CENTER FOR DISEASE CONTROL

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MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

Measles — Massachusetts

The first outbreak of measles in a Massachusetts high school since 1966 occurred in January 1977 in the northeastern part of the state. Outbreak control measures were instituted immediately, and an investigation was conducted by the Massachusetts Department of Public Health in concert with the local board of health and school department. Forty-seven cases were subsequently identified through school absentee surveillance, retrospective contact tracing, and official morbidity reports. All had a typical clinical syndrome. Five cases were later confirmed by laboratory tests. Five persons were hospitalized for several days with no known complications.

The investigation revealed that the 47 cases occurred in students aged 13 to 18 in the 4-year high school. Twenty-five of the cases (53%) had a history of immunization prior to 1966 with live attenuated measles vaccine and immune globulin. Eight of the 25 were immunized prior to 1 year of age. Fourteen cases had uncertain histories of immunization or disease; 3 were immunized after January 1, 1966, with live attenuated vaccine; and 5 cases had no history of immunization, disease, or exemption (Table 1). A record check of 1,637 students in the high school revealed that 785 (48%) were immunized prior to 1966 and 430 (26%) were of uncertain status. The vaccine efficacy for children vaccinated prior to 1966 was 72.5% compared to an efficacy of 93.1% in those vaccinated after January 1, 1966. This high school was considered well-immunized since only 2.6% (42) of the students did not meet the requirements of the state's school immunization law. These findings have been confirmed in other high school studies in Massachusetts. Immunization programs were conducted in all schools (K-12) in the community; over 2,500 students were vaccinated.

A massive record review of all schools (K-12) in Massachusetts is underway to identify and immunize all children who were immunized prior to 1966 or at ages under 1 year, those with uncertain histories of disease or immunization, and children who do not have a medical or religious exemption. Plans are underway to require school officials to exclude children from school if not "successfully immunized" as required by the school immunization law.

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TABLE 1. Measles immunization status of students in a northeastern school, Massachusetts, 1977

Immunization Status	Ill	Well	Total	Attack Rate
Immunized prior to 1966	25	760	785	3.2
>1 Year of age	17	729	746	2.3
<1 Year of age	8	31	39	20.5
Immunized after Jan. 1, 1966	3	376	379	0.8
Uncertain histories	14	416	430	3.3
Medical exemptions	0	1	1	0
No exemption, immunization, or disease	5	37	42	11.9
Total:	**47**	**1,590**	**1,637**	**2.9**

Editorial Note: This outbreak illustrates that measles can occur in communities in which a high proportion of students are reportedly vaccinated. The relatively high attack rate in persons with uncertain vaccination histories emphasizes the need for obtaining comprehensive and complete immunization histories on all students to ensure that all have been adequately vaccinated.

The high attack rate in persons immunized prior to 1966 does not necessarily imply that immunity is waning with time, or that measles vaccine given with measles immune globulin is ineffective. On the contrary, available evidence from several studies has pointed to good and lasting protection, provided vaccine was administered at 12-13 months of age or later (*1,2,3*). However, immunization recommendations prior to 1965 encouraged children to be immunized at 9 months of age, an age at which vaccine efficacy is now known to be low because of the interference of residual maternal measles antibodies in the infant (*1,4*). The increased risk for children immunized prior to 1966 in this outbreak can at least partially be explained by the fact that many of these children received measles vaccine at less than one year of age. Although the attack rate of 2.3% in children who were immunized at greater than 1 year of age before 1966 was greater than the 0.8% attack rate for children immunized after January 1, 1966, this difference is not statistically significant ($p>,10, \chi^2$ 1df).

Other factors, such as improper storage and handling of vaccine, have been shown to interfere with the effectiveness of measles vaccines (*5*).

Measles – continued

References

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2. Yeager AS, Davis JH, Ross LA, et al: Measles immunization successes and failures. JAMA 237:347-351, 1977
3. Krugman S: Present status of measles and rubella immunization in the United States: A medical progress report. J Pediatr 90:1-12, 1977
4. MMWR 14:64-67, 1965
5. [illegible]n R, Meyer B, Parkman P, et al: Impotency of live virus vaccines as a result of improper handling in clinical practice. J Pediatr 85:512-514, 1974

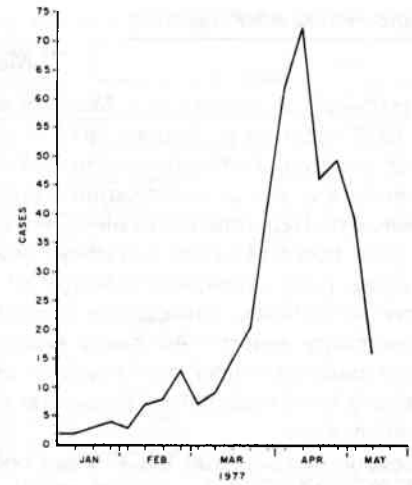
International Notes

Smallpox – Somalia

A total of 1,567 cases of smallpox have been reported to the World Health Organization (WHO) from Somalia since January 1, 1977. All occurred in the country's southern regions.

Two hundred thirty-nine outbreaks have been analyzed. Sixty-one (26%) were single-case outbreaks; 119 (50%) involved 2-5 cases. These figures are indicative of continuing transmission in a scattered desert population. The dates of onset – available for 418 cases – indicate a peak during April (Figure 1). This will not be confirmed, however, until surveillance teams are fully active throughout the country. The risk of importation of smallpox cases into neighboring Ethiopia remains extremely high.

FIGURE 1. 418 smallpox cases by week of onset, Somalia, 1977



Reported by the World Health Organization in the Weekly Epidemiological Record 52:193-195, 211, 1977.

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

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

DISEASE	28th WEEK ENDING		MEDIAN 1972–1976	CUMULATIVE, FIRST 28 WEEKS		
	July 16, 1977	July 17, 1976		July 16, 1977	July 17, 1976	MEDIAN 1972–1976
Aseptic meningitis	116	74	74	1,304	1,088	1,126
Brucellosis	4	3	6	103	138	100
Chickenpox	1,159	1,326	---	154,360	143,199	---
Diphtheria	–	1	1	52	117	117
Encephalitis, Primary	10	28	19	346	448	448
Encephalitis, Post-Infectious	5	28	8	113	162	165
Hepatitis, Viral, Type B	308	305	176	8,660	7,826	4,971
Hepatitis, Viral, Type A	580	610	784	16,800	18,807	23,037
Hepatitis, Viral, Type unspecified	179	179		4,951	4,713	
Malaria	5	15	8	244	209	178
Measles (rubeola)	720	550	316	50,663	32,858	22,969
Meningococcal infections, total	37	26	27	1,111	964	895
Civilian	36	25	26	1,105	950	875
Military	1	1	1	6	14	23
Mumps	163	349	580	14,559	30,589	43,719
Pertussis	15	18	---	401	493	---
Rubella (German measles)	225	141	141	17,525	10,108	14,193
Tetanus	1	3	3	27	24	40
Tuberculosis	513	603	---	16,343	17,863	---
Tularemia	2	10	7	63	75	73
Typhoid fever	4	11	9	188	191	191
Typhus, tick-borne (Rky. Mt. spotted fever)	57	46	30	525	363	344
Venereal Diseases:						
Gonorrhea, Civilian	21,319	20,216	---	506,795	522,681	---
Gonorrhea, Military	489	302	---	14,456	15,357	---
Syphilis, primary and secondary, Civilian	362	494	---	11,107	13,060	---
Syphilis, primary and secondary, Military	7	6	---	168	185	---
Rabies in animals	65	53	53	1,536	1,462	1,587

Table II. Notifiable Diseases of Low Frequency: United States

	CUM.		CUM.
Anthrax:	–	Poliomyelitis, total: Tex. 1, Ariz. 1	6
Botulism:	72	Paralytic: Tex. 1	5
Congenital rubella syndrome:	8	Psittacosis: *Tex. 1, Ariz. 1, Utah 1	41
Leprosy: Calif. 2	68	Rabies in man:	1
Leptospirosis:	25	Trichinosis: Tex. 1	51
Plague:	5	Typhus, murine: Tex. 1	34

*Delayed reports: Psittacosis: Pa. – 1

Table III

Cases of Specified Notifiable Diseases: United States

Weeks Ending July 16, 1977 and July 17, 1976 — 28th 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		
	1977	1977	1977	1977	CUM. 1977	1977	1976	1977	1977	1977	1977	1977	CUM. 1977
UNITED STATES	116	4	1,159	–	52	10	28	5	308	580	179	5	244
NEW ENGLAND	14	1	203	–	–	–	–	–	13	8	5	–	11
Maine	–	1	19	–	–	–	–	–	–	1	–	–	–
New Hampshire*	1	–	4	–	–	–	–	–	–	–	–	–	1
Vermont	–	–	–	–	–	–	–	–	–	3	–	–	1
Massachusetts	12	–	86	–	–	–	–	–	2	2	5	–	2
Rhode Island	–	–	58	–	–	–	–	–	2	2	–	–	3
Connecticut	1	–	36	–	–	–	–	–	9	–	–	–	4
MIDDLE ATLANTIC	3	1	341	–	5	1	5	–	43	68	27	1	62
Upstate New York	1	–	154	–	–	–	3	–	9	19	7	–	15
New York City	1	–	182	–	5	1	–	–	6	17	8	1	27
New Jersey*	–	–	NN	–	–	–	1	–	17	14	9	–	9
Pennsylvania	1	1	5	–	–	–	1	–	11	18	3	–	11
EAST NORTH CENTRAL	10	–	251	–	–	–	8	1	47	87	15	1	19
Ohio	1	–	4	–	–	–	4	–	2	10	–	1	7
Indiana	2	–	22	–	–	–	2	1	3	–	8	–	2
Illinois	4	–	66	–	–	–	2	–	30	33	1	–	2
Michigan	3	–	46	–	–	–	–	–	8	34	6	–	5
Wisconsin	–	–	113	–	–	–	–	–	4	10	–	–	3
WEST NORTH CENTRAL	3	–	40	–	1	1	2	1	10	30	4	2	22
Minnesota	–	–	2	–	–	–	–	–	7	9	–	1	9
Iowa	–	–	5	–	–	–	1	–	–	–	–	–	–
Missouri*	–	–	18	–	1	1	–	–	1	14	2	1	9
North Dakota	–	–	–	–	–	–	–	–	1	1	–	–	–
South Dakota	–	–	1	–	–	–	–	–	–	–	–	–	1
Nebraska	–	–	14	–	–	–	–	–	–	1	–	–	–
Kansas	3	–	–	–	–	–	1	1	1	5	2	–	3
SOUTH ATLANTIC	26	–	125	–	–	2	2	–	65	119	21	1	34
Delaware	–	–	13	–	–	–	–	–	3	–	–	–	–
Maryland	3	–	20	–	–	–	2	–	6	3	1	–	7
District of Columbia	–	–	2	–	–	–	–	–	–	–	–	–	1
Virginia*	7	–	27	–	–	1	–	–	3	11	7	–	4
West Virginia	1	–	23	–	–	1	–	–	5	7	–	–	1
North Carolina	1	–	NN	–	–	–	–	–	4	4	1	–	4
South Carolina	4	–	6	–	–	–	–	–	2	2	6	–	–
Georgia	–	–	–	–	–	–	–	–	6	27	–	–	7
Florida*	10	–	34	–	–	–	–	–	36	65	6	1	10
EAST SOUTH CENTRAL	18	–	13	–	–	1	7	1	34	48	14	–	6
Kentucky	–	–	8	–	–	–	1	–	14	20	6	–	4
Tennessee	3	–	NN	–	–	–	1	1	14	11	1	–	–
Alabama	14	–	4	–	–	1	–	–	4	3	7	–	2
Mississippi	1	–	1	–	–	–	5	–	2	14	–	–	–
WEST SOUTH CENTRAL	22	1	49	–	2	2	2	–	23	58	25	–	12
Arkansas	–	–	2	–	–	–	–	–	2	8	1	–	–
Louisiana*	2	–	NN	–	–	–	1	–	5	10	4	–	1
Oklahoma	–	–	2	–	–	–	–	–	2	8	2	–	–
Texas*	20	1	45	–	2	2	1	–	14	32	18	–	11
MOUNTAIN	–	–	101	–	3	1	–	–	14	51	16	–	8
Montana	–	–	2	–	–	–	–	–	2	2	–	–	–
Idaho	–	–	1	–	–	–	–	–	–	7	–	–	–
Wyoming*	–	–	16	–	–	–	–	–	1	–	–	–	1
Colorado	–	–	49	–	–	1	–	–	5	19	8	–	5
New Mexico	–	–	–	–	2	–	–	–	1	13	1	–	1
Arizona	–	–	NN	–	1	–	–	–	4	7	5	–	1
Utah	–	–	33	–	–	–	–	–	1	3	2	–	–
Nevada*	–	–	–	–	–	–	–	–	–	–	–	–	–
PACIFIC	20	1	36	–	41	2	2	2	59	111	52	–	70
Washington	1	–	25	–	38	–	–	–	3	3	2	–	4
Oregon	4	–	2	–	–	–	–	–	5	14	6	–	1
California*	15	1	–	–	1	2	2	2	50	94	44	–	59
Alaska	–	–	–	–	2	–	–	–	–	–	–	–	2
Hawaii	–	–	9	–	–	–	–	–	1	–	–	–	4
Guam	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–
Puerto Rico	–	–	8	–	–	–	–	–	1	1	4	–	1
Virgin Islands	–	–	–	–	–	–	–	–	–	–	–	–	–

NN: Not notifiable

NA: Not available

*Delayed reports: (+ = add; – = delete) Asep. meng.: N. Hamp. + 1, N.J. + 9, Mo. + 2, Fla. – 2; Chickenpox: Nev. + 8, Calif. + 4; Hep. B: Tex. – 2, Wyo. + 1; Hep. A: Mo. – 2, Fla. – 3, La. – 4, Tex. – 4, Wyo. – 1, Calif. – 1; Hep. unsp.: Va. – 3, Tex. – 3.

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending July 16, 1977 and July 17, 1976 — 28th Week

REPORTING AREA	MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1977	CUMULATIVE		1977	CUMULATIVE		1977	CUM. 1977	1977	1977	CUM. 1977	CUM. 1977
		1977	1976		1977	1976						
UNITED STATES	720	50,663	32,858	37	1,111	964	163	14,559	15	225	17,525	27
NEW ENGLAND	22	2,466	363	2	47	43	3	614	–	6	1,154	–
Maine*	–	164	6	–	3	–	–	46	–	1	69	–
New Hampshire	–	510	8	–	3	4	1	90	–	1	240	–
Vermont	–	291	28	–	4	3	–	6	–	–	64	–
Massachusetts*	8	651	36	2	15	12	–	112	–	3	362	–
Rhode Island	–	58	14	–	1	4	–	49	–	–	130	–
Connecticut	14	792	271	–	21	20	2	311	–	1	289	–
MIDDLE ATLANTIC	235	7,992	6,726	5	160	129	27	1,187	1	127	5,854	2
Upstate New York	188	3,591	2,815	1	37	52	12	265	–	113	3,238	1
New York City	45	649	418	2	39	35	10	441	1	9	298	–
New Jersey	2	193	583	2	31	17	2	334	–	4	1,775	1
Pennsylvania	–	3,559	2,910	–	53	25	3	147	–	1	543	–
EAST NORTH CENTRAL	264	10,232	13,985	4	107	124	39	5,025	2	18	3,517	2
Ohio	171	1,247	562	1	37	51	3	628	–	1	1,085	–
Indiana	13	4,258	3,051	1	9	6	–	262	–	1	882	1
Illinois	45	1,478	1,446	–	19	13	18	847	–	6	295	–
Michigan	16	897	5,675	2	31	46	4	1,763	2	7	885	1
Wisconsin*	19	2,352	3,251	–	12	8	14	1,525	–	3	370	–
WEST NORTH CENTRAL	21	9,391	1,165	1	65	66	3	3,347	2	2	486	4
Minnesota	–	2,596	389	–	21	14	–	6	–	–	16	1
Iowa	14	4,279	36	–	5	8	1	1,244	–	–	157	–
Missouri*	6	923	17	1	27	22	2	1,050	2	–	33	2
North Dakota	–	21	3	–	1	3	–	16	–	–	10	–
South Dakota	–	65	4	–	4	2	–	59	–	–	17	–
Nebraska	–	192	55	–	1	4	–	63	–	–	2	–
Kansas	1	1,315	661	–	6	13	–	909	–	2	251	1
SOUTH ATLANTIC	67	4,302	2,062	8	237	190	22	644	–	5	1,549	8
Delaware*	–	23	128	–	3	6	7	111	–	–	24	–
Maryland	–	367	715	2	17	16	6	50	–	–	5	–
District of Columbia	–	4	12	–	–	2	–	5	–	–	–	–
Virginia	48	2,553	681	–	14	31	2	83	–	1	566	1
West Virginia	3	205	179	1	9	4	5	145	–	1	88	–
North Carolina	–	59	9	–	57	34	1	38	–	2	437	–
South Carolina	1	146	4	1	25	33	–	10	–	–	207	–
Georgia	15	740	1	–	38	16	–	14	–	1	48	1
Florida	–	205	333	4	74	48	1	188	–	–	174	6
EAST SOUTH CENTRAL	20	1,900	766	7	126	83	23	772	4	7	1,895	2
Kentucky	13	1,154	716	7	26	14	–	80	–	–	74	1
Tennessee	3	637	35	–	33	37	21	469	1	6	1,704	1
Alabama	1	77	–	–	46	23	1	194	3	1	109	–
Mississippi	3	32	15	–	21	9	1	29	–	–	8	–
WEST SOUTH CENTRAL	9	2,012	650	3	194	153	21	1,271	4	2	745	4
Arkansas	–	29	–	–	9	8	–	36	–	–	3	1
Louisiana*	–	74	184	2	75	27	–	30	1	1	27	1
Oklahoma	–	53	284	–	10	16	1	448	–	–	27	–
Texas*	9	1,856	182	1	100	100	20	757	3	1	688	2
MOUNTAIN	15	2,444	4,943	1	40	29	14	574	–	8	338	1
Montana	6	1,151	202	–	2	4	–	9	–	2	14	–
Idaho	1	128	2,020	–	4	3	1	119	–	–	11	–
Wyoming	1	15	3	–	1	–	1	1	–	1	3	1
Colorado	2	494	237	–	1	5	2	250	–	1	230	–
New Mexico	–	267	15	–	17	3	–	105	–	1	11	–
Arizona	2	292	225	–	11	8	–	–	–	1	11	–
Utah	2	8	2,178	1	3	4	7	76	–	2	49	–
Nevada*	1	89	63	–	1	2	3	14	–	–	9	–
PACIFIC	67	9,924	2,198	6	135	147	11	1,125	2	50	1,987	4
Washington	4	519	326	2	18	25	1	256	–	–	430	–
Oregon	7	347	143	–	11	13	1	199	2	–	100	–
California	56	8,966	1,726	1	79	94	8	626	–	18	1,398	4
Alaska	–	58	–	3	25	13	–	25	–	–	1	–
Hawaii	–	34	3	–	2	2	1	19	–	32	58	–
Guam	NA	4	12	–	–	–	NA	3	NA	NA	7	–
Puerto Rico	9	771	267	–	1	3	11	562	–	–	29	7
Virgin Islands*	–	14	8	–	–	–	–	183	–	–	1	–

NA: Not available

*Delayed reports: (+ = add; – = delete): Measles: Mass. – 24, Wisc. – 2, Mo. + 3, Dela. – 1, Tex. – 1, Nev. + 4, La. – 1; Mumps: V. I. + 3, Pertussis: Me. + 2; Rubella: V. I. + 1

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending July 16, 1977 and July 17, 1976 – 28th Week

REPORTING AREA	TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER TICK-BORNE (RMSF)		VENEREAL DISEASES (Civilian Cases Only)						RABIES IN ANIMALS
								GONORRHEA			SYPHILIS (Pri. & Sec.)			
									CUMULATIVE			CUMULATIVE		
	1977	CUM. 1977	CUM. 1977	1977	CUM. 1977	1977	CUM. 1977	1977	1977	1976	1977	1977	1976	CUM. 1977
UNITED STATES	513	16,343	63	4	188	57	525	21,319	506,795	522,681	362	11,107	13,093	1,536
NEW ENGLAND	14	608	1	–	12	1	6	529	13,019	13,925	22	465	378	22
Maine	2	44	–	–	–	–	–	33	959	1,205	–	14	8	20
New Hampshire	–	17	–	–	–	–	–	24	530	384	–	3	6	1
Vermont	1	24	–	–	–	–	–	18	341	352	–	6	4	–
Massachusetts	7	336	1	–	9	1	1	256	5,724	6,699	13	326	265	–
Rhode Island	1	45	–	–	2	–	3	38	1,063	915	–	7	15	–
Connecticut	3	142	–	–	1	–	2	160	4,402	4,370	9	109	80	1
MIDDLE ATLANTIC	76	2,609	1	2	39	2	32	1,346	51,828	60,079	40	1,536	2,202	37
Upstate New York	6	399	1	1	6	–	17	296	8,652	9,574	–	141	146	20
New York City	27	868	–	1	15	–	–	311	20,727	26,954	32	973	1,367	–
New Jersey	16	659	–	–	16	1	6	113	8,722	9,376	4	197	300	15
Pennsylvania	27	683	–	–	2	1	9	626	13,727	14,175	4	225	369	2
EAST NORTH CENTRAL	99	2,591	3	–	19	–	7	3,771	78,265	82,147	36	1,203	1,120	60
Ohio*	21	419	1	–	7	–	4	1,132	20,432	20,082	3	274	276	–
Indiana	16	298	–	–	1	–	2	720	7,129	8,045	3	90	60	3
Illinois*	30	1,018	–	–	2	–	–	779	25,269	29,550	29	649	574	19
Michigan*	26	736	–	–	9	–	1	906	18,161	17,339	–	137	154	4
Wisconsin	6	120	2	–	–	–	–	234	7,274	7,131	1	53	56	34
WEST NORTH CENTRAL	19	563	5	1	13	3	17	1,029	26,577	27,007	8	256	224	391
Minnesota*	6	122	–	–	4	–	–	178	4,759	4,823	2	77	49	137
Iowa	–	58	–	–	–	–	–	132	3,157	3,393	1	30	23	63
Missouri*	5	235	4	–	4	2	10	506	11,279	10,786	5	89	92	30
North Dakota	–	13	–	1	1	–	–	24	487	391	–	–	–	58
South Dakota	1	26	1	–	–	–	–	30	696	745	–	2	2	74
Nebraska	–	21	–	–	1	–	–	42	2,278	2,322	–	24	15	1
Kansas	7	88	–	–	3	1	7	117	3,921	4,547	–	34	43	28
SOUTH ATLANTIC	127	3,700	8	1	31	31	284	6,549	125,875	127,950	106	3,161	3,994	155
Delaware	5	32	–	–	–	–	1	156	1,747	1,624	–	16	39	2
Maryland*	26	527	1	–	–	4	38	786	15,922	17,098	2	210	337	–
District of Columbia	4	172	–	–	1	–	–	439	8,293	8,840	13	332	321	–
Virginia	9	429	–	–	8	5	78	227	12,576	13,796	5	307	349	2
West Virginia*	5	133	–	–	3	1	3	43	1,774	1,637	–	1	18	2
North Carolina*	16	612	2	–	2	7	111	815	18,517	18,256	16	455	742	4
South Carolina	10	341	2	–	–	13	31	523	11,822	12,718	2	135	213	4
Georgia	22	428	3	–	9	1	22	1,580	24,361	23,636	35	618	563	105
Florida	30	1,026	–	1	8	–	–	1,980	30,863	30,345	33	1,087	1,412	36
EAST SOUTH CENTRAL	39	1,424	4	–	3	13	83	1,761	44,804	46,443	20	388	524	46
Kentucky	5	341	1	–	–	11	21	190	5,996	5,836	6	49	78	14
Tennessee	13	453	3	–	1	5	53	732	17,981	18,303	–	117	194	25
Alabama	14	389	–	–	1	3	9	422	12,381	13,273	8	72	106	7
Mississippi	7	241	–	–	1	–	–	417	8,446	9,031	6	150	146	–
WEST SOUTH CENTRAL	45	1,911	35	–	8	1	86	2,906	64,585	68,209	79	1,566	1,511	503
Arkansas*	7	222	20	–	1	–	12	144	4,888	6,264	3	33	47	72
Louisiana	–	363	1	–	–	1	1	504	9,687	10,100	19	351	321	6
Oklahoma	5	187	6	–	1	–	52	280	6,057	6,361	1	43	60	169
Texas*	33	1,139	8	–	6	–	21	1,978	43,953	45,484	56	1,139	1,083	256
MOUNTAIN	13	435	5	–	15	–	9	880	20,508	20,809	8	224	383	80
Montana	2	25	1	–	–	–	3	24	1,022	1,052	–	3	4	31
Idaho	–	23	–	–	–	–	4	39	958	1,113	–	4	14	–
Wyoming	–	7	1	–	–	–	2	17	492	391	–	4	8	1
Colorado	1	68	2	–	7	–	–	204	5,307	5,166	3	68	96	17
New Mexico	2	66	–	–	–	–	–	150	3,016	3,960	–	40	92	–
Arizona	4	198	1	–	4	–	–	211	5,928	6,289	4	92	129	28
Utah	2	17	–	–	4	–	–	58	1,135	936	1	6	16	3
Nevada	2	31	–	–	–	–	–	177	2,650	1,902	–	7	24	–
PACIFIC	81	2,502	1	–	48	–	1	2,548	81,334	76,112	43	2,308	2,757	242
Washington	NA	147	–	–	1	–	–	174	6,108	6,434	NA	106	73	–
Oregon	–	111	–	–	3	–	–	156	5,613	5,818	1	68	59	2
California	67	1,875	1	–	43	–	1	2,059	65,194	60,203	41	2,095	2,561	228
Alaska	–	35	–	–	–	–	–	108	2,658	2,161	–	16	10	12
Hawaii	14	334	–	–	1	–	–	51	1,761	1,496	1	23	54	–
Guam	NA	34	–	NA	1	NA	–	NA	107	192	NA	1	1	–
Puerto Rico	10	196	–	–	4	–	–	60	1,743	1,478	12	306	315	39
Virgin Islands	–	1	–	–	–	–	–	8	108	142	2	5	41	–

NA: Not available

*Delayed reports: (+= add; – = delete) TB: Ohio – 1, Mich. – 3, Mo. – 1, Md. – 2, N. Car. – 3; Tularemia: Ark. + 2; Typhoid fever: Mo. – 1, W. Va. – 1, Ark. + 1; RMSF: Mo. + 1, Md. – 4 Ark. + 8, Tex. – 4; GC: Ill. + 572, Md. – 7 civ. + 7 mil.; Syphilis: Ill. + 7; An. rabies: Minn. + 10.

Table IV
Deaths in 121 United States Cities*
Week Ending July 16, 1977 — 28th 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	565	349	158	32	8	32
Boston, Mass.	145	73	46	13	7	9
Bridgeport, Conn.	32	18	10	3	-	2
Cambridge, Mass.	30	17	11	1	-	3
Fall River, Mass.	15	13	2	-	-	-
Hartford, Conn.	55	31	15	4	1	5
Lowell, Mass.	28	19	6	-	-	2
Lynn, Mass.	18	13	5	-	-	-
New Bedford, Mass.	21	16	5	-	-	1
New Haven, Conn.	47	33	11	2	-	-
Providence, R.I.	54	36	13	5	-	4
Somerville, Mass.	4	2	1	1	-	-
Springfield, Mass.	40	31	7	-	-	1
Waterbury, Conn.	30	18	10	2	-	4
Worcester, Mass.	46	29	16	1	-	1
MIDDLE ATLANTIC	2,658	1,629	650	195	77	92
Albany, N. Y.	43	26	12	1	2	-
Allentown, Pa.	27	19	6	2	-	-
Buffalo, N. Y.	101	61	26	9	3	9
Camden, N. J.	31	19	9	3	-	1
Elizabeth, N. J.	26	17	5	2	-	-
Erie, Pa.	41	26	10	1	1	-
Jersey City, N. J.	49	27	13	5	2	2
Newark, N. J.	63	27	19	6	5	-
New York City, N. Y.	1,302	738	319	97	43	43
Paterson, N. J.	42	27	10	2	1	2
Philadelphia, Pa.	393	237	98	31	14	11
Pittsburgh, Pa.	166	100	46	12	4	9
Reading, Pa.	31	22	7	2	-	-
Rochester, N. Y.	116	72	21	11	1	5
Schenectady, N. Y.	16	12	2	-	1	2
Scranton, Pa.	52	38	10	3	-	2
Syracuse, N. Y.	83	55	21	5	-	-
Trenton, N. J.	21	17	2	1	-	1
Utica, N. Y.	31	22	9	-	-	3
Yonkers, N. Y.	24	17	5	2	-	2
EAST NORTH CENTRAL	2,406	1,427	637	144	96	66
Akron, Ohio	70	43	17	4	2	-
Canton, Ohio	31	23	7	1	-	-
Chicago, Ill.	624	339	176	45	30	13
Cincinnati, Ohio	91	65	18	5	2	4
Cleveland, Ohio	188	103	57	15	3	5
Columbus, Ohio	139	82	30	11	11	6
Dayton, Ohio	108	66	25	8	2	1
Detroit, Mich.	299	175	84	20	12	7
Evansville, Ind.	41	26	11	1	1	-
Fort Wayne, Ind.	36	25	10	1	-	3
Gary, Ind.	30	14	13	3	-	1
Grand Rapids, Mich.	48	31	11	1	5	4
Indianapolis, Ind.	189	116	46	10	9	6
Madison, Wis.	52	34	9	3	3	3
Milwaukee, Wis.	145	93	41	4	4	1
Peoria, Ill.	35	13	11	4	5	2
Rockford, Ill.	45	29	10	2	1	2
South Bend, Ind.	48	25	16	2	1	-
Toledo, Ohio	129	90	27	3	1	1
Youngstown, Ohio	58	35	18	1	2	1
WEST NORTH CENTRAL	851	537	192	50	33	18
Des Moines, Iowa	60	40	12	5	1	2
Duluth, Minn.	34	24	4	2	1	1
Kansas City, Kans.	36	23	6	1	1	-
Kansas City, Mo.	131	73	35	9	8	4
Lincoln, Nebr.	39	25	9	2	2	1
Minneapolis, Minn.	106	68	22	7	5	1
Omaha, Nebr.	97	61	23	5	7	1
St. Louis, Mo.	210	133	53	8	10	5
St. Paul, Minn.	84	54	19	5	1	1
Wichita, Kans.	54	36	9	6	-	2
SOUTH ATLANTIC	1,220	696	309	95	71	37
Atlanta, Ga.	100	45	29	16	4	2
Baltimore, Md.	294	168	79	25	11	5
Charlotte, N. C.	73	46	18	4	4	2
Jacksonville, Fla.	115	64	29	5	10	2
Miami, Fla.	100	58	29	9	2	4
Norfolk, Va.	58	28	19	2	6	2
Richmond, Va.	92	56	24	2	8	3
Savannah, Ga.	27	17	9	-	1	3
St. Petersburg, Fla.	78	64	9	2	1	5
Tampa, Fla.	71	38	13	6	9	4
Washington, D. C.	177	88	43	21	15	3
Wilmington, Del.	35	24	8	3	-	2
EAST SOUTH CENTRAL	797	440	213	48	42	27
Birmingham, Ala.	127	70	25	12	13	-
Chattanooga, Tenn.	72	39	18	3	3	3
Knoxville, Tenn.	51	32	13	4	1	-
Louisville, Ky.	156	78	55	6	5	10
Memphis, Tenn.	175	101	43	5	12	2
Mobile, Ala.	57	30	16	7	2	2
Montgomery, Ala.	44	29	8	1	-	5
Nashville, Tenn.	115	61	35	10	6	5
WEST SOUTH CENTRAL	1,255	694	346	110	50	33
Austin, Tex.	61	31	16	6	2	2
Baton Rouge, La.	62	38	14	5	3	4
Corpus Christi, Tex.	48	33	9	2	1	1
Dallas, Tex.	189	102	55	19	3	1
El Paso, Tex.	49	29	10	4	2	1
Fort Worth, Tex.	71	41	22	4	3	2
Houston, Tex.	271	138	82	32	9	2
Little Rock, Ark.	70	42	16	5	2	6
New Orleans, La.	139	72	35	15	14	1
San Antonio, Tex.	152	90	38	10	10	5
Shreveport, La.	76	47	22	3	1	4
Tulsa, Okla.	67	31	27	5	-	4
MOUNTAIN	536	313	134	43	17	12
Albuquerque, N. Mex.	69	40	20	5	1	1
Colorado Springs, Colo.	32	18	8	5	-	-
Denver, Colo.	123	66	39	13	-	2
Las Vegas, Nev.	30	10	14	1	1	2
Ogden, Utah	24	19	2	1	2	2
Phoenix, Ariz.	131	80	26	11	6	1
Pueblo, Colo.	23	17	4	2	-	3
Salt Lake City, Utah	46	28	11	2	4	-
Tucson, Ariz.	58	35	10	3	3	1
PACIFIC	1,831	1,095	463	126	71	43
Berkeley, Calif.	24	15	7	2	-	-
Fresno, Calif.	53	28	16	4	4	-
Glendale, Calif.	32	25	5	1	-	-
Honolulu, Hawaii	71	36	16	7	9	3
Long Beach, Calif.	100	57	32	7	4	4
Los Angeles, Calif.	664	417	159	52	15	12
Oakland, Calif.	83	55	16	4	3	2
Pasadena, Calif.	26	14	6	2	4	-
Portland, Oreg.	121	66	39	6	4	5
Sacramento, Calif.	76	50	12	6	4	1
San Diego, Calif.	134	72	36	6	8	3
San Francisco, Calif.	163	93	45	13	5	3
San Jose, Calif.	51	29	12	2	3	3
Seattle, Wash.	150	91	42	8	3	1
Spokane, Wash.	48	28	11	3	5	4
Tacoma, Wash.	35	19	9	3	-	2
TOTAL	12,119	7,180	3,102	843	465	360
Expected Number	11,235	6,733	2,908	751	383	349

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

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The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Send reports to: Center for Disease Control, Attn.: Editor, Morbidity and Mortality Weekly Report, Atlanta, Georgia 30333.

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Epidemiologic Notes and Reports

Salmonellosis — Kentucky

Three cases of multiply-resistant salmonellosis apparently acquired from consumption of unpasteurized milk occurred in a 4-member family in Kentucky in January.

The index cases were 2 children who developed fever, chills, diarrhea, and abdominal cramps on January 9, 1977. When they were hospitalized 2 days later, stool specimens from each child were positive for *Salmonella typhimurium.* On January 29, the father developed a similar illness, and a stool specimen yielded *S. typhimurium*. The mother was not ill, and a stool specimen she submitted on February 22 was negative for *Salmonella* organisms.

Investigation revealed that the father had worked on a dairy farm during December and January. On January 7, he had brought home raw milk from the farm; it was used for baking and as an ingredient in cake frosting. The cake was eaten that day by the 2 children, their father, and 2 family friends. The mother, who ate no frosting, and the 2 friends did not become ill. The remaining cake and frosting were discarded January 18. The children had no contact with anyone with gastrointestinal illness in the days before onset of illness, and no other suspect source of *Salmonella* organisms was identified.

The dairy farm where the father worked is a grade A operation with about 70 cows. The farm is owned by 2 brothers who, along with their mother, wives, and children — a total of 11 people — regularly drink raw milk produced there. There were no other employees, and no other persons used raw milk from the herd. Of these 11 family members, only one, an owner, had a recent gastrointestinal illness. He had had a 3-day illness during the week of January 17 that included abdominal pains, vomiting, diarrhea, and chills. He did not seek medical attention and took no antibiotics. A stool specimen obtained February 16 was negative for *Salmonella* organisms.

At the farm, calves are separated from the adult cows shortly after birth, kept in a calf barn, and allowed no direct contact with adult cows. From October 1976 to January 1977, there were at least 5 cases of diarrhea among the dairy cows; there were no cases of diarrhea or unusual morbidity or mortality among the calves. Two of the ill cows survived, one died, and the other 2 were shipped to slaughter. On February 16, fecal specimens were obtained from 8 cows, including the 2 that had survived the diarrheal illness, and 2 calves. There was no gastrointestinal illness in the herd at that time. Two fecal specimens were positive for *S. typhimurium;* one was from one of the previously symptomatic cows, the other from an apparently healthy calf. All *Salmonella* isolates from animals and humans had the same phage lysis pattern (1156121112A) and antibiogram, including resistances to streptomycin, tetracycline, ampicillin, carbenicillin, and penicillin. Four of the 5 isolates tested were also resistant to kanamycin.

Reported by RN McLeod, MD, Somerset; WL Adams, DVM, Mt. Vernon; LM Mullins, MS, Lincoln County Health Dept; MA Shepherd, MD, Lake Cumberland District Health Dept; RK Bonner, RN, BF Brown, MD, NJ Cambron, BS, C Hernandez, MD, MPH, State Epidemiologist, GE Killgore, DrPH, JW Skaggs, DVM, Bur for Health Services, Kentucky State Dept for Human Resources; in [Kentucky] Epidemiologic Notes and Reports 12(4):1, 1977; Bacteriology Div, Bur of Laboratories, Field Services Div, Bacterial Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: This investigation demonstrates that multiply-resistant *Salmonella* organisms may be transmitted from animals to man, emphasizing that increased antibiotic resistance of *Salmonella* organisms in animals poses a risk to humans. In this outbreak transmission in the children may have occurred through the ingestion of frosting made with contaminated raw milk. The father's long incubation period suggests that he may have acquired the disease from the children or from his continued exposure to the farm animals. Unpasteurized dairy products may carry microbial pathogens which may cause salmonellosis, brucellosis, tuberculosis, Q fever, typhoid fever, shigellosis, and streptococcal disease. When pasteurized, milk is rarely linked to such diseases. In countries where milk is not routinely pasteurized, milk-borne transmission of these illnesses remains a significant problem.

St. Louis Encephalitis — United States

The second documented case of St. Louis Encephalitis (SLE) infection for 1977 has been reported from Dallas, Texas. The patient was a 24-year-old woman who had onset of an illness on June 15; her symptoms included a stiff neck, myalgia, nausea, and a temperature of 102 F. She was hospitalized on June 22. Initially, her serum was negative for hemagglutination-inhibition (HI) antibodies to SLE; another serum sample drawn on June 28 had an HI titer of 1:180, however, documenting her infection.

The patient's residence is in northern Dallas, distant from the home of the first SLE case (*1*). Surveillance of human disease and vector-control efforts have been intensified. On July 8, the Dallas City and Harris County Health Departments and Region 5 of the Texas State Health Department requested each of the hospitals in the area to notify the appropriate health jurisdiction directly upon admission of any suspect encephalitis cases.

SLE activity during June also has been demonstrated by serologic evidence from birds bled in southern Illinois and central Ohio, in several sites in Mississippi, in Imperial County, California, and around Memphis, Tennessee, and Louisville, Kentucky.

Reported by JP Luby, MD, University of Texas; EL Berry, MD, L Freeman, JT Gentry, and JR Williams, MD, Dallas Environmental and Health Depts; L Chandler, RN, and CR Webb Jr, MD, State Epidemiologist, Texas State Dept of Health Resources; SLE Surveillance Vector-borne Diseases Div, Bur of Laboratories, and Viral Diseases Div, Bur of Epidemiology, CDC.

Reference

1. MMWR 26:215, 1977

Western Equine Encephalomyelitis in Animals — United States

Western Equine Encephalomyelitis (WEE) virus has been isolated from approximately 1 of every 50 *Culex tarsalis* mosquitoes collected from the Ft. Collins, Colorado, area in July by the Vector-borne Diseases Division Laboratory, CDC. The sera from a horse with encephalitis and from several sparrows from the Ft. Collins area have demonstrated evidence of WEE infection. Other suspect equine cases, including 4 horses in Pueblo, have been reported by the Colorado State Department of Health.

The California State Health Department has also isolated WEE virus from *C. tarsalis* mosquitoes collected near Needles, California, and from the California-Arizona border near Mojave, Arizona. No equine cases have yet been confirmed in California. However, laboratory-documented cases of WEE in horses have been reported during June and July from 12 other states — Idaho, Iowa, Minnesota, Nebraska, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Wyoming — by the Veterinary Services Laboratories, U. S. Department of Agriculture, in Ames, Iowa.

Reported by TM Vernon Jr, MD, State Epidemiologist, Colorado State Dept of Health; R Emmons, PhD, California Viral and Rickettsial Disease Laboratory; R Peters, PhD, Vector Control Section, California State Dept of Health; J Pearson, DVM, Veterinary Services Laboratories, USDA, Ames, Iowa; Vector-borne Diseases Div, Bur of Laboratories, and Viral Diseases Div, Bur of Epidemiology, CDC.

International Notes

Follow-up on Dengue — Jamaica

Dengue is now reportedly widespread in Jamaica (*1*). The San Juan Laboratories, Bureau of Laboratories, CDC, has isolated dengue virus type 1 in mosquitoes and mice inoculated with serum from 2 Jamaican patients. Four states — Florida, Louisiana, Maryland, and New York — and the District of Columbia have notified CDC of acute febrile illnesses compatible with dengue in persons who returned from Jamaica in July.

Haiti and the Dominican Republic are beginning surveillance of dengue and planning for control of the disease's mosquito vector, *Aedes aegypti.* Puerto Rico is also extending surveillance and vector-control measures.

Reported by the San Juan Laboratories, Bur of Laboratories, and Viral Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: Although the risk of acquiring dengue cannot be estimated, travelers to Jamaica should take precautions to avoid mosquito bites. They should also advise their physicians of any acute febrile illness within 2 weeks after leaving Jamaica.

Type 1 viruses have never before been isolated in the western hemisphere. However, there is serologic evidence that dengue type 1 may have existed in the western hemisphere more than 70 years ago (*2*). Other serologic evidence suggests the presence of dengue type 1 in the Caribbean as recently as the 1940s (*3*).

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1. MMWR 26:225, 1977
2. Rosen L: Observations on the epidemiology of dengue in Panama. Am J Hyg 68:45-58, 1958
3. Downs WG, Anderson CR, Theiler M: Neutralizing antibodies against certain viruses in the sera of residents of Trinidad, B.W.I. Am J Trop Med Hyg 5:626-641, 1956

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