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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE — HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION

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EPIDEMIOLOGIC NOTES AND REPORTS

FOLLOW-UP ON NURSERY STAPHYLOCOCCAL DISEASE AND ITS RELATIONSHIP TO THE USE OF HEXACHLOROPHENE – United States

On Dec. 8, 1971, the Food and Drug Administration (FDA) warned against prophylactic total-body bathing of infants with hexachlorophene (HCP). Outbreaks of neonatal staphylococcal disease following cessation of prophylactic bathing of newborns with HCP were confirmed by CDC early in 1972. On Feb. 2, 1972, representatives of CDC, FDA, and the Committee on Fetus and Newborn of the American Academy of Pediatrics (AAP) met to discuss these outbreaks. An accurate assessment of their significance proved difficult because some reports were brought to CDC's attention by manufacturers and because staphylococcal disease is not routinely reportable. In addition, the clinical severity of illness found and the possible role of changes in handwashing practices of nursery personnel in those outbreaks was uncertain. The major conclusions from the meeting were that good nursery practice be emphasized to prevent disease in newborns, that once-daily prophylactic bathing of newborns with 3% HCP followed by rinsing be considered when nursery infection is present, and that further research was indicated on prevention and control of nursery staphylococcal infections (MMWR, Vol. 21, No. 5).

Reports of outbreaks began to be received by CDC on Dec. 31, 1971. For 4 weeks beginning January 16, CDC actively encouraged state health authorities, hospitals, and manu-

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TABLE I. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES
(Cumulative totals include revised and delayed reports through previous weeks)

DISEASE	30th WEEK ENDING		MEDIAN 1967-1971	CUMULATIVE, FIRST 30 WEEKS		
	July 29, 1972	July 31, 1971		1972	1971	MEDIAN 1967-1971
Aseptic meningitis	104	137	118	1,313	1,826	1,258
Brucellosis	7	2	3	97	91	123
Chickenpox	707	– – –	– – –	111,433	– – –	– – –
Diphtheria	3	2	2	60	94	94
Encephalitis, primary:						
Arthropod-borne and unspecified	17	31	31	488	744	685
Encephalitis, post-infectious	6	6	7	177	240	282
Hepatitis, serum (Hepatitis B)	176	157	100	5,349	4,891	2,967
Hepatitis, infectious (Hepatitis A)	1,009	1,071	898	32,024	34,922	26,692
Malaria	11	28	51	634	1,964	1,548
Measles (rubeola)	171	481	286	25,940	67,197	38,230
Meningococcal infections, total	29	25	34	906	1,613	1,683
Civilian	28	24	33	870	1,430	1,509
Military	1	1	1	36	183	174
Mumps	522	733	– – –	54,347	95,991	– – –
Rubella (German measles)	186	270	327	19,818	36,919	41,756
Tetanus	1	4	4	63	59	79
Tuberculosis, new active	585	– – –	– – –	18,972	– – –	– – –
Tularemia	1	10	6	75	92	92
Typhoid fever	6	8	7	179	171	171
Typhus, tick-borne (Rky. Mt. spotted fever)	24	23	23	267	213	199
Venereal Diseases:†						
Gonorrhea	15,073	14,202	– – –	405,567	361,235	– – –
Syphilis, primary and secondary	520	465	– – –	13,848	13,474	– – –
Rabies in animals	72	74	74	2,541	2,554	2,158

TABLE II. NOTIFIABLE DISEASES OF LOW FREQUENCY

	Cum.		Cum.
Anthrax: Kans. – 1	1	Poliomyelitis, total:	8
Botulism:	–	Paralytic:	8
Congenital rubella syndrome: Calif. – 1	23	Psittacosis: Conn. – 1	22
Leprosy: Hawaii – 2, Tex. – 2	71	Rabies in man:	1
Leptospirosis: Tenn. – 1	16	Trichinosis:	46
Plague:	1	Typhus, murine: Ark. – 1	11

†Numbers for 1971 are estimated from quarterly reports to the Venereal Disease Branch, CDC

HEXACHLOROPHENE – Continued

facturers to report outbreaks of nursery staphylococcal disease. Reports of outbreaks have continued to be received up to the present. From December 31 through March 25, 60 epidemiologically investigated nurseries experienced confirmed outbreaks involving 467 cases following discontinuation of bathing of infants with HCP. Six more (less than 10%) had outbreaks that bore no relationship to use of HCP.

In recognition of biases in studies based on voluntary reporting of outbreaks, nearly 300 U.S. hospitals were randomly selected in February 1972 and polled by telephone concerning patterns of nursery use of HCP for handwashing by personnel and infant bathing (MMWR, Vol. 21, No. 8). The results of this poll showed that more than 95% of the hospitals continued as a matter of policy to use HCP or iodophors for handwashing of nursery personnel, as recommended by the FDA and the AAP.

A total of 243 of these hospitals were visited over the next month by epidemiologists from CDC or a state health department to obtain information on rates of nursery staphylococcal disease identified during hospitalization from June 1, 1971, to Feb. 18, 1972, and to assess the relationship between infant bathing practices and the rate of staphylococcal disease.

On the basis of this retrospective review, 35 of the nurseries surveyed were excluded from analysis. The majority of these (26) were excluded because extremely dilute solutions of HCP (< .1%) were used, and such patterns were not assumed to represent either "use" or "non-use." The remainder were excluded on the basis of simultaneous, mixed bathing practices in the same nursery (7), or because practices could not be accurately described by any of the established bathing categories (2).

The nurseries of the remaining 208 hospitals were divided into four categories (see below), and an analysis was performed of staphylococcal disease in relation to bathing practices. The incidence of culture-documented nursery staphylococcal disease was approximately one case per 1,000 births in all of these categories for the period surveyed before December 1971 (Figure 1). In addition:

1. In 102 hospitals, where HCP bathing was discontinued and dry skin care, washing with nonmedicated soap and tap water, or washing with tap water alone was substituted, staphylococcal disease increased to six cases per 1,000.

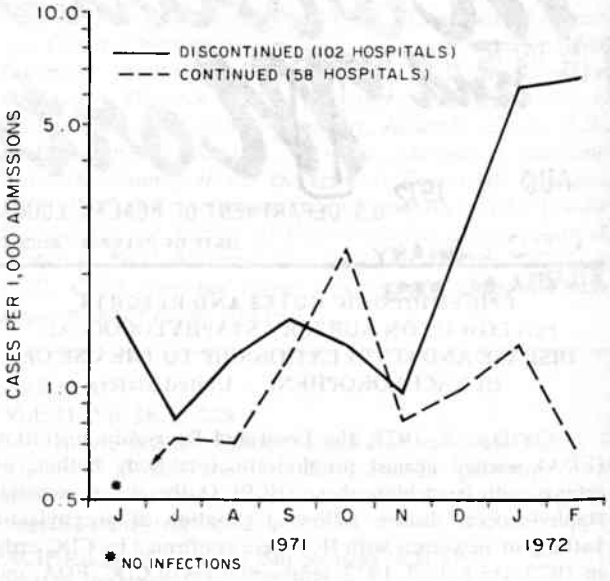
2. In 58 hospitals, where bathing with HCP emulsion alone was continued, there was no increase in rates. Comparing hospitals that discontinued and hospitals that continued HCP bathing, the difference in overall attack rates observed after the warning is statistically significant at the 5% level.

3. In 26 hospitals, where bathing with HCP emulsions was replaced by bathing with other commonly available antimicrobial agents, such as antibacterial bar soaps and iodophors, there were increases in rates comparable to those seen in hospitals changing to the use of dry skin care, nonmedicated soaps, or plain tap water.

4. In 22 hospitals, where no antibacterial bathing agent was used at any time during the study period, rates of staphylococcal disease in newborns increased in the 2-month period ending February 18, when compared with the previous 6-month period. However, the difference in rates during the two periods was not significant at the 5% level.

Although its role remains uncertain, increased awareness did not appear to be an important factor in the rise in

Figure 1
INCIDENCE OF NURSERY STAPHYLOCOCCAL DISEASE IN RELATION TO DISCONTINUATION OF HCP



neonatal staphylococcal disease in nurseries where routine bathing with HCP emulsions was discontinued. No increase in rates of culturing was noted in these nurseries. Serious staphylococcal disease, such as bullous impetigo, enterocolitis, bacteremia, and osteomyelitis, increased at the same rate as milder staphylococcal disease and comprised about 20% of all infections during both time periods.

These findings were corroborated by data acquired prospectively through the National Nosocomial Infections Study (NNIS) of CDC. A total of 77 hospitals in NNIS voluntarily submitted data to CDC on surveillance of nosocomial infections from January 1971 through March 1972. Thirty-two consistently reporting hospitals with nurseries had bathing practices comparable to those chosen for analysis in the random survey. The monthly incidence of nursery staphylococcal disease in these 32 NNIS hospitals showed a rise comparable to that observed in the randomly selected hospitals (Figure 2). A sharp increase in the rate of such disease occurred in December among hospitals discontinuing HCP emulsions for infant bathing. Monthly rates have subsequently remained above those for hospitals using HCP emulsions.

A slight increase in the total incidence of staphylococcal disease among all hospitalized patients was noted in the combined group of 77 reporting NNIS hospitals (Figure 3). This change was attributable to a substantial increase in staphylococcal cutaneous disease, primarily in neonates; no increase was observed for infections at other sites.

(Reported by the Bacterial Diseases Branch, Epidemiology Program, CDC.)

Editorial Note

The above data demonstrate that when some hospital nurseries previously using HCP emulsions changed to other types of skin care for neonates, an increased risk of staphylococcal disease was observed. As stated, in more than 95% of the hospitals, the policy was to continue the recommended substances (hexachlorophene or iodophors) for handwashing; the correlation between actual handwashing practices and those techniques said to be used by nursery personnel was not examined.

Figure 2
INCIDENCE OF NURSERY STAPHYLOCOCCAL DISEASE IN 208 SURVEY HOSPITALS AND 32 NNIS HOSPITALS

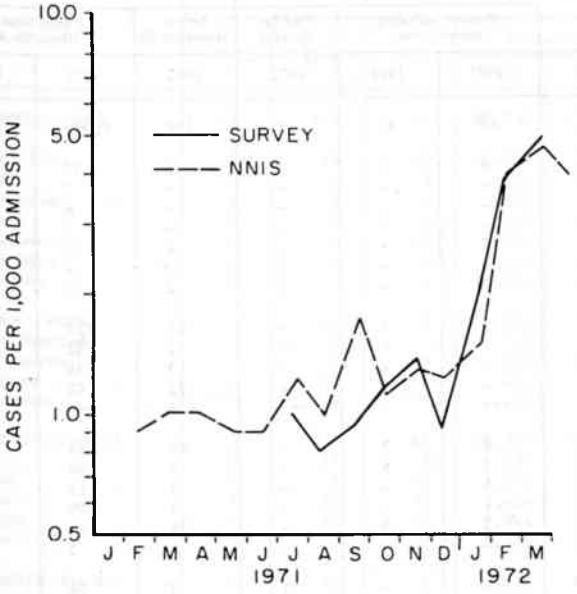
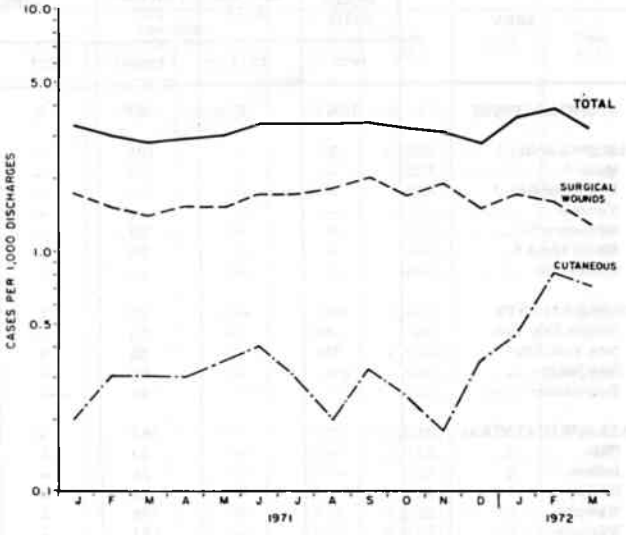


Figure 3
INCIDENCE OF STAPHYLOCOCCAL DISEASE, ALL SITES AND SERVICES, ALL NNIS HOSPITALS



These data, coupled with previous studies and observations, provide further indication that in some nurseries prophylactic bathing of hospitalized newborns with HCP emulsions is associated with lower rates of staphylococcal disease.

Final recommendations regarding the use or non-use of HCP bathing of newborn infants cannot be issued at this time. Toxicologic studies are needed to determine whether any neuropathologic harm results from short-term bathing of infants with normal skin. Also, it is certainly possible that the use of HCP may alter the risk of infection with gram-negative organisms. Of greatest concern is whether such use would allow an increase in the risk of gram-negative infections; accordingly, epidemiologic studies are needed to clarify any such relationship. The efficacy and safety of alternative antibacterial agents for bathing of infants have not been adequately evaluated, and the use of these agents cannot be recommended at present.

JOINT RECOMMENDATIONS OF FDA AND CDC

On the basis of currently available data, FDA and CDC recommend that nurseries exert every effort to maintain the following infection control practices:

1. adequate numbers and placement of handwashing facilities,
2. ability to isolate and treat neonatal disease promptly,
3. reliability of systems for surveillance of neonatal disease,
4. adequate number and type of personnel involved in patient care,
5. avoiding relative crowding of facilities, and
6. ability to practice infant cohorting routinely.

In the absence of infection, prophylactic total-body bathing of neonates with HCP is not recommended. Nurseries experiencing staphylococcal infections should consider HCP bathing as recommended previously (MMWR, Vol. 21, No. 5). It should generally be limited to short-term, in-hospital use. Infants with denuded skin surfaces must not be bathed with HCP. Careful rinsing must follow bathing. Bathing of infants after discharge from the hospital should be limited to specific indications under the direction of a physician. It must be stressed that HCP bathing should not be used by hospital nurseries as a substitute for other infection control practices.

SURVEILLANCE SUMMARY
MALARIA – United States, 1971

Between Jan. 1, 1971, and Feb. 29, 1972, a total of 3,047 cases of malaria were reported in the United States and Puerto Rico, representing a 23.8% decrease from the 3,997 cases reported for a similar period in 1970. In addition to the 3,047 first attacks, reports were also received on 131 individuals who had one or more relapses of malaria caused by the same species as their first attack.

The decrease in reported cases was due entirely to the decrease of malaria in military personnel (including recently discharged veterans) (Figure 4). Military cases declined from 3,872 in 1970 to 2,856 in 1971 and comprised 93.7% of all cases diagnosed in this country. All but 37 of these infections were acquired in Vietnam. Army personnel accounted for 84.1% of the cases and Marines for 7.5%; Navy and Air Force personnel rarely contracted the disease.

There were 191 civilian cases of malaria in 1971, compared with 125 cases in 1970. This increase was due primarily to 57 cases acquired in this country, the highest number since 1953. Of these 57 cases, 46 were needle-induced, nine were transfusion-induced, one resulted from an accidental needle prick, and one was cryptic. *Plasmodium vivax* was the infect-

(Continued on page 260)

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES FOR WEEKS ENDING JULY 29, 1972 AND JULY 31, 1971 (30th WEEK)

AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKENPOX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS		
						Primary including unspec. cases		Post Infectious	Serum (Hepatitis B)	Infectious (Hepatitis A)	
	1972	1972	1972	1972	Cum. 1972	1972	1971	1972	1972	1972	1971
UNITED STATES	104	7	707	3	60	17	31	6	176	1,009	1,071
NEW ENGLAND	2	–	126	–	–	2	1	–	6	57	72
Maine *	–	–	5	–	–	–	–	–	–	2	17
New Hampshire *	1	–	–	–	–	–	–	–	–	6	–
Vermont	–	–	2	–	–	–	–	–	–	1	5
Massachusetts	1	–	57	–	–	2	1	–	4	33	30
Rhode Island *	–	–	16	–	–	–	–	–	–	4	–
Connecticut	–	–	46	–	–	–	–	–	2	11	20
MIDDLE ATLANTIC	30	–	77	1	3	–	7	–	47	127	220
Upstate New York	–	–	3	–	1	–	6	–	12	42	41
New York City	1	–	74	1	2	–	–	–	13	38	60
New Jersey	29	–	NN	–	–	–	1	–	22	47	78
Pennsylvania	---	---	---	---	–	---	–	---	---	---	41
EAST NORTH CENTRAL	2	–	292	–	4	7	7	–	27	184	116
Ohio	–	–	37	–	–	2	4	–	5	46	21
Indiana	–	–	26	–	–	1	–	–	2	12	5
Illinois	–	–	–	–	3	1	–	–	6	50	11
Michigan	2	–	108	–	1	3	3	–	14	71	72
Wisconsin	–	–	121	–	–	–	–	–	–	5	7
WEST NORTH CENTRAL	3	1	10	–	9	–	–	1	2	34	42
Minnesota	–	–	–	–	–	–	–	1	–	1	10
Iowa	1	–	7	–	–	–	–	–	1	7	4
Missouri	1	–	3	–	–	–	–	–	1	6	7
North Dakota	–	–	–	–	–	–	–	–	–	1	2
South Dakota	–	–	–	–	6	–	–	–	–	2	1
Nebraska	1	1	–	–	3	–	–	–	–	3	4
Kansas	–	–	–	–	–	–	–	–	–	14	14
SOUTH ATLANTIC	17	4	91	–	9	–	6	–	34	167	138
Delaware	–	–	–	–	–	–	–	–	1	1	3
Maryland	3	–	7	–	1	–	1	–	4	21	15
District of Columbia	–	–	2	–	–	–	–	–	–	1	1
Virginia	4	–	4	–	–	–	4	–	1	24	30
West Virginia	–	–	68	–	–	–	1	–	–	7	11
North Carolina	6	–	NN	–	–	–	–	–	5	49	24
South Carolina	1	–	1	–	1	–	–	–	–	5	6
Georgia	–	4	9	–	2	–	–	–	–	12	15
Florida	3	–	–	–	5	–	–	–	23	47	33
EAST SOUTH CENTRAL	4	–	17	1	3	2	–	1	5	73	31
Kentucky	–	–	13	–	–	–	–	–	1	28	4
Tennessee	2	–	NN	–	–	–	–	–	2	27	19
Alabama	1	–	3	1	3	2	–	1	1	9	4
Mississippi	1	–	1	–	–	–	–	–	1	9	4
WEST SOUTH CENTRAL	13	–	28	–	23	2	2	–	8	102	108
Arkansas	–	–	–	–	–	–	–	–	–	10	2
Louisiana	3	–	NN	–	4	–	–	–	1	9	13
Oklahoma	1	–	–	–	–	2	2	–	–	20	22
Texas	9	–	28	–	19	–	–	–	7	63	71
MOUNTAIN	2	–	47	–	5	1	1	–	9	68	85
Montana *	–	–	5	–	–	–	–	–	–	3	1
Idaho	–	–	–	–	2	–	–	–	–	9	9
Wyoming	–	–	–	–	–	–	–	–	–	1	–
Colorado	–	–	7	–	–	–	1	–	2	14	8
New Mexico	2	–	11	–	1	1	–	–	5	17	11
Arizona	–	–	8	–	2	–	–	–	–	10	24
Utah	–	–	13	–	–	–	–	–	2	11	30
Nevada	–	–	3	–	–	–	–	–	–	3	2
PACIFIC	31	2	19	1	4	3	7	4	38	197	259
Washington	–	1	10	1	3	–	–	–	2	13	27
Oregon	–	–	–	–	–	–	–	–	1	22	30
California	31	1	–	–	1	3	7	4	35	152	198
Alaska	–	–	1	–	–	–	–	–	–	5	2
Hawaii	–	–	8	–	–	–	–	–	–	5	2
Guam	–	–	–	–	–	–	---	–	1	–	---
Puerto Rico	1	–	21	–	–	–	–	–	–	–	24
Virgin Islands	–	–	–	–	–	–	–	–	–	–	–

*Delayed reports: Chickenpox: Me. 2, Mont. 18 Hepatitis B: N.H. 8
Encephalitis, primary: R.I. delete 1 Hepatitis A: Me. 11, N.H. 21

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES
FOR WEEKS ENDING JULY 29, 1972 AND JULY 31, 1971 (30th WEEK) – Continued

AREA	MALARIA		MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS, TOTAL			MUMPS		RUBELLA	
	1972	Cum. 1972	1972	Cumulative		1972	Cumulative		1972	Cum. 1972	1972	Cum. 1972
				1972	1971		1972	1971				
UNITED STATES	11	634	171	25,940	67,197	29	906	1,613	522	54,347	186	19,818
NEW ENGLAND	2	18	27	3,012	3,367	1	37	71	16	2,298	10	928
Maine*	–	1	2	240	1,453	–	3	8	–	257	–	65
New Hampshire	–	3	–	227	196	–	3	11	1	180	–	32
Vermont	1	1	–	120	109	–	–	–	–	111	–	68
Massachusetts	–	6	16	646	232	–	17	28	7	557	5	428
Rhode Island	–	–	–	519	237	–	10	3	1	366	–	88
Connecticut	1	7	9	1,260	1,140	1	4	21	7	827	5	247
MIDDLE ATLANTIC	–	47	9	896	7,357	7	114	214	54	2,848	9	1,819
Upstate New York	–	9	–	123	619	3	30	60	NN	NN	–	227
New York City	–	7	9	236	3,681	–	35	41	49	1,512	9	194
New Jersey	–	15	–	484	1,179	4	24	50	5	692	–	1,154
Pennsylvania	---	16	---	53	1,878	---	25	63	---	644	---	244
EAST NORTH CENTRAL	3	65	65	10,705	14,817	10	126	179	147	15,008	36	5,343
Ohio	2	11	5	231	3,940	7	53	54	13	2,113	5	380
Indiana	–	1	10	1,216	2,655	–	11	13	15	959	9	631
Illinois	1	25	19	3,956	2,857	–	25	52	10	2,654	7	1,001
Michigan	–	25	12	1,946	2,198	2	32	49	42	2,620	5	1,229
Wisconsin	–	3	19	3,356	3,167	1	5	11	67	6,662	10	2,102
WEST NORTH CENTRAL	–	42	2	920	6,763	–	66	122	22	8,201	2	1,249
Minnesota	–	5	–	19	52	–	17	20	1	670	–	488
Iowa	–	3	1	647	2,230	–	2	9	2	5,659	1	379
Missouri *	–	11	1	159	2,589	–	20	44	15	494	–	107
North Dakota	–	1	–	51	230	–	–	5	4	319	1	22
South Dakota	–	4	–	5	214	–	2	5	–	117	–	12
Nebraska	–	3	–	18	62	–	9	14	–	244	–	50
Kansas	–	15	–	21	1,386	–	16	25	–	698	–	191
SOUTH ATLANTIC	1	97	18	2,056	7,285	5	204	285	62	5,041	59	1,539
Delaware	–	–	–	48	35	–	1	2	1	78	–	7
Maryland	–	8	–	15	524	–	33	44	11	302	–	45
District of Columbia	–	5	–	2	15	–	9	10	1	20	–	6
Virginia	–	4	–	58	1,499	1	45	28	13	1,072	–	67
West Virginia	1	2	4	253	486	–	6	7	19	2,275	3	372
North Carolina	–	35	1	30	1,914	1	26	49	NN	NN	–	27
South Carolina	–	10	–	214	895	–	19	20	–	163	–	50
Georgia	–	22	8	161	201	2	8	23	2	22	1	57
Florida	–	11	5	1,275	1,716	1	57	102	15	1,109	55	908
EAST SOUTH CENTRAL	4	161	6	1,020	8,105	1	75	139	34	2,872	32	1,484
Kentucky	4	142	4	518	3,867	1	24	37	8	449	28	843
Tennessee	–	–	–	191	998	–	28	53	22	1,828	2	486
Alabama	–	15	2	131	1,829	–	15	28	4	486	2	44
Mississippi	–	4	–	180	1,411	–	8	21	–	109	–	111
WEST SOUTH CENTRAL	1	68	9	1,391	12,237	1	111	143	45	4,546	21	1,417
Arkansas	–	5	–	13	775	–	9	5	1	160	–	29
Louisiana	–	5	–	82	1,664	–	34	50	8	291	–	85
Oklahoma	–	4	–	9	748	–	6	7	–	155	–	33
Texas	1	54	9	1,287	9,050	1	62	81	36	3,940	21	1,270
MOUNTAIN	–	42	11	1,727	3,132	1	16	48	22	2,808	7	1,035
Montana	–	2	–	12	916	–	2	6	3	169	–	28
Idaho	–	3	1	21	270	–	4	7	–	195	–	25
Wyoming	–	1	–	51	84	–	1	2	–	218	–	8
Colorado	–	27	4	514	807	–	3	7	3	728	1	515
New Mexico	–	1	2	110	331	1	2	3	3	553	–	85
Arizona	–	6	4	866	391	–	1	8	11	769	3	343
Utah	–	2	–	153	326	–	2	12	2	131	3	28
Nevada	–	–	–	–	7	–	1	3	–	45	–	3
PACIFIC	–	94	24	4,213	4,134	3	157	412	120	10,725	10	5,004
Washington	–	–	–	970	971	1	12	23	7	3,549	2	819
Oregon	–	11	5	113	367	–	13	29	30	1,444	1	348
California	–	72	18	3,024	2,424	1	123	354	82	5,399	7	3,771
Alaska	–	2	–	11	53	1	6	–	–	94	–	19
Hawaii	–	9	1	95	319	–	3	6	1	239	–	47
Guam	–	2	2	6	---	–	11	---	2	4	–	6
Puerto Rico	1	4	25	552	409	–	4	5	16	695	–	16
Virgin Islands	–	–	–	1	15	–	2	–	–	129	–	3

*Delayed reports: Malaria: Mo. delete 1
Mumps: Me. 3

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES FOR WEEKS ENDING JULY 29, 1972 AND JULY 31, 1971 (30th WEEK) – Continued

AREA	TETANUS	TB (New Active)	TULAREMIA		TYPHOID FEVER		TYPHUS FEVER TICK-BORNE (Rky. Mt. spotted fever)		VENEREAL DISEASES		RABIES IN ANIMALS	
									GONORRHEA	SYPHILIS (Pri. & Sec.)		
	1972	1972	1972	Cum. 1972	1972	Cum. 1972	1972	Cum. 1972	1972	1972	1972	Cum. 1972
UNITED STATES	1	585	1	75	6	179	24	267	15,073	520	72	2,541
NEW ENGLAND	–	17	–	–	–	11	–	–	387	13	2	78
Maine	–	4	–	–	–	–	–	–	13	1	1	62
New Hampshire*	–	–	–	–	–	2	–	–	22	–	–	2
Vermont	–	–	–	–	–	–	–	–	6	–	–	8
Massachusetts	–	7	–	–	–	7	–	–	210	5	–	2
Rhode Island	–	1	–	–	–	–	–	–	45	1	–	1
Connecticut	–	5	–	–	–	2	–	–	91	6	1	3
MIDDLE ATLANTIC	–	125	–	1	2	34	–	15	1,972	105	3	56
Upstate New York	–	18	–	–	–	11	–	4	550	10	3	28
New York City	–	70	–	–	2	19	–	1	1,132	83	–	–
New Jersey	–	37	–	1	–	3	–	6	290	12	–	–
Pennsylvania	---	---	---	–	---	1	---	4	---	---	---	28
EAST NORTH CENTRAL	–	51	–	1	–	14	3	17	1,437	20	15	261
Ohio*	–	1	–	1	–	5	2	16	639	2	–	70
Indiana	–	7	–	–	–	–	–	–	180	6	2	59
Illinois	–	23	–	–	–	3	–	–	403	–	1	46
Michigan	–	18	–	–	–	5	–	–	75	12	–	4
Wisconsin	–	2	–	–	–	1	1	1	140	–	12	82
WEST NORTH CENTRAL	–	26	–	17	–	4	2	12	1,235	13	21	702
Minnesota	–	3	–	–	–	–	–	–	225	–	13	159
Iowa	–	4	–	–	–	–	–	1	94	5	–	213
Missouri	–	11	–	14	–	3	2	8	500	4	5	63
North Dakota	–	1	–	–	–	–	–	–	15	–	3	95
South Dakota	–	1	–	1	–	–	–	2	35	–	–	76
Nebraska	–	1	–	1	–	–	–	–	111	1	–	8
Kansas	–	5	–	1	–	1	–	1	255	3	–	88
SOUTH ATLANTIC	–	119	–	9	–	21	10	149	3,400	169	5	217
Delaware	–	1	–	–	–	–	–	1	29	2	–	–
Maryland	–	22	–	1	–	5	–	25	295	21	1	6
District of Columbia	–	7	–	–	–	2	–	–	248	23	–	–
Virginia	–	7	–	6	–	7	2	34	564	53	2	58
West Virginia	–	11	–	–	–	1	1	3	22	–	1	45
North Carolina*	–	15	–	–	–	–	5	60	522	15	–	1
South Carolina	–	–	–	–	–	–	–	12	316	8	–	8
Georgia	–	24	–	1	–	1	2	14	515	19	–	60
Florida	–	32	–	1	–	5	–	–	889	28	1	39
EAST SOUTH CENTRAL	–	71	–	5	1	18	7	43	1,522	50	4	484
Kentucky*	–	9	–	–	1	5	–	1	173	19	1	190
Tennessee*	–	16	–	4	–	6	5	32	654	14	3	247
Alabama	–	34	–	1	–	2	–	3	389	7	–	46
Mississippi	–	12	–	–	–	5	2	7	306	10	–	1
WEST SOUTH CENTRAL	–	72	1	35	–	24	2	28	1,943	53	13	530
Arkansas	–	10	1	21	–	9	–	3	201	13	3	75
Louisiana	–	–	–	2	–	4	–	–	280	12	1	27
Oklahoma	–	2	–	8	–	1	–	20	321	–	1	218
Texas	–	60	–	4	–	10	2	5	1,141	28	8	210
MOUNTAIN	–	8	–	5	–	5	–	3	499	24	3	54
Montana	–	1	–	–	–	–	–	1	53	–	2	2
Idaho	–	1	–	–	–	–	–	2	42	–	–	–
Wyoming	–	–	–	–	–	–	–	–	7	–	–	1
Colorado	–	4	–	1	–	–	–	–	125	8	–	–
New Mexico	–	–	–	–	–	1	–	–	118	10	–	15
Arizona*	–	2	–	2	–	2	–	–	107	5	1	34
Utah	–	–	–	2	–	2	–	–	17	–	–	1
Nevada	–	–	–	–	–	–	–	–	30	1	–	1
PACIFIC	1	96	–	2	3	48	–	–	2,678	73	6	159
Washington	–	4	–	–	–	2	–	–	246	–	–	–
Oregon	–	3	–	1	–	–	–	–	260	2	1	1
California	1	79	–	–	3	43	–	–	2,078	70	5	151
Alaska	–	6	–	1	–	–	–	–	54	–	–	7
Hawaii	–	4	–	–	–	3	–	–	40	1	–	–
Guam	–	5	–	–	–	–	–	–	15	–	–	–
Puerto Rico	–	19	–	–	–	5	–	–	14	9	–	36
Virgin Islands	–	–	–	–	–	–	–	–	–	–	–	–

*Delayed reports: Tuberculosis: Ohio delete 1, N.C. delete 3, Ky. delete 1, Ariz. delete 2
Typhoid: N.H. 1
RMSF: N.C. delete 1
Gonorrhea: Ariz. 31
Rabies: Tenn. delete 1, Ariz. 1

Week No. 30

TABLE IV. DEATHS IN 122 UNITED STATES CITIES FOR WEEK ENDING JULY 29, 1972

(By place of occurrence and week of filing certificate. Excludes fetal deaths)

Area	All Causes			Pneumonia and Influenza	Area	All Causes			Pneumonia and Influenza
	All Ages	65 years and over	Under 1 year	All Ages		All Ages	65 years and over	Under 1 year	All Ages
NEW ENGLAND	748	472	27	56	SOUTH ATLANTIC	1,233	695	48	43
Boston, Mass.	205	114	15	18	Atlanta, Ga.	111	57	4	–
Bridgeport, Conn.	51	31	–	7	Baltimore, Md.	290	183	8	9
Cambridge, Mass.	32	28	–	8	Charlotte, N. C.	64	29	2	–
Fall River, Mass.	31	21	–	–	Jacksonville, Fla.	82	37	2	–
Hartford, Conn.	73	44	3	7	Miami, Fla.	106	56	5	3
Lowell, Mass.	24	14	–	–	Norfolk, Va.	56	30	2	7
Lynn, Mass.	12	9	–	–	Richmond, Va.	129	57	14	11
New Bedford, Mass.	32	18	2	1	Savannah, Ga.	26	10	2	4
New Haven, Conn.	64	38	3	1	St. Petersburg, Fla.	95	78	2	3
Providence, R. I.	71	44	2	7	Tampa, Fla.	72	46	2	2
Somerville, Mass.	8	7	–	1	Washington, D. C.	165	91	3	2
Springfield, Mass.	54	34	1	4	Wilmington, Del.	37	21	2	2
Waterbury, Conn.	36	30	–	–					
Worcester, Mass.	55	40	1	2	EAST SOUTH CENTRAL	695	383	28	40
					Birmingham, Ala.	87	49	3	2
MIDDLE ATLANTIC	4,006	2,462	117	205	Chattanooga, Tenn.	67	37	1	3
Albany, N. Y.	70	40	4	4	Knoxville, Tenn.	42	28	1	3
Allentown, Pa.	32	16	–	3	Louisville, Ky.	130	76	3	11
Buffalo, N. Y.	169	104	7	8	Memphis, Tenn.	155	84	10	7
Camden, N. J.	48	25	2	3	Mobile, Ala.	53	25	5	3
Elizabeth, N. J.	34	14	4	–	Montgomery, Ala.	45	22	4	5
Erie, Pa.	69	45	4	7	Nashville, Tenn.	116	62	1	6
Jersey City, N. J.	87	59	2	4					
Newark, N. J.	100	54	1	4	WEST SOUTH CENTRAL	1,247	634	61	29
New York City, N. Y.**	2,019	1,248	52	99	Austin, Tex.	49	27	3	1
Paterson, N. J.	59	40	1	3	Baton Rouge, La.	47	26	1	–
Philadelphia, Pa.	492	283	15	7	Corpus Christi, Tex.	33	14	4	–
Pittsburgh, Pa.	352	205	13	15	Dallas, Tex.	165	75	6	2
Reading, Pa.	50	41	2	6	El Paso, Tex.	35	15	5	–
Rochester, N. Y.	134	91	4	20	Fort Worth, Tex.	81	47	3	3
Schenectady, N. Y.	20	17	1	2	Houston, Tex.	257	124	7	2
Scranton, Pa.	54	36	1	3	Little Rock, Ark.	72	35	3	3
Syracuse, N. Y.	71	44	2	2	New Orleans, La.	165	82	10	6
Trenton, N. J.	60	39	1	1	Oklahoma City, Okla. **	89	49	4	1
Utica, N. Y.	30	20	1	4	San Antonio, Tex.	137	75	13	3
Yonkers, N. Y.	56	41	–	10	Shreveport, La.	61	31	1	3
					Tulsa, Okla.	56	34	1	5
EAST NORTH CENTRAL	2,846	1,702	93	92					
Akron, Ohio	76	51	2	1	MOUNTAIN	479	281	22	18
Canton, Ohio	43	27	1	2	Albuquerque, N. Mex.	63	36	3	8
Chicago, Ill.	800	484	24	16	Colorado Springs, Colo.	32	20	1	4
Cincinnati, Ohio	178	102	11	3	Denver, Colo.	128	77	8	3
Cleveland, Ohio	259	142	11	10	Ogden, Utah	14	9	–	2
Columbus, Ohio	140	74	2	9	Phoenix, Ariz.	105	57	3	1
Dayton, Ohio	139	80	4	–	Pueblo, Colo.	24	16	1	–
Detroit, Mich.	412	255	19	16	Salt Lake City, Utah	49	31	2	–
Evansville, Ind.	37	21	2	2	Tucson, Ariz.	64	35	4	–
Flint, Mich.**	57	32	3	2					
Fort Wayne, Ind.	50	30	–	3	PACIFIC	1,589	983	55	35
Gary, Ind.	49	25	4	3	Berkeley, Calif.	23	20	–	1
Grand Rapids, Mich.	63	47	1	2	Fresno, Calif.	46	19	4	–
Indianapolis, Ind.	131	76	3	3	Glendale, Calif.	38	23	–	1
Madison, Wis.	36	17	–	7	Honolulu, Hawaii	42	30	2	–
Milwaukee, Wis.	105	68	2	1	Long Beach, Calif.	107	68	1	2
Peoria, Ill.	32	17	1	1	Los Angeles, Calif.	452	306	13	12
Rockford, Ill.	34	17	–	7	Oakland, Calif.	103	59	4	–
South Bend, Ind.	32	22	1	2	Pasadena, Calif.	40	28	4	3
Toledo, Ohio	108	78	1	–	Portland, Oreg.	151	91	4	3
Youngstown, Ohio	65	37	1	2	Sacramento, Calif.	57	26	1	1
					San Diego, Calif.	110	60	8	3
WEST NORTH CENTRAL	754	471	37	18	San Francisco, Calif.	169	104	7	4
Des Moines, Iowa	48	27	2	–	San Jose, Calif.	52	32	1	1
Duluth, Minn.	18	12	1	–	Seattle, Wash.	100	55	–	2
Kansas City, Kans.	47	18	4	1	Spokane, Wash.	57	32	5	2
Kansas City, Mo.	124	85	7	2	Tacoma, Wash.	42	30	1	–
Lincoln, Nebr.	19	10	2	2					
Minneapolis, Minn.	95	60	4	4	Total	13,597	8,083	488	536
Omaha, Nebr.	71	45	4	–					
St. Louis, Mo.	232	139	10	3	Expected Number	12,263	6,891	572	409
St. Paul, Minn.	64	48	2	1					
Wichita, Kans.	36	27	1	5	Cumulative Total (includes reported corrections for previous weeks)	387,568	226,356	15,175	16,057
Las Vegas, Nev.*	---	---	---	---					

*Mortality data are being collected from Las Vegas, Nev., for possible inclusion in this table, however, for statistical reasons, these data will be listed only and not included in the total, expected number, or cumulative total, until 5 years of data are collected.

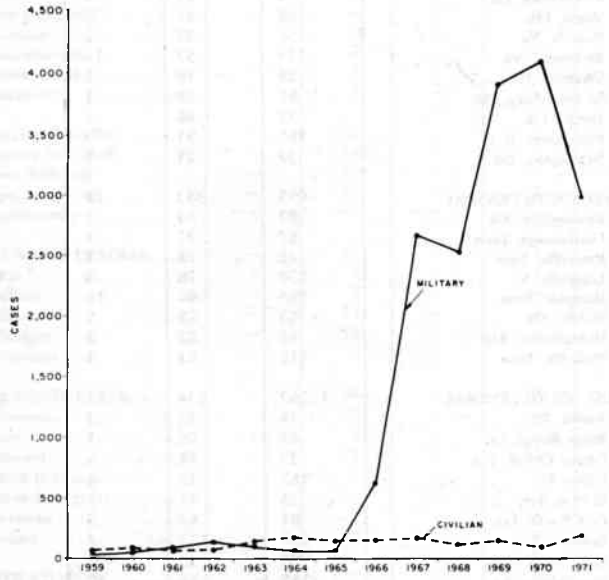
**Estimate based on average percent of divisional total.

MALARIA – Continued

ing species in 53 of these cases.

Eight deaths due to malaria were reported: two were tourists who had visited malarious areas, two were Vietnam veterans, and one was a seaman whose ship was en route from West Africa to Puerto Rico (his illness may have been complicated by the illicit use of narcotics). One person died of infection acquired through blood transfusion; two died from apparently ruptured spleens. Five of these deaths were caused by *P. falciparum,* and one was caused by *P. vivax.* The infecting species in the other cases could not be identified.

Figure 4
MILITARY AND CIVILIAN CASES OF MALARIA
UNITED STATES – 1959-1971



There was no significant change in the ratios of cases caused by any *Plasmodium* species between 1970 and 1971. *P. vivax* accounted for 82.8% of infections while *P. falciparum* was diagnosed in 11.0% of the cases. Of the 68 mixed infections, 66 were caused by coexistent *P. vivax* and *P. falciparum.*

Vietnam was the source of 2,827 imported cases of malaria, and only eight of these cases were in non-military personnel. Aside from Vietnam, the largest number of cases were imported from Nigeria (17), Nicaragua (13), and Mexico (10). Most of the malaria cases with onset in the United States occurred in California (392), Texas (371), Kentucky (328), Georgia (296), North Carolina (153), Colorado (143), and Kansas (125). This geographic distribution can be explained by the location of major military centers, particularly Army bases, in these states.

(Reported by the Parasitic Diseases Branch, Epidemiology Program, and the Laboratory Division, CDC.)

A copy of the original report from which these data were derived is available on request from
Center for Disease Control
Attn: Malaria Surveillance, Parasitic Diseases
Epidemiology Program
Atlanta, Georgia 30333

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The data in this report are provisional, based on weekly telegraphs to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday.

In addition to the established procedures for reporting morbidity and mortality, the editor welcomes accounts of interesting outbreaks or case investigations of current interest to health officials.

Address all correspondence to: Center for Disease Control
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