

# M M W R

## MORBIDITY AND MORTALITY WEEKLY REPORT

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### *Epidemiologic Notes and Reports*

#### Drug-Resistant Tuberculosis — Mississippi

In August 1976, tuberculosis was diagnosed in an 18-year-old high school student in rural north Mississippi. The clinical onset of his illness was probably in March 1976, when he experienced an episode of fever, cough, and chest pain. The cough, associated with weight loss, persisted. Because of poor performance at football practice in August, the coach recommended that he consult a physician. Subsequent evaluation revealed extensive bilateral cavitory pulmonary disease on chest roentgenogram, confirmed bacteriologically as tuberculosis; both the smear and the culture were positive. The tubercle bacilli were found to be resistant to isoniazid (INH), streptomycin (SM), and para-aminosalicylic acid (PAS).

Both parents of the student had had tuberculosis. The father was diagnosed in June 1964 and after a period of irregular treatment was found in September 1965 to have organisms resistant to INH, SM, PAS, cycloserine (CS), and viomycin (VM). Despite continued erratic treatment, primarily with INH alone, he achieved radiographic stability and bacteriologic negativity and was dismissed from follow-up in 1969. At the time of the student's diagnosis in August 1976, the father was again found to be excreting tubercle bacilli which were resistant to INH, SM, and PAS. The student's mother was diagnosed in August 1966, did poorly on treatment, and died in a tuberculosis sanatorium in July 1967. Her sputum cultures were not tested for drug susceptibility. The student had a positive tuberculin skin-test reaction in 1966, at which time his chest roentgenogram was normal. He was issued 10 1-month supplies of INH for preventive therapy which he reportedly took over a 15-month period starting in November 1966. He remained in good health until the onset of his symptoms in 1976.

Initial investigation of the student's school contacts in 1976 centered around fellow members of the football and basketball teams and fellow students in various classes. Tuberculin skin testing revealed reactor rates in the range of 50-80%. Subsequent testing of the entire junior and senior high school population (grades 8-12) showed an overall reactor rate of about 21%. Comparison testing of grades 11-12 in 3 other county schools gave reactor rates of 3-8%. Since teachers in the student's school were examined annually for tuberculosis, it was possible to determine that 7 of

28 high school teachers and 2 of 26 junior high school teachers (both athletic coaches) had converted from a negative to a positive skin test since the previous year. In general, reactor rates were higher in high school (grades 10-12) than in junior high school (grades 8-9), in males than in females, in blacks than in whites, and in athletes than in non-athletes. All tuberculin reactors in the student's school had negative chest roentgenograms, and INH preventive therapy was recommended for them.

In April 1977, a female high school senior was diagnosed as having pulmonary tuberculosis. She had missed the skin testing because she was temporarily living out of the state. In July 1977, a male sophomore football player was diagnosed as having cavitory pulmonary tuberculosis. His skin-test reaction in August 1976 had been 25 mm, his chest roentgenogram was negative at that time, and he had been issued a 6-month supply of INH for preventive therapy. In both cases organisms from pre-treatment specimens were resistant to INH, SM, and PAS.

Since 1965, there have been a total of 23 cases in this county known to have drug-resistant organisms. Fifteen of these cases have organisms resistant to INH, SM, and PAS; 10 of these were reported in 1976-77. Most of these recent cases had no history of prior treatment, suggesting transmission of resistant bacilli.

Of the 15 cases resistant to INH, SM, and PAS, 6—in addition to the 5 previously described—appear to be linked epidemiologically to this outbreak (e.g., babysitter, relative, friend). Two other cases were also linked to the outbreak: a 22-month-old child from whom tubercle bacilli have not been isolated and a 1-year-old child who died of tuberculous meningitis in 1969. The drug susceptibility pattern of the latter case was not determined.

Epidemiologic investigation is continuing to determine if additional links can be established among these cases of tuberculosis with multiply-resistant organisms. All of the patients currently known to have drug resistance have been switched to alternate effective drug regimens.

*Reported by DL Blakey, MD, State Epidemiologist, Mississippi State Board of Health; and Tuberculosis Control Div, Bur of State Services, Field Services Div, Bur of Epidemiology, CDC.*

## Tuberculosis — Continued

**Editorial Note:** This is an unusual outbreak of tuberculosis because of the striking pattern of multiple-drug resistance. Transmission of drug-resistant tubercle bacilli has been inferred in the past from the occurrence of primary drug resistance (resistance of bacilli in patients with no history of prior treatment) and from descriptions of individual drug-resistance cases linked to known sources of exposure with identical resistance patterns (1,2). However, this is the first report to CDC of a multiple-case outbreak in which transmission of multiply drug-resistant bacilli appears to have been documented.

Although the source of the outbreak cannot be ascertained, it is very likely that the student was infected with a multiply-resistant bacillus in 1965 or 1966. Isoniazid (presuming he took it) apparently offered no protection, and after a decade of dormancy his infection progressed, resulting in clinical illness. The high skin-test reactor rates among his school contacts probably resulted from the prolonged and frequent exposure to a highly infective case of a large number of susceptible (uninfected) persons in an environment conducive to transmission. Within a year of exposure, 2 of his fellow students developed tuberculosis caused by organisms with the same drug-resistance pattern. Other cases of drug-resistant tuberculosis in this community reported in 1976 and 1977 have been linked epidemiologically to previously reported patients who were contacts of the

student's father in the 1960s. Thus, it appears that at least 2 generations of transmission of this organism have occurred.

Containment of a tuberculosis outbreak requires emphasis both on *treating* cases and on *preventing* cases from developing in positive reactors (i.e., infected persons). This outbreak differs from most others, however, because of drug-resistance. Although there are several anti-tuberculosis drugs which can be used in treating resistant cases, no data are available on the efficacy or safety of drugs—other than INH—in preventing tuberculosis in reactors. Therefore, containment in this instance rests largely on interrupting transmission by prescribing appropriate therapy to the cases and ensuring that it is taken.

Even though INH may not be an effective preventive tool in the presence of INH-resistance, it is nevertheless the recommended measure for 3 reasons: 1. some portion of the tuberculin-positive population is infected with INH-susceptible organisms, but skin testing cannot identify those for whom this therapy is likely to be effective; 2. should any of the reactors become cases, they will not have developed resistance to effective alternative drugs; and 3. despite the *in vitro* demonstration of INH-resistance, there is a possibility that INH treatment may be effective *in vivo*.

Because INH preventive therapy may be ineffective, however, continuing surveillance of the infected population

(Continued on page 423)

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

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

DISEASE	50th WEEK ENDING		MEDIAN 1972-1976	CUMULATIVE, FIRST 50 WEEKS		
	December 17, 1977	December 18, 1976		December 17, 1977	December 18, 1976	MEDIAN 1972-1976
Aseptic meningitis	87	47	60	4,420	3,120	3,999
Brucellosis	1	1	3	210	278	182
Chickenpox	2,619	4,022	---	176,656	175,113	---
Diphtheria	1	1	6	81	146	190
Encephalitis	Primary	11	12	1,077	1,359	1,359
	Post-Infectious	6	2	199	256	266
Hepatitis, Viral	Type B	376	304	208	15,613	14,393
	Type A	662	715	798	29,577	32,130
	Type unspecified	198	141	---	8,855	7,756
Malaria	4	8	4	501	444	400
Measles (rubeola)	166	837	295	54,374	38,672	26,237
Meningococcal infections, total	33	35	24	1,701	1,473	1,316
Civilian	38	25	27	1,690	1,453	1,296
Military	---	---	---	11	20	28
Mumps	354	597	1,416	19,489	37,278	56,236
Pertussis	78	14	---	1,828	897	---
Rubella (German measles)	113	175	155	19,787	11,917	15,993
Tetanus	2	1	1	69	66	93
Tuberculosis	682	699	---	28,993	31,428	---
Tularemia	1	3	2	156	133	135
Typhoid fever	3	3	10	367	388	388
Typhus, tick-borne (Rky. Mt. spotted fever)	2	6	1	1,105	890	767
Venereal Diseases:						
Gonorrhea						
Civilian	21,325	19,795	---	964,409	970,104	---
Military	355	439	---	25,670	28,081	---
Syphilis, primary and secondary	508	456	---	19,789	22,992	---
Civilian	2	5	---	293	329	---
Military	---	---	---	---	---	---
Rabies in animals	23	49	34	2,897	2,832	2,832

Table II. Notifiable Diseases of Low Frequency: United States

	CUM.		CUM.
Anthrax:	---	Poliomyelitis, total: *Ohio 1.	18
Botulism:	103	Paralytic: S.C. 1, Tex. 1.	16
Congenital rubella syndrome: Tex. 1.	16	Psittacosis: Calif. 1.	62
Leprosy: *Calif. 3.	121	Rabies in man:	1
Leptospirosis: Ohio 1.	48	Trichinosis: Mass. 1, NYC 1, Ohio 1.	110
Plague:	17	Typhus, murine:	70

\*The following delayed reports will be reflected in next week's issue: Leprosy: Tex. 10; Polio, unsp.: N. Dak. 1

**Table III**  
**Cases of Specified Notifiable Diseases: United States**  
*Weeks Ending December 17, 1977 and December 18, 1976 — 50th Week*

AREA REPORTING	ASEPTIC MENIN- GITIS	BRUCEL- LOSIS	CHICKEN- POX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS, VIRAL			MALARIA	
						Primary: Arthropod- borne and Unspecified		Post In- fectious	Type B	Type A	Type Unspecified		
						1977	1978	1977	1977	1977	1977		
UNITED STATES .....	87	1	2,619	1	81	11	12	6	376	662	198	4	501
NEW ENGLAND .....	1	-	235	-	-	-	-	-	11	9	7	1	26
Maine .....	-	-	46	-	-	-	-	-	-	-	-	-	1
New Hampshire* .....	-	-	1	-	-	-	-	-	1	3	-	-	3
Vermont .....	-	-	40	-	-	-	-	-	2	-	-	-	2
Massachusetts .....	1	-	72	-	-	-	-	-	1	2	6	-	4
Rhode Island .....	-	-	23	-	-	-	-	-	3	1	-	-	5
Connecticut .....	-	-	53	-	-	-	-	-	4	3	1	1	11
MIDDLE ATLANTIC .....	16	-	233	-	5	1	4	1	67	66	20	1	124
Upstate New York .....	10	-	128	-	-	-	4	1	5	6	1	-	24
New York City .....	5	-	30	-	5	-	-	-	23	16	6	1	61
New Jersey* .....	-	-	NN	-	-	-	-	-	18	24	6	-	19
Pennsylvania* .....	1	-	75	-	-	1	-	-	21	20	7	-	20
EAST NORTH CENTRAL .....	8	1	1,171	-	-	6	-	-	43	94	15	-	37
Ohio .....	-	-	80	-	-	3	-	-	10	22	-	-	13
Indiana* .....	-	-	213	-	-	2	-	-	2	5	3	-	2
Illinois .....	1	-	182	-	-	-	-	-	13	28	6	-	2
Michigan .....	2	-	354	-	-	1	-	-	10	17	5	-	17
Wisconsin .....	5	1	342	-	-	-	-	-	8	22	1	-	3
WEST NORTH CENTRAL .....	1	-	189	-	1	1	2	2	7	31	5	-	36
Minnesota .....	-	-	-	-	-	-	-	-	-	12	-	-	13
Iowa .....	-	-	84	-	-	-	-	-	-	1	-	-	1
Missouri* .....	1	-	8	-	1	-	-	-	5	8	2	-	16
North Dakota* .....	-	-	7	-	-	-	-	-	-	-	-	-	1
South Dakota .....	-	-	6	-	-	-	-	-	2	-	-	-	1
Nebraska* .....	-	-	10	-	-	1	2	-	-	9	3	-	-
Kansas .....	-	-	74	-	-	-	-	2	-	1	-	-	4
SOUTH ATLANTIC .....	12	-	216	-	-	-	1	1	46	100	15	1	93
Delaware .....	-	-	6	-	-	-	-	-	-	-	-	-	-
Maryland .....	1	-	4	-	-	-	-	-	7	6	2	-	23
District of Columbia .....	-	-	-	-	-	-	-	-	-	4	-	-	6
Virginia* .....	3	-	18	-	-	-	-	-	4	16	5	1	23
West Virginia .....	-	-	97	-	-	-	-	-	1	4	-	-	2
North Carolina .....	4	-	NN	-	-	-	1	-	5	14	5	-	10
South Carolina .....	-	-	-	-	-	-	-	-	2	1	-	-	-
Georgia .....	-	-	-	-	-	-	-	-	14	37	-	-	8
Florida .....	4	-	91	-	-	-	-	1	13	18	3	-	21
EAST SOUTH CENTRAL .....	7	-	56	-	-	1	-	1	17	21	2	-	11
Kentucky .....	2	-	39	-	-	-	-	-	8	4	1	-	4
Tennessee .....	-	-	NN	-	-	-	-	-	6	8	1	-	1
Alabama .....	4	-	11	-	-	-	-	1	3	6	-	-	5
Mississippi .....	1	-	6	-	-	1	-	-	-	3	-	-	1
WEST SOUTH CENTRAL .....	18	-	151	-	3	1	2	-	19	69	20	-	29
Arkansas .....	-	-	62	-	-	-	1	-	1	7	3	-	3
Louisiana .....	2	-	NN	-	-	1	-	-	6	13	5	-	2
Oklahoma .....	3	-	19	-	-	-	-	-	2	10	3	-	-
Texas .....	13	-	70	-	3	-	1	-	10	39	9	-	24
MOUNTAIN .....	1	-	118	-	6	-	-	1	16	90	25	-	15
Montana .....	-	-	35	-	-	-	-	-	4	9	-	-	2
Idaho .....	-	-	39	-	-	-	-	-	-	-	-	-	-
Wyoming .....	-	-	1	-	-	-	-	-	-	-	1	-	2
Colorado .....	1	-	18	-	-	-	-	-	5	14	4	-	7
New Mexico .....	-	-	-	-	5	-	-	-	3	27	1	-	2
Arizona .....	-	-	NN	-	1	-	-	-	4	39	18	-	2
Utah .....	-	-	24	-	-	-	-	1	-	1	1	-	-
Nevada* .....	-	-	1	-	-	-	-	-	-	-	-	-	-
PACIFIC .....	23	-	250	1	66	1	3	-	150	182	89	1	130
Washington .....	2	-	238	1	60	-	1	-	12	39	18	-	5
Oregon .....	1	-	-	-	-	-	-	-	16	21	2	-	2
California* .....	19	-	-	-	4	1	2	-	122	120	68	1	117
Alaska .....	-	-	10	-	2	-	-	-	-	1	-	-	2
Hawaii .....	1	-	2	-	-	-	-	-	-	1	1	-	4
Guam .....	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
Puerto Rico .....	-	-	-	-	1	-	-	-	1	6	-	-	2
Virgin Islands .....	-	-	1	-	-	-	-	-	-	-	-	-	-

NN: Not notifiable

NA: Not available

\*The following delayed reports will be reflected in next week's issue: Asep. meng.: Pa. -2, Ind. +1, Nev. +1; Chickenpox: Calif. +24; Hep. B: N.J. +17, Pa. +19, N. Dak. +1, Tex. +1, Nev. +1; Hep. A: N.J. +16, Pa. +34, Mo. -4, N. Dak. -1, Nebr. +1, Tex. -1, Nev. +7; Hep. unsp. N.H. +1, N.J. -33, Pa. +5, Ind. -1, Mo. -2, Va. -1, Nev. +3.

**Table III-Continued**  
**Cases of Specified Notifiable Diseases: United States**  
*Weeks Ending December 17, 1977 and December 18, 1976 - 50th Week*

REPORTING AREA	MEASLES (Rubella)			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 .....	166	54,374	38,672	38	1,701	1,473	354	19,489	78	113	19,787	69
NEW ENGLAND .....	2	2,502	502	6	79	73	9	754	-	1	1,233	1
Maine .....	-	173	10	-	4	1	-	82	-	-	71	-
New Hampshire .....	-	512	9	-	4	6	2	95	-	-	247	-
Vermont .....	-	294	144	1	8	6	-	8	-	-	65	-
Massachusetts .....	1	647	38	1	24	24	1	136	-	1	391	-
Rhode Island .....	1	65	15	-	2	8	1	68	-	-	136	-
Connecticut .....	-	311	286	4	37	28	5	365	-	-	323	1
MIDDLE ATLANTIC .....	31	8,542	7,382	6	243	216	17	1,452	2	6	6,136	7
Upstate New York .....	19	3,882	2,971	-	51	84	5	349	2	3	3,385	2
New York City .....	1	801	486	4	67	54	6	529	-	1	335	1
New Jersey .....	5	210	627	-	54	31	5	374	-	-	1,786	2
Pennsylvania* .....	6	3,649	3,298	2	71	47	1	200	-	2	630	2
EAST NORTH CENTRAL .....	58	11,853	16,657	2	177	181	173	6,610	6	57	4,154	8
Ohio .....	4	1,865	620	1	70	68	47	836	3	-	1,144	3
Indiana .....	4	4,372	4,147	-	15	16	8	368	-	6	986	1
Illinois .....	7	1,389	1,837	-	26	20	63	1,289	3	5	361	2
Michigan .....	36	1,246	6,085	1	50	65	39	2,244	-	26	1,085	2
Wisconsin* .....	7	2,481	3,963	-	16	12	16	1,873	-	20	578	-
WEST NORTH CENTRAL .....	22	9,423	1,822	3	89	99	37	4,433	2	5	630	10
Minnesota .....	10	2,644	431	-	25	14	4	38	-	-	17	2
Iowa .....	8	4,324	90	-	10	10	-	1,340	-	2	179	1
Missouri* .....	1	917	432	2	38	49	31	1,623	2	3	47	4
North Dakota .....	-	29	3	-	1	3	1	21	-	-	21	-
South Dakota .....	-	75	4	-	6	3	-	59	-	-	89	-
Nebraska .....	-	214	55	-	2	6	-	84	-	-	3	-
Kansas .....	3	1,220	807	1	7	14	1	1,268	-	-	274	3
SOUTH ATLANTIC .....	17	4,728	2,251	13	373	294	16	975	8	12	1,733	13
Delaware .....	-	22	130	-	7	9	3	153	-	-	29	-
Maryland .....	-	372	715	1	28	25	3	87	-	-	6	-
District of Columbia .....	-	14	13	-	1	4	-	6	-	-	-	-
Virginia .....	-	2,750	814	2	37	43	5	123	-	-	585	1
West Virginia .....	2	274	212	-	10	8	2	218	-	5	170	-
North Carolina .....	1	66	18	2	78	54	1	71	2	5	453	1
South Carolina .....	1	162	4	3	41	36	-	21	-	-	237	-
Georgia .....	1	770	4	1	54	32	-	36	5	1	58	1
Florida .....	12	298	341	4	117	83	2	260	1	1	195	10
EAST SOUTH CENTRAL .....	22	2,061	970	1	168	139	15	1,182	1	9	1,982	6
Kentucky .....	2	1,193	760	-	32	24	1	121	-	-	94	1
Tennessee .....	13	732	193	1	46	61	6	652	1	9	1,769	3
Alabama .....	-	79	-	-	55	40	8	365	-	-	110	2
Mississippi .....	7	57	17	-	35	14	-	44	-	-	9	-
WEST SOUTH CENTRAL .....	2	2,208	879	2	315	216	37	1,755	1	3	838	14
Arkansas .....	1	36	18	-	21	16	6	152	-	-	3	2
Louisiana .....	1	83	298	-	138	40	1	61	-	-	27	3
Oklahoma .....	-	66	305	-	15	22	12	588	-	2	38	-
Texas .....	-	2,023	258	2	141	138	18	954	1	1	770	9
MOUNTAIN .....	3	2,557	5,386	1	42	40	9	674	1	3	398	2
Montana .....	-	1,163	374	-	7	6	1	13	1	-	17	1
Idaho .....	-	163	2,024	1	6	6	2	132	-	-	13	-
Wyoming .....	-	19	4	-	2	-	-	4	-	-	6	1
Colorado .....	1	511	429	-	1	6	3	299	-	-	247	-
New Mexico .....	-	256	16	-	11	4	-	116	-	-	11	-
Arizona .....	2	329	235	-	10	10	-	-	-	2	23	-
Utah .....	-	23	2,237	-	4	6	2	93	-	1	72	-
Nevada .....	-	93	67	-	1	2	1	17	-	-	9	-
PACIFIC .....	9	10,500	2,823	4	215	215	41	1,654	57	17	2,683	8
Washington .....	-	559	361	-	33	36	7	339	3	2	468	-
Oregon .....	-	367	175	-	18	19	12	317	47	2	141	-
California .....	9	9,478	2,270	4	125	135	18	923	7	13	1,659	8
Alaska .....	-	60	11	-	34	22	3	34	-	-	1	-
Hawaii .....	-	36	6	-	5	3	1	41	-	-	414	-
Guam .....	NA	9	16	-	1	-	NA	8	NA	NA	11	-
Puerto Rico .....	61	1,091	499	-	1	5	14	923	-	1	36	11
Virgin Islands .....	-	14	20	-	-	2	-	195	-	-	2	-

NA: Not available

\*The following delayed reports will be reflected in next week's issue: Measles: Pa. +18, Wis. -1; Men. inf.: Pa. -8, Pertussis: Mo. +1.

Table III-Continued  
 Cases of Specified Notifiable Diseases: United States  
 Weeks Ending December 17, 1977 and December 18, 1976 - 50th Week

REPORTING AREA	TUBERCULOSIS		TULA-REMI	TYPHOID FEVER		TYPHUS-FEVER TICK-BORNE (RMSF)		VENEREAL DISEASES (Civilian Cases Only)					RABIES IN ANIMALS	
	1977	CUM. 1977	CUM. 1977	1977	CUM. 1977	1977	CUM. 1977	GONORRHEA		SYPHILIS (Pri. & Sec.)		CUM. 1977		
								CUMULATIVE		1977	CUMULATIVE			
								1977	1976		1977		1976	
UNITED STATES .....	682	28,993	156	3	367	2	1,105	21,325	964,409	970,104	508	19,789	22,992	2,897
NEW ENGLAND .....	21	1,064	2	-	19	-	11	504	25,976	27,177	7	778	788	49
Maine .....	1	78	-	-	-	-	-	41	1,987	2,300	-	28	22	32
New Hampshire .....	1	28	-	-	-	-	-	18	1,080	833	-	5	10	1
Vermont .....	1	36	-	-	-	-	-	5	630	688	-	7	9	-
Massachusetts .....	9	602	2	-	13	-	5	263	11,084	12,791	4	538	564	8
Rhode Island .....	-	87	-	-	3	-	3	31	1,993	1,962	1	10	19	-
Connecticut .....	9	233	-	-	3	-	3	146	9,202	8,603	2	190	164	8
MIDDLE ATLANTIC .....	97	4,637	3	1	70	-	83	1,851	100,990	111,358	94	2,839	3,834	107
Upstate New York* .....	15	779	3	-	8	-	41	262	17,565	18,376	6	255	228	59
New York City .....	19	1,463	-	1	29	-	2	769	38,973	48,735	55	1,791	2,444	-
New Jersey .....	28	1,175	-	-	22	-	11	163	17,884	17,190	14	375	538	28
Pennsylvania* .....	35	1,220	-	-	11	-	29	657	26,568	27,057	19	418	624	20
EAST NORTH CENTRAL .....	108	4,489	3	-	33	-	40	3,074	152,251	153,190	44	2,037	2,022	162
Ohio .....	21	819	1	-	10	-	20	488	40,061	38,302	7	458	481	16
Indiana .....	20	512	-	-	3	-	2	450	14,305	14,937	4	154	102	11
Illinois .....	36	1,706	-	-	6	-	16	974	49,061	52,844	28	1,081	1,080	42
Michigan* .....	29	1,252	-	-	13	-	2	858	35,460	33,525	4	238	253	6
Wisconsin .....	2	200	2	-	1	-	-	304	13,364	13,582	1	106	106	87
WEST NORTH CENTRAL .....	28	987	28	-	24	-	34	912	50,087	51,316	11	439	445	744
Minnesota .....	8	202	-	-	5	-	-	216	8,970	8,901	5	152	101	265
Iowa .....	3	91	-	-	-	-	1	97	5,881	6,378	-	40	41	124
Missouri .....	13	434	25	-	14	-	18	369	20,679	20,491	5	170	173	54
North Dakota .....	-	27	-	-	1	-	-	16	932	810	-	3	-	116
South Dakota .....	-	49	2	-	-	-	2	45	1,547	1,532	1	10	6	139
Nebraska .....	-	39	1	-	1	-	2	90	4,330	4,330	-	24	37	3
Kansas .....	4	145	-	-	3	-	11	79	7,748	8,874	-	40	87	43
SOUTH ATLANTIC .....	137	6,295	12	1	59	-	578	5,268	236,396	235,744	102	5,322	6,879	349
Delaware .....	-	53	-	-	-	-	3	55	3,176	3,325	-	20	64	2
Maryland .....	14	902	2	-	5	-	77	722	29,683	30,523	-	310	532	-
District of Columbia .....	7	334	-	-	1	-	-	323	15,496	15,908	4	526	537	-
Virginia .....	15	718	3	-	10	-	153	671	24,649	24,913	13	529	665	5
West Virginia .....	8	230	-	-	6	-	5	108	3,348	3,084	-	5	22	9
North Carolina .....	33	1,037	2	-	5	-	221	665	35,497	34,118	14	704	1,214	13
South Carolina .....	8	581	2	1	7	-	53	750	22,661	22,510	7	243	367	36
Georgia .....	29	878	3	-	5	-	65	981	45,347	44,838	24	1,213	1,056	206
Florida .....	23	1,562	-	-	20	-	1	993	56,539	56,525	40	1,772	2,422	78
EAST SOUTH CENTRAL .....	66	2,709	9	-	10	-	176	2,304	84,945	85,135	10	759	869	78
Kentucky .....	25	708	3	-	5	-	43	331	11,555	11,239	2	108	119	29
Tennessee .....	27	871	5	-	2	-	105	603	33,428	34,219	4	243	287	37
Alabama .....	11	660	1	-	1	-	19	432	23,415	23,587	1	161	186	12
Mississippi .....	3	470	-	-	2	-	9	938	16,547	16,090	3	247	277	-
WEST SOUTH CENTRAL .....	85	3,421	78	-	34	2	164	2,669	122,740	121,885	111	2,853	2,750	754
Arkansas* .....	11	372	53	-	8	-	54	192	9,176	11,615	-	63	101	113
Louisiana .....	12	598	1	-	1	-	6	428	18,797	17,536	32	651	554	22
Oklahoma* .....	6	288	13	-	2	2	75	275	11,811	11,863	3	81	91	237
Texas .....	56	2,163	11	-	23	-	29	1,774	82,956	80,871	76	2,058	2,004	382
MOUNTAIN .....	27	807	15	-	28	-	14	940	39,135	39,784	8	409	560	183
Montana .....	1	51	1	-	-	-	6	45	2,067	1,974	-	6	11	45
Idaho .....	2	31	-	-	-	-	5	30	1,757	2,147	-	12	23	-
Wyoming .....	-	19	1	-	-	-	2	18	924	821	-	3	7	1
Colorado .....	6	112	3	-	8	-	1	271	10,255	10,046	5	123	134	57
New Mexico .....	3	155	1	-	-	-	-	100	5,713	6,957	-	84	134	21
Arizona .....	14	339	3	-	14	-	-	249	10,732	11,810	3	154	199	48
Utah .....	-	43	6	-	5	-	-	69	2,379	2,241	-	11	20	11
Nevada .....	1	57	-	-	1	-	-	158	5,308	3,788	-	16	32	-
PACIFIC .....	113	4,584	6	1	90	-	5	3,803	151,889	144,515	121	4,353	4,845	471
Washington .....	NA	290	-	-	2	-	-	330	11,736	12,143	NA	241	169	2
Oregon .....	2	168	1	-	3	-	1	346	10,596	10,724	5	141	106	8
California .....	102	3,481	5	1	83	-	4	2,974	121,689	114,853	113	3,904	4,460	424
Alaska* .....	-	85	-	-	-	-	-	63	4,748	4,180	-	27	25	37
Hawaii .....	9	560	-	-	2	-	-	90	3,120	2,615	3	40	85	-
Guam .....	NA	53	-	NA	1	NA	-	NA	198	329	NA	2	2	-
Puerto Rico .....	-	361	-	-	7	-	-	56	3,042	2,518	6	523	585	51
Virgin Islands .....	-	2	-	-	-	-	-	10	218	219	-	9	52	-

NA: Not available

\*The following delayed reports will be reflected in next week's issue: TB: Mich. -4, Md. -3, Ark. -1; Tularemia: Okla. -2; Typhoid fever: Nev. +1; GC: Wyo. +1 mil., Alaska +119 civ. +1 mil.; An rabies: Ups NY +2, Pa. -2.

Table IV  
Deaths in 121 United States Cities\*  
Week Ending December 17, 1977 - 50th Week

REPORTING AREA	ALL CAUSES						Pneumonia and Influenza ALL AGES	REPORTING AREA	ALL CAUSES						Pneumonia and Influenza ALL AGES
	ALL AGES	65 Years and Over	45-64 Years	25-44 Years	Under 1 Year	ALL AGES			ALL AGES	65 Years and Over	45-64 Years	25-44 Years	Under 1 Year	ALL AGES	
<b>NEW ENGLAND</b> .....	738	499	169	30	14	37		<b>SOUTH ATLANTIC</b> .....	1,177	684	306	92	59	40	
Boston, Mass. ....	206	130	45	13	6	7		Atlanta, Ga. ....	130	77	35	12	5	4	
Bridgeport, Conn. ....	37	29	7	1	-	4		Baltimore, Md. ....	175	97	48	13	11	2	
Cambridge, Mass. ....	29	22	5	2	-	6		Charlotte, N. C. ....	65	31	21	9	2	-	
Fall River, Mass. ....	29	20	6	2	-	-		Jacksonville, Fla. ....	75	40	21	6	4	1	
Hartford, Conn. ....	69	47	15	2	2	-		Miami, Fla. ....	165	100	43	17	1	9	
Lowell, Mass. ....	30	20	7	2	-	3		Norfolk, Va. ....	57	32	16	6	1	1	
Lynn, Mass. ....	23	17	6	-	-	2		Richmond, Va. ....	77	46	23	5	2	4	
New Bedford, Mass. ....	26	24	2	-	-	-		Savannah, Ga. ....	34	14	13	4	1	2	
New Haven, Conn. ....	48	27	16	4	-	1		St. Petersburg, Fla. ....	79	64	8	1	3	2	
Providence, R.I. ....	88	52	26	-	3	2		Tampa, Fla. ....	82	57	12	5	5	7	
Somerville, Mass. ....	15	9	5	1	-	1		Washington, D. C. ....	193	101	51	11	24	8	
Springfield, Mass. ....	44	29	11	2	2	5		Wilmington, Del. ....	45	25	15	3	-	-	
Waterbury, Conn. ....	40	30	9	1	-	2									
Worcester, Mass. ....	54	43	9	-	1	4		<b>EAST SOUTH CENTRAL</b> .....	744	442	193	45	39	40	
<b>MIDDLE ATLANTIC</b> .....	3,048	1,941	761	189	76	148		Birmingham, Ala. ....	140	86	34	12	4	2	
Albany, N. Y. ....	58	37	14	5	2	1		Chattanooga, Tenn. ....	50	31	10	3	3	7	
Allentown, Pa. ....	22	17	5	-	-	2		Knoxville, Tenn. ....	36	23	8	2	-	1	
Buffalo, N. Y. ....	92	58	25	4	3	5		Louisville, Ky. ....	115	69	31	4	7	14	
Camden, N. J. ....	40	17	16	2	1	2		Memphis, Tenn. ....	185	109	52	8	12	2	
Elizabeth, N. J. ....	30	19	7	2	-	1		Mobile, Ala. ....	61	34	18	5	1	4	
Erie, Pa. ....	35	24	7	2	2	-		Montgomery, Ala. ....	50	28	13	3	5	2	
Jersey City, N. J. ....	82	48	27	3	3	2		Nashville, Tenn. ....	107	62	27	8	7	8	
Newark, N. J. ....	65	31	23	8	-	1									
New York City, N. Y. ....	1,495	973	338	105	39	64		<b>WEST SOUTH CENTRAL</b> .....	1,165	664	299	103	55	30	
Paterson, N. J. ....	27	18	5	-	3	2		Austin, Tex. ....	58	45	7	2	1	4	
Philadelphia, Pa. ....	485	300	130	26	14	28		Baton Rouge, La. ....	27	17	3	4	2	1	
Pittsburgh, Pa. ....	171	103	50	9	4	11		Corpus Christi, Tex. ....	21	11	7	-	3	-	
Reading, Pa. ....	54	37	13	4	-	3		Dallas, Tex. ....	169	91	49	21	3	3	
Rochester, N. Y. ....	136	92	27	9	3	17		El Paso, Tex. ....	71	38	18	5	3	5	
Schenectady, N. Y. ....	25	19	5	1	-	1		Fort Worth, Tex. ....	78	44	11	10	11	2	
Scranton, Pa. ....	45	25	17	1	-	1		Houston, Tex. ....	259	134	71	27	14	4	
Syracuse, N. Y. ....	79	51	24	3	1	1		Little Rock, Ark. ....	55	32	15	3	1	1	
Trenton, N. J. ....	47	26	15	4	1	2		New Orleans, La. ....	173	101	50	11	6	-	
Utica, N. Y. ....	21	17	4	-	-	3		San Antonio, Tex. ....	114	68	30	11	3	3	
Yonkers, N. Y. ....	39	29	9	1	-	1		Shreveport, La. ....	67	36	20	5	5	1	
								Tulsa, Okla. ....	73	47	18	4	3	6	
<b>EAST NORTH CENTRAL</b> .....	2,555	1,509	700	150	110	77		<b>MOUNTAIN</b> .....	533	304	146	45	13	20	
Akron, Ohio ....	64	51	10	1	2	-		Albuquerque, N. Mex. ....	56	29	13	9	3	4	
Canton, Ohio ....	47	27	13	4	1	-		Colorado Springs, Colo. ....	29	21	3	3	-	2	
Chicago, Ill. ....	672	342	203	51	53	18		Denver, Colo. ....	139	79	40	11	1	5	
Cincinnati, Ohio ....	155	95	41	11	4	2		Las Vegas, Nev. ....	40	19	16	3	-	3	
Cleveland, Ohio ....	217	123	76	9	4	12		Ogden, Utah ....	16	12	2	1	1	1	
Columbus, Ohio ....	131	73	40	4	6	2		Phoenix, Ariz. ....	111	57	34	9	3	-	
Dayton, Ohio ....	147	93	46	5	2	3		Pueblo, Colo. ....	27	19	6	1	-	5	
Detroit, Mich. ....	337	200	89	23	14	7		Salt Lake City, Utah ....	43	18	18	5	2	-	
Evansville, Ind. ....	37	26	7	3	-	3		Tucson, Ariz. ....	72	50	14	3	3	-	
Fort Wayne, Ind. ....	63	41	11	6	4	9									
Gary, Ind. ....	20	9	9	2	-	1		<b>PACIFIC</b> .....	1,690	1,074	389	110	64	32	
Grand Rapids, Mich. ....	61	40	12	3	3	4		Berkeley, Calif. ....	21	16	3	1	-	-	
Indianapolis, Ind. ....	156	98	35	12	7	3		Fresno, Calif. ....	66	34	23	4	4	-	
Madison, Wis. ....	34	20	6	3	1	4		Glendale, Calif. ....	27	23	2	-	-	-	
Milwaukee, Wis. ....	120	81	28	3	3	1		Honolulu, Hawaii ....	59	34	11	4	6	1	
Peoria, Ill. ....	37	25	11	-	1	3		Long Beach, Calif. ....	110	71	25	5	4	4	
Rockford, Ill. ....	53	39	9	2	1	4		Los Angeles, Calif. ....	484	310	110	30	14	11	
South Bend, Ind. ....	42	24	14	-	1	-		Oakland, Calif. ....	79	50	19	6	3	2	
Toledo, Ohio ....	103	65	27	4	1	1		Pasadena, Calif. ....	27	20	3	2	1	-	
Youngstown, Ohio ....	59	37	13	4	2	-		Portland, Oreg. ....	131	88	30	3	6	-	
								Sacramento, Calif. ....	88	53	22	6	4	-	
<b>WEST NORTH CENTRAL</b> .....	658	455	134	26	24	25		San Diego, Calif. ....	142	76	41	13	10	4	
Des Moines, Iowa ....	49	36	12	-	1	1		San Francisco, Calif. ....	149	87	36	15	7	1	
Duluth, Minn. ....	17	9	6	1	-	2		San Jose, Calif. ....	62	39	11	9	1	-	
Kansas City, Kans. ....	26	16	6	1	1	-		Seattle, Wash. ....	145	109	28	5	2	6	
Kansas City, Mo. ....	134	87	27	11	5	4		Spokane, Wash. ....	60	43	11	4	1	2	
Lincoln, Nebr. ....	33	28	2	1	-	2		Tacoma, Wash. ....	40	21	14	3	1	1	
Minneapolis, Minn. ....	94	64	17	3	6	3									
Omaha, Nebr. ....	73	53	11	3	5	1		<b>TOTAL</b> .....	12,308	7,572	3,097	790	454	449	
St. Louis, Mo. ....	136	86	36	5	6	6		Expected Number .....	11,986	7,291	3,087	715	429	448	
St. Paul, Minn. ....	62	49	11	1	-	-									
Wichita, Kans. ....	34	27	6	-	-	6									

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

The Morbidity and Mortality Weekly Report, circulation 70,000, is published by the Center for Disease Control, Atlanta, Georgia. The data in this report are provisional, based on weekly telegrams 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.

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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**Tuberculosis — Continued**

is indicated to ensure prompt detection of any additional cases and early institution of correct treatment.

There is no evidence that this outbreak has spread beyond the local area. It is possible that similar outbreaks have occurred elsewhere without being recognized and that such situations may occur in the future. This episode demonstrates the importance of maintaining a tuberculosis control program that assures successful treatment and minimizes the possibility of emerging drug resistance. It also

points out the need for maintaining a sensitive surveillance system to detect promptly episodes such as this one so that containment measures can be instituted and remedial actions taken.

**References**

1. Doster B, Caras GJ, Snider DE Jr: A continuing survey of primary drug resistance in tuberculosis, 1961 to 1968. *Am Rev Resp Dis* 113:419-425, 1976
2. Steiner M, Zimmerman R, Park BH, et al: Primary tuberculosis in children. *Am Rev Resp Dis* 98:201-209, 1968

**Current Trends**

**Primary and Secondary Syphilis — United States, October 1977**

Reported cases of primary and secondary syphilis numbered 1,701 in October 1977, down 18.3% from the 2,082 cases reported in October 1976 (Table 1). When cases by month are compared with the number reported in the corresponding month of the previous year, there has been a steady decline for the past 19 months, that is, since March 1976. In the first 10 months of 1977 (January-October), 16,980 cases were reported, representing a decline of 15.3% from the 20,037 cases reported in the same time period of 1976. Nineteen areas reported more cases during the first

10 months of 1977 compared to the same time period of 1976.

Reported early latent (less than 1-year duration) syphilis cases declined 24.7% in October 1977 compared to October 1976. During the first 10 months of 1977 some 13,590 cases were reported, representing a decline of 15.3% from the 16,041 cases reported during the comparable 10-month period of 1976.

*Reported by the Venereal Disease Control Div, Bur of State Services, CDC.*

TABLE 1. Summary of reported primary and secondary syphilis cases by reporting area, October 1977 and October 1976 — provisional data

Reporting Area by HEW Regions	October		Calendar Year Cumulative January-October		Reporting Area by HEW Regions	October		Calendar Year Cumulative January-October		Reporting Area by HEW Regions	October		Calendar Year Cumulative January-October	
	1977	1976	1977	1976		1977	1976	1977	1976		1977	1976	1977	1976
Connecticut	14	8	152	136	Illinois (Excl. Chicago)	14	17	135	128	Arizona	12	13	130	181
Maine	4	3	23	22	Chicago	100	82	847	786	California (Excl. LA & SF)	148	168	1248	1700
Massachusetts	30	57	467	465	Indiana (Excl. Indianapolis)	2	5	80	70	Los Angeles*	143	138	1149	1522
New Hampshire	1	0	5	8	Indianapolis*	2	1	50	30	San Francisco*	59	84	705	684
Rhode Island	0	0	9	17	Michigan	20	30	219	210	Hawaii	2	7	28	77
Vermont	1	0	6	9	Minnesota	13	8	123	84	Nevada	1	5	15	37
REGION I TOTAL	50	68	662	657	Ohio	34	48	412	424	REGION IX TOTAL	365	415	3275	4201
New Jersey	38	48	300	475	Wisconsin	9	15	94	93	Alaska	2	3	27	25
New York (Excl. NYC)	15	21	226	203	REGION V TOTAL	184	206	1960	1825	Idaho	0	3	6	23
New York City	170	178	1489	2030	Arkansas	9	19	61	89	Oregon	14	10	122	96
REGION II TOTAL	223	247	2015	2708	Louisiana	54	56	588	501	Washington	31	17	218	139
Delaware	0	5	16	56	New Mexico	3	8	74	130	REGION X TOTAL	47	33	373	283
District of Columbia	35	50	462	486	Oklahoma	7	5	69	84	UNITED STATES TOTAL	1701	2082	16980	20037
Maryland (Excl. Baltimore)	14	6	132	159	Texas	167	176	1693	1701	Puerto Rico	42	69	508	528
Baltimore	18	37	232	325	REGION VI TOTAL	240	264	2485	2505	Virgin Islands	0	2	11	32
Pennsylvania (Excl. Phila.)	21	14	143	199	Iowa	5	3	34	36	United States, Including Outlying Areas	1743	2153	17499	20597
Philadelphia	20	34	208	346	Kansas	3	10	52	70					
Virginia	42	77	465	585	Missouri	20	21	146	154					
West Virginia	0	1	3	21	Nebraska	0	4	25	33					
REGION III TOTAL	150	224	1661	2177	REGION VII TOTAL	28	38	257	293					
Alabama	22	13	141	157	Colorado	4	12	102	117					
Florida	141	255	1541	2135	Montana	1	4	5	12					
Georgia (Excl. Atlanta)	52	52	678	507	North Dakota	0	0	3	2					
Atlanta*	41	37	372	401	South Dakota	1	1	11	5					
Kentucky	9	9	85	110	Utah	2	2	10	23					
Mississippi	20	24	218	241	Wyoming	0	1	2	5					
North Carolina	55	131	694	1097	REGION VIII TOTAL	8	20	133	164					
South Carolina	20	23	219	321										
Tennessee	36	23	211	255										
REGION IV TOTAL	396	567	4159	5224										

Note: Cumulative totals include revised and delayed reports through previous months.  
Source: CDC 9-98, HEW-CDC-BSS-VD Control Division, Atlanta, Georgia

\*County Data

**International Notes**

**Influenza — Worldwide**

**United States:** Sporadic cases and local outbreaks of influenza continue to be reported. Thus far this season influenza A strains isolated in the United States from 11 states (Colorado, Florida, Hawaii, Illinois, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Tennessee, Wisconsin) and Puerto Rico have been similar to A/Texas/1/77 (H3N2), with the exception of Colorado where isolates have resembled A/Victoria/3/75(H3N2). No influenza B viruses have been isolated.

**Worldwide:** Influenza A (H1N1) isolates from current outbreaks in the U.S.S.R. and Hong Kong (7) have now been compared in preliminary tests at the World Health Organization (WHO) Influenza Centers in Atlanta and London. In hemagglutination inhibition (HI) tests 3 isolates from the U.S.S.R. and 4 isolates from Hong Kong appear similar to each other and appear to be more closely related to earlier H1N1 strains (1946 to 1950) than to later H1N1 strains. The neuraminidases of representative viral isolates A/USSR/

*Influenza – Continued*

90/77 and A/Hong Kong/117/77 are also similar to each other, and their activities are inhibited by reference sera to some human H1N1 strains. Sera are being prepared with the new isoaltes to use in reciprocal HI- and neuraminidase-inhibition testing necessary for their full characterization. Until such time as reagents have been prepared with the current H1N1 strains, A/FM/1/47(H1N1) serum and antigen have been distributed to laboratories collaborating with the WHO influenza surveillance program for diagnostic

use. No H1N1 influenza A strains have yet been reported from outside of the U.S.S.R. and Hong Kong.

*Reported by appropriate State and Territorial Epidemiologists; by appropriate Directors of State Health Laboratories; National Institute for Allergy and Infectious Diseases, National Institutes of Health; WHO Collaborating Centre for Influenza, National Institute for Medical Research, London, England. WHO Collaborating Center for Influenza, Virology Div, Bur of Laboratories, Immunization Div, Bur of State Services, CDC.*

*Reference*

1. MMWR 26: 410, 1977

Current Trends**Follow-up on Poliomyelitis – United States, 1977**

As of December 20, 1977, there have been 18 cases of paralytic poliomyelitis reported to CDC with onset of illness in 1977 (1). The 4 cases reported in the past week had onsets in April, May, July, and October and were in 4 different states.

Epidemiologic classification of cases follows that recommended by a panel of experts convened by CDC in 1975 to review all poliomyelitis cases reported to CDC since 1969 (2,3). Of the 18 cases, 16 were endemic and 2 imported (illness contracted outside the country). Three of the endemic cases had no history of receiving oral polio vaccine (OPV) or of contact with an OPV recipient. Three endemic cases were in individuals who had received OPV from 4-30 days before onset of illness. The remaining 10 cases had onset of illness 4-60 days after OPV was fed to

an individual in contact with the patient, and the patient's contact with this individual occurred within 30 days before the onset of illness.

There have been no cases this year in any individuals with cellular and/or humoral immune deficiency states.

To evaluate poliomyelitis fully in the United States, it is important that all cases be reported to state and local health departments.

*Reported by Enteric and Neurotropic Pathogens Br, Viral Diseases Div, Bur of Epidemiology, CDC.*

*References*

1. MMWR 26:410, 1977
2. CDC: Poliomyelitis Surveillance Summary 1974-76, issued October 1977
3. Public Service Advisory Committee on Immunization Practices: Poliomyelitis Prevention. MMWR 26:329-330, 335-336, 1977

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