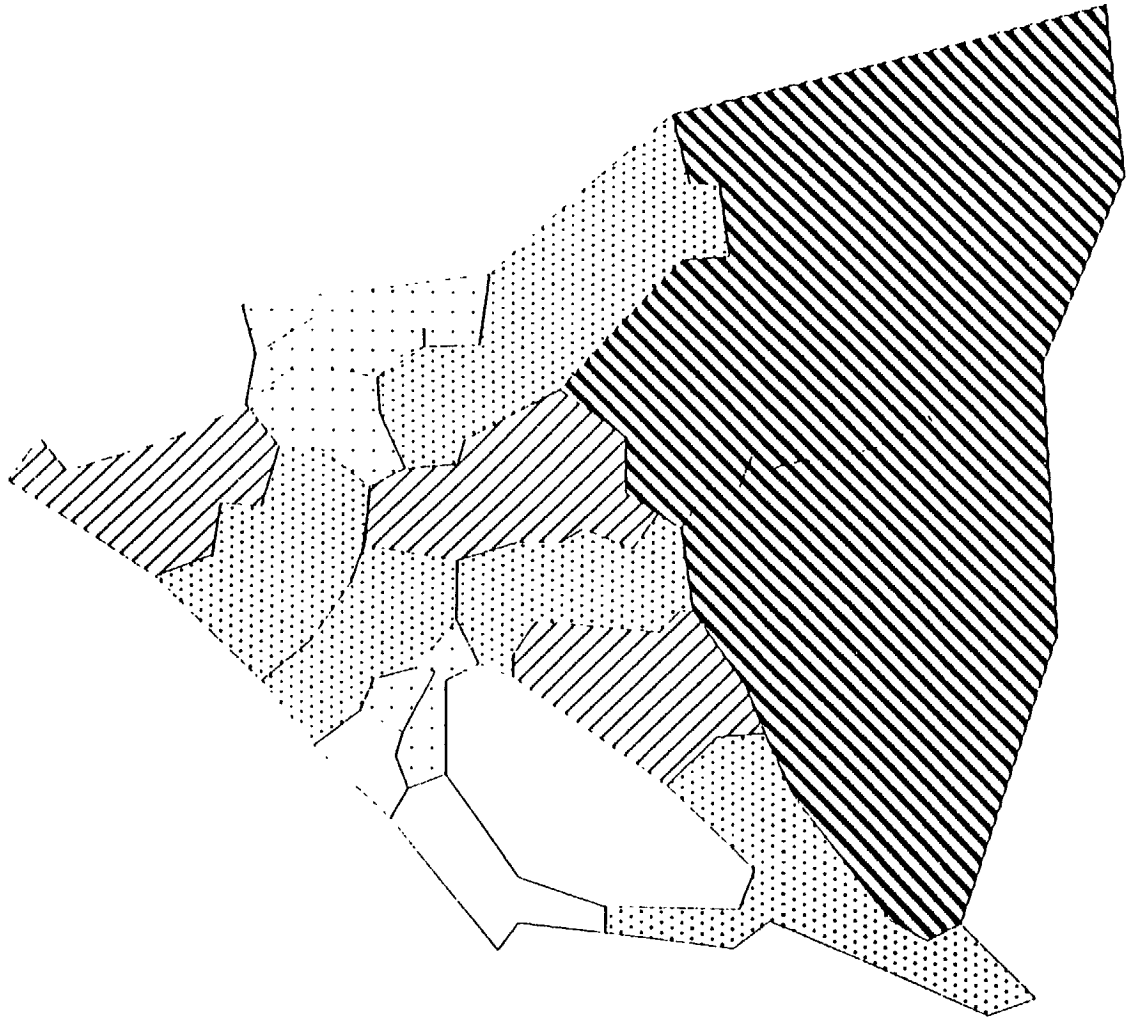
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.

f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

# N I C A R A G U A

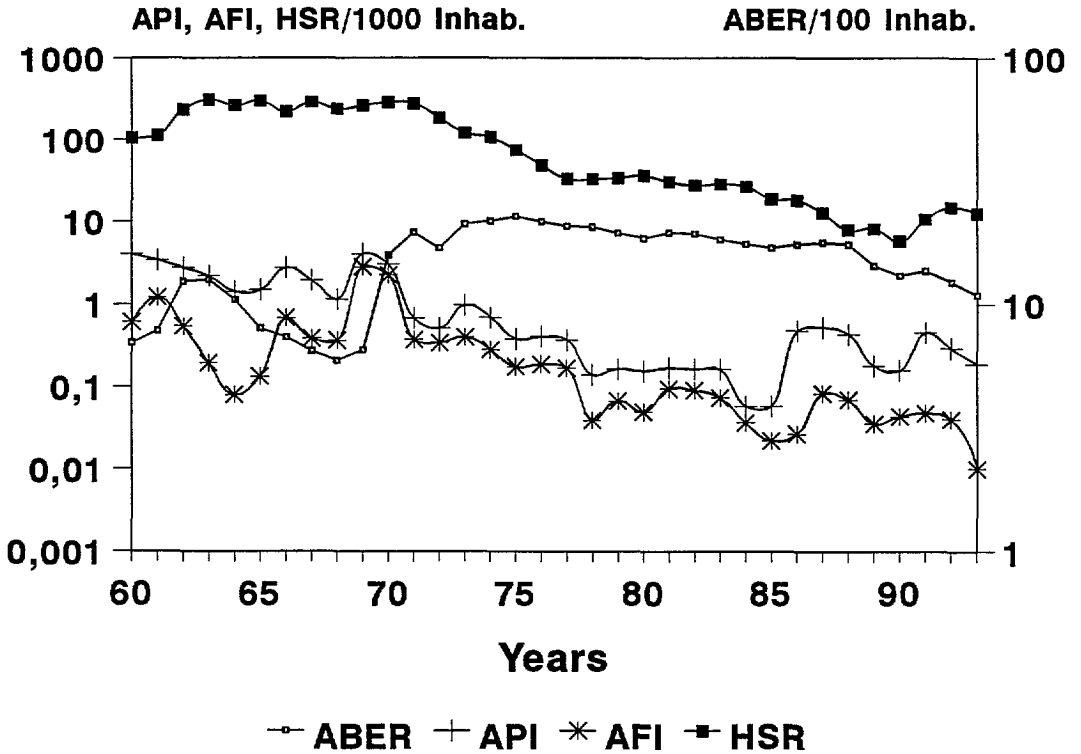
## ANNUAL P.falciparum INDEX BY DEPARTMENTS
## 1993



**Risk criteria**

- 0.01 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 4.20

# PANAMA- Malariometric Rates
## 1960-1993




The malarious area in Panamá measures 71,272 km$^2$ and has a population of 2,418,094. During 1993 a total of 278,557 blood samples were examined for malaria parasites, which represented a reduction of 10.7% with respect to the number of samples taken in 1992. In total, 481 cases of malaria were detected, a reduction of 51.1% with regard to the previous year. Of the cases detected, 95.8% (461 cases) were P. vivax infections, while 4.2% (20 cases) were caused by P. falciparum.

For the first time in the history of malaria control efforts in the country, the province of Darién did not rank first in detection of cases. The most affected province was Bocas del Toro, on the border with Costa Rica, with a total of 299 cases, which was 62.2% of the total number reported in the country. All were P. vivax infections, which represents an increase of 275.8% with regard to the previous year. In the province of Darién, 80 malaria cases were detected, which was 16.6% of all the cases detected in the country; 69 were due to P. vivax and 11 to P. falciparum. Darién registered a reduction of 76.7% in the number of cases. It was followed by the province of Chiriquí, with 48 cases, which was 10% of all the P. vivax infections. Next, in terms of number of cases, was the province of Panama, with 23 (4.8%) cases, of which 21 were due to P. vivax and 2 to P. falciparum. This province also showed a reduction of 72.6% in the number of cases. Finally, in the Region of San Blas 21 cases were diagnosed, which was 4.4% of all the cases detected in the country; 14 were caused by P. vivax and 7 by P. falciparum. This Region also registered a reduction of 56.3% in the number of cases.

**PANAMA – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993**

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| **Municipalities or "Cantones":** | – | 12 | 20 | 36 | 68 |
| **Slides** | | | | | |
| **Examined:** | – | 185,300 | 93,257 | – | 278,557 |
| **Positives:** | – | 445 | 36 | – | 481 |
| **(P.falciparum):** | – | (19) | (1) | – | (20) |
| **4–Aminoquinolines** | | | | | |
| **Complete Treatments:** | – | 20,000 | 800 | – | 20,800 |
| **Administered treatments for each case:** | – | 44.94 | 22.22 | – | 43.24 |

The reduction in the number of cases observed over the last three years, from 1,115 in 1991 to 481 in 1993, is due largely to the measures taken by the Environmental Management and Vector Control Division. The system of epidemiological surveillance was expanded; radical treatment was administered to clinical and epidemiological suspects; presumptive treatment was administered to the entire population at risk; selective spraying was carried out in malarious areas; and timely diagnosis was facilitated. The effectiveness of these measures was clearly demonstrated in the indigenous area of Bocas del Toro, specifically in the jurisdictions of Tobobe and Santa Catalina. When health personnel neglected epidemiological surveillance and failed to maintain appropriate controls, an outbreak of malaria occurred, producing a total of 215 cases, which constituted 44.7% of all the cases detected in the country.

## PANAMA – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| | 1,073 | 80,471 | 7.50 | 5,066 | 4.72 | 583 | 4,481 | 2 | 0.54 | 4.18 | 142,848 | 133.13 |
| 1960 | 1,104 | 77,141 | 6.99 | 4,464 | 4.04 | 670 | 3,793 | 1 | 0.61 | 3.44 | 115,948 | 105.03 |
| | 1,137 | 88,961 | 7.82 | 3,911 | 3.44 | 1,378 | 2,531 | 2 | 1.21 | 2.23 | 128,200 | 112.75 |
| | 1,175 | 145,012 | 12.34 | 3,249 | 2.77 | 631 | 2,618 | – | 0.54 | 2.23 | 271,260 | 230.86 |
| | 1,217 | 152,898 | 12.56 | 2,670 | 2.19 | 236 | 2,433 | 1 | 0.19 | 2.00 | 373,953 | 307.27 |
| | 1,259 | 131,634 | 10.46 | 1,804 | 1.43 | 101 | 1,703 | – | 0.08 | 1.35 | 331,795 | 263.54 |
| 1965 | 1,288 | 102,996 | 8.00 | 1,929 | 1.50 | 172 | 1,757 | – | 0.13 | 1.36 | 383,552 | 297.79 |
| | 1,327 | 97,525 | 7.35 | 3,664 | 2.76 | 906 | 2,757 | 1 | 0.68 | 2.08 | 292,251 | 220.23 |
| | 1,366 | 88,612 | 6.49 | 2,646 | 1.94 | 527 | 2,119 | – | 0.39 | 1.55 | 392,532 | 287.36 |
| | 1,407 | 83,211 | 5.91 | 1,625 | 1.15 | 512 | 1,113 | – | 0.36 | 0.79 | 333,764 | 237.22 |
| | 1,448 | 94,596 | 6.53 | 5,937 | 4.10 | 4,104 | 1,833 | – | 2.83 | 1.27 | 379,549 | 262.12 |
| 1970 | 1,504 | 237,477 | 15.79 | 4,584 | 3.05 | 3,405 | 1,179 | – | 2.26 | 0.78 | 429,829 | 285.79 |
| | 1,545 | 301,030 | 19.48 | 1,041 | 0.67 | 573 | 467 | 1 | 0.37 | 0.30 | 427,499 | 276.70 |
| | 1,595 | 269,098 | 16.87 | 819 | 0.51 | 543 | 276 | – | 0.34 | 0.17 | 293,971 | 184.31 |
| | 1,636 | 344,315 | 21.05 | 1,595 | 0.97 | 651 | 944 | – | 0.40 | 0.58 | 197,897 | 120.96 |
| | 1,705 | 368,820 | 21.63 | 1,184 | 0.69 | 481 | 703 | – | 0.28 | 0.41 | 180,910 | 106.11 |
| 1975 | 1,748 | 394,995 | 22.60 | 666 | 0.38 | 307 | 359 | – | 0.18 | 0.21 | 130,241 | 74.51 |
| | 1,790 | 384,941 | 21.51 | 727 | 0.41 | 337 | 390 | – | 0.19 | 0.22 | 86,915 | 48.56 |
| | 1,831 | 377,059 | 20.59 | 674 | 0.37 | 308 | 365 | 1 | 0.17 | 0.20 | 60,340 | 32.95 |
| | 1,873 | 382,942 | 20.45 | 263 | 0.14 | 73 | 190 | – | 0.04 | 0.10 | 60,954 | 32.54 |
| | 1,914 | 369,775 | 19.32 | 316 | 0.17 | 129 | 187 | – | 0.07 | 0.10 | 64,250 | 33.57 |
| 1980 | 1,957 | 360,172 | 18.40 | 304 | 0.16 | 97 | 207 | – | 0.05 | 0.11 | 69,954 | 35.75 |
| | 2,000 | 387,276 | 19.36 | 340 | 0.17 | 189 | 151 | – | 0.09 | 0.08 | 60,330 | 30.17 |
| | 2,044 | 392,458 | 19.20 | 334 | 0.16 | 186 | 148 | – | 0.09 | 0.07 | 55,737 | 27.27 |
| | 2,089 | 380,135 | 18.20 | 341 | 0.16 | 154 | 187 | – | 0.07 | 0.09 | 59,328 | 28.40 |
| | 2,134 | 373,072 | 17.48 | 125 | 0.06 | 78 | 47 | – | 0.04 | 0.02 | 56,516 | 26.48 |
| 1985 | 2,180 | 367,839 | 16.87 | 126 | 0.06 | 48 | 78 | – | 0.02 | 0.04 | 40,802 | 18.72 |
| | 2,227 | 388,485 | 17.44 | 1,060 | 0.48 | 59 | 1,001 | – | 0.03 | 0.45 | 40,392 | 18.14 |
| | 2,274 | 403,305 | 17.74 | 1,195 | 0.53 | 189 | 1,006 | – | 0.08 | 0.44 | 29,046 | 12.77 |
| | 2,322 | 404,320 | 17.41 | 1,000 | 0.43 | 161 | 839 | – | 0.07 | 0.36 | 18,367 | 7.91 |
| | 2,370 | 338,473 | 14.28 | 427 | 0.18 | 84 | 343 | – | 0.04 | 0.14 | 19,361 | 8.17 |
| 1990 m) | 2,418 | 315,359 | 13.04 | 381 | 0.16 | 105 | 276 | – | 0.04 | 0.11 | 13,955 | 5.77 |
| 1991(m) | 2,466 | 336,569 | 13.65 | 1,115 | 0.45 | 118 | 997 | – | 0.05 | 0.40 | 26,093 | 10.58 |
| 1992(m) | 2,515 | 308,359 | 12.26 | 727 | 0.29 | 113 | 614 | – | 0.04 | 0.24 | 37,184 | 14.78 |
| 1993(n) | 2,563 | 278,557 | 10.87 | 481 | 0.19 | 20 | 461 | – | 0.01 | 0.18 | 32,272 | 12.59 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.

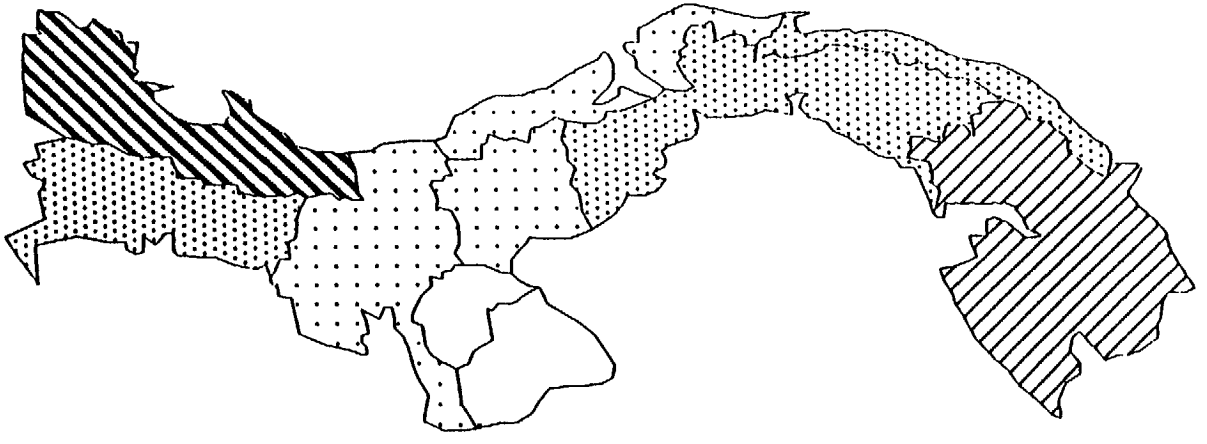
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.

f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

# P A N A M A

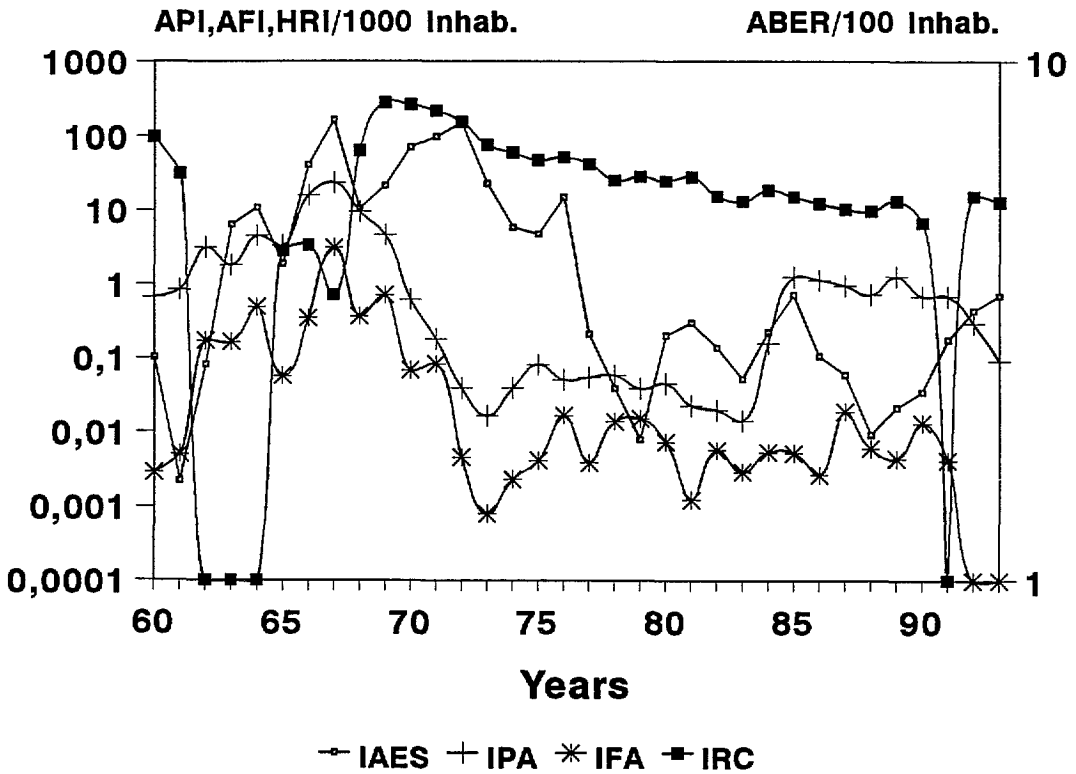
## MALARIA CASES BY PROVINCES
## 1993



Number of cases

- 1 to 10
- 11 to 50
- 51 to 100
- 101 to 299

# PARAGUAY - Malariometric Rates
## 1960-1993




The malaria problem in Paraguay has been controlled. An analysis of the last five-year period reveals that a considerable reduction has occurred since 1989, when 5,247 cases of malaria were diagnosed. In 1993, in contrast, the number of cases totaled 436, which was a 1,103.4% reduction.

The persistence of transmission in some areas is due to: (1) mobility of the population, which hinders regular control activities, making it is difficult to administer adequate treatment, as a result of which individuals become reservoirs; (2) presence of susceptibles and/or carriers in new rural settlements; (3) continuous migration, especially of groups of agricultural workers from endemic areas to precarious settlements, often located close to breeding sites; (4) tremendous increase in wetlands, which has led to proliferation of breeding sites.

PARAGUAY – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| Municipalities or "Cantones": | 41 | 22 | 156 | – | 219 |
| Slides | | | | | |
| Examined: | 55,368 | 49,818 | 58,960 | 69 | 164,215 |
| Positives: | 334 | 84 | 14 | 4 | 436 |
| (P.falciparum): | – | (1) | – | – | (1) |
| 4–Aminoquinolines | | | | | |
| Complete Treatments: | 16,944 | 15,028 | 17,702 | | 49,675 |
| Administered treatments for each case: | 50.73 | – | 1,264.43 | | 113.93 |

## PARAGUAY – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| | 1,728 | 11,379 | 0.66 | 641 | 0.37 | 1 | 640 | – | 0.00 | 0.37 | 161,261 | 93.32 |
| 1960 | 1,751 | 47,045 | 2.69 | 1,165 | 0.67 | 5 | 1,159 | 1 | 0.00 | 0.66 | 171,086 | 97.71 |
| | 1,801 | 27,995 | 1.55 | 1,528 | 0.85 | 9 | 1,519 | – | 0.00 | 0.84 | 56,656 | 31.46 |
| | 1,850 | 48,184 | 2.60 | 5,756 | 3.11 | 313 | 5,443 | – | 0.17 | 2.94 | 0 | 0.00 |
| | 1,910 | 92,806 | 4.86 | 3,443 | 1.80 | 313 | 3,130 | – | 0.16 | 1.64 | 0 | 0.00 |
| | 1,969 | 103,169 | 5.24 | 8,851 | 4.50 | 961 | 7,889 | 1 | 0.49 | 4.01 | 0 | 0.00 |
| 1965 | 2,030 | 82,848 | 4.08 | 6,732 | 3.32 | 115 | 6,616 | 1 | 0.06 | 3.26 | 5,709 | 2.81 |
| | 2,070 | 131,293 | 6.34 | 33,026 | 15.95 | 717 | 32,309 | – | 0.35 | 15.61 | 6,993 | 3.38 |
| | 2,130 | 164,444 | 7.72 | 50,304 | 23.62 | 6,636 | 43,668 | – | 3.12 | 20.50 | 1,519 | 0.71 |
| | 2,180 | 113,770 | 5.22 | 20,743 | 9.52 | 794 | 19,949 | – | 0.36 | 9.15 | 138,627 | 63.59 |
| | 2,240 | 129,509 | 5.78 | 10,307 | 4.60 | 1,591 | 8,716 | – | 0.71 | 3.89 | 625,145 | 279.08 |
| 1970 | 2,300 | 157,587 | 6.85 | 1,429 | 0.62 | 155 | 1,274 | – | 0.07 | 0.55 | 600,198 | 260.96 |
| | 2,360 | 169,448 | 7.18 | 423 | 0.18 | 194 | 229 | – | 0.08 | 0.10 | 513,048 | 217.39 |
| | 2,430 | 185,659 | 7.64 | 94 | 0.04 | 11 | 83 | – | 0.00 | 0.03 | 374,865 | 154.27 |
| | 2,500 | 145,879 | 5.84 | 41 | 0.02 | 2 | 39 | – | 0.00 | 0.02 | 189,875 | 75.95 |
| | 2,600 | 124,803 | 4.80 | 101 | 0.04 | 6 | 95 | – | 0.00 | 0.04 | 156,857 | 60.33 |
| 1975 | 2,687 | 125,132 | 4.66 | 217 | 0.08 | 11 | 206 | – | 0.00 | 0.08 | 127,295 | 47.37 |
| | 2,778 | 152,410 | 5.49 | 140 | 0.05 | 46 | 94 | – | 0.02 | 0.03 | 144,286 | 51.94 |
| | 2,872 | 85,613 | 2.98 | 156 | 0.05 | 11 | 145 | – | 0.00 | 0.05 | 120,511 | 41.96 |
| | 2,696 | 63,070 | 2.34 | 156 | 0.06 | 37 | 119 | – | 0.01 | 0.04 | 68,169 | 25.29 |
| | 3,068 | 57,225 | 1.87 | 116 | 0.04 | 46 | 70 | – | 0.01 | 0.02 | 86,845 | 28.31 |
| 1980 | 3,169 | 93,899 | 2.96 | 140 | 0.04 | 23 | 117 | – | 0.01 | 0.04 | 78,576 | 24.80 |
| | 3,251 | 101,979 | 3.14 | 73 | 0.02 | 4 | 69 | – | 0.00 | 0.02 | 91,664 | 28.20 |
| | 3,359 | 94,348 | 2.81 | 66 | 0.02 | 19 | 47 | – | 0.01 | 0.01 | 51,793 | 15.42 |
| | 3,468 | 84,630 | 2.44 | 49 | 0.01 | 10 | 39 | – | 0.00 | 0.01 | 45,656 | 13.16 |
| | 3,580 | 107,662 | 3.01 | 554 | 0.15 | 19 | 535 | – | 0.01 | 0.15 | 66,354 | 18.53 |
| 1985 | 3,693 | 131,196 | 3.55 | 4,568 | 1.24 | 19 | 4,549 | – | 0.01 | 1.23 | 55,989 | 15.16 |
| | 3,808 | 102,912 | 2.70 | 4,329 | 1.14 | 10 | 4,319 | – | 0.00 | 1.13 | 46,813 | 12.29 |
| | 3,923 | 97,532 | 2.49 | 3,741 | 0.95 | 73 | 3,667 | 1 | 0.02 | 0.93 | 40,632 | 10.36 |
| | 4,043 | 77,081 | 1.91 | 2,884 | 0.71 | 24 | 2,859 | 1 | 0.01 | 0.71 | 39,202 | 9.70 |
| | 4,157 | 89,263 | 2.15 | 5,247 | 1.26 | 18 | 5,229 | – | 0.00 | 1.26 | 55,249 | 13.29 |
| 1990 | 4,277 | 98,417 | 2.30 | 2,912 | 0.68 | 55 | 2,857 | – | 0.01 | 0.67 | 29,047 | 6.79 |
| 1991 | 4,397 | 127,807 | 2.91 | 2,983 | 0.68 | 18 | 2,965 | – | 0.00 | 0.67 | – | – |
| 1992 m) | 4,519 | 149,523 | 3.31 | 1,289 | 0.29 | 10 | 1,279 | – | 0.00 | 0.28 | 69,845 | 15.46 |
| 1993 n) | 4,643 | 164,215 | 3.54 | 436 | 0.09 | 1 | 435 | – | 0.00 | 0.09 | 59,243 | 12.76 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.

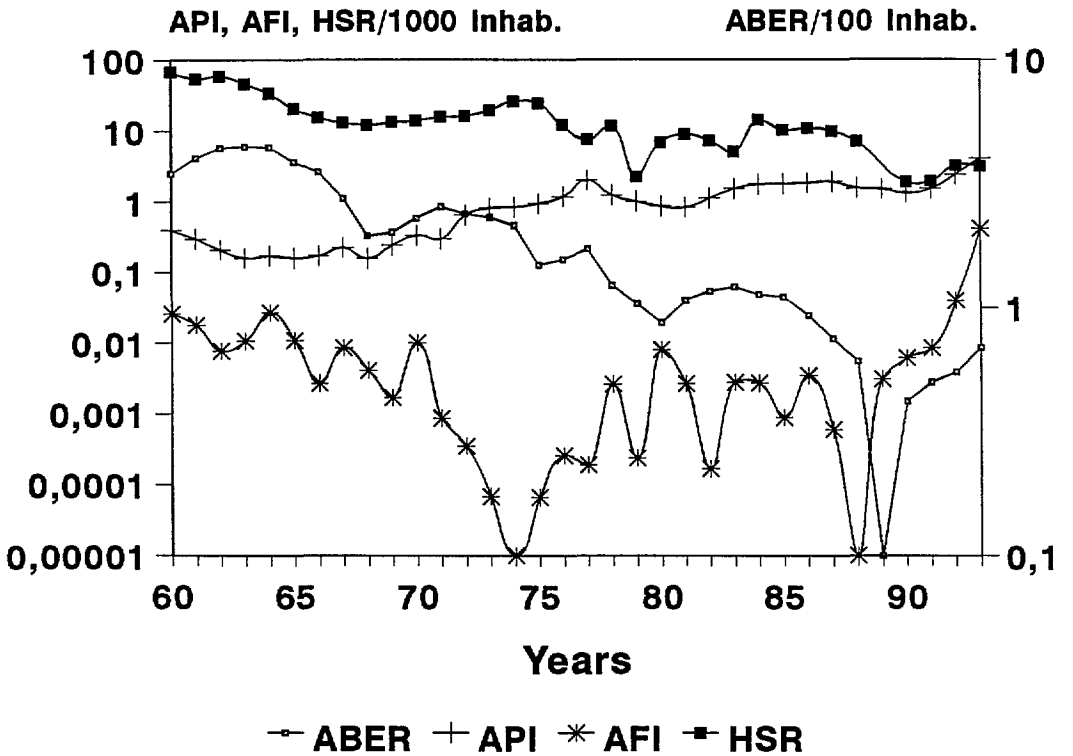
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.

f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

# PERU - Malariometric Rates

## 1960-1993




Malaria ranks first among the vector-borne diseases as a cause of morbidity and constitutes a priority public health problem. The number of malaria cases in the country has been rising steadily for years.

In 1993, government officials received 95,222 reports of malaria cases, 90% of which were caused by P. vivax and 10% by P. falciparum. The API was 12.5 per 1,000 population. The exposed population in the high-risk areas, which encompass parts of 24 provinces, numbered 2,456,618, with a stratified API of 26.5 per 1,000. The exposed population in the medium-risk areas, found in 49 provinces, was 5,186,081, with an API of 3.4 per 1,000 population.

A growing concern is the increase in cases due to P. falciparum, which has been of such magnitude that the P. vivax/P. falciparum ratio has been inverted in border areas in the Peruvian Amazon region. Along the northern border, for the first time in several decades, a trend toward equal proportions of the two species has been noted. Malaria has shown a tendency to spread in the northeast and in border areas, and cases are also being reported in Andean valleys.

Until recently the malaria control program in Peru operated according to the standards and strategies of a vertical model, despite the existence of declarations and policies apparently directed toward the integration of malaria control into the activities of the health services. This situation led to the persistence of an eradication-oriented strategic approach that was at variance with the new Global Malaria Control Strategy.

The principal problems in the Program were determined to be:

1. Lack of standardization, direction, and leadership versed in the new approach.
2. Resistance on the part of program services and technical personnel to decentralization and integration of malaria control into the health services.
3. Lack of a functional system for timely diagnosis and treatment at the regional and subregional levels.
4. Centralized system of management, not integrated into the structures of the health services.
5. Prioritization of activities and actions at the operational level that failed to take into account the myriad factors that favor persistence of the disease, focusing instead on vector control, with emphasis on the application of a single type of intervention. This produced an incomplete epidemiological picture, since the behavior of malaria in different socioeconomic, environmental and ecological conditions is variable.

In the face of this situation, a favorable political-technical change has taken place within the National Malaria Control Service in the country. A National Technical Committee on Malaria has been formed and is in the process of revising the concepts, guidelines, and procedures for malaria control in Peru with a view to bringing the malaria control efforts of all involved institutions in the country into line with the new Global Strategy.

In this context, the new malaria control strategy will be based on the following principles:

1. The objective is malaria control, not eradication.
2. Control of the disease will be achieved through the detection, diagnosis, and treatment of cases.
3. Vector control contributes to the control of the disease and will be continued through selective and technically efficient interventions.
4. Control activities will be carried out in the framework of the general activities of the health services, which are decentralized, locally programmed, and systematically evaluated.
5. The impact of control measures will be reevaluated regularly, taking into account the ecological, social, and economic factors that influence the disease.

PERU – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| Municipalities or "Cantones": | 24 | 49 | 108 | 7 | 188 |
| Slides | | | | | |
| Examined: | ... | ... | ... | – | 158,325 |
| Positives: | ... | ... | ... | | 95,222 |
| (P.falciparum): | ... | ... | ... | – | (9.634) |
| 4–Aminoquinolines | | | | | |
| Complete Treatments: | ... | ... | ... | | 125,440 |
| Administered treatments for each case: | ... | ... | ... | – | 1.32 |
| No. of treatments with 2nd line antimalarial drugs: | ... | ... | ... | – | 8.567 |

## PERU – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| | 9,741 | 149,791 | 1.54 | 4,658 | 0.48 | 342 | 4,265 | 51 | 0.04 | 0.44 | 669,140 | 68.69 |
| 1960 | 10,022 | 349,780 | 3.49 | 3,906 | 0.39 | 256 | 3,560 | 90 | 0.03 | 0.36 | 682,491 | 68.10 |
| | 10,322 | 417,528 | 4.05 | 3,056 | 0.30 | 185 | 2,805 | 66 | 0.02 | 0.27 | 559,042 | 54.16 |
| | 10,630 | 470,639 | 4.43 | 2,216 | 0.21 | 82 | 2,052 | 82 | 0.01 | 0.19 | 627,527 | 59.03 |
| | 10,947 | 490,568 | 4.48 | 1,747 | 0.16 | 116 | 1,484 | 147 | 0.01 | 0.14 | 500,218 | 45.69 |
| | 11,272 | 502,744 | 4.46 | 1,934 | 0.17 | 302 | 1,538 | 94 | 0.03 | 0.14 | 379,184 | 33.64 |
| 1965 | 11,607 | 452,097 | 3.90 | 1,877 | 0.16 | 126 | 1,664 | 87 | 0.01 | 0.14 | 240,003 | 20.68 |
| | 11,952 | 424,993 | 3.56 | 2,049 | 0.17 | 32 | 1,915 | 102 | 0.00 | 0.16 | 186,109 | 15.57 |
| | 12,307 | 341,937 | 2.78 | 2,772 | 0.23 | 105 | 2,591 | 76 | 0.01 | 0.21 | 162,433 | 13.20 |
| | 12,675 | 247,116 | 1.95 | 2,010 | 0.16 | 52 | 1,911 | 47 | 0.00 | 0.15 | 153,893 | 12.14 |
| | 13,055 | 263,344 | 2.02 | 3,168 | 0.24 | 22 | 3,105 | 41 | 0.00 | 0.24 | 173,975 | 13.33 |
| 1970 | 13,447 | 310,237 | 2.31 | 4,494 | 0.33 | 135 | 4,282 | 77 | 0.01 | 0.32 | 188,723 | 14.03 |
| | 13,830 | 354,765 | 2.57 | 4,128 | 0.30 | 12 | 4,092 | 24 | 0.00 | 0.30 | 218,566 | 15.80 |
| | 14,220 | 341,084 | 2.40 | 9,270 | 0.65 | 5 | 9,236 | 29 | 0.00 | 0.65 | 229,605 | 16.15 |
| | 14,630 | 339,566 | 2.32 | 12,033 | 0.82 | 1 | 12,007 | 25 | 0.00 | 0.82 | 285,606 | 19.52 |
| | 14,750 | 317,522 | 2.15 | 12,485 | 0.85 | 0 | 12,485 | – | 0.00 | 0.85 | 383,405 | 25.99 |
| 1975 | 15,161 | 225,114 | 1.48 | 14,338 | 0.95 | 1 | 14,324 | 13 | 0.00 | 0.94 | 366,828 | 24.20 |
| | 15,573 | 243,675 | 1.56 | 18,462 | 1.19 | 4 | 18,448 | 10 | 0.00 | 1.18 | 187,410 | 12.03 |
| | 15,991 | 275,827 | 1.72 | 32,410 | 2.03 | 3 | 32,385 | 22 | 0.00 | 2.03 | 120,235 | 7.52 |
| | 16,415 | 201,489 | 1.23 | 20,376 | 1.24 | 43 | 20,312 | 21 | 0.00 | 1.24 | 192,877 | 11.75 |
| | 16,849 | 174,565 | 1.04 | 17,127 | 1.02 | 4 | 17,117 | 6 | 0.00 | 1.02 | 37,997 | 2.26 |
| 1980 | 17,295 | 150,407 | 0.87 | 14,982 | 0.87 | 138 | 14,805 | 39 | 0.01 | 0.86 | 117,684 | 6.80 |
| | 17,723 | 189,164 | 1.07 | 14,812 | 0.84 | 47 | 14,752 | 13 | 0.00 | 0.83 | 156,963 | 8.86 |
| | 18,148 | 211,100 | 1.16 | 20,483 | 1.13 | 3 | 20,480 | – | 0.00 | 1.13 | 132,393 | 7.30 |
| | 18,572 | 224,650 | 1.21 | 28,563 | 1.54 | 51 | 28,511 | 1 | 0.00 | 1.54 | 95,441 | 5.14 |
| | 18,995 | 214,213 | 1.13 | 33,724 | 1.78 | 51 | 33,655 | 18 | 0.00 | 1.77 | 269,129 | 14.17 |
| 1985 | 19,417 | 213,487 | 1.10 | 35,026 | 1.80 | 17 | 35,009 | – | 0.00 | 1.80 | 201,473 | 10.38 |
| | 19,839 | 184,636 | 0.93 | 36,866 | 1.86 | 68 | 36,783 | 15 | 0.00 | 1.85 | 216,665 | 10.92 |
| | 20,260 | 151,276 | 0.75 | 39,136 | 1.93 | 12 | 39,122 | 2 | 0.00 | 1.93 | 202,160 | 9.98 |
| | 20,684 | 125,430 | 0.61 | 32,359 | 1.56 | 0 | 32,211 | 148 | 0.00 | 1.56 | 147,702 | 7.14 |
| * | 21,113 | ... | 0.00 | 32,114 | 1.52 | 65 | 32,049 | – | 0.00 | 1.52 | ... | ... |
| 1990 ** | 21,550 | 90,040 | 0.42 | 28,882 | 1.34 | 131 | 28,693 | 58 | 0.01 | 1.33 | 41,564 | 1.93 |
| 1991 ** | 21,996 | 109,654 | 0.50 | 33,705 | 1.53 | 187 | 33,502 | 16 | 0.01 | 1.52 | 43,124 | 1.96 |
| (m)** | 22,451 | 123,147 | 0.55 | 54,922 | 2.45 | 793 | 54,129 | – | 0.04 | 2.41 | 74,084 | 3.30 |
| (n) | 22,913 | 158,325 | 0.69 | 95,222 | 4.16 | 9,634 | 85,504 | 84 | 0.42 | 3.73 | 74,084 | 3.23 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.

d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.

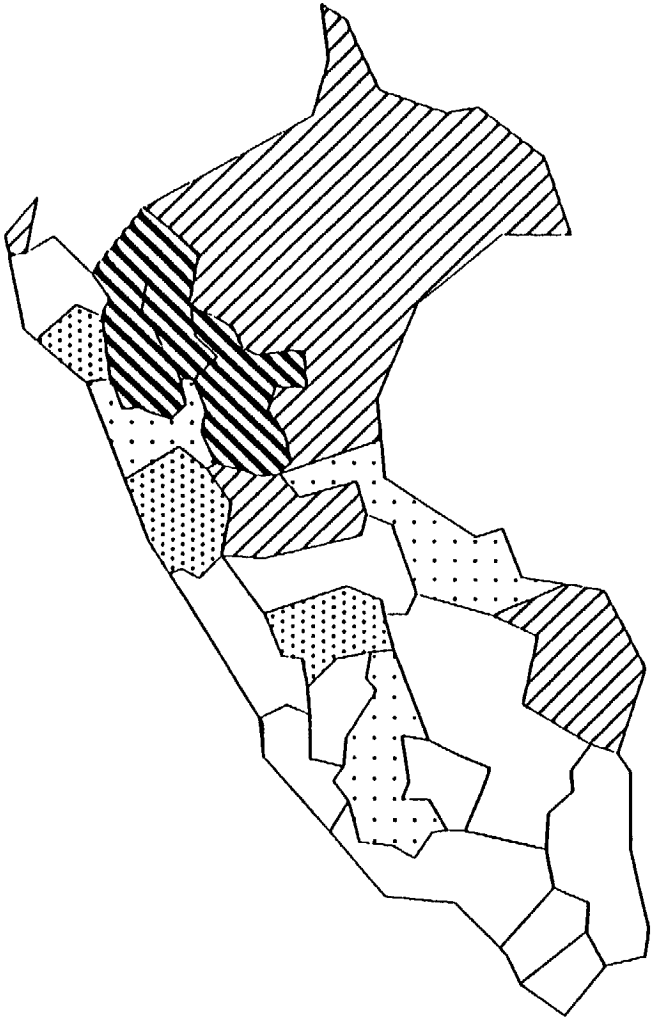
f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

* Inconpleted information. ** 1990 information up to Oct. ***1991 information up to Sept.

# PERU

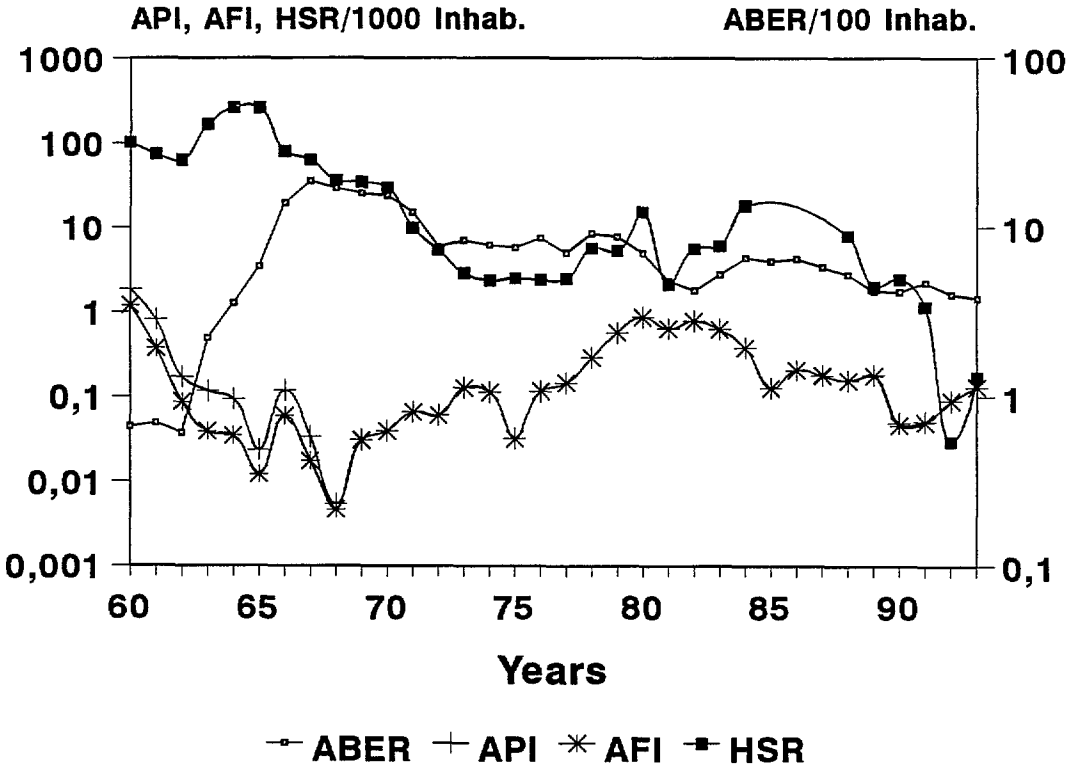
## MALARIA CASES BY DEPARTMENTS
## 1993



**Number of cases**

- 372 to 750
- 751 to 1,735
- 1,736 to 4,854
- 4,855 to 10,159

# DOMINICAN REP. - Malariometric Rates
## 1960-1993




The National Malaria Eradication Service (NMES) is a decentralized agency under the authority of the Ministry of Public Health, which is responsible for malaria control at the national level. Its functions include detection (active and passive) of malaria cases, treatment (presumptive and radical cure), household spraying, fumigation, and treatment of anopheline breeding sites. During 1993 four significant malaria outbreaks were detected in different parts of country. These were controlled through the use of fenitrothion.

DOMINICAN REPUBLIC – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| Municipalities or "Cantones": | 7 | 3 | 126 | 17 | 153 |
| Slides | | | | | |
| Examined: | 29,728 | 11,263 | 249,082 | – | 290,073 |
| Positives: | 154 | 47 | 786 | – | 987 |
| (P.falciparum): | (154) | (47) | (782) | – | (983) |
| 4–Aminoquinolines | | | | | |
| Complete Treatments: | 8,488 | 3,396 | 72,996 | – | 84,880 |
| Administered treatments for each case: | 55.12 | 72.26 | 92.87 | – | 86.00 |

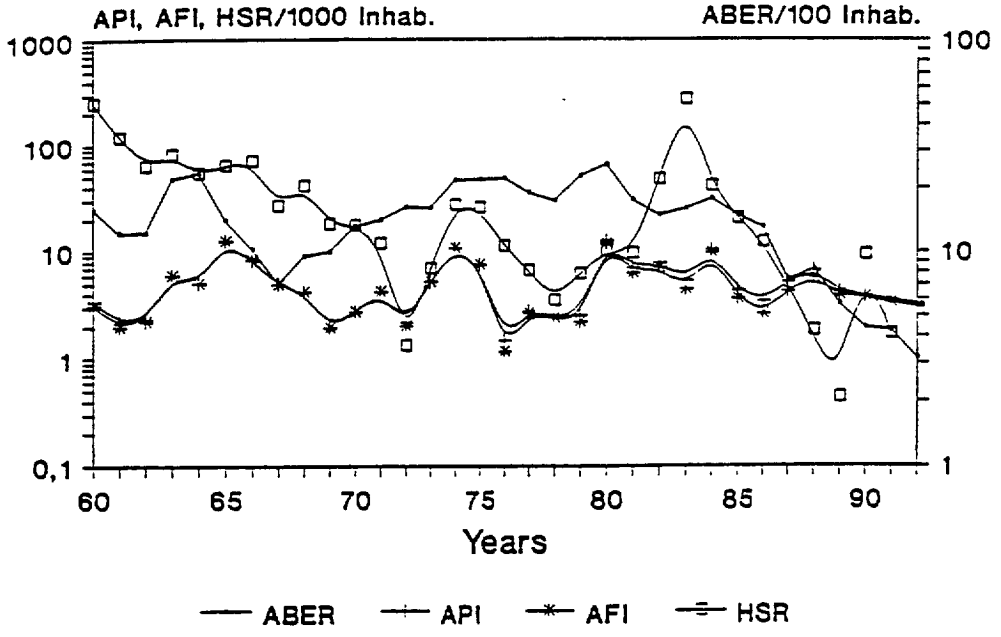
## DOMINICAN REPUBLIC – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| | 2,927 | 28,721 | 0.98 | 3,743 | 1.28 | 1,976 | 1,767 | – | 0.68 | 0.60 | 393,896 | 134.57 |
| 1960 | 3,038 | 20,337 | 0.67 | 5,540 | 1.82 | 3,591 | 1,949 | – | 1.18 | 0.64 | 309,716 | 101.95 |
| | 3,128 | 21,946 | 0.70 | 2,523 | 0.81 | 1,165 | 1,358 | – | 0.37 | 0.43 | 231,127 | 73.89 |
| | 3,220 | 19,742 | 0.61 | 548 | 0.17 | 277 | 271 | – | 0.09 | 0.08 | 201,109 | 62.46 |
| | 3,315 | 73,352 | 2.21 | 386 | 0.12 | 130 | 256 | – | 0.04 | 0.08 | 549,554 | 165.78 |
| | 3,412 | 121,211 | 3.55 | 321 | 0.09 | 120 | 201 | – | 0.04 | 0.06 | 891,727 | 261.35 |
| 1965 | 3,513 | 205,836 | 5.86 | 84 | 0.02 | 43 | 41 | – | 0.01 | 0.01 | 911,536 | 259.48 |
| | 3,616 | 505,130 | 13.97 | 429 | 0.12 | 216 | 213 | – | 0.06 | 0.06 | 288,765 | 79.86 |
| | 3,723 | 702,520 | 18.87 | 127 | 0.03 | 66 | 61 | – | 0.02 | 0.02 | 234,656 | 63.03 |
| | 3,833 | 655,202 | 17.09 | 21 | 0.01 | 18 | 3 | – | 0.00 | 0.00 | 140,220 | 36.58 |
| | 3,946 | 629,695 | 15.96 | 124 | 0.03 | 123 | 1 | – | 0.03 | 0.00 | 136,189 | 34.51 |
| 1970 | 4,062 | 628,221 | 15.47 | 161 | 0.04 | 161 | – | – | 0.04 | 0.00 | 120,812 | 29.74 |
| | 4,182 | 514,596 | 12.31 | 277 | 0.07 | 276 | 1 | – | 0.07 | 0.00 | 41,059 | 9.82 |
| | 4,305 | 329,394 | 7.65 | 261 | 0.06 | 261 | – | – | 0.06 | 0.00 | 23,078 | 5.36 |
| | 4,480 | 374,880 | 8.37 | 569 | 0.13 | 569 | – | – | 0.13 | 0.00 | 12,793 | 2.86 |
| | 4,610 | 360,782 | 7.83 | 520 | 0.11 | 520 | – | – | 0.11 | 0.00 | 10,825 | 2.35 |
| 1975 | 4,945 | 374,478 | 7.57 | 159 | 0.03 | 159 | – | – | 0.03 | 0.00 | 12,301 | 2.49 |
| | 5,070 | 436,068 | 8.60 | 586 | 0.12 | 585 | 1 | – | 0.12 | 0.00 | 11,992 | 2.37 |
| | 5,191 | 364,800 | 7.03 | 745 | 0.14 | 745 | – | – | 0.14 | 0.00 | 12,788 | 2.46 |
| | 5,311 | 489,095 | 9.21 | 1,531 | 0.29 | 1,531 | – | – | 0.29 | 0.00 | 29,965 | 5.64 |
| | 5,432 | 478,832 | 8.82 | 3,080 | 0.57 | 3,080 | – | – | 0.57 | 0.00 | 28,647 | 5.27 |
| 1980 | 5,558 | 390,770 | 7.03 | 4,780 | 0.86 | 4,779 | 1 | – | 0.86 | 0.00 | 84,501 | 15.20 |
| | 5,688 | 273,498 | 4.81 | 3,596 | 0.63 | 3,596 | – | – | 0.63 | 0.00 | 11,868 | 2.09 |
| | 5,977 | 251,542 | 4.21 | 4,654 | 0.78 | 4,653 | 1 | – | 0.78 | 0.00 | 33,206 | 5.56 |
| | 6,122 | 321,589 | 5.25 | 3,801 | 0.62 | 3,801 | – | – | 0.62 | 0.00 | 37,048 | 6.05 |
| | 6,268 | 413,416 | 6.60 | 2,370 | 0.38 | 2,370 | – | – | 0.38 | 0.00 | 113,717 | 18.14 |
| 1985 | 6,416 | 404,575 | 6.31 | 816 | 0.13 | 815 | 1 | – | 0.13 | 0.00 | – | – |
| | 6,566 | 427,694 | 6.51 | 1,360 | 0.21 | 1,359 | – | – | 0.21 | 0.00 | – | – |
| | 6,716 | 391,345 | 5.83 | 1,206 | 0.18 | 1,204 | 1 | – | 0.18 | 0.00 | – | – |
| | 6,867 | 360,101 | 5.24 | 1,072 | 0.16 | 1,064 | 8 | – | 0.15 | 0.00 | 54,670 | 7.96 |
| | 7,019 | 293,093 | 4.18 | 1,275 | 0.18 | 1,243 | 32 | – | 0.18 | 0.00 | 13,788 | 1.96 |
| 1990 | 7,170 | 297,599 | 4.15 | 356 | 0.05 | 334 | 22 | 0 | 0.05 | 0.00 | 17,342 | 2.42 |
| 1991 | 7,321 | 343,491 | 4.69 | 377 | 0.05 | 367 | 10 | 0 | 0.05 | 0.00 | 8,429 | 1.15 |
| 1992(m) | 7,471 | 299,549 | 4.01 | 698 | 0.09 | 694 | 4 | 0 | 0.09 | 0.00 | 226 | 0.03 |
| 1993(n) | 7,621 | 290,073 | 3.81 | 987 | 0.13 | 983 | 4 | 0 | 0.13 | 0.00 | 1,319 | 0.17 |

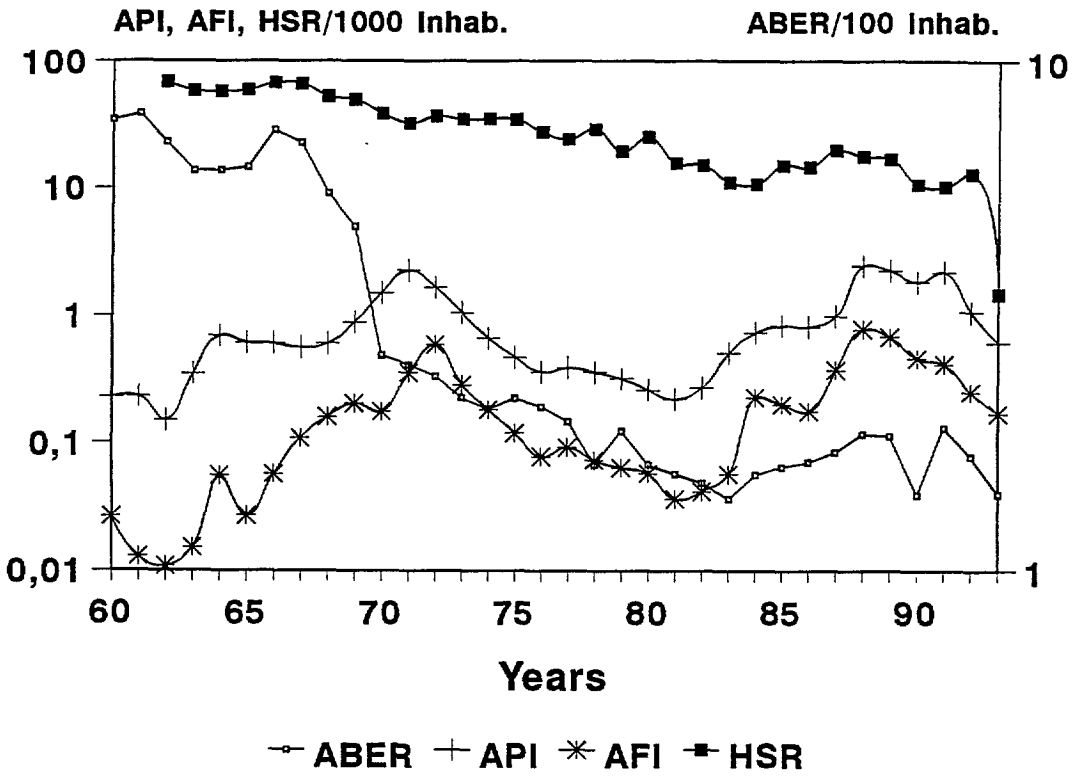
Aug/2/94

a) Population in thousands, estimated by PAHO Technical Information System.
b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 inhabitants.
d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 inhanbitants.
f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.
n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

# SURINAME- Malariometric Rates
## 1960-1992



# VENEZUELA - Malariometric Rates
## 1960-1993




Venezuela reported 12,539 cases of malaria during 1993. This represents a net decline of 8,876 cases with regard to 1992, with a cumulative epidemic index of 28 (95% confidence interval; 27.5; 28.5) with respect to the tricentral mean, which is indicative of the declining intensity of malaria transmission. Stratification was the priority strategy employed in areas with high epidemic indexes (the states of Amazonas, Apure, and Bolívar).

The Program continues to receive economic contributions from both the regional and central governments, as well as grants from the Corporación Venezolana de Guayanas.

# VENEZUELA – MALARIOMETRIC RATES

| Year | Total population | Blood slides examined | | | | | | | | | Sprayings | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | ABER | Positives | API | P.falc. & Mixed | P.vivax | Other species | AFI | AVI | Number of sprayings | HSR |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | (l) |
| | 7.086 | 503.777 | 7,11 | 911 | 0,13 | 126 | 762 | 23 | 0,02 | 0,11 | | |
| 1960 | 7.365 | 564.669 | 7,67 | 1.674 | 0,23 | 194 | 1.468 | 12 | 0,03 | 0,20 | | |
| | 7.627 | 600.511 | 7,87 | 1.754 | 0,23 | 98 | 1.630 | 26 | 0,01 | 0,21 | | |
| | 7.926 | 548.240 | 6,92 | 1.210 | 0,15 | 86 | 1.107 | 17 | 0,01 | 0,14 | 540.069 | 68,14 |
| | 8.225 | 499.944 | 6,08 | 2.853 | 0,35 | 124 | 2.707 | 22 | 0,02 | 0,33 | 479.865 | 58,34 |
| | 8.525 | 518.313 | 6,08 | 5.884 | 0,69 | 471 | 5.406 | 7 | 0,06 | 0,63 | 490.884 | 57,58 |
| 1965 | 8.824 | 545.035 | 6,18 | 5.364 | 0,61 | 237 | 5.100 | 27 | 0,03 | 0,58 | 522.616 | 59,23 |
| | 9.123 | 667.540 | 7,32 | 5.481 | 0,60 | 518 | 4.916 | 47 | 0,06 | 0,54 | 611.665 | 67,05 |
| | 9.423 | 650.682 | 6,91 | 5.257 | 0,56 | 1.020 | 4.215 | 22 | 0,11 | 0,45 | 623.926 | 66,21 |
| | 9.620 | 527.453 | 5,48 | 5.735 | 0,60 | 1.531 | 4.144 | 60 | 0,16 | 0,43 | 505.452 | 52,54 |
| | 9.940 | 468.158 | 4,71 | 8.740 | 0,88 | 2.017 | 6.652 | 71 | 0,20 | 0,67 | 492.476 | 49,54 |
| 1970 | 10.280 | 271.449 | 2,64 | 15.288 | 1,49 | 1.803 | 13.465 | 20 | 0,18 | 1,31 | 397.766 | 38,69 |
| | 10.612 | 268.615 | 2,53 | 23.626 | 2,23 | 3.762 | 19.860 | 4 | 0,35 | 1,87 | 343.936 | 32,41 |
| | 10.939 | 262.955 | 2,40 | 18.062 | 1,65 | 6.447 | 11.608 | 7 | 0,59 | 1,06 | 403.867 | 36,92 |
| | 11.280 | 245.733 | 2,18 | 11.687 | 1,04 | 3.213 | 8.470 | 4 | 0,28 | 0,75 | 390.822 | 34,65 |
| | 11.632 | 240.547 | 2,07 | 7.648 | 0,66 | 2.109 | 5.535 | 4 | 0,18 | 0,48 | 407.293 | 35,01 |
| 1975 | 12.665 | 275.048 | 2,17 | 5.952 | 0,47 | 1.502 | 4.448 | 2 | 0,12 | 0,35 | 436.744 | 34,48 |
| | 13.124 | 274.308 | 2,09 | 4.768 | 0,36 | 1.017 | 3.747 | 4 | 0,08 | 0,29 | 358.814 | 27,34 |
| | 13.595 | 266.052 | 1,96 | 5.304 | 0,39 | 1.246 | 4.047 | 11 | 0,09 | 0,30 | 326.600 | 24,02 |
| | 14.074 | 226.546 | 1,61 | 5.065 | 0,36 | 1.025 | 4.032 | 8 | 0,07 | 0,29 | 405.717 | 28,83 |
| | 14.552 | 272.409 | 1,87 | 4.722 | 0,32 | 928 | 3.789 | 5 | 0,06 | 0,26 | 279.186 | 19,19 |
| 1980 | 15.024 | 241.953 | 1,61 | 3.901 | 0,26 | 862 | 3.035 | 4 | 0,06 | 0,20 | 377.080 | 25,10 |
| | 15.487 | 239.051 | 1,54 | 3.377 | 0,22 | 562 | 2 801 | 14 | 0,04 | 0,18 | 241.749 | 15,61 |
| | 15.944 | 236.380 | 1,48 | 4.269 | 0,27 | 660 | 3.591 | 18 | 0,04 | 0,23 | 239.213 | 15,00 |
| | 16.397 | 226.229 | 1,38 | 8.400 | 0,51 | 929 | 7.465 | 6 | 0,06 | 0,46 | 180.940 | 11,03 |
| | 16.853 | 259.099 | 1,54 | 12.242 | 0,73 | 3.823 | 8.416 | 3 | 0,23 | 0,50 | 179.645 | 10,66 |
| 1985 | 17.317 | 276 020 | 1,59 | 14 305 | 0,83 | 3.447 | 10 854 | 4 | 0,20 | 0,63 | 257.598 | 14,88 |
| | 17.790 | 289.504 | 1,63 | 14.361 | 0,81 | 3.139 | 11.221 | 1 | 0,18 | 0,63 | 257.688 | 14,48 |
| | 18.270 | 311.055 | 1,70 | 17.988 | 0,98 | 6.851 | 11.137 | – | 0,37 | 0,61 | 359.731 | 19,69 |
| | 18.756 | 346.616 | 1,85 | 45.827 | 2,44 | 14.579 | 31.233 | 15 | 0,78 | 1,67 | 328.823 | 17,53 |
| | 19.245 | 352.784 | 1,83 | 43.374 | 2,25 | 13.094 | 29.794 | 486 | 0,68 | 1,55 | 322.089 | 16,74 |
| 1990 m)* | 19.321 | 277.164 | 1,43 | 35.082 | 1,82 | 9.135 | 25.944 | 3 | 0,47 | 1,34 | 208.803 | 10,81 |
| (m) ** | 19.753 | 375.473 | 1,90 | 42.826 | 2,17 | 8.182 | 34.641 | 3 | 0,41 | 1,75 | 200.848 | 10,17 |
| (m)** | 20.186 | 336.571 | 1,67 | 21.416 | 1,06 | 5.004 | 16.365 | 47 | 0,25 | 0,81 | 260.231 | 12,89 |
| (n) | 20.618 | 290.483 | 1,41 | 12.539 | 0,61 | 3.501 | 8.988 | 50 | 0,17 | 0,44 | 30.096 | 1,46 |

a) Population in thousands, estimated by PAHO Technical Information System. Aug/2/94

b) Number thick blood films examined during the year. c) ABER = Annual Blood Examination Rate, per 100 Inhabitants.

d) Number of positive slides, i.e. showing Plasmodium in at least 100 microscopic fields. e) API = Annual Parasite Index, per 1000 Inhanbitants.

f) Number of slides showing P. falciparum and other associated plasmodia. g) Number of slides showing P. vivax. h) Number of slides with P. malariae and/or P. ovale. i) AFI = Annual P. falciparum Index, during the year, per 1000 Inhabitants. j) AVI = Annual P. vivax Index during the year, per 1000 Inhabitants. k) Number of house sprayings during the year, regardless of cycles and insecticides. l) HSR = House Spraying Rate, per 1000 inhabitants. m) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1992 Revision.

n) Information from "Pop. Division of the UN Secretariat, World Population Prospects." The 1993 Revision.

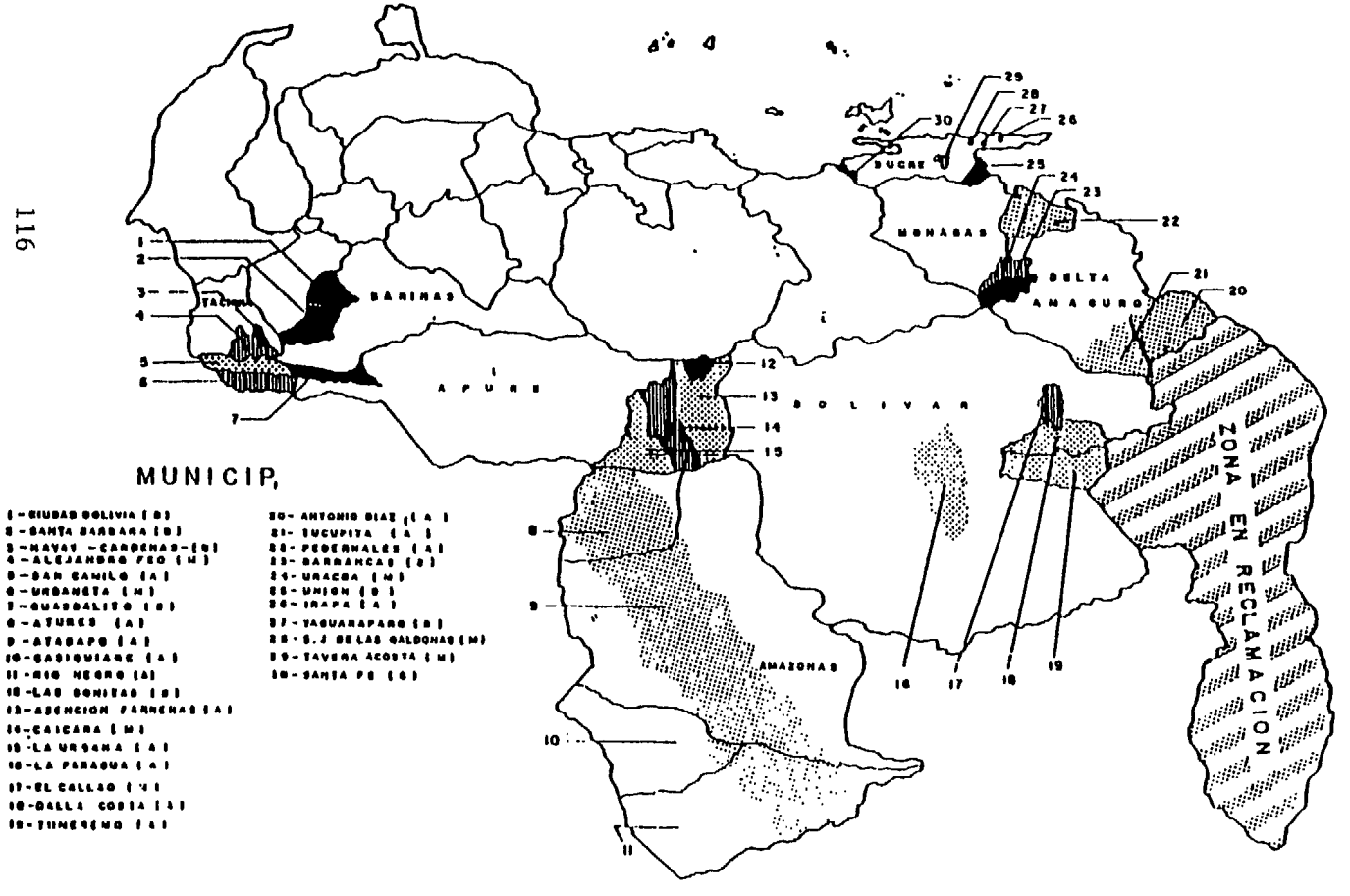
* Information up to Sept. **provisional information

VENEZUELA – Distribution of Activities of Diagnosis and treatment according to Malaria risk level, 1993

| Total number | High risk | Moderate risk | Low risk | Non–Malarious Areas | Total |
|---|---|---|---|---|---|
| Municipalities or "Cantones": | 7 | 13 | 23 | 943 | 986 |
| Slides | | | | | |
| Examined: | 87,904 | 25,428 | 88,347 | 88,804 | 290,483 |
| Positives: | 8,520 | 850 | 2,844 | 325 | 12,539 |
| (P.falciparum): | (2.266) | (104) | (1.103) | (28) | (3.501) |
| 4–Aminoquinolines | | | | | |
| Complete Treatments: | 115,923 | 22,838 | 38,716 | | 177,477 |
| Administered treatments for each case: | 13.61 | 26.87 | 13.61 | – | 14.15 |
| No. of treatments with 2nd line antimalarial drugs: | 7,020 | 258 | 137 | – | 7,415 |

# VENEZUELA

## AREAS OF RISK BY MUNICIPALITIES AND STATES
## 1993




**Areas of risk**

- < 5/1000 Low
- 5-10/1000 Moderate
- > 11/1000 High