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MORBIDITY AND MORTALITY WEEKLY REPORT

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Epidemiologic Notes and Reports

Chloramphenicol-resistant *Haemophilus influenzae* — Pennsylvania

Haemophilus influenzae, type b, resistant to chloramphenicol, was recovered from blood and cerebrospinal fluid (CSF) of a 9-month-old male from Philadelphia, Pennsylvania on November 4, 1976.

The infant had never traveled from Philadelphia. He was a normal child in good health until November 2, 1976, when he fell, hitting his head. About 6 hours after the fall he became lethargic and febrile to 102 F. At a local hospital he was noted to have an occipital fracture and a large occipital hematoma; he was hospitalized for observation. The following day his fever rose to 104 F, and a lumbar puncture was performed which revealed a CSF with a protein of 116 mg %, glucose of 28 mg %, 1800 neutrophils/mm³, 440 mononuclear cells/mm³, 100 red blood cells/mm³, and a gram stain which revealed gram-negative pleomorphic rods. Cultures of blood and CSF were obtained before he was given intravenous ampicillin and transferred to another hospital.

On admission to the referral hospital, the patient was stuporous, had paresis of the right arm and a temperature of 104 F. Another blood culture was obtained, and he was begun on intravenous ampicillin at 400 mg per kg per day and intravenous chloramphenicol at 100 mg per kg per day. *H. influenzae*, type b, was isolated from CSF and from both blood cultures. The infant remained stuporous with a temperature to 103 F through the fifth day of therapy. On the sixth day of therapy a repeat lumbar puncture was performed which revealed CSF with a protein of 54 mg %, glucose of 65 mg %, and 166 white blood cells/mm³ of which 32% were neutrophils and 68% were mononuclear cells. CSF culture was negative. On the seventh day of therapy a computer axial tomography scan of the skull revealed fluid over the right hemisphere with shift of midline structures to the left. Seventy cubic centimeters of sterile, non-purulent hemorrhagic fluid was drawn from the right subdural space. After completing 7 days of ampicillin and chloramphenicol, the patient was switched to intravenous chloramphenicol alone. By the eleventh day of therapy he had become afebrile, and his neurologic symptoms gradually improved. Chloramphenicol was discontinued after 24 days of therapy. A third lumbar puncture was performed 5 days after completion of antibiotic therapy; it revealed a protein of

17, a glucose of 51, and 50 white blood cells/mm³ of which 90% were mononuclear cells and 10% were neutrophils. He has remained afebrile while off antibiotics and is being observed.

H. influenzae, type b, organisms isolated from initial blood cultures and initial cerebrospinal fluid cultures were sensitive to ampicillin but resistant to chloramphenicol. The minimum inhibitory concentration as performed by CDC was 32 µg per ml of chloramphenicol, 32 µg per ml of tetracycline, and 0.25 µg per ml of ampicillin, as determined by micro tube dilution technique.

Reported by S Long, MD, S Phillips, PhD, St. Christopher's Children's Hospital, Philadelphia; W Parkin, DVM, Acting State Epidemiologist, Pennsylvania State Dept of Health; Clinical Bacteriology Br, Bacteriology Div, Bur of Laboratories; and Special Pathogens Br, Bacterial Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: There have been 3 previously reported isolates of *H. influenzae* resistant to chloramphenicol. The first isolate was a type b organism recovered in Texas from a child with meningitis, but it was not confirmed (1). The second, from the throat of a 4-year-old Dutch girl with leukemia (2), and the third, from the blood, sputum, and conjunctiva of a 38-year-old Connecticut woman with agammaglobulinemia, were non-typable strains (3). This is the first *H. influenzae*, type b, isolated from a child with meningitis which CDC has confirmed to be resistant to chloramphenicol.

Chloramphenicol has been recommended for initial therapy in documented or suspected severe *H. influenzae*, type b, infections because of the occurrence of ampicillin-resistant type b isolates (4). Intravenous ampicillin and chloramphenicol have been recommended as initial therapy for purulent meningitis in childhood (5).

Regimens that may be effective in treatment of meningitis caused by *H. influenzae* resistant to ampicillin, tetracycline, and chloramphenicol include intrathecal streptomycin and the combination of trimethoprim and sulfamethoxazole given orally (6).

References

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Haemophilus influenzae — Continued

2. Manten A, Van Klingeren B, Dessens-Kroon: Chloramphenicol resistance in *Haemophilus influenzae*. Lancet 1:702, 1976
3. Center for Disease Control: Chloramphenicol-resistant *Haemophilus influenzae* - Connecticut, Massachusetts. MMWR 25:267, 1976
4. American Academy of Pediatrics, Committee on Infectious Dis-

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Salmonella bredeney — Massachusetts

A 2-day-old infant born vaginally in a Massachusetts hospital developed a severe febrile diarrheal illness on July 1, 1976. Stool cultures grew *Salmonella bredeney*. During the next 4 days, 3 of the 15 infants occupying the nursery with the index patient developed a similar illness, and *S. bredeney* was recovered from stool cultures in all cases. Blood cultures of all these patients were sterile. All the infants were treated promptly with parenteral ampicillin, and all recovered. The children had all been fed commercially prepared formula. The outbreak was terminated apparently as a result of intensive handwashing, appropriate isolation, and effective cohorting of infants.

Stool cultures from the 12 well infants in the nursery at the time and from physicians and nursing and laboratory personnel having contact with the infants were negative. The family of the index patient (both parents and 3 siblings) had stool cultures performed before the infant's discharge, and all grew *S. bredeney*. All persons denied re-

cent intestinal illness. Epidemiologic and microbiologic investigation failed to reveal the source of the family's infections.

Reported by RE Bessette, MD, Worcester Hahnemann Hospital; A Gurwitz, MD, Worcester; L Morse, MD, Worcester Health Dept; NJ Fiumara, MD, MPH, State Epidemiologist, Massachusetts Dept of Public Health.

Editorial Note: In contrast to community-acquired *Salmonella* outbreaks and *Salmonella* outbreaks in institutionalized adults, where a common food source is usually found, nursery outbreaks more commonly have been traced to an environmental reservoir or a convalescent carrier(1). The carrier is often a mother who appears to transmit the illness to her child at the time of birth. The organisms may then spread rapidly from infant to infant by way of the hands of hospital personnel. It is likely that this sequence occurred in the present outbreak.

(Continued on page 391)

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

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

DISEASE	48th WEEK ENDING		MEDIAN 1971-1975	CUMULATIVE, FIRST 48 WEEKS		
	December 4, 1976	November 29, 1975		December 4, 1976	November 29, 1975	MEDIAN 1971-1975
Aseptic meningitis	82	91	91	2,997	3,855	3,985
Brucellosis	1	5	1	248	242	167
Chickenpox	2,928	1,967	---	162,474	130,067	---
Diphtheria	1	—	5	134	268	182
Encephalitis	Primary	19	23	1,311	2,503	1,427
	Post-Infectious	5	4	248	282	259
Hepatitis, Viral	Type B	273	188	13,513	10,843	8,259
	Type A	556	557	30,511	32,086	47,821
	Type unspecified	153	149	7,766	7,589	
Malaria	6	10	5	426	387	387
Measles (rubeola)	538	237	249	36,913	22,991	25,781
Meningococcal infections, total	32	15	21	1,405	1,318	1,254
Civilian	32	14	20	1,395	1,290	1,234
Military	—	1	1	10	28	29
Mumps	454	1,034	1,034	35,883	54,046	63,879
Pertussis	9	24	---	878	1,473	---
Rubella (German measles)	123	97	115	11,555	15,770	23,630
Tetanus	3	—	1	60	92	92
Tuberculosis	569	502	---	30,111	30,447	---
Tularemia	1	1	1	128	105	133
Typhoid fever	3	4	6	368	326	393
Typhus, tick-borne (Rky. Mt. spotted fever)	7	3	2	861	800	626
Veneral Diseases:						
Gonorrhea						
Civilian	18,389	17,271	---	927,637	919,288	---
Military	369	360	---	26,760	26,797	---
Syphilis, primary and secondary	449	422	---	22,099	23,590	---
Civilian	4	8	---	315	327	---
Military	35	29	54	2,707	2,238	3,139

Table II. Notifiable Diseases of Low Frequency: United States

	CUM.		CUM.
Anthrax:	2	Poliomyelitis, total:	8
Botulism:	27	Paralytic:	7
Congenital rubella syndrome: Neb. 1	22	Psittacosis:	61
Leprosy: Hawaii 2	123	Rabies in man:	2
Leptospirosis:	41	Trichinosis:	80
Plague:	15	Typhus, murine:	49

Table III
Cases of Specified Notifiable Diseases: United States
Weeks Ending December 4, 1976 and November 29, 1975 - 48th 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		
						1976	1975	1976	1976	1976	1976		
UNITED STATES	82	1	2,928	1	134	19	97	5	273	556	153	6	426
NEW ENGLAND	1	-	260	-	-	-	1	-	11	17	9	-	21
Maine*	-	-	14	-	-	-	1	-	-	-	-	-	-
New Hampshire*	-	-	51	-	-	-	-	-	-	1	-	-	-
Vermont	-	-	9	-	-	-	-	-	-	-	-	-	-
Massachusetts	-	-	119	-	-	-	-	-	3	5	4	-	11
Rhode Island	-	-	13	-	-	-	-	-	2	1	-	-	4
Connecticut	1	-	54	-	-	-	-	-	6	10	5	-	6
MIDDLE ATLANTIC	1	-	142	-	-	2	8	-	46	81	14	1	93
Upstate New York	1	-	64	-	-	-	2	-	-	1	-	-	21
New York City	-	-	31	-	-	1	-	-	22	29	-	-	40
New Jersey	-	-	NN	-	-	-	-	-	16	22	14	-	15
Pennsylvania	-	-	47	-	-	1	6	-	8	29	-	1	17
EAST NORTH CENTRAL ..	3	-	1,398	-	1	-	60	-	62	93	12	-	22
Ohio	-	-	147	-	1	-	11	-	18	47	-	-	7
Indiana	-	-	282	-	-	-	45	-	3	1	3	-	-
Illinois	-	-	140	-	-	-	-	-	14	13	4	-	4
Michigan	2	-	615	-	-	-	4	-	24	29	5	-	9
Wisconsin	1	-	214	-	-	-	-	-	3	3	-	-	2
WEST NORTH CENTRAL ..	1	-	327	-	4	1	8	-	15	30	4	-	27
Minnesota	-	-	-	-	-	-	7	-	7	5	-	-	4
Iowa	-	-	172	-	-	-	-	-	3	1	1	-	-
Missouri	1	-	31	-	1	1	1	-	2	12	3	-	9
North Dakota	-	-	55	-	-	-	-	-	1	5	-	-	1
South Dakota	-	-	-	-	3	-	-	-	-	-	-	-	3
Nebraska	-	-	12	-	-	-	-	-	-	1	-	-	5
Kansas	-	-	53	-	-	-	-	-	2	6	-	-	5
SOUTH ATLANTIC	16	-	189	-	1	2	3	3	38	75	24	-	67
Delaware	-	-	6	-	-	-	-	-	2	1	-	-	-
Maryland	1	-	39	-	-	-	-	1	7	12	2	-	12
District of Columbia ..	-	-	5	-	-	-	-	-	-	3	-	-	9
Virginia	-	-	10	-	-	-	1	-	2	2	5	-	10
West Virginia	-	-	109	-	1	-	-	-	-	6	-	-	3
North Carolina	4	-	NN	-	-	1	-	-	4	8	-	-	6
South Carolina	1	-	6	-	-	1	-	-	6	2	5	-	1
Georgia	-	-	-	-	-	-	-	-	-	17	-	-	5
Florida	10	-	14	-	-	-	2	2	17	24	12	-	21
EAST SOUTH CENTRAL ..	26	-	162	-	-	9	3	2	20	39	5	-	3
Kentucky	17	-	69	-	-	1	-	-	-	-	-	-	-
Tennessee	3	-	NN	-	-	3	1	1	8	23	2	-	-
Alabama	6	-	89	-	-	5	-	1	11	7	3	-	2
Mississippi	-	-	4	-	-	-	2	-	1	9	-	-	1
WEST SOUTH CENTRAL ..	7	-	85	-	1	4	7	-	13	71	26	-	21
Arkansas	1	-	-	-	-	-	-	-	4	13	4	-	2
Louisiana	4	-	NN	-	-	-	4	-	1	6	1	-	2
Oklahoma	-	-	13	-	-	1	-	-	2	9	4	-	3
Texas	2	-	76	-	1	3	3	-	6	43	17	-	14
MOUNTAIN	8	-	156	-	4	-	1	-	9	29	11	1	17
Montana	-	-	9	-	-	-	-	-	-	-	1	-	-
Idaho	-	-	33	-	-	-	-	-	1	7	-	-	-
Wyoming	-	-	-	-	-	-	-	-	-	-	-	-	-
Colorado	5	-	56	-	3	-	1	-	5	9	4	1	10
New Mexico*	-	-	-	-	1	-	-	-	-	1	1	-	1
Arizona*	-	-	NN	-	-	-	-	-	2	6	4	-	5
Utah	1	-	56	-	-	-	-	-	1	-	1	-	-
Nevada	2	-	-	-	-	-	-	-	-	6	-	-	1
PACIFIC	19	1	205	1	123	1	6	-	59	121	48	4	155
Washington	-	-	191	1	115	-	-	-	-	4	5	1	4
Oregon	1	-	1	-	-	-	-	-	5	13	2	-	7
California*	15	1	-	-	1	1	4	-	50	100	40	2	142
Alaska	-	-	3	-	6	-	2	-	-	-	-	-	-
Hawaii	3	-	10	-	1	-	-	-	4	4	1	1	2
Guam*	-	-	-	-	-	-	-	-	-	-	-	-	-
Puerto Rico	-	-	1	-	1	-	-	-	-	2	-	-	1
Virgin Islands	-	-	-	-	-	-	-	-	-	-	-	-	-

NN: Not Notifiable

*Delayed reports: Chickenpox: N. Hamp. add 32, Calif. add 7, Guam add 1; Diphtheria: N. Mex. add 1; Hep. A: Me delete 1; Hep. unsp.: Ariz. delete 1

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending December 4, 1976 and November 29, 1975 - 48th Week

REPORTING AREA	MEASLES (Rubella)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1976	CUMULATIVE		1976	CUMULATIVE		1976	CUM. 1976	1976	1976	CUM. 1976	CUM. 1976
		1976	1975		1978	1975						
UNITED STATES	538	36,913	22,591	32	1,405	1,318	454	35,883	9	123	11,555	60
NEW ENGLAND	5	458	351	1	66	73	42	1,535	-	4	309	2
Maine	-	9	16	-	1	6	-	126	-	1	14	-
New Hampshire	-	9	22	-	5	3	-	27	-	-	12	-
Vermont	5	143	75	-	6	2	6	48	-	-	6	-
Massachusetts	-	38	111	1	19	27	3	176	-	3	146	1
Rhode Island	-	15	3	-	7	5	15	494	-	-	6	-
Connecticut	-	284	124	-	28	30	18	664	-	-	125	1
MIDDLE ATLANTIC	4	7,146	2,212	2	208	136	10	3,252	3	2	2,332	9
Upstate New York	4	2,960	966	-	79	43	1	408	-	1	613	4
New York City	-	481	164	-	53	35	4	1,716	1	1	154	4
New Jersey*	-	620	476	-	31	20	2	545	-	-	1,352	-
Pennsylvania	-	3,085	606	2	45	38	3	583	2	-	213	1
EAST NORTH CENTRAL ..	241	15,914	6,893	4	176	192	209	14,641	1	88	4,424	4
Ohio	-	579	106	-	68	64	19	2,076	-	33	349	2
Indiana	162	3,806	484	1	13	10	18	1,553	-	36	936	-
Illinois	2	1,731	1,858	-	20	24	35	1,868	-	2	1,202	-
Michigan	15	5,997	3,162	2	63	72	79	5,234	-	11	1,465	2
Wisconsin	62	3,801	1,283	1	12	22	58	3,910	1	6	472	-
WEST NORTH CENTRAL ..	176	1,392	5,104	1	87	88	36	3,778	-	2	430	7
Minnesota	-	425	224	-	12	19	-	549	-	-	31	2
Iowa	-	37	650	-	10	7	34	1,496	-	-	85	-
Missouri*	175	199	271	1	40	45	-	358	-	1	46	2
North Dakota	-	3	1,061	-	3	2	-	127	-	-	3	1
South Dakota	-	4	356	-	3	1	-	11	-	-	21	1
Nebraska	-	55	395	-	5	3	2	110	-	-	3	-
Kansas	1	669	2,147	-	14	11	-	1,127	-	1	241	1
SOUTH ATLANTIC	18	2,214	428	9	272	261	26	2,697	5	4	1,328	10
Delaware	-	130	25	-	9	8	3	72	-	-	36	-
Maryland	-	715	62	-	22	31	4	708	-	-	3	3
District of Columbia ..	-	13	1	1	4	5	-	107	-	-	46	-
Virginia	14	801	39	1	32	21	7	217	2	1	242	1
West Virginia	4	208	196	-	8	5	10	821	1	2	322	-
North Carolina	-	17	2	-	52	49	-	386	-	-	18	-
South Carolina	-	4	-	-	36	37	-	46	-	1	599	1
Georgia	-	4	40	3	32	15	1	2	-	-	2	-
Florida	-	322	53	4	77	90	1	338	2	-	60	5
EAST SOUTH CENTRAL ..	20	931	328	2	130	181	42	3,020	-	8	399	9
Kentucky	4	758	117	-	23	76	1	985	-	4	183	2
Tennessee*	16	156	178	2	58	60	22	1,635	-	3	203	6
Alabama	-	-	5	-	35	31	19	340	-	1	2	1
Mississippi	-	17	28	-	14	14	-	60	-	-	11	-
WEST SOUTH CENTRAL ..	8	841	413	8	210	202	24	2,585	-	1	593	11
Arkansas	-	1	-	-	14	13	-	81	-	-	190	-
Louisiana	3	286	2	3	41	40	1	27	-	-	92	2
Oklahoma	3	306	147	-	21	14	11	784	-	-	79	-
Texas	2	248	264	5	134	135	12	1,693	-	1	232	9
MOUNTAIN	44	5,222	1,536	-	47	39	23	1,213	-	2	499	1
Montana	40	327	50	-	6	8	-	25	-	-	236	-
Idaho	3	2,023	12	-	7	5	13	466	-	-	18	-
Wyoming	-	4	3	-	-	1	-	1	-	-	2	-
Colorado	-	320	1,159	-	12	10	2	259	-	-	31	-
New Mexico	-	16	15	-	4	4	-	127	-	-	33	-
Arizona	1	229	82	-	10	3	-	-	-	-	-	1
Utah	-	2,237	187	-	6	7	8	218	-	1	159	-
Nevada	-	66	28	-	2	1	-	117	-	1	20	-
PACIFIC	22	2,755	5,726	5	209	146	42	3,162	-	12	1,241	7
Washington	2	357	293	1	35	21	10	918	-	3	214	1
Oregon	-	175	199	1	18	8	8	403	-	1	138	1
California	17	2,206	5,169	3	131	108	24	1,770	-	8	866	5
Alaska	-	11	-	-	22	7	-	33	-	-	3	-
Hawaii	3	6	65	-	3	2	-	38	-	-	20	-
Guam	-	16	35	-	1	3	-	22	-	-	6	-
Puerto Rico	15	463	706	-	4	1	1	753	-	-	10	7
Virgin Islands	-	17	8	1	2	-	4	57	-	-	12	2

*Delayed reports: Men. Inf.: Mo. delete 1; Mumps: Mo. add 2, Tenn. add 1; Rubella: N. J. add 1, N. Mex. delete 2

Table III-Continued
 Cases of Specified Notifiable Diseases: United States
 Weeks Ending December 4, 1976 and November 29, 1975 - 48th Week

REPORTING AREA	TUBERCULOSIS		TULA- REMIA	TYPHOID FEVER		TYPHUS-FEVER TICK-BORNE (RMSF)		VENEREAL DISEASES (Civilian Cases Only)					RABIES IN ANIMALS	
	1976	CUM. 1976	CUM. 1976	1976	CUM. 1976	1976	CUM. 1976	GONORRHEA		SYPHILIS (Pri. & Sec.)			CUM. 1976	
								1976	CUMULATIVE		1976	CUMULATIVE		
1976	1975	1976	1976	1975	1976	1975								
UNITED STATES	569	30,111	128	3	368	7	861	18,389	927,637	919,288	449	22,099	23,590	2,707
NEW ENGLAND	20	1,046	1	1	25	-	9	409	26,343	25,492	24	766	807	70
Maine	-	72	-	-	-	-	-	44	2,229	2,079	1	22	35	35
New Hampshire	1	42	-	-	2	-	-	14	805	661	-	10	15	1
Vermont	1	32	-	-	-	-	-	13	661	657	-	9	7	-
Massachusetts	17	619	1	1	16	-	4	154	12,447	11,817	17	556	529	24
Rhode Island	1	79	-	-	-	-	3	23	1,876	2,000	1	19	22	5
Connecticut	-	202	-	-	7	-	2	161	8,325	8,278	5	150	199	5
MIDDLE ATLANTIC	96	5,514	3	-	64	-	65	2,061	106,848	105,053	74	3,656	4,288	70
Upstate New York	26	869	2	-	9	-	26	428	17,458	18,945	5	235	384	16
New York City	-	2,119	1	-	34	-	5	1,024	47,088	43,676	43	2,266	2,508	-
New Jersey	19	1,125	-	-	13	-	13	55	16,441	15,494	12	550	681	31
Pennsylvania	51	1,401	-	-	8	-	21	554	25,861	26,938	14	605	715	23
EAST NORTH CENTRAL	77	4,339	2	1	41	-	23	2,751	148,089	152,413	46	2,016	1,925	178
Ohio	4	833	-	1	13	-	18	522	37,027	42,707	2	459	473	34
Indiana	6	480	-	-	4	-	-	302	14,632	12,714	1	103	137	23
Illinois	40	1,528	1	-	12	-	-	958	50,721	53,102	35	1,125	924	27
Michigan*	26	1,252	-	-	9	-	5	685	31,994	29,235	6	223	318	7
Wisconsin	1	246	1	-	3	-	-	284	13,715	14,655	2	106	73	87
WEST NORTH CENTRAL	26	1,111	30	-	21	-	28	1,327	49,121	46,346	10	420	575	650
Minnesota	10	192	3	-	11	-	-	157	8,624	9,255	2	96	106	158
Iowa	3	108	1	-	1	-	3	116	6,018	6,597	-	40	65	125
Missouri*	12	553	22	-	5	-	15	638	19,765	16,956	2	167	255	68
North Dakota	1	32	-	-	-	-	-	30	780	735	-	-	5	125
South Dakota	-	53	1	-	1	-	3	43	1,461	1,765	1	6	5	94
Nebraska	-	47	-	-	2	-	-	71	4,101	4,095	-	37	19	15
Kansas	-	126	3	-	1	-	7	272	8,372	6,943	5	74	120	65
SOUTH ATLANTIC	116	6,350	10	-	47	6	427	3,435	221,701	224,366	117	6,299	7,214	413
Delaware*	-	63	-	-	-	-	1	44	3,149	3,193	2	63	83	19
Maryland	11	868	1	-	5	-	21	493	29,212	27,409	5	496	530	11
District of Columbia	2	285	-	-	2	-	-	238	12,571	12,951	13	549	638	-
Virginia*	14	939	3	-	5	-	98	109	23,030	22,155	16	644	569	55
West Virginia	5	251	-	-	5	-	8	73	2,924	2,913	-	22	55	15
North Carolina*	20	1,175	3	-	2	6	190	637	33,194	32,261	8	1,121	972	14
South Carolina	13	469	-	-	5	-	50	NA	20,504	21,004	NA	345	516	5
Georgia	-	792	2	-	4	-	56	911	43,241	41,873	25	745	983	207
Florida	51	1,508	1	-	19	-	3	930	53,876	60,607	48	2,314	2,868	87
EAST SOUTH CENTRAL	35	2,595	18	-	15	1	160	2,073	82,131	77,614	16	849	1,092	125
Kentucky	11	550	1	-	6	-	34	186	10,826	10,076	2	118	162	61
Tennessee	9	850	17	-	8	1	92	1,006	32,988	30,458	6	291	411	43
Alabama	12	754	-	-	1	-	14	517	22,774	21,819	5	176	243	21
Mississippi	3	441	-	-	-	-	20	364	15,543	15,261	3	264	276	-
WEST SOUTH CENTRAL	97	3,640	47	-	18	-	139	2,593	117,150	113,928	47	2,644	2,121	609
Arkansas	15	450	27	-	5	-	21	168	10,977	12,340	1	94	66	146
Louisiana	28	587	3	-	3	-	-	440	16,927	19,608	6	541	493	7
Oklahoma*	4	355	8	-	1	-	97	257	11,474	11,018	-	91	85	161
Texas	50	2,248	9	-	9	-	21	1,728	77,772	70,962	40	1,918	1,477	295
MOUNTAIN	14	844	5	-	20	-	4	799	36,306	37,165	7	721	537	155
Montana	-	45	2	-	2	-	1	35	1,900	1,944	-	12	5	86
Idaho	-	31	-	-	1	-	1	41	2,035	1,934	1	34	15	-
Wyoming	-	18	1	-	-	-	-	24	780	884	2	12	10	1
Colorado	6	139	1	-	5	-	1	121	9,487	9,964	-	152	95	53
New Mexico	2	162	-	-	2	-	1	89	6,763	6,544	1	268	147	4
Arizona	3	370	-	-	9	-	-	260	10,641	9,781	3	197	196	30
Utah	1	44	1	-	1	-	-	122	2,159	2,332	-	20	16	21
Nevada	2	35	-	-	-	-	-	107	2,541	3,782	-	26	53	-
PACIFIC	88	4,672	12	1	117	-	6	2,941	139,948	136,911	108	4,728	5,031	397
Washington*	-	360	2	-	5	-	3	230	11,719	12,475	-	129	164	8
Oregon	5	185	1	-	1	-	-	205	9,857	10,358	5	104	134	11
California	69	3,456	9	1	105	-	3	2,322	111,295	108,432	102	4,382	4,675	336
Alaska*	-	80	-	-	-	-	-	113	4,031	3,392	-	24	6	42
Hawaii	14	591	-	-	6	-	-	71	3,046	2,254	1	89	52	-
Guam*	-	40	-	-	1	-	-	-	285	383	-	2	17	-
Puerto Rico	-	363	-	1	2	-	-	30	2,346	2,680	11	532	661	40
Virgin Islands	-	6	-	-	-	-	-	2	216	210	-	51	41	-

NA: Not available

*Delayed reports: TB: Mich. delete 3, Dela. add 8, Va. delete 1, N. Car. delete 3, Okla. delete 2, Wash. add 40, Alaska add 10; GC: Wash. add 92 (mil.), Guam add 5, (civ.); Syphilis: Mo. add 1, Wash. add 17 (civ.) 1 (mil.)

Table IV
Deaths in 121 United States Cities*
Week Ending December 4, 1976 - 48th 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	65 Years and Over	45-64 Years	25-44 Years	Under 1 Year	
NEW ENGLAND	714	483	169	31	16	43	SOUTH ATLANTIC	1,260	732	359	89	45	49
Boston, Mass.	210	129	57	14	3	11	Atlanta, Ga.	98	59	26	6	6	1
Bridgeport, Conn.	43	37	6	-	-	1	Baltimore, Md.	213	117	65	17	7	2
Cambridge, Mass.	37	29	6	1	1	5	Charlotte, N. C.	61	27	22	7	3	3
Fall River, Mass.	27	18	8	1	-	-	Jacksonville, Fla.	89	49	30	4	2	3
Hartford, Conn.	60	38	16	1	3	2	Miami, Fla.	107	64	34	5	2	3
Lowell, Mass.	30	22	5	3	-	4	Norfolk, Va.	54	36	9	2	5	6
Lynn, Mass.	25	19	3	1	2	1	Richmond, Va.	95	57	23	6	7	8
New Bedford, Mass.	19	14	5	-	-	-	Savannah, Ga.	54	26	16	7	1	5
New Haven, Conn.	38	25	12	1	-	1	St. Petersburg, Fla.	90	75	12	3	-	5
Providence, R.I.	66	41	17	2	3	7	Tampa, Fla.	84	53	20	5	3	6
Somerville, Mass.	10	7	3	-	-	-	Washington, D. C.	262	142	83	25	7	5
Springfield, Mass.	55	34	14	4	2	7	Wilmington, Del.	53	27	19	2	2	2
Waterbury, Conn.	39	30	8	-	-	1							
Worcester, Mass.	55	40	9	3	2	3							
MIDDLE ATLANTIC	3,398	2,194	835	174	97	157	EAST SOUTH CENTRAL	748	442	198	52	22	43
Albany, N. Y.	53	37	9	1	3	3	Birmingham, Ala.	124	65	29	13	7	-
Allentown, Pa.	19	13	2	-	1	3	Chattanooga, Tenn.	81	48	26	4	-	10
Buffalo, N. Y.	148	95	36	5	5	9	Knoxville, Tenn.	56	35	15	1	-	1
Camden, N. J.	58	39	15	1	2	1	Louisville, Ky.	117	69	32	5	7	15
Elizabeth, N. J.	38	26	6	3	1	2	Memphis, Tenn.	147	88	39	13	2	7
Erie, Pa.	28	17	8	1	1	1	Mobile, Ala.	52	33	10	4	3	1
Jersey City, N. J.	72	44	21	2	3	5	Montgomery, Ala.	44	25	12	4	2	1
Newark, N. J.	91	43	25	6	14	5	Nashville, Tenn.	127	79	35	8	1	8
New York City, N. Y.	1,653	1,103	383	89	30	57	WEST SOUTH CENTRAL	1,424	774	407	111	82	32
Paterson, N. J.	37	26	6	3	1	3	Austin, Tex.	41	23	9	5	-	3
Philadelphia, Pa.	512	318	139	30	15	25	Baton Rouge, La.	52	28	19	1	2	-
Pittsburgh, Pa.	250	155	67	13	8	15	Corpus Christi, Tex.	32	18	6	3	4	-
Reading, Pa.	51	36	10	1	3	4	Dallas, Tex.	195	102	61	20	7	4
Rochester, N. Y.	134	93	28	6	1	14	El Paso, Tex.	52	37	9	4	1	1
Schenectady, N. Y.	25	14	10	-	1	1	Fort Worth, Tex.	85	50	25	5	3	-
Scranton, Pa.	46	23	14	5	3	-	Houston, Tex.	321	151	100	25	35	4
Syracuse, N. Y.	85	43	29	4	6	2	Little Rock, Ark.	72	41	19	5	2	2
Trenton, N. J.	37	20	15	2	-	5	New Orleans, La.	195	109	61	18	3	1
Utica, N. Y.	34	26	8	-	-	4	San Antonio, Tex.	194	105	57	11	12	3
Yonkers, N. Y.	27	23	4	-	-	-	Shreveport, La.	86	54	13	6	8	6
							Tulsa, Okla.	99	56	28	8	5	8
EAST NORTH CENTRAL	2,593	1,550	692	155	103	66	MOUNTAIN	595	364	150	32	23	30
Akron, Ohio	98	67	21	4	4	-	Albuquerque, N. Mex.	72	40	19	6	4	4
Canton, Ohio	47	31	12	2	1	1	Colorado Springs, Colo.	37	21	9	2	4	4
Chicago, Ill.	627	357	170	48	28	13	Denver, Colo.	142	89	40	7	2	10
Cincinnati, Ohio	166	105	41	4	9	3	Las Vegas, Nev.	33	19	9	3	1	2
Cleveland, Ohio	192	109	60	14	3	1	Ogden, Utah	20	12	6	-	1	3
Columbus, Ohio	125	64	34	10	8	12	Phoenix, Ariz.	136	85	34	4	6	1
Dayton, Ohio	139	87	42	2	2	4	Pueblo, Colo.	18	11	5	2	-	4
Detroit, Mich.	356	196	99	28	18	4	Salt Lake City, Utah	54	30	10	4	5	1
Evansville, Ind.	32	21	9	2	-	-	Tucson, Ariz.	83	57	18	4	-	1
Fort Wayne, Ind.	22	17	3	-	2	3							
Gary, Ind.	18	11	4	1	2	1	PACIFIC	1,697	1,085	420	87	49	46
Grand Rapids, Mich.	56	36	15	3	1	4	Berkeley, Calif.	21	15	5	-	-	-
Indianapolis, Ind.	150	85	50	6	6	1	Fresno, Calif.	67	40	16	4	5	1
Madison, Wis.	38	21	11	2	1	6	Glendale, Calif.	22	15	7	-	-	1
Milwaukee, Wis.	196	122	52	11	6	-	Honolulu, Hawaii	56	30	18	4	3	-
Peoria, Ill.	61	34	13	6	6	2	Long Beach, Calif.	93	62	26	1	1	-
Rockford, Ill.	47	31	8	3	6	6	Los Angeles, Calif.	546	359	136	31	8	14
South Bend, Ind.	48	34	12	1	1	2	Oakland, Calif.	65	48	12	1	3	-
Toledo, Ohio	122	82	26	7	1	3	Pasadena, Calif.	36	27	6	-	3	2
Youngstown, Ohio	53	40	10	1	1	-	Portland, Oreg.	102	60	28	4	5	4
							Sacramento, Calif.	69	39	21	1	2	1
WEST NORTH CENTRAL	843	536	203	34	33	31	San Diego, Calif.	156	93	35	15	2	5
Des Moines, Iowa	72	48	14	4	2	1	San Francisco, Calif.	201	130	45	15	4	3
Duluth, Minn.	31	23	7	-	1	5	San Jose, Calif.	59	38	14	6	-	2
Kansas City, Kans.	39	25	6	1	4	1	Seattle, Wash.	103	58	28	2	10	3
Kansas City, Mo.	138	93	27	3	12	6	Spokane, Wash.	65	48	13	-	3	9
Lincoln, Nebr.	29	22	6	1	-	3	Tacoma, Wash.	36	23	10	3	-	1
Minneapolis, Minn.	120	75	34	5	2	2							
Omaha, Nebr.	102	64	26	3	5	-							
St. Louis, Mo.	201	121	53	11	4	2							
St. Paul, Minn.	68	43	16	1	3	3							
Wichita, Kans.	43	22	14	5	-	8							
TOTAL	13,272	8,160	3,433	765	470	497	Expected Number	11,862	7,211	3,081	751	408	416

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

The Morbidity and Mortality Weekly Report, circulation 62,000, 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.

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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Salmonella bredeney — Continued

This outbreak demonstrates the rapid transmission of infectious diarrhea in newborn nurseries. Control measures, including strict isolation procedures, and early discharge of asymptomatic infants and cases must be instituted rapidly, as was done in this case. All obstetrical admissions to hospitals should be questioned regarding recent intestinal illness. For any mother reporting a recent diarrheal illness, appropriate isolation measures should be used for her and her newborn infant until stool cultures are negative for enteric pathogens.

Infants are subject to prolonged convalescent carriage of

Salmonella when compared to adults (2), and administration of antibiotics has been shown to prolong such carriage (3). Therefore, antibiotic use should be restricted to cases with bacteremia or to high-risk infants (especially low birth-weight infants) who are severely ill.

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Current Trends

Influenza Surveillance — United States

It has been observed repeatedly in the United States that during influenza epidemics the number of deaths from pneumonia and influenza exceeds expected values for several weeks (1-3). Therefore, as part of the regular influenza surveillance system, CDC obtains from 121 U.S. cities reports of all deaths due to pneumonia and influenza in order to assess the extent and impact of influenza activity. The following is a description of CDC's system of collecting, analyzing, and interpreting data on deaths due to pneumonia and influenza.

Each week, 121 cities throughout the United States relay mortality data by postcard to the National Morbidity and Mortality Statistical Activity of the CDC. The numbers of deaths occurring in these cities are reported separately for all causes, influenza, and pneumonia. A death is attributed to pneumonia if it appears on Part 1 of the death certificate as an immediate or underlying cause of death. An influenza death is reported if influenza appears anywhere in Part 1 or 2 of the certificate, taking precedence over other causes of death. The data are reported for the following age groups: under 28 days, 28 days to 1 year, 1-14 years, 15-24 years, 25-44 years, 45-64 years, and greater than 64 years. Deaths are reported to CDC by the number reported to the health departments the previous week rather than by date of occurrence.

The reported numbers of deaths are shown as dots connected by line segments (Fig. 1). The solid line for each mortality category is the expected number of deaths. The broken line is the epidemic threshold, the derivation of which is described below, which is set at a point where significant deviations from the expected number can be seen. The charts are drawn to a scale that allows the distance between the expected and threshold levels to be con-

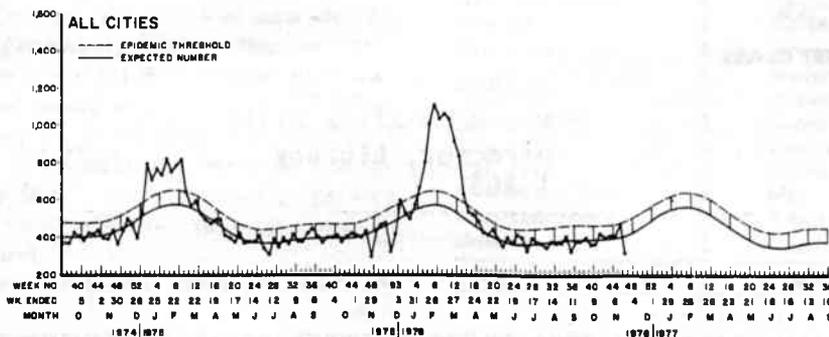
stant for every curve. This device allows one to compare the influenza activity between regions by glancing at the regional chart. Although the vertical labels are different, comparison of the absolute distance on the chart between observed and threshold levels between regions shows whether the mortality is significantly higher in 1 region than another. This is accomplished by allowing 0.3 inches on the original full-size chart to represent 1.65 standard errors of measurement for each graph that is drawn.

Each year before the respiratory disease season begins, equations to describe the expected number of deaths are generated for deaths due to all causes by age group and deaths due to either pneumonia or influenza by region. The expected mortality level is calculated by using weekly data for the previous 5-year period, omitting epidemic weeks, and fitting a regression model which includes terms to compensate for a general upward or downward linear trend, a semiannual cycle (26 weeks), and an annual cycle (52 weeks) about a general mean value. The equation used (shown below) derives the expected mortality level as a function of week number (t). All other values in the equation are constants solved for by the regression equation:

$$\hat{y} = u + rt + A_1 \cos \frac{2\pi t}{52} + B_1 \sin \frac{2\pi t}{52} + A_2 \cos \frac{4\pi t}{52} + B_2 \sin \frac{4\pi t}{52}$$

These equations are then used to evaluate current mortality statistics reported by the 121 cities in terms of previous reporting trends or expected number of deaths. Except for resulting in a slightly smoother curve and yielding a standard error, which forms the basis of the epidemic threshold, the regression procedure may be thought of as a means of averaging the deaths for corresponding weeks over the 5-year period and using the average as the expected number for the next year.

FIGURE 1. Pneumonia-influenza deaths in 121 United States cities



Influenza - Continued

The epidemic threshold is used to identify weeks in which the difference between the observed number of deaths and expected number of deaths cannot be explained by chance (4). Ninety-five percent of all the weekly reports should, according to the model, fall beneath the threshold line, which is 1.65 standard errors (SE) above the expected values (2-tailed test). Since 1 in every 20 weeks by chance alone is expected to pass through the threshold, the definition of an epidemic requires 2 or more successive weeks greater than 1.65 SE away from the mean. The probability that this would occur by chance alone is approximately 1 in 400 (0.05²).

The statistical model used in the analysis of mortality data generates expected values so that the sum of the differences between the expected and observed values will equal zero after epidemic weeks are eliminated. Two or more successive weeks falling above the threshold is interpreted as indicating a mechanism other than chance alone. Experience has shown that when the observed numbers exceed the epidemic threshold for 2 or more weeks, this reflects substantial influenza activity occurring in the country or region.

Excess deaths caused by an influenza epidemic are calculated from this equation as the difference between the ob-

served and expected values for those weeks falling above the threshold line when 2 or more consecutive weeks are above the threshold line.

It should be emphasized that this method of influenza surveillance is based on data from 121 urban centers in the United States, most of whose populations exceed 100,000 and whose total population constitutes approximately one-third of the U.S. population. Thus, these numbers represent only an index of mortality due to pneumonia and influenza, but they nevertheless serve as the most readily available and sensitive indicator of influenza activity for the country.

As can be seen on Figure 1, through week 47 there is no evidence of excess deaths due to pneumonia and influenza for the country.

Reported by National Morbidity and Mortality Statistical Activity, Bureau of Epidemiology, CDC.

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*Epidemiologic Notes and Reports***Influenza - Wisconsin and Washington, D.C.**

Three isolates made at the University of Wisconsin from a 22-year-old man have been confirmed by CDC as influenza A/New Jersey/76. The isolates came from throat washings from the patient, who had a mild influenza-like illness beginning on November 24. An investigation is in progress to determine if there has been secondary spread of the virus to any of his contacts. Specimens were obtained from swine on this man's farm, and A/New Jersey/76 influenza virus was isolated from 6 of the 8 clinically ill swine. There has been slight seasonal increase in upper respiratory illness in the community but only sporadic cases of influenza-like illness. Extensive ongoing laboratory virus surveillance systems in Wisconsin that screen more than 60 specimens

per week from persons with upper respiratory illness have not recovered other influenza viruses.

An influenza B/Hong Kong/72 virus isolated from a nasopharyngeal specimen from a 34-month-old child in the Washington, D.C., area is the only other current evidence of influenza activity in the United States.

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