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MALARIA ERADICATION IN THE UNITED STATES

Statement presented by the Representative of the
United States of America to the
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Pan American Sanitary Organization

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MALARIA ERADICATION IN THE UNITED STATES

(Statement prepared for U. S. Representative,
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Organization)

The National Malaria Eradication Program was activated in the U.S.A. on 1 July 1947 as the logical development of co-operative antimalaria efforts by the United States Public Health Service and certain State and local health agencies during and immediately after the second World War.

Control operations reached their maximal level in 1948. In that year \$5,048,866 were spent, of which 39% were State and local funds, and the remainder Federal. DDT residual spray was applied to 1,364,950 dwellings in 360 counties in 13 States. This required 1,405,813 pounds (637,666 kg) of DDT. In 1947, 16,203 cases and 214 deaths were reported. In 1948, reported malaria cases decreased to 9,797, deaths to 170. Entomological evaluation of the program revealed that 97.2% of the sprayed houses and 83.3% of the unsprayed ones were free of Anopheles quadrimaculatus, thus indicating a percentage of mosquito control of 83.2.

Starting in 1949, Congressional appropriations for the National Malaria Eradication Program were reduced each year. This resulted in an overall decrease in funds expended for the program but in relative

1/ This report is based upon data supplied by the Communicable Disease Center, Public Health Service, Department of Health, Education, and Welfare, Atlanta Georgia, and the paper entitled "Effects of Suspended Residual Spraying and of Imported Malaria on Malaria Control in the U.S.A." by J. M. Andrews, Jean S. Grant and R. F. Fritz, Bull. Wld. Hlth. Org. 11:839-848, 1954.

increases in State and local contributions during each of the years concerned. In 1950, Federal support of operations was withdrawn from the six States (Florida, Kentucky, Missouri, North Carolina, Oklahoma, and Tennessee) located on the outer edge of the malarious area. In 1951, the Public Health Service ceased active participation in operational phases of the eradication program in the remaining seven States (Alabama, Arkansas, Georgia, Louisiana, Mississippi, South Carolina, and Texas), but continued to give technical guidance to States and localities when requested. Federal contributions to the National Malaria Eradication Program were discontinued after 1952.

Coincidentally with the curtailment of Federal participation in the residual spray program, which began in 1949, State health departments were given Federal support for malaria surveillance-and-prevention programs designed to safeguard gains which had been achieved, and to complete the task of eradicating endemic malaria from the U.S.A. This support entailed the assignment of personnel to supplement State health department staffs in epidemiology, engineering, and entomology, and to provide teams for surveillance and prevention. The epidemiologist investigated and attempted to verify parasitologically all malaria reports, official and unofficial. Where a case was judged to be malaria, the entomologist appraised the local mosquito vector potentialities and recommended the necessary control measures. These were put into effect within a one-mile (1.6-km) radius of the patient's home by the engineer. The teams assisted practitioners in making differential diagnoses of questionable cases, supplied information about new antimalarial drugs,

and promoted better reporting by physicians.

By 1950, only 2,227 cases of malaria were reported to the National Office of Vital Statistics, the majority from six States. Criteria to determine when malaria ceases to be an endemic disease in the U.S.A. were established by the National Malaria Society at the request of the Public Health Service. It was believed that the eradication goal was within reach, but in June 1950 American troops entered the Korean conflict. During the period June 1950 to December 1952 thousands of servicemen were returned to the U.S.A. from the combat zone. Among them were more than 23,000 who subsequently experienced malaria attacks. These occurred, presumably, as the result of failures in the administration of suppressive medication under battle conditions, and of the inadequacy of chloroquine as a prophylactic agent. The Korean strain of malaria exhibited the prolonged latency characteristic of certain other temperate-zone vivax malarias. Thus, many of these infected troops experienced their first clinical attacks in the U.S.A. either before discharge, when the military authorities could take the necessary precautions to prevent further transmission, or after separation, when it was difficult if not impossible to institute the proper preventive measures for all cases. In 1951, 5,600 cases ^{2/} were reported through civilian health channels to the National Office of Vital Statistics. Of the 1,874 cases, appraised, 14 were believed to be the result of local transmission, probably from veterans of Korea. This influx of potential sources for the reintroduction of malaria to this country caused much concern among civilian and military

2/ This is an incomplete figure since it is known that over 12,000 malaria attacks (new cases and relapses) occurred among Army personnel during 1951 and over 10,000 in 1952.

authorities.

Studies on antimalarial drugs had demonstrated the value of primaquine in preventing clinical attacks of malaria. In January 1952, a program of mass administration of this prophylactic to all troops returning from Korea aboard ship was instituted, but it was June 1952 before it reached reasonably complete coverage. Consequently, large numbers of service personnel who had received little or no primaquine entered the U.S.A. during 1952, and the morbidity statistics for 1952, a total of 7,023 reported cases mostly from 24 States do not reflect the expected benefits of this program.

During 1952, expenditure for vector control on the co-operative program in 13 States amounted to \$2,574,000, about 84% being State and local funds. However, starting in 1951, these operations had been expanded to multipurpose programs for vector control in general and were not directed solely against malaria, but they provided a readily available reservoir of trained personnel and equipment should the need arise for intensified malaria-control activities. Both DDT and chlordane were used as residual sprays. Entomological evaluations of these programs were less extensive in 1952, but available data indicate that 99.5% of sprayed houses were maintained free of vector anophelines, as compared to 89.9% of unsprayed ones, an indicated control of 94.5%.

Of the 1952 malaria reports, 3,097 have been appraised. Of these 34 were adjudged primary indigenous cases, 28 probably having been transmitted from Korean veterans and six from Mexican nationals. All but one, a Plasmodium malariae infection, were vivax malaria. Many of these cases

were unrelated as to time and locality. There has been to date only one recognizable outbreak, the first in the U.S.A. since 1945. This occurred at a Camp Fire Girls' summer camp in California, in a region where malaria had been unreported since 1939, and resulted in a total of 9 cases among the campers during 1952 and 26 cases in the following year.

During 1953,^{3/} totals of 559 cases from civilian sources and 859 from military ones were reported. Of these, 436 were appraised; 339 were confirmed, 28 being of local origin and 311 of foreign. Since 24 of the indigenous cases were infected during 1952 in California, only four appear to have been acquired in 1953.

During 1954,^{3/} totals of 400 cases from civilian sources and 302 from military sources were reported. Of these, 108 have been appraised; 90 were confirmed, 8 being of local origin (1 a relapse) and 82 of foreign origin. The number of reported cases is continuing to decrease during 1955.

Although widespread insecticidal operations directed against malaria mosquitos alone have been discontinued, anti-anopheline activities have been incorporated into broader vector-control and prevention programs in some states. The development of DDT-resistance among some anophelines has made health authorities cautious of

^{3/} provisional data

indiscriminate applications; therefore, residual spraying is being carried out in only a few isolated areas. However, the surveillance-and-prevention personnel assigned to the States have at hand the organization and equipment which can be made rapidly available if and when malaria transmission threatens to become established in areas not being sprayed regularly.