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WEEKLY REPORT

For Week Ending June 20, 1970

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE / PUBLIC HEALTH SERVICE / HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION

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EPIDEMIOLOGIC NOTES AND REPORTS

AFRICAN TRYPANOSOMIASIS – California

On June 13, 1970, the day of his return to the United States from Africa, a 57-year-old man developed nausea, headache, and malaise. Three days later he developed persistent fever. Symptomatic therapy was given but he did not improve. On June 19 a peripheral blood smear was examined for malaria parasites. Malaria parasites were absent, but the smear showed an overwhelming infection with trypanosomes (approximately 20 per oil immersion field). That same day, the patient was hospitalized in St. Helena, Napa County, California.

On physical examination the patient appeared toxic and febrile. He was confused and nauseated. He had an area of ecchymosis over his left eye and a nose bleed. There was no lymphadenopathy or trypanosomal chancre. All other physical findings were normal except for the appearance of a transient morbilliform rash on his chest and back during the second hospital day. Pertinent laboratory findings included proteinuria (1+), azotemia (BUN – 43), and thrombocytopenia (platelets – 45,900). The first spinal fluid tap was traumatic and could not be interpreted; however, a spinal fluid tap on the second hospital day was clear with no trypanosomes present. Because of the proteinuria and azotemia, Suramin* was administered with caution. A test dose of 100 mg was given, and later the same day the initial therapeutic dose of 1 g was given in divided doses. On the following day trypanosomes had disappeared from the patient's peripheral blood. The patient's condition is gradually improving. Suramin was again

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TABLE I. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

(Cumulative totals include revised and delayed reports through previous weeks)

DISEASE	24th WEEK ENDED June 20, 1970	24th WEEK ENDED June 14, 1969	MEDIAN 1965 - 1969	CUMULATIVE, FIRST 24 WEEKS 1970	CUMULATIVE, FIRST 24 WEEKS 1969	CUMULATIVE, FIRST 24 WEEKS MEDIAN 1965 - 1969
Aseptic meningitis	68	45	45	754	668	676
Brucellosis	4	8	6	92	81	95
Diphtheria	–	1	1	181	68	72
Encephalitis, primary:						
Arthropod-borne & unspecified	31	14	24	484	452	588
Encephalitis, post-infectious	7	8	13	219	140	386
Hepatitis, serum	179	134	783	3,278	2,423	19,374
Hepatitis, infectious	1,060	895		25,921	21,914	
Malaria	61	41	41	1,559	1,203	911
Measles (rubeola)	1,237	755	1,244	34,234	16,635	53,043
Meningococcal infections, total	41	49	46	1,468	1,920	1,868
Civilian	39	48	46	1,320	1,736	1,706
Military	2	1	1	148	184	162
Mumps	2,155	2,186	---	64,853	58,233	---
Poliomyelitis, total	–	1	1	5	3	12
Paralytic	–	1	1	5	3	11
Rubella (German measles)	1,134	1,917	---	44,927	41,557	---
Tetanus	3	2	8	49	54	66
Tularemia	1	8	4	44	67	68
Typhoid fever	7	5	6	108	127	133
Typhus, tick-borne (Rky. Mt. spotted fever)	14	28	14	92	122	63
Rabies in animals	48	64	68	1,467	1,769	2,091

TABLE II. NOTIFIABLE DISEASES OF LOW FREQUENCY

	Cum.		Cum.
Anthrax:	1	Psittacosis:	14
Botulism: Calif.-1	2	Rabies in Man:	–
Leprosy: Calif.-1, Hawaii-1, NYC-1	56	Rubella congenital syndrome: Calif.-1	37
Leptospirosis:	15	Trichinosis:	52
Plague:	1	Typhus, murine: Ohio-1	10

TRYPANOSOMIASIS – *(Continued from front page)*

administered on the third treatment day, and will also be given on the seventh, 14th, and 21st days. Treatment with Mel B* has been withheld; however, signs of central nervous system involvement will continue to be monitored.

The patient and his wife stated that they had worked as missionaries during the past 6 months at the Gitwe Mission in Rwanda. The mission is located close to the equator at an elevation of approximately 6,000 feet and is free of tsetse flies. Just prior to their departure from Africa on June 5 and 6, the patient, his wife and daughter, and the mission director and his wife and three children, visited the Kagera Game Park in northeast Rwanda. The park is inhabited by impala, zebra, waterbuck, topi, lion, etc. and is in a region of *Trypanosoma rhodesiense* transmission. All members of the party were heavily bitten by tsetse flies. To date, the patient's family remains well; the health status of the mission director and his family who remained in Rwanda is unknown.

(Reported by Philip Ottman, M.D., John Zumwalt, M.D., Attending Physicians, St. Helena Hospital; James Chin, M.D., Head, and Ronald Roberto, M.D., Medical Epidemiologist, General Epidemiology Section, Bureau of Communicable Disease Control, California State Department of Public Health; and the Parasitic Diseases Branch, Epidemiology Program, NCDC.)

*Suramin and Mel B available from the Parasitic Disease Drug Service, NCDC.

MENINGOCOCCAL A INFECTION – Washington

The first reported meningococcal infection due to *Neisseria meningitidis* serogroup A in the United States for 1970 occurred in Olympia, Washington, in May. The patient, a 2 1/2-year-old boy, had the onset of high fever and rash on May 10. He was seen by his physician on May 14 and was immediately hospitalized. On admission he appeared acutely ill; fever (101°F.), meningismus, and a petechial rash were noted. Lumbar puncture showed grossly cloudly cerebrospinal fluid (CSF) with 11,250 white cells and 98 percent neutrophils. He was treated initially with intravenous penicillin and subsequently with sulfonamides and made an uneventful recovery.

Cultures of his CSF yielded sulfonamide sensitive serogroup A *N. meningitidis*. None of the five members of his family (parents, 7-month-old sister, and grandparents) had been outside Washington during the preceding 6 months. The family members were treated with oral penicillin, prophylactically, by their physician. Nasopharyngeal cultures were first obtained from four family contacts 12 days after use of prophylaxis. They were negative for *N. meningitidis*.

(Reported by Roger L. Barrett, M.D., Memorial Clinic; Kenneth Wright, and Kenneth L. Tartlow, M.D., Bacteriology Laboratory, St. Peters Hospital, Olympia; Yvonne Fichtenau, Division of Laboratories, and Byron J. Francis, M.D., Chief, Division of Epidemiology, Washington State Department of Health; and an EIS Officer.)

Editorial Comment:

Neither oral penicillin nor parenteral penicillin in usual dosage is consistently effective as a prophylactic measure against meningococcal infections (MMWR, Vol. 18, Nos. 22, 23), and oral doses as high as 6 million units a day can not be relied upon to eradicate strains carried in the nasopharynx *(1, 2, 3)*. If a meningococcal strain is known to be sulfonamide sensitive, sulfonamides may be confidently used as an effective agent for prophylaxis as well as eradication of carriage.

References

(1) Dowd, J.M, et al: Antibiotic prophylaxis of carriers of sulfadiazine-resistant meningococci. J Infect Dis 116:473-480, 1966

(2) Singer, RC: Sulfonamide-resistant meningococcal disease. Med Clin N Amer 51:719-27, 1967

(3) Feldman, HA: Meningococcal disease, 1965. JAMA 196:391-393, 1966

INTERNATIONAL NOTES

FOLLOW-UP SMALLPOX – Federal Republic of Germany

Investigation of the smallpox outbreak with 20 cases in Germany during January 1970 (MMWR, Vol. 19, Nos. 3-5, 8) has been completed. The index patient had just returned from West Pakistan. Transmission from the index case to 17 secondary cases presumably occurred from January 13 or 14 when his rash first appeared and while he was hospitalized in the isolation ward at Meschede Hospital until January 16 when he was removed to the Wimbern Smallpox Hospital. Cases 19 and 20 resulted from secondary spread within the hospital. Each of these last cases was a patient who shared a room with earlier cases (Table 1).

The most probable explanation for the spread of smallpox appeared to be airborne dissemination. In addition to the fact that no alternative mechanisms of transmission could be elicited, two incidents support this hypothesis. The first related to the circumstances of exposure of patient 8, who had visited the hospital only once on the evening of January 13 and remained in the building for only 15 minutes (The floor plan of the Meschede Hospital is shown in Figure 1; the numbered cases correspond to those of Table 1). After entering the hospital by the front door, he located a physician and spoke briefly with him at the site designated "8" in Figure 1. He had no known contact with any patient or any other member of the hospital staff. He subsequently developed typical smallpox on January 24. The second incident relates to the exposure of case 15 who was confined to the cloister on the third floor. The patient, one of the nursing sisters, had been hospitalized for many months and did not leave her room during January. No hospital personnel other than the nuns, the priest, and physicians caring for the nuns were permitted to enter this area. She developed smallpox on January 31. An additional support to the hypothesis of airborne transmission is the uniformity of attack rates by floor in the hospital (Table 2).

Table 1
Cases of Smallpox – Meschede Hospital, 1970

Case Number	Age	Sex	Onset*		Outcome	Past Vaccination		Recent Vaccination			Comment
			Fever	Rash		Vaccination Scar	Most Recent Vaccination	Killed Vaccine	VIG**	Live Vaccine	
1	20	M	10/1	14/1		No	1969	–	–	–	Index patient
2	5	F	23/1	25/1		No	–	16/1	16/1	–	Patient – R1
3	17	F	22/1	25/1	Death	No	–	16/1	25/1	17/1	Nurse – R6
4	21	F	25/1	28/1		No	–	16/1	25/1	22/1	Nurse – R3
5	57	M	22/1	26/1		Yes	1968	–	22/1	19/1	Patient – R6
6	50	F	25/1	29/1		Yes	1932	19/1	19/1	19/1	Patient – R1
7	56	M	26/1	29/1		Yes	1942	17/1	18/1	–	Patient – R3
8	42	M	24/1	26/1		Yes	1946	–	–	–	Visitor
9	79	M	27/1	29/1	Death	Yes	1903(?)	16/1	18/1	–	Patient – R3
10	89	M	28/1	30/1		Yes	–	21/1	21/1	–	Patient – R6
11	90	M	28/1	30/1		Yes	1892(?)	16/1	18/1	–	Patient – R3
12	59	M	28/1	31/1		Yes	1930	17/1	–	22/1	Patient – R6
13	73	M	31/1	1/2		Yes	1909	17/1	18/1	30/1	Patient – R6
14	59	F	29/1	2/2		Yes	1930	–	–	17/1	Nurse – R6
15	65	F	31/1	2/2		Yes	1917	17/1	30/1	–	Patient – R5
16	69	F	31/1	2/2		Yes	1902	16/1	18/1	–	Patient – R1
17	60	M	31/1	4/2	Death	Yes	1917	17/1	–	30/1	Patient – R3
18	21	M	22/1	None		Yes	1961	–	–	17/1	Patient – R3
19	74	M	13/2	15/2		Yes	1907(?)	17/1, 29/1	18/1	–	Patient contact – case 17
20	81	F	16/2	17/2	Death	Yes	1901(?)	17/1	17/1	–	Patient contact -- case 15

*Day/Month
**Vaccinia immune globulin

Figure 1
MESCHEDE HOSPITAL

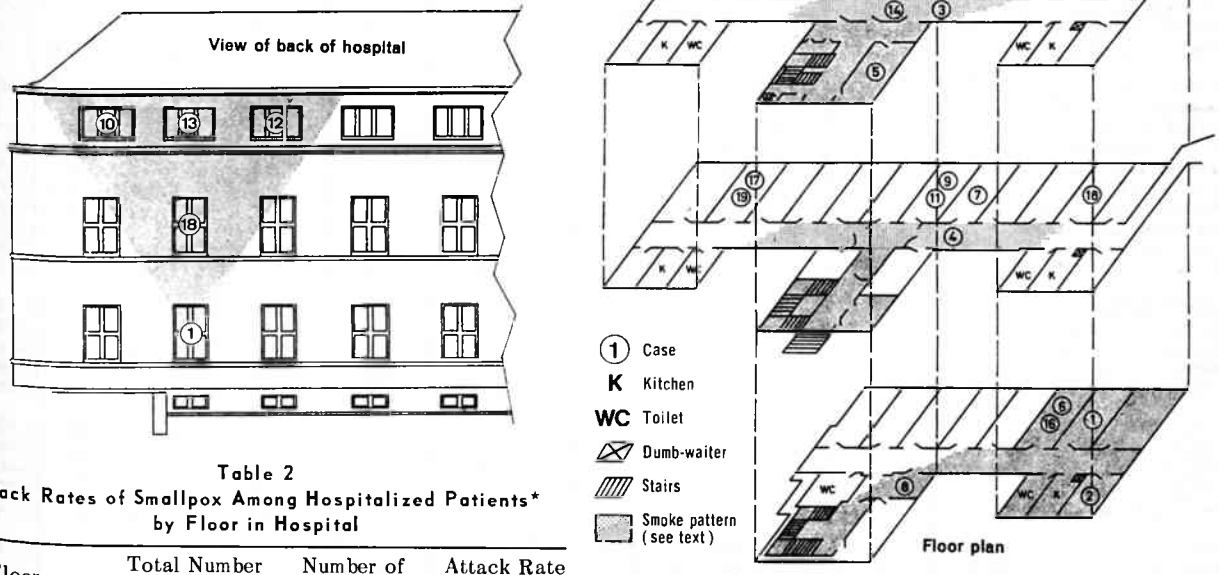

Table 2
Attack Rates of Smallpox Among Hospitalized Patients* by Floor in Hospital

Floor	Total Number of Patients	Number of Cases	Attack Rate (Percent)
Ground Floor	15	3	20
First Floor	31	5	16
Second Floor	25	5	20
Total	71	13	18

*Second generation cases excluding cases of smallpox among three staff members, the visitor and the index case.

Such uniform rates would seem unlikely if transfer of infection had occurred by direct contact or through fomites or hospital personnel.

On April 10 patterns of air flow within the building were determined. Meteorological conditions were similar to those of mid-January. A smoke generating device was released in the room of the index patient. The patterns of the air currents observed within and outside the building were approximately as shown in the shaded portions of Figure 1. Within the building, dense smoke entered the corridor and rooms adjacent to that of the index patient. The smoke then passed down the corridor, through a door which was normally kept ajar by means of a special device, and then into the entrance hall. Notably, the visitor who contracted smallpox waited in this entrance hall. The smoke after passing through this entrance hall proceeded directly to the central stairwell which served effectively as a chimney. This open stairwell conducted the dense

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TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

FOR WEEKS ENDED
JUNE 20, 1970 AND JUNE 14, 1969 (24th WEEK)

AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	DIPHTHERIA	ENCEPHALITIS			HEPATITIS			MALARIA	
				Primary including unsp. cases		Post Infectious	Serum	Infectious			
	1970	1970	1970	1970	1969	1970	1970	1970	1969	1970	Cum. 1970
UNITED STATES.....	68	4	–	31	14	7	179	1,060	895	61	1,559
NEW ENGLAND.....	2	–	–	2	–	–	10	97	65	3	45
Maine.....	–	–	–	–	–	–	–	9	3	1	4
New Hampshire.....	–	–	–	–	–	–	–	9	4	–	1
Vermont.....	–	–	–	–	–	–	–	7	3	–	3
Massachusetts.....	–	–	–	2	–	–	1	54	28	2	24
Rhode Island.....	2	–	–	–	–	–	1	5	14	–	5
Connecticut.....	–	–	–	–	–	–	8	13	13	–	8
MIDDLE ATLANTIC.....	10	–	–	7	5	1	72	197	128	11	188
New York City.....	8	–	–	4	1	–	36	55	44	–	25
New York, Up-State...	–	–	–	1	1	1	1	44	20	6	53
New Jersey.....	2	–	–	1	2	–	25	62	18	2	46
Pennsylvania.....	–	–	–	1	1	–	10	36	46	3	64
EAST NORTH CENTRAL.....	7	–	–	4	5	1	14	118	143	3	86
Ohio.....	1	–	–	2	3	–	3	37	30	–	20
Indiana.....	2	–	–	–	–	–	–	10	15	1	7
Illinois.....	2	–	–	–	–	–	1	16	25	–	22
Michigan.....	2	–	–	2	2	1	10	45	68	2	37
Wisconsin.....	–	–	–	–	–	–	–	10	5	–	–
WEST NORTH CENTRAL.....	–	2	–	–	–	–	12	40	32	2	117
Minnesota.....	–	–	–	–	–	–	9	3	4	–	1
Iowa*.....	–	–	–	–	–	–	–	7	6	–	8
Missouri.....	–	–	–	–	–	–	1	18	18	–	17
North Dakota.....	–	–	–	–	–	–	–	1	1	–	1
South Dakota.....	–	–	–	–	–	–	–	–	1	–	2
Nebraska.....	–	2	–	–	–	–	–	2	–	–	1
Kansas.....	–	–	–	–	–	–	2	9	2	2	87
SOUTH ATLANTIC.....	20	2	–	7	2	2	18	179	94	22	281
Delaware.....	–	–	–	–	–	–	–	2	–	–	1
Maryland.....	–	–	–	–	–	–	–	4	19	–	29
Dist. of Columbia....	–	–	–	–	–	–	–	1	–	–	2
Virginia.....	–	–	–	2	1	–	–	58	9	1	25
West Virginia.*.....	–	–	–	1	–	–	–	4	6	–	3
North Carolina.....	1	–	–	–	–	–	4	19	12	13	118
South Carolina.....	–	–	–	–	–	–	–	7	5	1	26
Georgia.....	–	1	–	–	–	–	–	16	16	–	49
Florida.....	19	1	–	4	1	2	14	68	27	7	28
EAST SOUTH CENTRAL.....	3	–	–	3	–	1	2	76	71	11	128
Kentucky.....	–	–	–	–	–	–	–	29	37	11	110
Tennessee.....	2	–	–	3	–	1	1	24	21	–	–
Alabama.....	1	–	–	–	–	–	1	7	6	–	11
Mississippi.....	–	–	–	–	–	–	–	16	7	–	7
WEST SOUTH CENTRAL.....	12	–	–	3	–	1	6	76	74	1	288
Arkansas.....	–	–	–	–	–	–	–	5	–	–	5
Louisiana.....	1	–	–	3	–	1	5	11	14	–	21
Oklahoma.....	2	–	–	–	–	–	–	3	7	1	46
Texas.*.....	9	–	–	–	–	–	1	57	53	–	216
MOUNTAIN.....	–	–	–	–	–	1	1	50	42	1	111
Montana.....	–	–	–	–	–	1	–	1	1	–	4
Idaho.....	–	–	–	–	–	–	1	1	1	–	3
Wyoming.....	–	–	–	–	–	–	–	3	–	–	–
Colorado.....	–	–	–	–	–	–	–	15	18	–	94
New Mexico.....	–	–	–	–	–	–	–	11	4	–	3
Arizona.....	–	–	–	–	–	–	–	8	9	1	5
Utah.....	–	–	–	–	–	–	–	6	9	–	2
Nevada.....	–	–	–	–	–	–	–	5	–	–	–
PACIFIC.....	14	–	–	5	2	–	44	227	246	7	315
Washington.....	1	–	–	–	1	–	–	18	26	1	18
Oregon.....	–	–	–	–	–	–	–	11	19	–	14
California.....	10	–	–	5	1	–	44	197	196	6	209
Alaska.....	---	---	---	---	–	---	---	---	2	---	–
Hawaii.....	3	–	–	–	–	–	–	1	3	–	74
Puerto Rico.*.....	–	–	–	–	–	–	6	17	16	–	1
Virgin Islands.....	---	---	---	---	–	---	---	---	–	---	–

*Delayed Reports: Diphtheria: Texas Delete 2
Hepatitis, Infectious: W. Va. 2, P.R. 6
Malaria: Iowa 1

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

FOR WEEKS ENDED

JUNE 20, 1970 AND JUNE 14, 1969 (24th WEEK) - CONTINUED

AREA	MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS, TOTAL			MUMPS		POLIOMYELITIS		
		Cumulative			Cumulative			Cum.	Total	Paralytic	
	1970	1970	1969	1970	1970	1969	1970	1970	1970	1970	Cum. 1970
UNITED STATES	1,237	34,234	16,635	41	1,468	1,920	2,155	64,853	–	–	5
NEW ENGLAND	63	734	823	3	68	63	320	7,869	–	–	–
Maine*	21	140	5	–	3	6	2	612	–	–	–
New Hampshire	5	47	226	–	5	2	72	306	–	–	–
Vermont	1	4	2	–	6	–	2	561	–	–	–
Massachusetts*	16	392	143	2	29	27	59	2,480	–	–	–
Rhode Island	17	80	18	–	5	5	97	1,178	–	–	–
Connecticut	3	71	429	1	20	23	88	2,732	–	–	–
MIDDLE ATLANTIC	127	4,101	6,142	9	256	307	233	6,502	–	–	–
New York City	18	726	4,187	4	62	56	101	2,126	–	–	–
New York, Up-State	21	194	507	2	51	48	NN	NN	–	–	–
New Jersey	26	1,566	711	1	97	134	66	1,875	–	–	–
Pennsylvania	62	1,615	737	2	46	69	66	2,501	–	–	–
EAST NORTH CENTRAL	397	8,317	1,691	4	170	254	632	17,045	–	–	–
Ohio	231	3,419	284	1	72	89	131	2,911	–	–	–
Indiana	3	238	449	–	17	31	41	1,564	–	–	–
Illinois	62	2,792	337	–	36	39	32	1,548	–	–	–
Michigan	70	1,153	161	2	38	78	240	4,307	–	–	–
Wisconsin	31	715	460	1	7	17	188	6,715	–	–	–
WEST NORTH CENTRAL	68	3,314	471	3	75	101	134	3,538	–	–	1
Minnesota	–	36	3	1	11	21	–	311	–	–	–
Iowa*	–	753	315	1	11	12	10	2,236	–	–	–
Missouri	64	1,140	16	–	45	44	122	228	–	–	1
North Dakota	4	309	7	–	3	–	–	248	–	–	–
South Dakota	–	83	1	–	–	1	–	22	–	–	–
Nebraska	–	921	125	–	3	9	2	357	–	–	–
Kansas	–	72	4	1	2	14	–	136	–	–	–
SOUTH ATLANTIC	204	6,412	2,158	8	314	334	261	6,947	–	–	–
Delaware	2	251	325	–	3	4	24	225	–	–	–
Maryland	14	1,271	33	–	32	32	71	676	–	–	–
Dist. of Columbia	5	338	–	–	1	8	5	162	–	–	–
Virginia	56	1,773	824	–	30	37	54	1,600	–	–	–
West Virginia	10	258	159	–	6	14	36	1,747	–	–	–
North Carolina	34	712	237	–	64	59	NN	NN	–	–	–
South Carolina	24	482	102	2	39	47	30	680	–	–	–
Georgia	–	11	1	1	29	59	–	–	–	–	–
Florida	59	1,316	477	5	110	74	41	1,857	–	–	–
EAST SOUTH CENTRAL	63	927	87	2	113	119	97	3,661	–	–	–
Kentucky	31	455	50	1	40	41	63	1,348	–	–	–
Tennessee	16	322	15	–	48	44	26	2,083	–	–	–
Alabama	5	70	1	–	20	19	2	192	–	–	–
Mississippi	11	80	21	1	5	15	6	38	–	–	–
WEST SOUTH CENTRAL	96	7,022	3,803	2	199	267	145	6,401	–	–	4
Arkansas	–	29	16	–	16	27	14	101	–	–	–
Louisiana	–	82	118	1	52	70	2	21	–	–	–
Oklahoma	4	397	125	–	12	26	20	2,372	–	–	–
Texas	92	6,514	3,544	1	119	144	109	3,907	–	–	4
MOUNTAIN	39	1,314	585	1	27	36	73	2,833	–	–	–
Montana	2	22	10	–	1	5	16	567	–	–	–
Idaho	–	30	54	1	5	6	1	82	–	–	–
Wyoming	–	10	–	–	1	–	–	30	–	–	–
Colorado	–	126	112	–	7	6	20	884	–	–	–
New Mexico	7	154	185	–	–	6	10	570	–	–	–
Arizona	26	919	220	–	11	9	26	586	–	–	–
Utah	4	32	3	–	2	2	–	114	–	–	–
Nevada	–	21	1	–	–	2	–	–	–	–	–
PACIFIC	180	2,093	875	9	246	439	260	10,057	–	–	–
Washington	65	416	54	–	34	50	45	4,020	–	–	–
Oregon	2	182	178	1	18	10	48	850	–	–	–
California	82	1,271	615	8	193	359	141	4,033	–	–	–
Alaska	---	100	8	---	–	11	---	352	---	---	–
Hawaii	31	124	20	–	1	9	26	802	–	–	–
Puerto Rico	11	814	862	–	3	14	17	605	–	–	–
Virgin Islands	---	6	19	---	1	–	---	1	---	---	–

*Delayed Reports: Measles: Mass. Delete 24, Iowa 640
Mumps: Maine Delete 3

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

FOR WEEKS ENDED

JUNE 20, 1970 AND JUNE 14, 1969 (24th WEEK) - CONTINUED

AREA	RUBELLA		TETANUS		TULAREMIA		TYPHOID FEVER		TYPHUS FEVER TICK-BORNE (Rky. Mt. Spotted)		RABIES IN ANIMALS	
	1970	Cum. 1970	1970	Cum. 1970	1970	Cum. 1970	1970	Cum. 1970	1970	Cum. 1970	1970	Cum. 1970
UNITED STATES	1,134	44,927	3	49	1	44	7	108	14	92	48	1,467
NEW ENGLAND	62	2,078	–	3	–	–	–	5	–	–	–	55
Maine	11	344	–	–	–	–	–	–	–	–	–	16
New Hampshire	4	150	–	–	–	–	–	–	–	–	–	–
Vermont	–	45	–	–	–	–	–	–	–	–	–	37
Massachusetts	24	988	–	2	–	–	–	3	–	–	–	–
Rhode Island	8	69	–	–	–	–	–	–	–	–	–	1
Connecticut	15	482	–	1	–	–	–	2	–	–	–	1
MIDDLE ATLANTIC	85	3,653	–	5	–	1	3	27	1	3	5	139
New York City	15	485	–	2	–	–	2	9	–	–	–	–
New York, Up-State	23	353	–	–	–	1	–	8	1	1	5	132
New Jersey	18	805	–	2	–	–	1	4	–	1	–	–
Pennsylvania	29	2,010	–	1	–	–	–	6	–	1	–	7
EAST NORTH CENTRAL	275	9,221	–	8	–	17	1	15	–	–	5	108
Ohio	100	1,893	–	–	–	2	–	5	–	–	1	35
Indiana	16	1,658	–	1	–	13	–	1	–	–	1	4
Illinois	45	1,508	–	3	–	2	–	3	–	–	2	33
Michigan	72	2,317	–	4	–	–	1	6	–	–	–	10
Wisconsin	42	1,845	–	–	–	–	–	–	–	–	1	26
WEST NORTH CENTRAL	34	3,143	–	1	–	5	1	4	–	–	10	221
Minnesota	–	94	–	–	–	–	–	1	–	–	3	47
Iowa	24	1,970	–	–	–	–	–	1	–	–	–	38
Missouri	9	365	–	–	–	4	1	1	–	–	4	50
North Dakota	1	119	–	–	–	1	–	–	–	–	–	20
South Dakota	–	1	–	1	–	–	–	–	–	–	–	17
Nebraska*	–	540	–	–	–	–	–	1	–	–	–	4
Kansas	–	54	–	–	–	–	–	–	–	–	3	45
SOUTH ATLANTIC	71	5,737	1	11	–	7	–	16	11	64	9	327
Delaware	1	40	–	–	–	–	–	–	–	3	–	–
Maryland	7	291	–	–	–	–	–	6	4	8	–	1
Dist. of Columbia	–	17	–	1	–	–	–	–	–	–	–	–
Virginia	5	631	–	–	–	–	–	2	5	21	2	155
West Virginia	19	1,142	–	–	–	–	–	–	–	2	3	77
North Carolina	–	32	–	–	–	4	–	1	2	16	–	1
South Carolina	10	586	1	1	–	–	–	–	–	12	–	–
Georgia	–	–	–	1	–	2	–	5	–	2	1	49
Florida	29	2,998	–	8	–	1	–	2	–	–	3	44
EAST SOUTH CENTRAL	123	2,252	–	4	–	2	–	5	1	10	1	124
Kentucky	92	845	–	–	–	1	–	1	–	–	–	72
Tennessee	23	1,093	–	1	–	1	–	1	1	6	1	36
Alabama	2	245	–	3	–	–	–	3	–	1	–	16
Mississippi	6	69	–	–	–	–	–	–	–	3	–	–
WEST SOUTH CENTRAL	152	8,050	1	9	–	9	–	8	–	11	7	267
Arkansas	–	32	1	3	–	2	–	3	–	2	–	33
Louisiana	–	135	–	2	–	2	–	1	–	–	1	44
Oklahoma	1	788	–	–	–	4	–	–	–	8	1	55
Texas	151	7,095	–	4	–	1	–	4	–	1	5	135
MOUNTAIN	58	1,747	–	–	–	2	2	7	–	3	1	52
Montana	3	283	–	–	–	–	–	1	–	–	1	1
Idaho	3	164	–	–	–	–	–	–	–	–	–	–
Wyoming	–	133	–	–	–	–	–	–	–	1	–	–
Colorado	27	343	–	–	–	–	–	1	–	2	–	30
New Mexico	4	165	–	–	–	–	2	5	–	–	–	9
Arizona	20	509	–	–	–	–	–	–	–	–	–	11
Utah	1	150	–	–	–	2	–	–	–	–	–	–
Nevada	–	–	–	–	–	–	–	–	–	–	–	1
PACIFIC	274	9,046	1	8	1	1	–	21	1	1	10	174
Washington	75	4,492	–	1	–	–	–	2	–	–	–	1
Oregon	52	643	–	3	–	–	–	–	–	–	–	1
California	139	3,640	1	4	1	1	–	17	1	1	10	172
Alaska	---	89	---	–	---	–	---	1	---	–	---	–
Hawaii	8	182	–	–	–	–	–	1	–	–	–	–
Puerto Rico	2	25	–	4	–	–	–	2	–	–	3	24
Virgin Islands	---	–	---	–	---	–	---	–	---	–	----	–

*Delayed Reports: Typhoid Fever: Nebr. 1

Week No. 24

TABLE IV. DEATHS IN 122 UNITED STATES CITIES FOR WEEK ENDED JUNE 20, 1970

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

Area	All Causes: All Ages	All Causes: 65 years and over	Pneumonia and Influenza All Ages	Under 1 year All Causes
NEW ENGLAND:	700	430	42	30
Boston, Mass.	210	111	10	14
Bridgeport, Conn.	54	36	6	3
Cambridge, Mass.	22	17	8	–
Fall River, Mass.	24	16	–	–
Hartford, Conn.	60	35	–	4
Lowell, Mass.	21	13	–	–
Lynn, Mass.	14	14	–	–
New Bedford, Mass.	26	17	2	1
New Haven, Conn.	39	27	1	1
Providence, R. I.	63	35	4	1
Somerville, Mass.	13	9	2	–
Springfield, Mass.	53	39	4	1
Waterbury, Conn.	36	22	–	2
Worcester, Mass.	65	39	5	3
MIDDLE ATLANTIC:	3,202	1,850	119	133
Albany, N. Y.	47	34	–	2
Allentown, Pa.	32	24	3	1
Buffalo, N. Y.	157	89	4	4
Camden, N. J.	36	22	2	4
Elizabeth, N. J.	21	9	–	1
Erie, Pa.	38	23	6	1
Jersey City, N. J.	68	41	3	4
Newark, N. J.	98	44	6	5
New York City, N. Y.	1,644†	960	60	69
Paterson, N. J.	38	23	2	2
Philadelphia, Pa.	400	215	4	17
Pittsburgh, Pa.	188	108	10	5
Reading, Pa.	51	31	2	2
Rochester, N. Y.	111	71	7	5
Schenectady, N. Y.	32	24	1	–
Scranton, Pa.	31	19	2	1
Syracuse, N. Y.	104	53	2	7
Trenton, N. J.	39	17	2	–
Utica, N. Y.	28	18	2	–
Yonkers, N. Y.	39	25	1	3
EAST NORTH CENTRAL:	2,672	1,538	88	141
Akron, Ohio	73	48	1	5
Canton, Ohio	28	13	1	1
Chicago, Ill.	731	388	27	47
Cincinnati, Ohio	177	104	5	6
Cleveland, Ohio	218	137	5	7
Columbus, Ohio	131	73	–	7
Dayton, Ohio	86	52	2	2
Detroit, Mich.	373	206	8	22
Evansville, Ind.	27	18	1	–
Flint, Mich.	46	27	–	1
Fort Wayne, Ind.	47	29	2	1
Gary, Ind.	34	17	4	3
Grand Rapids, Mich.	57	40	5	4
Indianapolis, Ind.	168	98	4	11
Madison, Wis.	43	21	7	4
Milwaukee, Wis.	118	77	–	1
Peoria, Ill.	42	22	–	4
Rockford, Ill.	40	25	5	1
South Bend, Ind.	52	30	4	3
Toledo, Ohio	115	70	6	8
Youngstown, Ohio	66	43	1	3
WEST NORTH CENTRAL:	821	511	20	47
Des Moines, Iowa	69	45	2	4
Duluth, Minn.	28	17	–	2
Kansas City, Kans.	40	27	1	6
Kansas City, Mo.	103	62	2	4
Lincoln, Nebr.	35	23	–	4
Minneapolis, Minn.	112	80	5	3
Omaha, Nebr.	80	48	–	8
St. Louis, Mo.	230	127	6	13
St. Paul, Minn.	78	54	–	1
Wichita, Kans.	46	28	4	2
Las Vegas, Nev.*	19	8	1	4

Area	All Causes: All Ages	All Causes: 65 years and over	Pneumonia and Influenza All Ages	Under 1 year All Causes
SOUTH ATLANTIC:	1,134	582	37	89
Atlanta, Ga.	112	49	7	11
Baltimore, Md.	243	125	3	6
Charlotte, N. C.	43	17	–	1
Jacksonville, Fla.	81	41	–	2
Miami, Fla.	116	56	1	7
Norfolk, Va.	53	16	4	5
Richmond, Va.	92	49	7	2
Savannah, Ga.	32	19	1	3
St. Petersburg, Fla.	107	94	6	–
Tampa, Fla.	71	40	1	5
Washington, D. C.	141	53	6	42
Wilmington, Del.	43	23	1	5
EAST SOUTH CENTRAL:	672	371	25	39
Birmingham, Ala.	82	46	–	8
Chattanooga, Tenn.	43	24	1	4
Knoxville, Tenn.	36	19	1	–
Louisville, Ky.	165	97	12	6
Memphis, Tenn.	152	91	4	11
Mobile, Ala.	52	22	1	5
Montgomery, Ala.	29	17	1	–
Nashville, Tenn.	113	55	5	5
WEST SOUTH CENTRAL:	1,223	651	48	103
Austin, Tex.	38	22	4	5
Baton Rouge, La.	44	17	2	5
Corpus Christi, Tex.	25	13	–	–
Dallas, Tex.	176	95	3	12
El Paso, Tex.	41	19	3	10
Fort Worth, Tex.	92	51	6	5
Houston, Tex.	229	100	3	35
Little Rock, Ark.	52	31	5	3
New Orleans, La.	189	100	2	15
Oklahoma City, Okla.	84	45	2	3
San Antonio, Tex.	127	73	4	7
Shreveport, La.	58	37	5	2
Tulsa, Okla.	68	48	9	1
MOUNTAIN:	456	262	14	29
Albuquerque, N. Mex.	42	18	4	1
Colorado Springs, Colo.	26	10	1	4
Denver, Colo.	119	74	4	6
Ogden, Utah	22	12	1	–
Phoenix, Ariz.	104	50	2	7
Pueblo, Colo.	24	17	–	3
Salt Lake City, Utah	61	39	2	5
Tucson, Ariz.	58	42	–	3
PACIFIC:	1,522	887	27	63
Berkeley, Calif.	14	12	–	–
Fresno, Calif.	51	31	–	4
Glendale, Calif.	20	17	–	–
Honolulu, Hawaii	53	28	1	6
Long Beach, Calif.	94	52	4	3
Los Angeles, Calif.	418	237	9	19
Oakland, Calif.	79	39	–	1
Pasadena, Calif.	42	30	1	3
Portland, Oreg.	139	85	3	2
Sacramento, Calif.	52	28	–	–
San Diego, Calif.	108	67	1	4
San Francisco, Calif.	182	107	3	8
San Jose, Calif.	54	31	1	2
Seattle, Wash.	142	80	2	10
Spokane, Wash.	42	26	–	–
Tacoma, Wash.	32	17	2	1
Total	12,402	7,082	420	674
Expected Number	12,303	7,075	360	494
Cumulative Total (includes reported corrections for previous weeks)	320,771	184,294	13,714	14,701

*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.

†Delayed report for week ended June 13, 1970.

SMALLPOX – *(Continued from page 235)*

cloud of smoke to the first and second levels where it drifted into the corridors and adjacent rooms.

The smoke from the index patient's room also passed out of the partially opened window in a thin layer and proceeded directly up the exterior surface of the building. Upon opening windows in the rooms above, smoke readily entered these rooms. This pattern of smoke flow appeared to be caused by convection currents generated by the radiators located below the windows. Smoke did not reach the elevator in the main building. It is interesting to note that the pattern of air flow coincided closely with the distribution of cases within the hospital.

Extensive studies both in endemic and nonendemic countries show that virtually all smallpox cases are infected as a result of "face-to-face" contact with patients some time after they have developed a rash. Rarely does a single infected individual come into close contact with a large number of susceptible persons after developing a rash. A single patient rarely infects more than a few persons. This outbreak was thus unusual in regard to both the large number of second generation cases which occurred and the fact that none had had face-to-face contact with the patient.

The possibility that airborne transmission over long distance might occur has been suggested in a number of outbreaks to explain occasional isolated cases without known face-to-face contact with a patient. As such episodes involved only an occasional case, the possibility was always present that the patient might not have accurately recalled his previous movements. No episode involving a large number of cases such as in Meschede has been described.

The Meschede outbreak very likely resulted from an unusual combination of factors. It is noted that the patient had a densely confluent rash with severe bronchitis and cough. As described by Rao and others *(1)*, patients with more serious disease are much more effective transmitters of infection than those with a modified illness. This is attributed to the fact that such patients have a greater number of lesions on the mucous membranes and thus shed larger quantities of virus into the saliva and subsequently into the air. Dissemination in this instance was undoubtedly accentuated by coughing, as it is well recognized that coughing markedly increased the volume of virus expelled. The virus particles undoubtedly survived in the air for unusually long periods of time as the relative humidity at the hospital was very low. Experimental studies *(2)* have shown that vaccinia virus will survive for long periods when the relative humidity is low but will be inactivated more rapidly when the relative humidity is high. Presumably, variola virus will behave similarly. Lastly, the hospital itself was of a design which inadvertently favored dissemination of the virus particles. Although from field studies, it would appear that smallpox is rarely transmitted over more than very short distances, thus requiring face-to-face contact, it is apparent that under certain circumstances wider dissemination may occur.

(Compiled from the World Health Organization Weekly Epidemiological Record 45(23): 249-256, June 1970.)

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(1) Rao AR, et al: Epidemiological studies in smallpox. Ind J Med Res 56:1826-1854, 1968.

(2) Harper GJ: Airborne micro-organisms; survival tests with four viruses. J Hyg 59:479-486, 1961.

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