

CDC MALARIA SURVEILLANCE REPORT--1957

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SPECIAL NOTE

Information contained in this report is a summary of data reported to CDC by State Health Departments, Epidemic Intelligence Service Officers, The National Office of Vital Statistics, and other pertinent sources. Much of it is preliminary in nature and is intended for those involved in malaria control activities. Anyone desiring to quote this information is urged to contact the persons responsible for the preparation of this report in order that the exact interpretation of the report and the current status of the investigation be obtained. State Health Officers, of course, will judge the advisability of releasing any information from their own states.

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I. Introduction

In 1957 reported morbidity for malaria was at an historic low for the United States. The provisional figure reported by the National Office of Vital Statistics (NOVS) for the year was 146 cases. In 1956 the final NOVS figure was 234; in 1955 it was 522. Only six years ago, in 1952, during the Korean War, the figure stood at 7,023, while twelve years ago in 1945 the estimated morbidity was about 60,000 cases. Effective eradication of malaria has been achieved. Total eradication, however, cannot be achieved until world eradication is at least effective. It seems likely that the United States can expect a continuing small malaria problem for some years to come. The annual morbidity may not drop a great deal below the figure for 1957, and it seems reasonable, assuming continuing maintenance of overseas military installations and continuing widespread international travel by U.S. nationals, to expect forty or fifty cases per year through the early 1960's.

As in 1955, an intensive surveillance effort was made in 1957 to provide those concerned with malaria control a reasonably accurate picture of the status of the disease in the United States. This type of close scrutiny will be continued for although the number of cases is small the danger of establishment of endemic foci in a highly susceptible population is ever present. As the yearly morbidity has declined the task of surveillance has become less difficult. Future years should see malaria surveillance reduced to intensive individual case evaluation similar to the current practice for such diseases as plague and smallpox.

While this report is primarily concerned with a presentation of the 1957 morbidity data, appendices include available information for 1956 which was collected simultaneously. A tabulation of data gathered in 1955 is also presented. The final appendix is a summary of the various malaria reporting procedures currently practiced by the States. We wish to express our appreciation to the State Health authorities who have provided us with the detailed information which makes this report possible.

II. Malaria Surveillance 1957 -- Continental United States

The Surveillance Section of the Communicable Disease Center has obtained appraisals of 138 of 157 malaria cases reported to this office during 1957. Twenty-nine states reported 146 cases (provisional figure) to the NOVS. Of the 138 appraised cases, 97 have been confirmed, 6 are considered presumptive, 30 have not been confirmed, and 5 have been shown not to be malaria. California reported 36 cases to the Surveillance Section; Florida and Oklahoma 15 cases; Georgia 13; Texas 10; New York 9; and Virginia 8. No other state reported more than five cases. It should be noted here that all of Virginia's cases and all but two of Georgia's cases were in military personnel. New York reported two military cases and seven in persons who had travelled in foreign parts. Texas, of particular note, listed only 10 cases in contrast to 62 in 1956. It is felt that a change in reporting procedures accounts for at least part of this decline. A moderate number of military cases and a somewhat smaller number of cases originating in Mexico occurred in California. Most striking, however, were the six primary indigenous cases reported by the state.

Among the group of 103 confirmed and presumptive cases, 56 have been reported from military sources. All of these cases are of overseas origin, the majority of the persons having become infected in Korea. It has apparently been impossible, thus far, to cure all malaria cases in troops returning to this country prior to their arrival here. Only 15 cases are of Mexican origin, half of these occurring among migrant laborers. California is the only state facing a problem of malaria control among Mexican migrant laborers. The remainder of the cases of Mexican origin occurred in persons who had travelled to Mexico on business or as tourists. In 1956 the cases of Mexican-origin were second in number after military cases. This year other foreign sources provided a total of 21 cases thus exceeding those originating in Mexico. Section III.b. presents a listing of foreign sources of 1957 malaria cases. Tourists, missionaries, and foreign exchange students were responsible for most of the non-military introductions from foreign areas.

Eleven cases (about 10% of all confirmed or presumptive cases in 1957) are considered to be of probable or possible primary indigenous origin. These are the most important cases from the standpoint of surveillance since they represent the introduction of the plasmodium into the mosquito population. California reported six confirmed indigenous cases. Four of these occurred in Sutter County among workers on a farm located about one quarter of a mile from a Mexican migrant labor camp. Anopheles freeborni were shown to be abundant in the area at the time that these cases occurred in August 1957. None of the persons who became ill (all had Plasmodium vivax infections) had travelled out of the region. The two other California cases occurred, also in persons who had not travelled far from their homes, in Colusa County and San Diego County.

The primary indigenous case reported by Indiana is considered presumptive and the origin of the infection was apparently in Arkansas. The four Oklahoma indigenous cases, all confirmed, occurred in the eastern part of the state. Two of these cases, reported from Cherokee County,

appeared in Indians who had never travelled out of the county. The area is considered to be an old traditionally malarious region, and state authorities feel it is possible that these cases represent a surviving reservoir of malaria rather than a new introduction of malaria into the abundant anopheline population.

Plasmodium vivax was responsible for 67 of the 74 infections for which we have information about the organism. Four others were P.falciparum, one was P. ovale, and two were "rare ring type, not identified".

In both 1956 and 1957 there was a seasonal variation in malaria case reporting, which was borne out by analysis of actual dates of onset of illness when these data were available. (Sections III.c. and IV.d.) Inasmuch as 90% or more of the U.S. malaria cases apparently originated outside this country, the July-August-September peak cannot very well reflect a seasonal variation in the U.S. anopheline mosquito population. The summer morbidity rise in this country probably reflects several things including: 1) the seasonal increase in U.S. international tourist travel, 2) the late summer arrival in this country of foreign exchange students, 3) the summer influx of migrant laborers from Mexico, and 4) seasonal increases in anopheline mosquito populations in other parts of the world.

No information is available at this time in regard to malaria mortality in the United States in 1957. The number of deaths will be extremely small, undoubtedly fewer than ten.

It is felt that over-reporting of malaria has ceased to be a problem in the United States. Conservatism is becoming the rule. The decline in morbidity of the past three or four years appears to be, at least in part, the result of improvement in reporting practices by the states and the increasing conservatism on the part of physicians.

III. a. Tabulation of 1957 Malaria Data

(See reverse side for footnotes)

ORIGIN
of Confirmed and
Presumptive Cases

State	***			Pre- sump- tive	Not Conf.	Not Malaria	ORIGIN				
	* NOVS	** CDC	Appr- aised				Con- firmed	Mili- tary	Mex- ico	Other Foreign	Indig- enous
Alabama	1	1	1	1					1		
Arizona	3	3	3		1	2					
Arkansas	5	5	5	5			4		1		
California	43	36	36	30	5	1	12	9	3	6	
Colorado	0	0	0								
Connecticut	2	3	3	1	1	1	2				
Delaware	0	0	0								
D. C.	0	0	0								
Florida	13	15	12	5	1	6	4		2		
Georgia	6	13	13	13			11		2		
Idaho	1	1	1		1				1		
Illinois	2	4	4	3		1	3				
Indiana	1	1	1		1					1	
Iowa	0	1	1	1			1				
Kansas	2	2	0								
Kentucky	5	5	0								
Louisiana	5	5	5	5			4		1		
Maine	1	0	0						1		
Maryland	0	0	0								
Massachusetts	1	1	0								
Michigan	0	0	0								
Minnesota	0	0	0								
Mississippi	0	0	0								
Missouri	1	1	1	1			1				
Montana	0	0	0								
Nebraska	0	0	0								
Nevada	2	2	0								
New Hampshire	0	0	0								
New Jersey	2	2	2	2			2				
New Mexico	1	1	1	1					1		
New York	0	9	9	9			2		7		
North Carolina	4	4	0								
North Dakota	0	0	0								
Ohio	1	1	0								
Oklahoma	15	15	15	4		10	1			4	
Oregon	2	2	1	1					1		
Pennsylvania	0	0	0								
Rhode Island	0	0	0								
South Carolina	2	1	1	1			1				
South Dakota	0	0	0								
Tennessee	1	3	3	2		1	1		1		
Texas	7	10	10	3	1	6		4			
Utah	1	1	1	1				1			
Vermont	0	0	0								
Virginia	7	8	8	8			8				
Washington	0	0	0								
West Virginia	0	0	0								
Wisconsin	1	1	1		1			1			
Wyoming	0	0	0								
Unassigned	8										
TOTALS	146	157	138	97	6	30	5	56	15	21	11

Footnotes to Table III. a. Tabulation of 1957 Malaria Data

- * Cases reported by State to NOVS (provisional data).
- ** Cases reported by State to CDC.
- *** Cases for which epidemiological information was obtained by the Surveillance Section.

III. b. Foreign Sources of 1957 Malaria Cases:

Mexico -- 15 cases
 Korea -- Among the military cases, at least 24 originated in Korea.

Other foreign areas which were indicated as probable U.S. case sources:

	<u>No. Cases</u>
Pakistan	1
Japan	2
Nigeria	2
†Africa†	2
Philippines	3
Panama	3
Iraq	1
Honduras	1
Argentina	1
India	1
Cuba	5
Indonesia	1
Okinawa	1
Morocco	1
†N. Africa†	4
†Europe†	1
Belg. Congo	1
Ecuador	1
†Central America†	1
Colombia	1
Nepal	1

III. c. 1957 Malaria Seasonal Analysis (by reported Date of Onset of Illness)

Month :	J	F	M	A	M	J	J	A	S	O	N	D
*No. Cases:	4	7	5	8	8	9	13	19	11	0	2	2

*Data available for 88 of 138 appraised cases.

IV. Appendices

a. Malaria Surveillance 1956 --- Continental United States

Thirty-two states and the District of Columbia reported 234 cases of malaria to NOVS in 1956, while 238 cases were reported to the Surveillance Section, CDC for the same year. Appraisals of 194 of these cases have been obtained at this writing. Of these 194 cases, 93 have been confirmed, 32 are considered presumptive, 67 have not been confirmed, and 2 have been shown not to be malaria. Approximately half the listed cases came from California and Texas. The only other states to report more than six cases were Oklahoma and Florida.

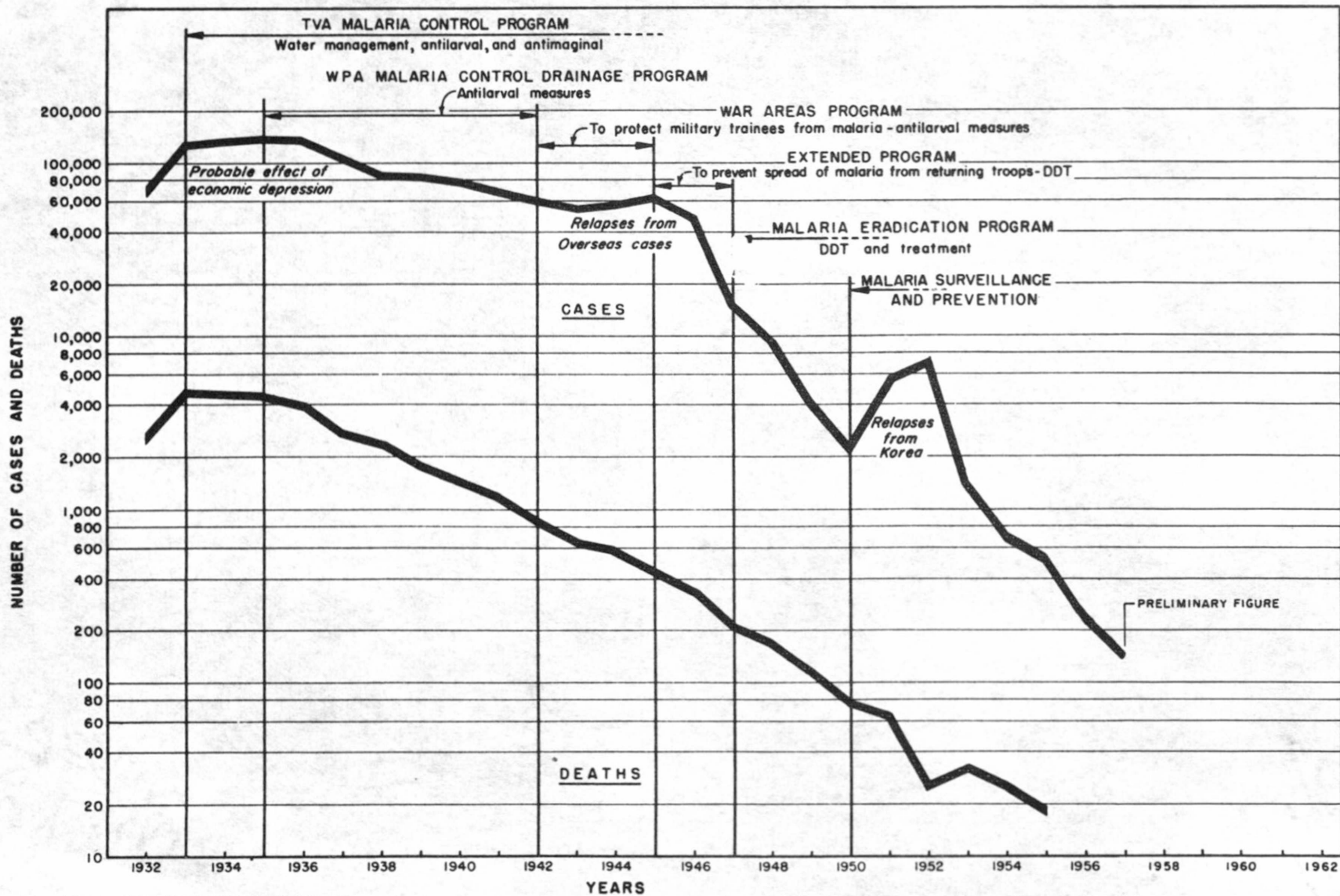
Among the group of 125 confirmed and presumptive cases, 46 were in military personnel (the bulk of these cases originated in Korea), some 32 were of Mexican origin (migrant laborers, tourists, other travellers), and at least 20 originated in other foreign countries. Seventeen cases of foreign origin reported from Texas remain unspecified as to country of origin. Ten cases (about 8% of all confirmed and presumptive cases in 1956) are considered to be of probable or possible primary indigenous origin--California six, Missouri one, Tennessee one, and Texas two.

Plasmodium vivax was responsible for 67 of the 78 infections for which we have information about the organism. Seven P.falciparum, 3 P.malariae, and one mixed P.vivax and P.falciparum infection were included in this group.

Analysis of dates of onset which were available for 99 cases revealed a seasonal morbidity peak during the summer months. These data are presented in Section IV.d.

No information is available at this time in regard to malaria mortality in the United States in 1956.

REPORTED MALARIA MORBIDITY AND MORTALITY IN THE UNITED STATES 1932-1957



SOURCE: CASES AND DEATHS, NATIONAL OFFICE OF VITAL STATISTICS

ATLANTA, GA.

FEB., 1958

IV. b. Tabulation of 1956 Malaria Data

(See reverse side for footnotes)

State	***			Pre- sump- tive	Not Conf.	Not Malaria	ORIGIN of Confirmed and Presumptive Cases				
	* NOVS	** CDC	Appr- aised				Con- firmed	Mili- tary	Mex- ico	Other Foreign	Indig- enous
Alabama	3	3	0								
Arizona	4	4	0								
Arkansas	6	6	6	6			2	4			
California	61	52	52	35	15	2	7	18	4	6	
Colorado	4	4	4	4			4				
Connecticut	3	2	2	1	1				2		
Delaware	0	2	2	2				1	1		
D. C.	2	2	2	2			2				
Florida	11	11	9	6	2	1	1	4	3		
Georgia	0	2	2	2			1		1		
Idaho	2	2	0								
Illinois	2	4	4	1	2	1	1	1	1		
Indiana	1	1	1	1			1				
Iowa	3	3	0								
Kansas	1	1	0								
Kentucky	0	0	0								
Louisiana	9	9	9	8	1		5	3	1		
Maine	0	0	0								
Maryland	2	3	3	3			2		1		
Massachusetts	0	0	0								
Michigan	1	1	0								
Minnesota	0	0	0								
Mississippi	1	2	2	2			2				
Missouri	4	6	6	4	2		5			1	
Montana	1	1	1	1			1				
Nebraska	0	0	0								
Nevada	0	0	0								
New Hampshire	0	0	0								
New Jersey	3	3	0								
New Mexico	1	1	0								
New York	3	6	6	3	2	1	1	1	3		
North Carolina	4	4	0								
North Dakota	0	0	0								
Ohio	1	1	0								
Oklahoma	18	18	3			3					
Oregon	4	4	4		3	1	1		2		
Pennsylvania	0	0	0								
Rhode Island	0	0	0								
South Carolina	4	4	4	2		2	2				
South Dakota	0	0	0								
Tennessee	1	2	2	2			1			1	
Texas	62	62	62	1	19	42	1	-	17****	2	
Utah	0	0	0								
Vermont	0	0	0								
Virginia	5	5	5	5			5				
Washington	5	5	1	1					1		
West Virginia	0	0	0								
Wisconsin	1	1	1			1					
Wyoming	1	1	1	1			1				
TOTALS	234	238	194	93	32	67	2	46	32+	20+	10

Footnotes to Table IV. b. Tabulation of 1956 Malaria Data

- * Cases reported by State to NOVS.
- ** Cases reported by State to CDC.
- *** Cases for which epidemiological information was obtained from the States by the Surveillance Section, CDC.
- **** Breakdown by country of origin not available.

IV. c. Foreign Sources of 1956 Malaria Cases:

Mexico -- at least 32 cases.

Korea -- Among the military cases at least 19 originated in Korea.

Other foreign areas which were indicated as probable U.S. case sources:

	<u>No. Cases</u>
Japan	1
Nigeria	1
'Africa'	1
'West Africa'	1
'E & S Africa'	1
'Cent. Africa'	1
'South Pacific'	1
Philippines	1
Panama	1
French Guinea	1
El Salvador	1
Iraq	1
Brit. Honduras	1
Guatemala	2
Italy	1
Indonesia	1
IndoChina	1
'Far East'	1
South Africa	1
Puerto Rico	1
Haiti	1
'South America'	1
Fr. Equat. Africa	1
Thailand	1

IV. d. 1956 Malaria Seasonal Analysis (by reported Date of Onset of Illness)

Month	J	F	M	A	M	J	J	A	S	O	N	D
*No. Cases:	4	2	4	2	11	9	16	13	20	8	5	5

* Data available for 99 of 194 appraised cases.

IV. e. Malaria Surveillance - 1955*

States	REPORTED MORBIDITY (to NOV5)			CASE APPRAISAL		
	Total	Acquired Out- side the U.S.	Con- firmed	Presump- tive	Not Malaria	Total Appraisal
Maine	1					
New Hampshire						
Vermont						
Massachusetts	6		1			1
Rhode Island	2					
Connecticut						
New York	12	3	2			2
New Jersey	8					
Pennsylvania						
Ohio	5		2			2
Indiana	1	1				
Illinois	3		1	2		3
Michigan	2	2				
Wisconsin						
Minnesota	4	4	3	2		5
Iowa	4					
Missouri	1					
N. Dakota						
S. Dakota	1					
Nebraska						
Kansas	5					
Delaware						
Maryland	2	2				
D. C.	2					
Virginia	12					
W. Virginia	1					
North Carolina	18	17		18		18
South Carolina	4			4		4
Georgia						
Florida	13		3	11	1	15
Kentucky				9		9
Tennessee	1	1	4		4	8
Alabama	1			1	1	2
Mississippi	2		1	2	6	9
Arkansas	6		5	1	9	15
Louisiana	7	5	2	3		5
Oklahoma	13	3	6	3	3	12
Texas	217	49	5	212	8	225
Montana	1				1	1
Idaho	1				1	1
Wyoming						
Colorado	4	4				
New Mexico	2					
Arizona	6		1	1	1	3
Utah	3					
Nevada						
Washington	13	13				
Oregon	6					
California	132	129	11	119	2	132
TOTALS	522	233	47	388	37	472

* Data compiled by Walter Murray, M.D. and E.R. Alexander, M.D.

IV. f. Summary of State Malaria Reporting Procedures

The criteria for reporting malaria to NOVS vary from State to State. In general, where malaria has traditionally been a problem more rigid standards of diagnosis are enforced. In the Northern States, where the threat of malaria has not existed in recent years, the physician's diagnosis without State or regional laboratory confirmation is often accepted for reporting purposes.

Of 30 states from which some statement of reporting criteria is available, 12 require laboratory confirmation prior to NOVS reporting. The majority of these States rely entirely upon approved laboratories. The remaining 18 States report all cases of malaria diagnosed by physicians to NOVS, whether the State is able to confirm the cases or not. All States usually accept and report military cases without further confirmatory efforts. Several States report only indigenous cases to NOVS. Military cases and cases of foreign origin identified in the states are not nationally recorded.