CENTER FOR DISEASE CONTROL

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

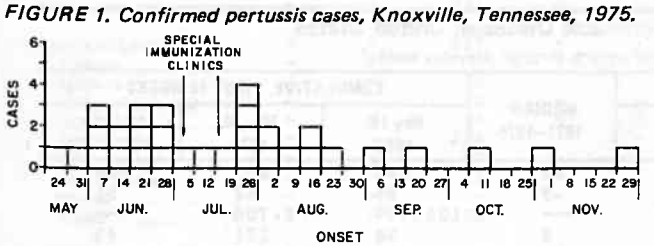
May 21, 1976 / Vol. 25 / No. 19

Epidemiologic Notes and Reports

Pertussis Outbreak — Tennessee

Thirty-one cases of pertussis confirmed by culture (29) or fluorescent antibody (15) were reported in Knoxville, Tennessee, in the period May 27-November 24, 1975 (Figure 1). An additional 20 unconfirmed cases were reported during the same period. There had been only 17 confirmed cases in the preceding 5½ years even though culturing and fluorescent antibody staining of nasopharyngeal smears has been available through the Knox County Health Department and Knoxville Branch of the State Laboratory since 1969.

FIGURE 1. Confirmed pertussis cases, Knoxville, Tennessee, 1975.



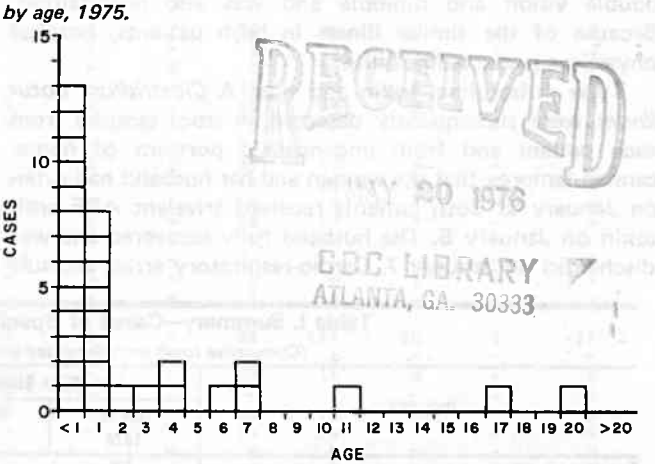
Ages of confirmed cases were between 1 month and 20 years (Figure 2). There were no deaths. Three (10%) of the confirmed cases were fully immunized for their age, 15 (48%) were partially immunized for their age, and 13 (42%) had no history of pertussis immunization.

Twenty-five confirmed cases were from Knox County. The other 6 were from parts of the Knoxville metropolitan area in adjacent counties. Immunization surveys conducted in Knox County found that in 1973 and 1975 90% of 2-year-old children had received at least 4 doses of Diphtheria-Tetanus-Pertussis vaccine (DTP) and that from 1973-1975, 98% of new school entrants were fully immunized.

Most reported cases in the 1975 outbreak came from low income neighborhoods and housing projects. One housing project was chosen for an immunization survey. While most children in the project had received at least 1 injection of DTP, only 184 (41%) of 453 pre-school children had received the appropriate number of injections.

The Knox County Health Department sponsored 13 immunization clinics in the 13 identified high risk neighborhoods and administered approximately 600 DTP injections between July 3-11. One hundred thirty of the 184 susceptibles identified in the special survey received injections at these clinics. Children were referred to their usual sources of medical care for additional injections when indicated.

FIGURE 2. Confirmed pertussis cases, Knoxville, Tennessee, by age, 1975.



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In addition to the special clinics, the Knox County Health Department sponsored a mass media campaign to encourage parents to utilize routine health department immunization clinics. During July 1975, 1,750 DTP injections were given by these clinics, compared with 1,263 given during July 1974. A second cluster of cases occurred shortly after the special clinics were held (Figure 1), but thereafter only a few sporadic cases were reported. Age distribution and residences of patients in the second cluster were similar to those of patients in the first.

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Editorial Note: Despite high overall immunization levels in Knoxville children, an epidemic of pertussis occurred in a subset of the population with much lower immunization levels. Similar outbreaks associated with low socioeconomic groups have occurred in the past with pertussis and other vaccine preventable diseases. In the 1974 immunization survey, 80.2% of the U.S. population between 0-13 years were estimated to have received 3 or more doses of DTP vaccine. However, this figure was 74.2% in areas where 20% or more of the population fell below the poverty level as defined by the Bureau of Census in 1970 (*1*).

Pertussis — Continued

Active surveillance by the Knox County Health Department identified the problem early and facilitated a focused attack on the population at risk. Surveillance was facilitated by the availability of FA staining as an aid in the diagnosis of whooping cough syndrome. Slides made from nasopharyngeal swabs can be heat-fixed and mailed to a central laboratory for this test which is quick, reliable, and inexpensive (*2*).

References

1. Center for Disease Control: United States Immunization Survey: 1974. Issued April 1975
2. Kendrick PL, Eldering G, and Eveland WC: Fluorescent antibody techniques, methods for identification of *Bordetella pertussis*. Am J Dis Child 101:149-154, 1961

Botulism — Washington

A married couple from Seattle, Washington, contracted botulism after eating home-canned lamprey in early January 1976. The wife, a 55-year-old woman, died.

The woman was hospitalized on January 3, 1976, in Seattle, with sudden onset of vomiting, blurred vision, and diplopia. By the next day facial paralysis, dysphonia, upper extremity weakness, and respiratory insufficiency were observed. On January 5, the patient's husband noted double vision and diplopia and was also hospitalized. Because of the similar illness in both patients, hospital physicians suspected botulism.

Type A botulinal toxin and type A *Clostridium botulinum* were subsequently detected in stool samples from each patient and from unconsumed portions of home-canned lamprey that the woman and her husband had eaten on January 2. Both patients received trivalent ABE antitoxin on January 5. The husband fully recovered and was discharged on January 7. Cardio-respiratory arrest and subsequent coma complicated the woman's hospital course, and she died April 9.

The lamprey had been caught in the Columbia River in May 1975 and promptly cleaned, barbecued, and baked at 375-400°F for 30 minutes. The lamprey was then packed in jars and boiled in an open kettle for an additional 40 minutes. Only 1 of the 36 jars which had been prepared in May had been consumed, and then without incident. All other bottles were recovered; 5 were tested and found to be negative for botulinal toxin by the Washington State Department of Social and Health Services.

Reported by JJ Cotesworth, MD, Virginia Mason Hospital, Seattle; AHB Pedersen, MD, HW Anderson, BS, PA Bonin, MA, E Tronca, MS, Seattle-King County Health Dept; TL Nghiem, MD, DrPH, State Epidemiologist, Washington State Dept of Social and Health Services; Enterobacteriology Br, Bacteriology Div, Bur of Laboratories, and Enteric Diseases Br, Bacterial Diseases Div, Bur of Epidemiology, CDC.

Table I. Summary—Cases of Specified Notifiable Diseases: United States

[Cumulative totals include revised and delayed reports through previous weeks]

DISEASE	19th WEEK ENDING		MEDIAN 1971–1975	CUMULATIVE, FIRST 19 WEEKS		
	May 15, 1976	May 10, 1975		May 15, 1976	May 10, 1975	MEDIAN 1971–1975
Aseptic meningitis	29	47	33	644	683	684
Brucellosis	12	6	3	85	62	51
Chickenpox	5,936	5,923	---	108,999	82,700	---
Diphtheria	2	8	8	98	171	83
Encephalitis, Primary	13	14	14	275	233	318
Encephalitis, Post-Infectious	4	14	11	102	112	101
Hepatitis, Viral, Type B	279	250	174	5,187	4,054	3,292
Hepatitis, Viral, Type A	619	807	1,153	13,028	13,315	18,910
Hepatitis, Viral, Type unspecified	174	197		3,212	2,926	
Malaria	6	5	7	126	95	95
Measles (rubeola)	2,590	1,250	1,303	21,899	12,509	16,879
Meningococcal infections, total	34	43	43	754	648	657
Civilian	34	43	42	749	632	632
Military	-	-	1	5	16	19
Mumps	1,142	2,003	2,191	24,015	31,197	38,877
Pertussis	10	24	---	344	449	---
Rubella (German measles)	578	1,717	1,291	7,098	10,060	14,573
Tetanus	-	-	3	13	22	24
Tuberculosis	660	714	---	11,992	11,409	---
Tularemia	3	1	1	37	25	31
Typhoid fever	3	5	6	111	89	95
Typhus, tick-borne (Rky. Mt. spotted fever)	21	22	11	62	58	35
Venereal Diseases:						
Gonorrhea, Civilian	18,285	18,891	---	350,998	339,811	---
Gonorrhea, Military	977	577	---	11,261	10,694	---
Syphilis, primary and secondary, Civilian	454	418	---	9,247	9,438	---
Syphilis, primary and secondary, Military	4	9	---	131	132	---
Rabies in animals	71	54	87	913	841	1,359

Table II. Notifiable Diseases of Low Frequency: United States

	CUM.		CUM.
Anthrax:	2	Poliomyelitis, total:	4
Botulism:	6	Paralytic:	4
Congenital rubella syndrome: Mo. 1, Tex. 1	10	Psittacosis:	21
Leprosy: Tex. 1	51	Rabies in man:	-
Leptospirosis:	14	Trichinosis: Mass. 1	48
Plague:	1	Typhus, murine: Tex. 1	7

Table III

Cases of Specified Notifiable Diseases: United States

Weeks Ending May 15, 1976 and May 10, 1975 — 19th Week

AREA REPORTING	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKENPOX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS, VIRAL			MALARIA	
						Primary: Arthropod-borne and Unspecified		Post Infectious	Type B	Type A	Type Unspecified		
	1976	1976	1976	1976	CUM. 1976	1976	1975	1976	1976	1976	1976	1976	CUM. 1976
UNITED STATES	29	12	5,936	2	98	13	14	4	279	619	174	6	126
NEW ENGLAND	–	–	697	–	–	2	1	–	5	25	14	1	8
Maine	–	–	65	–	–	–	–	–	–	10	–	–	–
New Hampshire*	–	–	13	–	–	–	–	–	–	–	–	–	–
Vermont	–	–	–	–	–	–	–	–	–	1	–	–	–
Massachusetts	–	–	279	–	–	2	–	–	2	2	13	–	4
Rhode Island	–	–	100	–	–	–	–	–	1	2	–	–	1
Connecticut	–	–	240	–	–	–	1	–	2	10	1	1	3
MIDDLE ATLANTIC	7	–	275	–	–	4	2	–	56	60	28	1	24
Upstate New York	4	–	91	–	–	2	1	–	18	17	4	–	5
New York City	–	–	130	–	–	1	1	–	17	18	–	1	13
New Jersey	2	–	NN	–	–	–	–	–	21	25	24	–	–
Pennsylvania	1	–	54	–	–	1	–	–	NA	NA	NA	–	6
EAST NORTH CENTRAL	3	2	3,120	–	–	1	1	2	30	86	15	2	7
Ohio	–	–	314	–	–	–	1	–	1	13	–	–	3
Indiana	–	–	132	–	–	–	–	2	1	10	9	–	–
Illinois	–	–	779	–	–	–	–	–	11	11	3	1	1
Michigan	3	–	1,211	–	–	1	–	–	15	45	3	1	3
Wisconsin	–	2	684	–	–	–	–	–	2	7	–	–	–
WEST NORTH CENTRAL	1	3	640	–	4	1	2	2	31	42	8	–	4
Minnesota	–	–	19	–	–	–	–	–	5	10	1	–	3
Iowa	–	–	259	–	–	–	–	2	5	3	1	–	–
Missouri *	1	3	39	–	1	1	1	–	18	17	5	–	–
North Dakota*	–	–	18	–	–	–	1	–	–	–	–	–	–
South Dakota	–	–	–	–	3	–	–	–	–	4	–	–	1
Nebraska	–	–	51	–	–	–	–	–	1	–	1	–	–
Kansas	–	–	254	–	–	–	–	–	2	8	–	–	–
SOUTH ATLANTIC	3	–	337	–	–	1	2	–	33	111	20	1	16
Delaware	–	–	7	–	–	–	–	–	2	1	–	–	–
Maryland	2	–	26	–	–	1	–	–	10	14	4	–	2
District of Columbia	–	–	10	–	–	–	–	–	–	2	–	–	2
Virginia*	–	–	16	–	–	–	1	–	10	13	6	–	5
West Virginia	–	–	226	–	–	–	–	–	–	4	–	–	–
North Carolina	–	–	NN	–	–	–	–	–	5	9	5	–	2
South Carolina	–	–	12	–	–	–	–	–	2	5	2	1	1
Georgia	–	–	–	–	–	–	–	–	–	51	–	–	1
Florida	1	–	40	–	–	–	1	–	4	12	3	–	5
EAST SOUTH CENTRAL	1	–	43	–	–	1	1	–	5	19	5	–	1
Kentucky	–	–	34	–	–	–	–	–	1	4	–	–	–
Tennessee	–	–	NN	–	–	–	–	–	2	5	3	–	–
Alabama	1	–	4	–	–	–	–	–	1	2	2	–	–
Mississippi	–	–	5	–	–	1	1	–	1	8	–	–	1
WEST SOUTH CENTRAL	7	5	423	–	1	–	2	–	19	89	27	–	5
Arkansas	–	2	21	–	–	–	–	–	–	9	2	–	–
Louisiana	–	–	NN	–	–	–	1	–	2	1	2	–	–
Oklahoma	–	–	59	–	–	–	1	–	9	18	7	–	–
Texas	7	3	343	–	1	–	–	–	8	61	16	–	5
MOUNTAIN	2	–	156	–	3	1	–	–	15	27	8	1	7
Montana	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–
Idaho	–	–	31	–	–	–	–	–	–	1	–	–	–
Wyoming	–	–	–	–	–	–	–	–	–	1	–	–	–
Colorado	2	–	74	–	3	1	–	–	7	8	2	1	4
New Mexico	–	–	–	–	–	–	–	–	5	9	1	–	1
Arizona	–	–	–	–	–	–	–	–	2	5	2	–	1
Utah	–	–	45	–	–	–	–	–	–	–	3	–	–
Nevada	–	–	6	–	–	–	–	–	1	3	–	–	1
PACIFIC	5	2	245	2	90	2	3	–	85	160	49	–	52
Washington	–	–	195	2	88	–	2	–	7	11	7	–	1
Oregon	–	–	–	–	–	–	–	–	6	13	8	–	5
California*	5	1	–	–	1	1	1	–	70	129	33	–	45
Alaska	–	1	17	–	1	1	–	–	–	–	–	–	–
Hawaii	–	–	33	–	–	–	–	–	2	7	1	–	1
Guam*	–	–	–	–	–	–	–	–	–	–	–	–	–
Puerto Rico	–	–	19	–	–	–	–	–	2	13	–	–	1
Virgin Islands	–	–	–	–	–	–	–	–	–	–	–	–	–

NA: Not Available NN: Not Notifiable

*Delayed Reports: Chickenpox: N. Hamp. add 1, Calif. add 13, Guam add 9; Hep. B: Mo. delete 1, N. Dak. delete 1, Va. delete 1; Hep. Unsp.: Va. delete 4

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending May 15, 1976 and May 10, 1975 — 19th Week

REPORTING AREA	MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1976	CUMULATIVE		1976	CUMULATIVE		1976	CUM. 1976	1976	1976	CUM. 1976	CUM. 1976
		1976	1975		1976	1975						
UNITED STATES	2,590	21,899	12,509	34	754	648	1,142	24,015	10	578	7,098	13
NEW ENGLAND	15	182	118	-	33	37	56	919	-	7	186	-
Maine	-	3	7	-	-	5	8	78	-	-	2	-
New Hampshire	-	3	19	-	2	1	-	24	-	1	11	-
Vermont	-	-	31	-	3	-	-	5	-	-	1	-
Massachusetts	-	2	31	-	9	11	3	135	-	2	96	-
Rhode Island	-	15	1	-	4	3	11	336	-	-	4	-
Connecticut	15	159	29	-	15	17	34	341	-	4	72	-
MIDDLE ATLANTIC	335	4,464	747	10	97	64	147	1,876	2	153	1,476	-
Upstate New York	125	1,603	228	5	37	21	6	277	2	37	271	-
New York City	30	236	82	1	22	12	91	874	-	13	92	-
New Jersey *	51	497	243	3	16	10	41	358	-	91	989	-
Pennsylvania	129	2,128	194	1	22	21	9	367	-	12	124	-
EAST NORTH CENTRAL	1,434	9,198	3,647	5	123	94	504	10,120	6	285	2,530	-
Ohio*	41	315	68	4	71	17	66	1,446	1	5	169	-
Indiana*	202	1,774	299	-	4	5	61	903	-	29	327	-
Illinois	242	986	808	-	9	17	79	1,338	3	143	807	-
Michigan	828	3,705	1,882	-	32	44	129	3,935	2	94	940	-
Wisconsin	121	2,418	590	1	7	11	169	2,498	-	14	287	-
WEST NORTH CENTRAL	85	493	3,671	2	51	35	68	2,712	-	35	257	1
Minnesota	27	173	-	-	11	8	7	502	-	2	21	-
Iowa	-	9	327	-	8	5	35	993	-	12	23	-
Missouri	2	9	160	1	13	18	-	207	-	5	27	-
North Dakota	-	1	847	-	3	-	4	111	-	-	1	1
South Dakota	-	2	313	-	1	-	-	2	-	3	10	-
Nebraska	-	40	282	-	2	1	-	60	-	-	3	-
Kansas	56	259	1,742	1	13	3	22	837	-	13	172	-
SOUTH ATLANTIC	63	1,307	140	5	143	123	69	1,851	1	18	1,069	7
Delaware	1	114	7	-	2	4	6	23	-	-	6	-
Maryland	-	592	-	-	10	11	21	492	-	-	1	2
District of Columbia	-	3	-	-	2	4	4	88	-	-	45	-
Virginia	34	205	13	3	16	13	2	163	-	4	164	1
West Virginia	11	128	98	-	4	4	23	557	-	11	227	-
North Carolina	-	-	-	2	26	26	9	289	-	2	13	-
South Carolina	-	3	-	-	27	15	1	34	1	-	567	-
Georgia	-	-	2	-	13	8	-	-	-	-	-	-
Florida	17	262	20	-	43	38	3	205	-	1	46	4
EAST SOUTH CENTRAL	48	515	184	2	54	93	52	1,932	-	16	219	1
Kentucky	48	496	69	1	10	39	17	821	-	1	123	1
Tennessee	-	5	106	1	23	34	27	917	-	15	93	-
Alabama	-	-	3	-	15	12	4	170	-	-	-	-
Mississippi	-	14	6	-	6	8	4	24	-	-	3	-
WEST SOUTH CENTRAL	4	469	148	2	114	106	86	1,592	-	9	290	3
Arkansas *	-	-	-	-	3	6	3	59	-	-	42	-
Louisiana	-	114	-	-	15	21	-	12	-	-	72	1
Oklahoma	2	221	47	1	18	8	21	530	-	-	49	-
Texas	2	134	101	1	78	71	62	991	-	9	127	2
MOUNTAIN	476	3,957	843	-	25	24	58	887	1	11	387	-
Montana	NA	154	9	-	2	3	NA	17	NA	NA	192	-
Idaho	225	1,710	4	-	2	2	24	403	-	-	18	-
Wyoming	-	-	-	-	-	-	-	1	-	-	2	-
Colorado	103	241	793	-	10	8	8	150	-	-	12	-
New Mexico	4	12	3	-	1	3	-	124	1	-	30	-
Arizona*	124	210	15	-	6	1	-	-	-	-	-	-
Utah	12	1,603	4	-	4	6	1	122	-	9	122	-
Nevada*	8	27	15	-	-	1	25	70	-	2	11	-
PACIFIC	130	1,314	3,011	8	114	72	102	2,126	-	44	684	1
Washington	1	93	97	1	19	12	14	765	-	11	102	-
Oregon	12	85	100	-	9	2	10	266	-	10	92	1
California	117	1,134	2,768	7	80	57	77	1,067	-	23	479	-
Alaska	-	-	-	-	4	-	-	16	-	-	-	-
Hawaii	-	2	46	-	2	1	1	12	-	-	11	-
Guam*	-	6	8	-	1	1	-	5	-	-	1	-
Puerto Rico	6	92	337	-	2	1	21	413	1	-	5	13
Virgin Islands	-	4	6	-	-	-	-	20	-	1	3	1

NA: Not Available

*Delayed Reports: Measles: N. Jersey delete 1, Ind. delete 1, Ariz. add 113, Nev. add 29; Mening. Inf.: Ohio add 1; Mumps: Guam add 2; Rubella: N. Jersey delete 1, Ark. add 145, Nev. add 5, Guam add 2

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending May 15, 1976 and May 10, 1975 — 19th Week

REPORTING AREA	TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER TICK-BORNE (RMSF)		VENEREAL DISEASES (Civilian Cases Only)						RABIES IN ANIMALS
								GONORRHEA			SYPHILIS (Pri. & Sec.)			
	1976	CUM. 1976	CUM. 1976	1976	CUM. 1976	1976	CUM. 1976	1976	CUMULATIVE 1976	CUMULATIVE 1975	1976	CUMULATIVE 1976	CUMULATIVE 1975	CUM. 1976
UNITED STATES	660	11,992	37	3	111	21	62	18,285	350,998	339,811	454	9,247	9,438	913
NEW ENGLAND	28	451	-	-	16	-	-	500	9,603	9,355	13	271	344	16
Maine	3	29	-	-	-	-	-	44	814	605	-	8	8	12
New Hampshire*	1	21	-	-	2	-	-	15	255	259	1	4	10	-
Vermont	1	14	-	-	-	-	-	15	216	211	-	2	4	-
Massachusetts	19	269	-	-	12	-	-	220	4,547	4,467	10	198	225	3
Rhode Island	2	33	-	-	-	-	-	29	630	714	-	10	4	1
Connecticut	2	85	-	-	2	-	-	177	3,141	3,099	2	49	93	-
MIDDLE ATLANTIC	136	2,247	-	-	19	2	2	1,798	37,593	40,499	58	1,565	1,710	8
Upstate New York	10	338	-	-	4	-	-	117	5,834	7,132	3	98	169	2
New York City	80	918	-	-	10	-	-	1,026	16,488	17,802	34	1,007	1,010	-
New Jersey	26	417	-	-	3	2	2	121	6,006	5,378	11	210	279	3
Pennsylvania	20	574	-	-	2	-	-	534	9,265	10,187	10	250	252	3
EAST NORTH CENTRAL	69	1,535	-	1	8	-	1	3,840	57,835	55,835	32	834	775	46
Ohio	10	260	-	-	3	-	1	925	14,287	14,755	5	196	166	-
Indiana	6	217	-	-	-	-	-	126	5,287	5,036	1	44	54	13
Illinois	20	477	-	1	3	-	-	1,838	21,475	19,424	23	445	382	9
Michigan*	33	495	-	-	1	-	-	583	11,473	11,096	2	101	134	1
Wisconsin	-	86	-	-	1	-	-	368	5,313	5,524	1	48	39	23
WEST NORTH CENTRAL	39	444	10	1	5	-	-	862	17,753	16,702	6	234	211	209
Minnesota	7	86	3	-	2	-	-	126	3,323	3,472	1	38	38	54
Iowa	2	41	-	-	-	-	-	99	2,242	2,253	1	83	9	43
Missouri*	24	213	6	1	3	-	-	404	7,022	6,081	3	69	119	26
North Dakota	2	13	-	-	-	-	-	9	256	258	-	-	3	45
South Dakota	1	22	-	-	-	-	-	28	514	676	-	2	3	14
Nebraska	1	21	-	-	-	-	-	31	1,456	1,448	-	13	4	4
Kansas	2	48	1	-	-	-	-	165	2,940	2,514	1	29	35	23
SOUTH ATLANTIC	154	2,613	3	-	13	15	31	4,272	84,020	83,888	167	2,733	2,907	131
Delaware*	3	35	-	-	-	-	-	47	1,156	1,165	7	32	35	-
Maryland	20	371	1	-	-	1	3	704	11,858	9,387	8	234	221	-
District of Columbia	6	115	-	-	-	-	-	227	5,056	5,184	17	258	231	-
Virginia	34	438	-	-	3	4	9	582	8,968	8,590	20	255	233	24
West Virginia	5	116	-	-	-	-	-	80	1,117	1,042	1	15	10	8
North Carolina	27	445	2	-	1	4	10	539	12,445	12,014	41	544	347	1
South Carolina	15	180	-	-	1	6	8	282	7,998	7,899	7	142	208	2
Georgia	14	340	-	-	2	-	1	726	15,560	15,444	10	288	392	77
Florida	30	573	-	-	6	-	-	1,085	19,862	23,163	56	965	1,230	19
EAST SOUTH CENTRAL	39	1,033	9	-	5	1	11	1,631	31,561	27,788	16	384	422	59
Kentucky	8	241	1	-	3	-	2	189	4,052	3,524	5	62	65	38
Tennessee	8	306	8	-	2	1	7	691	12,374	11,191	4	156	154	14
Alabama	18	297	-	-	-	-	1	404	8,785	7,365	5	75	108	7
Mississippi	5	189	-	-	-	-	1	347	6,350	5,708	2	91	95	-
WEST SOUTH CENTRAL	73	1,380	8	-	3	3	17	2,079	47,277	42,734	38	1,014	827	228
Arkansas*	8	190	2	-	-	1	4	192	4,356	4,300	1	31	23	66
Louisiana*	5	201	1	-	-	-	-	267	6,819	8,088	10	217	189	-
Oklahoma	8	137	2	-	-	1	11	242	4,403	3,981	-	40	38	55
Texas	52	852	3	-	3	1	2	1,378	31,699	26,365	27	726	577	107
MOUNTAIN	24	317	1	-	7	-	-	631	13,425	13,266	19	252	243	55
Montana	NA	17	1	NA	2	NA	-	NA	646	750	NA	3	3	46
Idaho	-	9	-	-	1	-	-	27	701	696	1	21	7	-
Wyoming	1	7	-	-	-	-	-	18	308	340	-	5	2	1
Colorado	7	68	-	-	1	-	-	171	3,416	3,393	3	64	49	-
New Mexico	3	55	-	-	1	-	-	137	2,738	2,361	10	71	71	-
Arizona	8	136	-	-	2	-	-	189	3,814	3,527	2	61	82	8
Utah	4	14	-	-	-	-	-	41	728	782	2	10	4	-
Nevada*	1	11	-	-	-	-	-	48	1,074	1,417	1	17	25	-
PACIFIC	98	1,972	6	1	35	-	-	2,672	51,931	49,744	105	1,960	1,999	161
Washington*	5	185	2	-	2	-	-	208	4,340	4,524	-	37	69	-
Oregon	3	68	1	-	-	-	-	226	3,820	3,711	2	53	43	-
California	75	1,460	3	1	32	-	-	2,160	41,342	39,441	102	1,823	1,870	124
Alaska	-	25	-	-	-	-	-	49	1,432	1,251	-	10	1	37
Hawaii	15	234	-	-	1	-	-	29	997	817	1	37	16	-
Guam*	-	22	-	-	-	-	-	-	134	167	-	1	2	-
Puerto Rico	6	115	-	-	-	-	-	32	992	1,099	9	204	267	14
Virgin Islands	-	2	-	-	-	-	-	4	100	57	3	31	12	-

NA: Not Available

*Delayed Reports: TB: N. Hamp. delete 1, Mich. delete 1, Mo. delete 1, Ark. delete 2, Guam add 2; GC: La. delete 8, Nev. add 9, Guam add 14; Syphilis: Dela. add 3 civ.; Wash. add 8 civ., add 1 mil.; An. Rabies: Wash. add 1

Table IV
Deaths in 121 United States Cities*
Week Ending May 15, 1976 — 19th Week

REPORTING AREA	ALL CAUSES					Pneumonia and Influenza
	ALL AGES	65 Years and Over	45-64 Years	25-44 Years	Under 1 Year	ALL AGES
NEW ENGLAND	630	391	171	33	19	34
Boston, Mass.	193	98	56	17	4	11
Bridgeport, Conn.	37	36	1	–	–	6
Cambridge, Mass.	25	21	3	1	–	1
Fall River, Mass.	29	22	6	1	–	1
Hartford, Conn.	62	37	18	3	3	2
Lowell, Mass.	23	15	6	1	1	–
Lynn, Mass.	13	9	4	–	–	–
New Bedford, Mass.	20	10	9	–	–	2
New Haven, Conn.	43	26	9	2	5	1
Providence, R.I.	63	34	22	2	3	6
Somerville, Mass.	10	7	2	1	–	–
Springfield, Mass.	40	26	10	3	–	1
Waterbury, Conn.	29	19	5	1	2	1
Worcester, Mass.	43	31	10	1	1	2
MIDDLE ATLANTIC	2,770	1,734	700	149	94	102
Albany, N. Y.	56	37	12	–	3	–
Allentown, Pa.	28	17	7	3	1	4
Buffalo, N. Y.	124	61	39	7	4	7
Camden, N. J.	35	23	10	–	1	–
Elizabeth, N. J.	26	13	12	1	–	1
Erie, Pa.	23	17	4	–	1	4
Jersey City, N. J.	40	25	10	2	2	–
Newark, N. J.	55	24	18	3	4	3
New York City, N. Y†	1,392	894	325	89	45	37
Paterson, N. J.	44	26	9	3	5	1
Philadelphia, Pa.	393	239	109	20	13	24
Pittsburgh, Pa.	207	114	64	11	7	6
Reading, Pa.	30	23	6	1	–	–
Rochester, N. Y.	110	77	24	3	3	5
Schenectady, N. Y.	22	18	4	–	–	–
Scranton, Pa.	33	24	7	2	–	1
Syracuse, N. Y.	70	39	23	3	3	1
Trenton, N. J.	26	18	7	1	–	2
Utica, N. Y.	19	15	4	–	–	3
Yonkers, N. Y.	37	30	6	–	1	3
EAST NORTH CENTRAL	2,519	1,458	695	172	98	73
Akron, Ohio	87	51	25	4	4	–
Canton, Ohio	34	20	9	2	1	2
Chicago, Ill.	650	354	178	51	34	18
Cincinnati, Ohio	161	107	35	10	9	6
Cleveland, Ohio	182	95	66	11	3	5
Columbus, Ohio	183	105	53	7	12	2
Dayton, Ohio	103	61	36	3	2	3
Detroit, Mich.	295	164	80	35	4	3
Evansville, Ind.	58	40	14	1	–	4
Fort Wayne, Ind.	70	48	13	4	3	6
Gary, Ind.	30	10	14	3	2	1
Grand Rapids, Mich.	51	29	10	5	4	–
Indianapolis, Ind.	163	90	47	13	4	2
Madison, Wis.	56	31	16	2	5	8
Milwaukee, Wis.	113	76	24	11	2	2
Peoria, Ill.	44	29	9	1	2	2
Rockford, Ill.	37	21	13	1	1	4
South Bend, Ind.	43	28	10	3	–	4
Toledo, Ohio	106	65	27	4	6	–
Youngstown, Ohio	53	34	16	1	–	1
WEST NORTH CENTRAL	743	450	191	48	31	20
Des Moines, Iowa	55	31	15	5	2	–
Duluth, Minn.	23	17	3	–	2	2
Kansas City, Kans.	30	21	5	2	1	–
Kansas City, Mo.	140	81	38	11	7	3
Lincoln, Nebr.	36	25	9	1	1	1
Minneapolis, Minn.	99	62	24	5	5	–
Omaha, Nebr.	68	34	22	3	4	–
St. Louis, Mo.	167	105	36	14	8	5
St. Paul, Minn.	74	45	23	3	–	2
Wichita, Kans.	51	29	16	4	1	7

REPORTING AREA	ALL CAUSES					Pneumonia and Influenza
	ALL AGES	65 Years and Over	45-64 Years	25-44 Years	Under 1 Year	ALL AGES
SOUTH ATLANTIC	1,131	609	354	92	45	27
Atlanta, Ga.	108	60	32	12	1	3
Baltimore, Md.	210	106	70	19	9	2
Charlotte, N. C.	54	27	14	8	3	2
Jacksonville, Fla.	109	62	31	7	2	1
Miami, Fla.	129	71	40	8	8	2
Norfolk, Va.	56	28	17	4	6	4
Richmond, Va.	81	47	22	5	5	4
Savannah, Ga.	27	8	14	3	–	–
St. Petersburg, Fla.	79	59	14	3	2	–
Tampa, Fla.	61	34	18	2	4	4
Washington, D. C.	148	75	58	12	2	3
Wilmington, Del.	69	32	24	9	3	2
EAST SOUTH CENTRAL	710	407	185	39	53	22
Birmingham, Ala.	117	69	22	7	10	–
Chattanooga, Tenn.	49	31	11	4	1	5
Knoxville, Tenn.	52	30	15	2	4	1
Louisville, Ky.	119	64	37	8	4	10
Memphis, Tenn.	178	92	45	8	29	1
Mobile, Ala.	73	39	26	5	2	2
Montgomery, Ala.	32	23	6	1	1	1
Nashville, Tenn.	90	59	23	4	2	2
WEST SOUTH CENTRAL	1,226	656	346	98	69	41
Austin, Tex.	52	34	12	3	2	5
Baton Rouge, La.	69	43	17	4	3	4
Corpus Christi, Tex.	33	16	9	3	3	–
Dallas, Tex.	142	83	46	7	3	5
El Paso, Tex.	47	24	11	5	4	8
Fort Worth, Tex.	77	42	17	5	11	1
Houston, Tex.	371	173	110	43	16	1
Little Rock, Ark.	49	24	12	4	2	4
New Orleans, La.	114	56	40	11	7	–
San Antonio, Tex.	133	74	36	9	8	3
Shreveport, La.	58	37	14	2	4	2
Tulsa, Okla.	81	50	22	2	6	8
MOUNTAIN	508	298	131	32	19	17
Albuquerque, N. Mex.	44	27	8	3	1	1
Colorado Springs, Colo.	40	27	10	1	–	4
Denver, Colo.	108	58	37	6	4	4
Las Vegas, Nev.	37	19	12	2	–	–
Ogden, Utah	22	16	3	2	1	2
Phoenix, Ariz.	120	70	28	6	8	3
Pueblo, Colo.	21	11	7	1	1	2
Salt Lake City, Utah	47	31	10	2	2	–
Tucson, Ariz.	69	39	16	9	2	1
PACIFIC	1,577	963	410	93	55	44
Berkeley, Calif.	19	15	1	–	3	–
Fresno, Calif.	48	30	12	3	1	–
Glendale, Calif.	20	12	6	2	–	–
Honolulu, Hawaii	49	28	15	–	2	5
Long Beach, Calif.	102	62	30	7	–	2
Los Angeles, Calif.	458	278	119	29	16	8
Oakland, Calif.	66	40	15	5	3	2
Pasadena, Calif.	32	21	7	1	1	–
Portland, Oreg.	134	79	41	6	5	6
Sacramento, Calif.	58	37	18	–	2	–
San Diego, Calif.	151	82	38	12	9	5
San Francisco, Calif.	156	97	43	8	5	6
San Jose, Calif.	49	29	10	5	1	–
Seattle, Wash.	143	88	34	12	6	5
Spokane, Wash.	49	33	13	–	1	2
Tacoma, Wash.	43	32	8	3	–	3
TOTAL	11,814	6,966	3,183	756	483	380
Expected Number	11,873	7,157	3,126	762	365	399

*By place of occurrence and week of filing certificate. Excludes fetal deaths. †Delayed Report for Week Ending 5/8/76 (For NYC)

The Morbidity and Mortality Weekly Report, circulation 52,000, is published by the Center for Disease Control, Atlanta, Georgia. 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.

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Human Plague — Arizona, California, New Mexico

Since January 1, 1976, 2 confirmed and 1 suspect case of human plague have been reported to CDC. Secondary plague pneumonia developed in all 3 patients, and 2 of the patients died. Summaries of these 3 unrelated plague cases are given below.

Case 1. On February 24, a 15-year-old Navajo boy from Moenave, Arizona, had onset of fever and left axillary pain. He was admitted to the Tuba City Indian Hospital on February 27 with fever of 104°F, headache, and bilateral axillary lymphadenitis. Bubonic plague was suspected and streptomycin therapy was begun within 1 hour after admission. Later on the day of admission the patient had onset of a cough productive of frothy, bloody sputum which contained organisms suggestive of *Yersinia pestis,* and he had clinical and X-ray evidence of bilateral pneumonitis. His clinical course was complicated by profound hypotension and thrombocytopenia. The patient recovered following treatment with streptomycin and chloramphenicol. Organisms isolated from blood cultures and a lymph node aspirate obtained at the time of admission have been identified as *Y. pestis.*

Two to 3 days before the onset of his illness, the patient found a dead (or dying) cottontail rabbit 1 to 2 miles from his residence; he dismembered the rabbit and fed the carcass to his dog. Rodent fleas removed from field mice trapped near the patient's residence were positive for *Y. pestis.* Three of 7 serum specimens collected from dogs at the patient's residence had positive titers for *Y. pestis.*

Although the patient had no respiratory symptoms until 2 hours after he was placed in strict isolation, as a precautionary measure, 5 household members and 15 hospital personnel were placed on prophylactic tetracycline and temperature surveillance. No illnesses suggestive of pneumonic plague developed in any of the exposed individuals.

Case 2. On April 13, a 45-year-old man who lived 25 miles southeast of Bakersfield, California, had onset of chills and fever and subsequently developed painful right inguinal lymphadenopathy. Later he developed a generalized blanching erythematous rash, jaundice, and a cough. On April 19 he was taken to the emergency rooms of 2 Bakersfield hospitals for evaluation and admitted to an isolation room of the Kern Medical Center. At the time of his admission, the patient had respiratory distress, blood tinged sputum, and X-ray evidence of a right-sided pneumonia. Gram-negative, bipolar staining bacilli were seen in slide preparations of peripheral blood, transtracheal aspirate, and a papular skin lesion on the right arm. Bubonic plague with secondary plague septicemia and pneumonia was tentatively diagnosed and treatment with chloramphenicol was begun, but the patient died on April 20. Specimens of peripheral blood, lymph nodes, and transtracheal aspirate were fluorescent antibody positive and yielded *Y. pestis* at the State Microbial Diseases Laboratory. Autopsy showed extensive lung involvement, a large necrotic spleen, and a hemorrhagic right inguinal bubo.

The risk of secondary plague pneumonia was considered sufficient to require surveillance and prophylactic treatment of face-to-face contacts. Six household contacts and 67 contacts among personnel at the 3 hospitals were identified, placed on active surveillance, and treated with 250mg of tetracycline every 6 hours for 6 days. No secondary cases developed.

Investigation revealed that a die-off of ground squirrels had recently occurred around the patient's home. Animal carcasses and fleas collected from abandoned burrows are being tested for plague bacilli, and serum specimens from 5 household contacts and 5 dogs and a cat on the premises are being tested for *Y. pestis* antibodies. The area has been treated with insecticide and further study is underway to define the epizootic area.

Case 3. On April 26, a 63-year-old woman from Santo Domingo Pueblo, New Mexico, had onset of headache, nausea, and fever, and a small, fluid-filled lesion was noted on the left thumb. When the patient was admitted to the Albuquerque Indian Health Service Hospital on April 30, physical examination revealed fever of 102.2°F, tender left epitrochlear and axillary lymph nodes, a lesion on the left thumb, and a clear chest. On the second hospital day she became short of breath and hypotensive, and was transferred to the Bernalillo County Medical Center (BCMC), where chest X-rays revealed bilateral basilar infiltrates and multiple nodular densities in the right middle lobe and left lingular area. Despite therapy with gentamicin, carbenicillin, chloramphenicol, and vasopressors, the patient died on May 11.

On May 4 admission blood cultures and cultures from the thumb lesion yielded *Y. pestis.* The possibility that the patient had secondary plague pneumonia prompted physicians to place approximately 45 contacts from the Indian Health Service Hospital, BCMC, and Santo Domingo Pueblo on prophylactic tetracycline 250mg orally every 6 hours for 5 days. An additional, larger group of low-risk contacts were placed under fever surveillance and were followed by IHS and BCMC physicians. No cases of pneumonic plague developed among exposed individuals.

The patient skinned a rabbit and pack rat 5 days before onset of symptoms. Field investigations revealed evidence of a possible pack rat die-off in the area, and a single dead pack rat found was fluorescent antibody positive for plague. No immediate field control measures were instituted since the site is in an isolated location on a private ranch.

Reported by T Welty, MD, E Kompare, MD, Tuba City Indian Hospital; JM Counts, DrPH, J Doll, PhD, Arizona State Dept of Health; California Morbidity Weekly Report, *No. 16, April 30, 1976; D Console, MD, R Farleigh, MD, A Cushing, MD, A Kisch, MD, Bernalillo County Medical Center; T Inui, MD, W Moore, MD, J Sanders, Indian Health Service; R Barr, MD, M Burkhart, L Hughes, MD, JM Mann, MD, State Epidemiologist, P Matzner, B Miller, N Weber, New Mexico Health and Social Service Dept; Plague Br, Vector-Borne Diseases Div, Bur of Laboratories; and Bacterial Zoonoses Br, Bacterial Diseases Div, Bur of Epidemiology, CDC.*

Editorial Note: These plague cases are unusual because all 3 had microbiologic, histologic, and/or clinical evidence of secondary plague pneumonia. Only 5 of 86 (6%) of plague cases reported to CDC since 1950 have had evidence of pneumonia. Persons who come in close contact with patients with suspected or confirmed plague pneumonia should have their temperatures taken twice daily and should receive prophylactic tetracycline 250mg orally every 6 hours for 7 to 10 days. Alternatively, sulfonamides (e.g. trisulfapyrimidines) may be used for chemoprophylaxis. Contacts with minimal exposure to patients with plague pneumonia should be placed under fever surveillance, since fever is the most common presenting sign in primary pneumonic plague.

Rubella — Illinois and Texas

A total of 386 cases of rash illness occurred in the period December 1975–February 1976 at 2 widely separated U.S. Air Force installations, Chanute AFB, Illinois, and Sheppard AFB, Texas. Forty-one of 43 representative cases were confirmed as rubella by ⩾ 4-fold hemagglutination-inhibition (HI) titer rises. The geometric mean rubella HI titer of convalescent sera from cases with clinical onset 1 to 10 weeks prior to the investigation was significantly higher than that of matched controls ($P < .001$), suggesting a rubella etiology in the early portion of the outbreaks. The case distribution shows successive waves at a 2 to 3-week incubation period consistent with rubella (Figure 3).

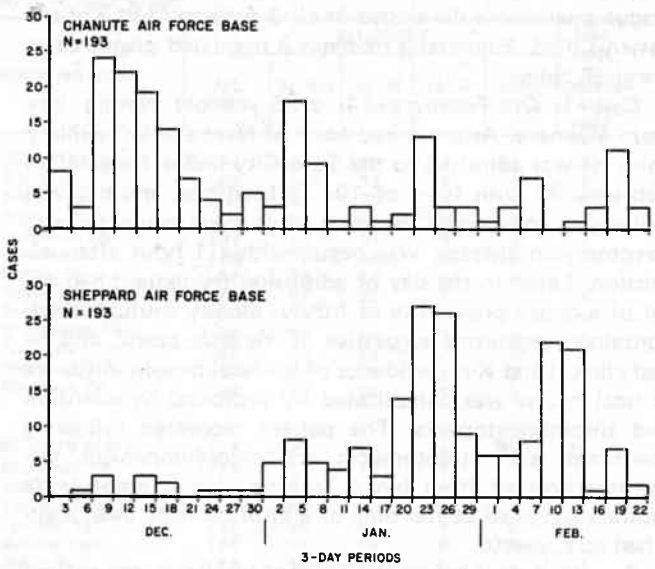
Recruits undergo a brief training period at Lackland AFB, Texas, and are then transferred to technical training centers at the 2 other bases; 93% of the cases occurred in student trainees at each installation. Approximately 30% of the cases were contracted while at Lackland AFB but did not become clinically apparent until the recruit had been transferred. The remaining 70% of the rubella transmission occurred after transfer. A serum bank of randomly selected Lackland recruits showed that 11% were susceptible to rubella (HI titers < 1:10).

Eighteen suspect rubella cases also were observed during early January in high school students from the civilian community adjacent to one of the bases, but no direct epidemiologic link to the base was apparent. No other "spillover" into the community was evident.

Editorial Note: The level of rubella susceptibility among recruits was low in this episode, consistent with national experience. However, the military training camps brought together sufficient numbers of susceptibles to sustain the outbreaks, and the arrival of additional susceptibles at weekly intervals served to perpetuate the outbreaks. Immunization of susceptible trainees is under consideration by Air Force medical authorities.

Reported by RE Gengler, Lt Col, USAF, NC, DH Gremillion, Major, USAF, MC, and GD Lathrop, Lt Col, USAF, MD, USAF School of Aerospace Medicine, Brooks AFB, Texas.

FIGURE 3. Suspected rubella cases by date of onset, Illinois, Texas, December 1, 1975-February 22, 1976



International Notes

Quarantine Measures

The following changes should be made in the *Supplement — Health Information for International Travel,* MMWR, Vol. 24, December 1975:

NEW YORK

Albany: Add Yellow Fever Vaccination Center:
Albany County Dept of Health, South Ferry and Green Streets, 12201, Telephone number 518-445-7800, Clinic hours Tues. 1-2:30 pm, Fee charged

TEXAS

El Paso: Add Yellow Fever Vaccination Center:
Drs. Egbert and Olive Office, 1501 Arizona, Suite 3-E 79902, Telephone number 915-532-1645, Clinic hours Mon.-Fri. 8:30-11:30 am & 1:30-4:30 pm, Fee charged

BULGARIA

Smallpox — Delete note. Insert: Except that NO Certificate is required from travelers who have been resident in the following countries for 14 days before arriving in Bulgaria:

Americas: USA, Canada
Europe: All countries
Africa: Algeria, Morocco, Tunisia
Asia: China, Mongolia, Turkey

However, a Certificate will be required from travelers arriving from these countries if any part is infected with smallpox.

NEW ZEALAND

Smallpox — Delete all information. Insert code II. Insert: A Certificate is ALSO required from travelers who within the preceding 14 days have been in a country any part of which is infected.

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PUBLIC HEALTH SERVICE / CENTER FOR DISEASE CONTROL
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