CENTERS FOR DISEASE CONTROL

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MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

Amebiasis Associated with Colonic Irrigation – Colorado

The Colorado State Department of Health has reported an outbreak of amebiasis that occurred in the period December 1977-November 1980 and was associated with a chiropractic clinic. All of the cases had received colonic irrigation—a series of enemas performed by machine to "wash out" the colon—a practice that has been gaining popularity recently among some chiropractors, naturopaths, and nutritional counselors. Thirteen cases were confirmed by biopsy review or serologic tests. Seven cases were fatal.

Colorado health officials first learned of the association on January 9, 1981, when a gastroenterologist from Grand Junction, Colorado, reported 2 cases of amebiasis. Both patients had received colonic irrigation at a chiropractic clinic in Montrose. The gastroenterologist knew of 2 other cases of nonspecific colitis who had also had colonic irrigation at this clinic. Colorado Health Department epidemiologists contacted other clinicians and pathologists in this area of the western slope and found several other cases of colitis also associated with the same chiropractic office.

A systematic review was undertaken of all recently diagnosed, biopsy-confirmed cases of colitis in 1980 in the area served by the Montrose Memorial Hospital. Of the 12 cases found, 8 had had colonic irrigation at the same clinic. The practitioners of this clinic were notified, and with their cooperation a more definitive study was performed.

Clinic records showed that 221 individuals had been to this chiropractic office in the period September 1-December 31, 1980. Of these, 180 were reached by telephone and interviewed. Approximately 85% of these were residents of local towns (Montrose, Delta, Paonia, Norwood, and Ouray); the others were from other parts of Colorado and from other states. Eighty-seven (48%) of those interviewed had received colonic irrigation (colonic group); 93 (52%) had received other forms of treatment, such as spinal manipulation, without colonic irrigation (noncolonic group). Twenty percent of the colonic group reported having bloody diarrhea at some time after they began having this treatment; 1% of the noncolonic group reported having bloody diarrhea ($X^2=15.45$; $p<<0.001$).

Approximately 60% of the individuals contacted submitted stool and blood samples for testing at CDC. Stool results are pending. Indirect hemagglutination (IHA) titers for antibody to *Entamoeba histolytica* showed that 30% (16/53) of persons in the colonic group had an antibody titer of ≥ 128, whereas 3% (1/38) of the noncolonic group had such a titer ($p<0.01$).

Amebiasis — Continued

As of February 14, 15 biopsy-confirmed cases of colitis with onsets of symptoms from December 1977 through November 1980 had been identified. Thirteen of these had evidence to support a diagnosis of amebiasis either on the basis of identification of the organism in a biopsy specimen or the presence of a high antibody titer. The other 2 cases have not yet been reviewed. Ten patients had such fulminant disease that they developed bowel perforation and had to have a partial or total colectomy. Seven of these patients died.

Cultures of specimens taken from the colonic irrigation machine after routine cleaning showed heavy contamination with coliform bacteria in virtually the entire system.

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Editorial Note: The isolation of coliform bacteria from the internal passages of the enema machine suggests that infective amebae from an earlier patient's effluent could have contaminated the common inflow/outflow tubing used for later patients. The usual mode of transmission of amebiasis in the United States is person to person and, rarely, contaminated food or drink. Infection presumably occurs by oral ingestion of amebic cysts. However, this investigation suggests a previously unreported means of infection—i.e., colonic irrigation. Since this practice is widespread, it is possible that other cases have occurred elsewhere through the use of improperly disinfected machines. CDC is interested in receiving reports of such cases, which should be submitted through state health departments.

Diagnosing amebiasis can be difficult. Successful diagnosis is facilitated by multiple stool specimens that are preserved promptly in fixative, concentrated and prepared for permanent stain and wet mount, and examined carefully by trained personnel (*1*). Sigmoidoscopic swabs or biopsy specimens may also contain identifiable amebae. The IHA serologic test available through state health laboratories and CDC can be helpful in diagnosis. Although only about 10% of asymptomatic cyst carriers and a minority of those with amebic diarrhea will have positive titers ($\geq$256), about 85% of those with invasive amebic dysentery and over 90% of those with amebic abscesses will have positive titers (*2*).

Intestinal amebiasis can resemble Crohn's disease or ulcerative colitis, prompting the use of steroids that could exacerbate the infection (*3*). In such situations, early diagnosis and treatment of amebiasis may prevent complications such as perforation and even death.

References

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3. Krogstad DJ, Spencer HC Jr, Healy GR, Gleason NN, Sexton DJ, Herron CA. Amebiasis: epidemiologic studies in the United States, 1971-74. Ann Intern Med 1978;88:89-97.

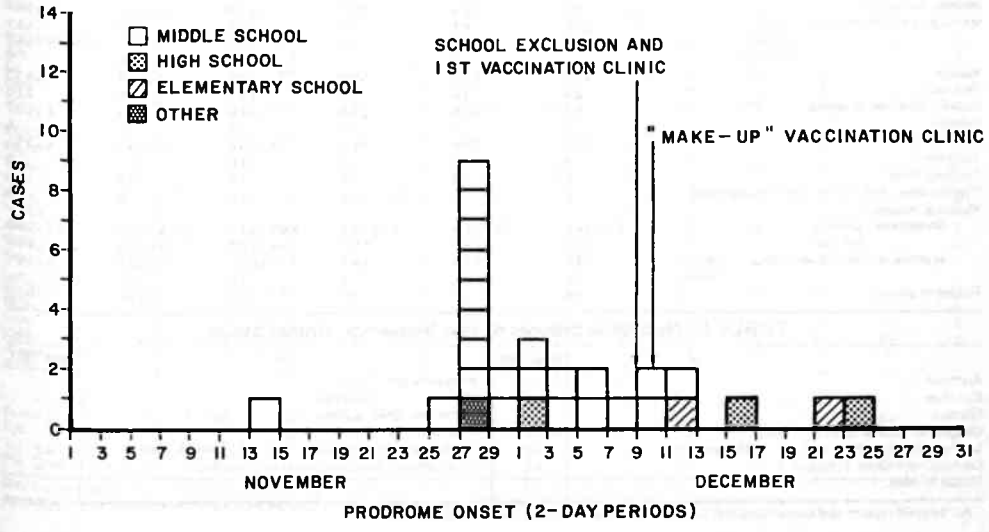
Measles — Montgomery County, Pennsylvania, 1980

During a recent measles outbreak, a township in Montgomery County, Pennsylvania, excluded from all township schools children who lacked documented proof of measles vaccination or antibody. This action was taken because measles had spread beyond the originally affected school and because students from different schools often interact during social activities and ride the same school bus. This control measure may have stemmed a potentially large outbreak.

In the period November 14-December 24, 1980, a total of 27 cases of measles occurred in 3 of the 11 schools in the township. Another case was that of a 23-year-old teacher who worked at the central recreation center used by the students of the township schools (Figure 1). All cases had a prodrome of 3 or more days, a generalized maculopapular rash lasting 4 days or longer, a temperature of ≥101 F (38.3 C), and cough, coryza, or conjunctivitis. The index patient, a 13-year-old student in the middle school, had been to Philadelphia on November 1, when measles cases were being reported there. Two of the 28 cases were confirmed by detection of measles-specific IgM hemagglutination inhibition antibody.

A review of records in all 11 schools in the affected school district during the first week of December revealed that 1,968 (44.5%) of the 4,424 enrolled students did not have on file adequate proof of vaccination (i.e., since 1968 and after the first birthday) or adequate evidence of measles disease (presence of detectable measles antibody). On December 5, the parents of all 1,968 students were issued a warning stating that their children would be excluded from school if they were not vaccinated or if they failed to show proof of measles antibody by December 9. On this date, vaccination clinics were held in each of the schools, and a certification office was established in the high school. Each student had to produce proof of adequate vaccination or documentation of measles antibody before being re-admitted.

FIGURE 1. Measles cases by date of onset, Montgomery County schools, November 14-December 24, 1980



Measles – Continued

A total of 460 students (10.4% of the total enrollment) were excluded on December 9. A make-up clinic at the high school on December 10 reduced the number excluded to 279 (6.3%). By December 19, only 13 (0.3%) students were still excluded, mostly for medical reasons. Five cases of measles occurred after December 10; 3 of these were definately incubating on the second day of the vaccination clinics, and the 2 others may have been.

Reported by C Butler, RN, EJ Witte, VMD, RD Gens, MD, Pennsylvania State Dept of Health; Immunization Div, Center for Prevention Services, CDC.

Editorial Note: Prompt identification and exclusion from school of children who lack an adequate history of measles vaccination or immunity has proved effective in controlling measles outbreaks in schools (*1*). The decision in Montgomery County to apply this control measure to all 11 schools in the affected township appears to have been justified since substantial geographic spread had occurred before this measure was instituted. In 1 township elementary school without prior cases, 2 cases were incubating at the time the control program was implemented. Had investigators waited until these cases had been detected to apply the exclusion rule to that elementary school, several more cases and further geographic spread might have occurred.

(Continued on page 109)

TABLE I. Summary – cases of specified notifiable diseases, United States

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

DISEASE	9th WEEK ENDING		MEDIAN 1976-1980	CUMULATIVE, FIRST 9 WEEKS		
	March 7 1981	March 1 1980		March 7 1981	March 1 1980	MEDIAN 1976-1980
Aseptic meningitis	61	73	35	547	591	347
Brucellosis	1	1	2	13	30	30
Chickenpox	6,528	6,299	6,208	46,175	42,852	47,108
Diphtheria	–	1	3	3	1	18
Encephalitis: Primary (arthropod-borne & unspec.)	9	10	11	116	107	107
Post-infectious	1	3	3	11	23	25
Hepatitis, Viral: Type B	382	285	288	2,986	2,602	2,566
Type A	541	613	620	4,115	4,753	5,074
Type unspecified	187	196	196	1,848	1,765	1,567
Malaria	32	30	6	213	233	69
Measles (rubeola)	80	324	615	409	1,461	3,147
Meningococcal infections: Total	110	83	57	893	528	463
Civilian	110	81	57	892	522	460
Military	–	2	–	1	6	3
Mumps	107	253	500	905	2,265	3,633
Pertussis	23	14	14	175	185	210
Rubella (German measles)	58	114	298	416	629	1,657
Tetanus	–	1	–	8	6	6
Tuberculosis	553	564	564	4,050	3,948	4,391
Tularemia	2	–	2	16	13	14
Typhoid fever	9	9	9	74	43	62
Typhus fever, tick-borne (Rky. Mt. spotted)	2	1	1	12	8	8
Venereal diseases:						
Gonorrhea: Civilian	17,347	20,165	17,304	165,372	166,052	163,060
Military	544	427	453	4,777	4,706	4,818
Syphilis, primary & secondary: Civilian	525	515	495	5,152	4,527	4,169
Military	10	10	8	70	74	56
Rabies in animals	99	93	55	849	806	400

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1981		CUM. 1981
Anthrax	–	Poliomyelitis: Total	–
Botulism	9	Paralytic	–
Cholera	–	Psittacosis Ohio 1, Wash. 2	13
Congenital rubella syndrome Calif. 1	2	Rabies in man	–
Leprosy Texas 2, Nev. 1, Calif. 2, Hawaii 1	40	Trichinosis Mass. 1, Conn. 3, N.J. 1, Tenn. 1, Calif. 1	47
Leptospirosis Ohio 1, Hawaii 2	10	Typhus fever, flea-borne (endemic, murine)	–
Plague N. Mex. 1	1		

All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending March 7, 1981 and March 1, 1980 (9th week)

REPORTING AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKENPOX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS (VIRAL), BY TYPE			MALARIA	
						Primary		Post-infectious	B	A	Unspecified		
	1981	1981	1981	1981	CUM. 1981	1981	1980	1981	1981	1981	1981	1981	CUM. 1981
UNITED STATES	61	1	6,528	-	3	9	10	1	382	541	187	32	213
NEW ENGLAND	1	-	639	-	-	-	-	-	10	12	12	-	11
Maine	-	-	149	-	-	-	-	-	1	1	-	-	1
N.H.	-	-	26	-	-	-	-	-	1	1	-	-	2
Vt.	-	-	43	-	-	-	-	-	1	2	-	-	-
Mass.	-	-	218	-	-	-	-	-	2	4	11	-	6
R.I.	-	-	58	-	-	-	-	-	1	2	-	-	1
Conn.	1	-	145	-	-	-	-	-	4	2	1	-	1
MID. ATLANTIC	7	-	447	-	-	1	1	1	82	53	18	1	17
Upstate N.Y.	1	-	243	-	-	-	1	1	13	11	3	-	5
N.Y. City	-	-	126	-	-	-	-	-	25	11	9	1	9
N.J.	5	-	NN	-	-	1	-	-	29	23	5	-	2
Pa.	1	-	78	-	-	-	-	-	15	8	1	-	1
E.N. CENTRAL	2	-	2,518	-	-	-	2	-	63	63	22	-	5
Ohio	-	-	185	-	-	-	1	-	10	13	11	-	-
Ind.	-	-	371	-	-	-	-	-	9	7	5	-	1
Ill.	-	-	549	-	-	-	-	-	32	20	5	-	1
Mich.	2	-	1,045	-	-	-	1	-	10	22	1	-	3
Wis.	-	-	368	-	-	-	-	-	2	1	-	-	-
W.N. CENTRAL	3	-	1,294	-	-	-	1	-	10	14	4	-	7
Minn.	-	-	-	-	-	-	-	-	3	2	-	-	2
Iowa	1	-	385	-	-	-	1	-	1	9	-	-	2
Mo.	1	-	10	-	-	-	-	-	1	-	3	-	1
N. Dak.	-	-	46	-	-	-	-	-	-	-	-	-	-
S. Dak.	-	-	47	-	-	-	-	-	-	-	-	-	-
Nebr.	-	-	64	-	-	-	-	-	3	1	-	-	-
Kans.	1	-	742	-	-	-	-	-	2	2	1	-	2
S. ATLANTIC	9	-	708	-	1	2	2	-	75	57	22	6	23
Del.	-	-	4	-	-	-	-	-	-	3	-	-	-
Md.	-	-	91	-	-	-	1	-	20	4	1	2	4
D.C.	-	-	1	-	-	-	-	-	2	-	-	-	1
Va.	2	-	17	-	-	1	-	-	6	4	-	2	8
W. Va.	-	-	140	-	-	-	1	-	2	1	1	-	-
N.C.	2	-	NN	-	-	-	-	-	7	4	5	-	1
S.C.	-	-	29	-	-	1	-	-	7	3	2	-	-
Ga.	1	-	27	-	-	-	-	-	13	10	-	-	3
Fla.	4	-	399	-	1	-	-	-	18	28	13	2	6
E.S. CENTRAL	2	-	134	-	-	-	1	-	18	29	2	-	-
Ky.	-	-	66	-	-	-	1	-	5	9	-	-	-
Tenn.	-	-	NN	-	-	-	-	-	8	12	1	-	-
Ala.	2	-	66	-	-	-	-	-	3	2	1	-	-
Miss.	-	-	2	-	-	-	-	-	2	6	-	-	-
W.S. CENTRAL	11	-	360	-	-	1	1	-	21	80	43	2	9
Ark.	2	-	3	-	-	-	-	-	1	5	2	-	1
La.	-	-	NN	-	-	-	-	-	3	8	7	-	1
Okla.	1	-	-	-	-	-	1	-	4	2	7	-	1
Tex.	8	-	357	-	-	1	-	-	13	65	27	2	6
MOUNTAIN	1	-	94	-	1	1	-	-	14	59	22	1	6
Mont.	-	-	-	-	1	-	-	-	1	1	-	-	-
Idaho	-	-	-	-	-	-	-	-	-	5	-	-	-
Wyo.	-	-	-	-	-	-	-	-	1	-	-	-	-
Colo.	-	-	65	-	-	-	-	-	6	33	1	1	3
N. Mex.	-	-	-	-	-	-	-	-	1	7	-	-	-
Ariz.	1	-	NN	-	-	-	-	-	2	5	14	-	2
Utah	-	-	11	-	-	1	-	-	1	-	6	-	-
Nev.	-	-	18	-	-	-	-	-	2	8	1	-	1
PACIFIC	25	1	334	-	1	4	2	-	89	174	42	22	135
Wash.	2	-	295	-	-	-	-	-	3	3	1	-	9
Oreg.	1	-	4	-	-	-	-	-	3	14	5	-	3
Calif.	20	1	-	-	-	4	1	-	82	156	36	22	123
Alaska	-	-	15	-	1	-	-	-	1	1	-	-	-
Hawaii	2	-	20	-	-	-	1	-	-	-	-	-	-
Guam	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
P.R.	-	-	12	-	-	-	-	-	2	5	2	-	3
V.I.	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	1
Pac. Trust Terr.	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-

NN: Not notifiable. NA: Not available.
All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending March 7, 1981 and March 1, 1980 (9th week)

REPORTING AREA	MEASLES (RUBEOLA)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	1981	1981	CUM. 1981	CUM. 1981
UNITED STATES	80	409	1,461	110	893	528	107	909	23	58	416	8
NEW ENGLAND	6	14	129	4	58	23	6	39	–	–	47	–
Maine	–	–	–	–	8	1	4	10	–	–	30	–
N.H.	–	2	78	–	5	4	–	4	–	–	11	–
Vt.	–	1	49	–	–	1	–	1	–	–	–	–
Mass.	6	7	–	2	14	8	–	14	–	–	6	–
R.I.	–	–	1	–	5	1	1	4	–	–	–	–
Conn.	–	4	1	2	26	8	1	6	–	–	–	–
MID. ATLANTIC	36	151	261	11	89	87	10	83	1	2	50	1
Upstate N.Y.	26	115	77	5	28	38	1	23	1	2	24	–
N.Y. City	4	13	74	2	6	20	2	10	–	–	9	1
N.J.	–	7	23	2	33	18	4	19	–	–	15	–
Pa.	6	16	87	2	22	11	3	31	–	–	2	–
E.N. CENTRAL	9	33	166	24	100	64	21	271	5	10	87	1
Ohio	4	11	18	6	32	29	3	46	1	2	2	–
Ind.	1	2	11	1	12	12	3	35	3	2	30	–
Ill.	1	6	45	10	30	6	–	38	–	2	20	–
Mich.	3	14	57	7	22	13	12	107	–	1	10	1
Wis.	–	–	35	–	4	4	3	45	1	3	25	–
W.N. CENTRAL	1	3	186	2	27	20	6	69	5	4	22	2
Minn.	–	1	131	–	12	6	–	1	1	–	5	1
Iowa	1	1	–	1	8	2	3	23	–	–	–	–
Mo.	–	–	34	–	3	9	–	2	3	–	1	1
N. Dak.	–	–	–	–	–	1	–	–	–	–	–	–
S. Dak.	–	–	–	–	1	2	–	1	–	–	–	–
Nebr.	–	1	3	–	–	–	–	–	–	–	–	–
Kans.	–	–	18	1	3	–	3	42	1	4	16	–
S. ATLANTIC	10	89	383	28	241	116	21	139	2	7	47	1
Del.	–	–	1	–	4	–	1	3	–	–	–	–
Md.	–	–	10	2	10	10	5	26	–	–	–	–
D.C.	–	–	–	–	1	–	–	–	–	–	–	–
Va.	–	–	72	4	25	12	2	35	–	–	5	–
W. Va.	–	3	1	3	13	3	1	23	–	–	10	–
N.C.	–	–	29	3	32	22	–	3	–	–	2	–
S.C.	–	–	–	7	34	13	–	4	–	–	4	1
Ga.	1	41	190	5	41	27	2	13	2	3	12	–
Fla.	9	45	80	4	81	29	10	32	–	4	14	–
E.S. CENTRAL	–	1	90	9	72	50	4	32	2	4	11	–
Ky.	–	–	28	5	22	14	–	14	2	1	6	–
Tenn.	–	1	4	3	23	14	1	9	–	3	5	–
Ala.	–	–	12	1	18	14	3	8	–	–	–	–
Miss.	–	–	46	–	9	8	–	1	–	–	–	–
W.S. CENTRAL	3	25	100	17	176	60	3	41	–	2	28	1
Ark.	1	1	1	2	16	3	–	–	–	–	–	–
La.	–	–	3	–	36	23	–	3	–	–	2	–
Okla.	–	2	50	3	9	4	–	–	–	–	–	–
Tex.	2	22	46	12	115	30	3	38	–	2	26	1
MOUNTAIN	1	8	33	2	36	29	4	30	4	4	18	1
Mont.	–	–	–	–	1	1	3	3	–	–	1	–
Idaho	–	–	–	–	2	3	–	2	–	–	–	–
Wyo.	–	–	–	–	–	1	–	–	–	–	1	–
Colo.	–	–	2	2	17	8	–	11	4	4	13	–
N. Mex.	–	–	1	–	4	5	–	–	–	–	–	–
Ariz.	1	1	10	–	7	5	–	6	–	–	1	1
Utah	–	–	18	–	3	1	–	4	–	–	2	–
Nev.	–	7	2	–	2	5	1	4	–	–	–	–
PACIFIC	14	85	113	13	94	79	32	205	4	25	106	1
Wash.	–	–	21	5	16	13	6	61	–	4	20	–
Oreg.	–	–	–	2	8	10	1	28	–	–	3	–
Calif.	14	84	89	6	64	55	25	108	3	21	83	1
Alaska	–	–	–	–	2	1	–	1	–	–	–	–
Hawaii	–	1	3	–	4	–	–	7	1	–	–	–
Guam	NA	–	1	–	–	–	NA	–	NA	NA	–	–
P.R.	5	41	11	–	2	4	–	10	–	–	–	–
V.I.	NA	2	3	–	–	–	NA	1	NA	NA	–	–
Pac. Trust Terr.	NA	–	3	–	–	–	NA	–	NA	NA	1	–

NA: Not available.
All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending March 7, 1981 and March 1, 1980 (9th week)

REPORTING AREA	TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		VENEREAL DISEASES (Civilian)						RABIES (in Animals)
								GONORRHEA			SYPHILIS (Pri. & Sec.)			
	1981	CUM. 1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1980	CUM. 1981
UNITED STATES	553	4,050	16	9	74	2	12	17,347	165,372	166,052	525	5,152	4,527	849
NEW ENGLAND	23	119	–	4	5	–	–	450	4,308	4,549	18	127	105	5
Maine	2	11	–	–	–	–	–	24	205	302	–	1	–	5
N.H.	1	2	–	–	–	–	–	21	163	149	–	9	–	–
Vt.	5	7	–	–	–	–	–	8	63	136	–	2	1	–
Mass.	11	68	–	4	5	–	–	159	1,720	1,784	12	72	61	–
R.I.	–	5	–	–	–	–	–	23	191	265	–	10	3	–
Conn.	4	26	–	–	–	–	–	215	1,966	1,913	6	33	40	–
MID. ATLANTIC	113	703	–	2	8	1	3	1,779	18,228	17,699	23	733	647	1
Upstate N.Y.	11	111	–	1	2	1	1	287	2,702	2,706	–	60	46	1
N.Y. City	50	289	–	1	6	–	2	NA	6,375	7,487	NA	448	432	–
N.J.	17	167	–	–	–	–	–	793	4,483	2,933	7	93	83	–
Pa.	35	136	–	–	–	–	–	699	4,668	4,573	16	132	86	–
E.N. CENTRAL	71	515	–	–	6	–	1	2,068	25,731	28,513	41	282	423	87
Ohio	10	88	–	–	1	–	1	567	9,922	7,457	2	52	63	7
Ind.	–	23	–	–	–	–	–	331	2,201	3,090	2	21	42	6
Ill.	30	230	–	–	4	–	–	443	5,582	9,252	–	117	244	49
Mich.	28	154	–	–	–	–	–	548	5,746	5,862	35	72	56	–
Wis.	3	20	–	–	1	–	–	179	2,280	2,852	2	20	18	25
W.N. CENTRAL	17	138	1	–	2	–	1	732	8,041	7,207	15	95	46	355
Minn.	5	22	–	–	1	–	–	115	1,286	1,276	8	28	16	74
Iowa	–	26	–	–	–	–	–	87	790	813	1	5	4	131
Mo.	8	47	1	–	–	–	1	291	3,584	2,983	4	52	25	26
N. Dak.	–	6	–	–	–	–	–	25	100	97	1	1	–	63
S. Dak.	–	9	–	–	1	–	–	25	224	250	–	–	–	24
Nebr.	–	7	–	–	–	–	–	58	610	615	–	3	1	17
Kans.	4	21	–	–	–	–	–	131	1,447	1,173	1	6	–	20
S. ATLANTIC	96	876	4	2	9	–	4	4,562	42,315	40,296	205	1,411	1,092	58
Del.	1	7	1	–	–	–	–	65	644	602	2	3	5	–
Md.	2	67	–	1	2	–	–	443	4,380	3,823	15	108	82	1
D.C.	1	58	–	–	1	–	–	295	2,858	3,005	26	128	70	–
Va.	9	74	–	–	–	–	–	365	3,892	3,507	11	133	99	11
W. Va.	3	36	–	1	4	–	–	55	553	557	1	3	4	2
N.C.	18	177	1	–	1	–	4	678	6,982	6,366	24	104	78	–
S.C.	9	81	2	–	–	–	–	524	3,803	3,915	12	98	54	1
Ga.	19	133	–	–	–	–	–	753	8,357	7,126	35	345	323	31
Fla.	34	243	–	–	1	–	–	1,384	10,846	11,395	79	489	377	12
E.S. CENTRAL	35	331	2	–	2	1	3	1,957	13,898	13,252	35	379	357	50
Ky.	–	72	2	–	–	1	1	264	1,764	1,955	1	17	21	17
Tenn.	16	118	–	–	–	–	1	602	5,124	4,759	17	149	150	25
Ala.	6	107	–	–	1	–	–	810	4,597	3,701	7	107	59	8
Miss.	13	34	–	–	1	–	1	281	2,413	2,837	10	106	127	–
W.S. CENTRAL	80	370	3	–	4	–	–	2,084	23,557	20,796	97	1,235	875	174
Ark.	29	51	–	–	–	–	–	216	1,396	1,595	–	20	30	33
La.	4	85	2	–	–	–	–	377	3,650	3,269	17	258	198	10
Okla.	12	54	–	–	1	–	–	245	2,327	2,146	1	25	13	24
Tex.	35	180	1	–	3	–	–	1,246	16,184	13,786	79	932	634	107
MOUNTAIN	15	121	5	–	5	–	–	852	6,685	6,265	4	150	113	23
Mont.	6	12	1	–	4	–	–	40	258	231	–	3	–	23
Idaho	–	5	1	–	–	–	–	20	259	288	–	7	5	–
Wyo.	1	2	–	–	–	–	–	16	143	175	–	1	3	–
Colo.	–	8	2	–	1	–	–	213	1,763	1,533	3	40	32	–
N. Mex.	6	27	–	–	–	–	–	98	808	942	–	29	18	–
Ariz.	2	49	–	–	–	–	–	244	2,114	1,702	–	32	40	–
Utah	–	6	1	–	–	–	–	43	319	314	1	2	4	–
Nev.	–	12	–	–	–	–	–	178	1,021	1,080	–	36	11	–
PACIFIC	103	877	1	1	33	–	–	2,863	22,609	27,475	87	740	869	96
Wash.	12	64	–	–	–	–	–	207	1,962	2,298	–	8	53	–
Oreg.	2	33	–	–	2	–	–	268	1,962	1,728	2	13	21	1
Calif.	89	768	1	1	29	–	–	2,226	17,539	22,220	84	701	783	85
Alaska	–	1	–	–	–	–	–	99	609	634	–	1	1	10
Hawaii	–	11	–	–	2	–	–	63	537	595	1	17	11	–
Guam	NA	–	–	NA	–	NA	–	NA	–	26	NA	–	–	–
P.R.	–	1	–	1	1	–	–	54	544	379	15	127	85	10
V.I.	NA	–	–	NA	1	NA	–	NA	7	30	NA	–	5	–
Pac. Trust Terr.	NA	8	–	NA	–	NA	–	NA	46	94	NA	–	–	–

NA: Not available.
All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE IV. Deaths in 121 U.S. cities,* week ending March 7, 1981 (9th week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P&I** TOTAL
	ALL AGES	>65	45-64	25-44	<1	
NEW ENGLAND	620	408	145	28	24	53
Boston, Mass.	159	95	46	8	6	19
Bridgeport, Conn.	54	38	13	2	1	4
Cambridge, Mass.	26	20	5	1	-	3
Fall River, Mass.	25	21	4	-	-	-
Hartford, Conn.	47	30	10	3	2	2
Lowell, Mass.	25	16	8	-	-	-
Lynn, Mass.	21	19	-	1	-	2
New Bedford, Mass.	26	17	7	2	-	-
New Haven, Conn.	36	17	7	4	8	6
Providence, R.I.	53	31	15	2	3	4
Somerville, Mass.	13	7	4	1	-	3
Springfield, Mass.	54	39	11	-	1	4
Waterbury, Conn.	27	19	6	2	-	4
Worcester, Mass.	54	39	9	2	3	2
MID. ATLANTIC	2,400	1,566	565	153	60	125
Albany, N.Y.	52	31	15	3	2	2
Allentown, Pa.	23	13	8	2	-	2
Buffalo, N.Y.	100	61	25	2	9	9
Camden, N.J.	39	30	7	2	-	2
Elizabeth, N.J.	28	18	9	1	-	-
Erie, Pa.†	34	18	10	3	-	1
Jersey City, N.J.	52	22	18	6	4	2
Newark, N.J.	63	28	19	8	4	4
N.Y. City, N.Y.	1,307	862	286	99	28	54
Paterson, N.J.	20	11	6	-	2	-
Philadelphia, Pa.†	289	176	85	17	6	19
Pittsburgh, Pa.†	59	38	19	1	-	3
Reading, Pa.	33	28	3	-	1	4
Rochester, N.Y.	111	82	23	4	1	7
Schenectady, N.Y.	30	23	5	1	-	3
Scranton, Pa.†	27	23	1	3	-	2
Syracuse, N.Y.	44	31	9	-	3	2
Trenton, N.J.	39	31	8	-	-	5
Utica, N.Y.	23	21	2	-	-	1
Yonkers, N.Y.	27	19	7	1	-	3
E.N. CENTRAL	2,250	1,379	547	153	80	62
Akron, Ohio	75	48	18	4	3	2
Canton, Ohio	30	21	7	-	1	1
Chicago, Ill.	497	279	131	46	15	7
Cincinnati, Ohio	128	92	25	6	1	12
Cleveland, Ohio	174	91	53	10	13	1
Columbus, Ohio	135	68	38	13	9	10
Dayton, Ohio	98	68	21	4	3	1
Detroit, Mich.	285	169	69	25	12	9
Evansville, Ind.	57	38	14	4	1	1
Fort Wayne, Ind.	56	43	9	-	2	2
Gary, Ind.	11	5	4	1	1	-
Grand Rapids, Mich.	64	45	12	1	3	2
Indianapolis, Ind.	155	80	47	14	5	2
Madison, Wis.	48	30	14	1	1	4
Milwaukee, Wis.	149	107	27	8	3	-
Peoria, Ill.	46	29	9	5	2	-
Rockford, Ill.	48	31	11	2	3	3
South Bend, Ind.	38	31	4	-	1	2
Toledo, Ohio	92	57	24	5	1	3
Youngstown, Ohio	64	47	10	4	-	-
W.N. CENTRAL	751	504	141	47	33	41
Des Moines, Iowa	67	42	12	6	3	1
Duluth, Minn.	42	36	2	1	3	6
Kansas City, Kans.	36	20	4	6	2	1
Kansas City, Mo.	117	79	22	9	7	6
Lincoln, Nebr.	35	26	6	1	-	2
Minneapolis, Minn.	87	54	22	2	5	4
Omaha, Nebr.	92	66	18	3	3	7
St. Louis, Mo.	123	72	31	10	6	2
St. Paul, Minn.	78	60	7	6	3	5
Wichita, Kans.	74	49	17	3	1	7
S. ATLANTIC	1,302	716	369	117	52	78
Atlanta, Ga.	202	109	52	17	16	7
Baltimore, Md.	170	91	46	21	5	8
Charlotte, N.C.	91	46	31	7	3	8
Jacksonville, Fla.	111	66	31	9	3	4
Miami, Fla.	147	74	44	15	6	4
Norfolk, Va.	56	26	16	9	3	10
Richmond, Va.	66	32	24	6	2	5
Savannah, Ga.	55	27	16	7	2	10
St. Petersburg, Fla.	107	89	15	1	2	5
Tampa, Fla.	92	54	30	4	2	8
Washington, D.C.	166	77	53	18	8	8
Wilmington, Del.	39	25	11	3	-	1
E.S. CENTRAL	785	477	210	49	33	47
Birmingham, Ala.	133	77	41	6	5	6
Chattanooga, Tenn.	51	35	9	3	2	5
Knoxville, Tenn.	52	39	10	3	-	-
Louisville, Ky.	140	80	42	7	8	9
Memphis, Tenn.	201	117	52	15	13	8
Mobile, Ala.	47	26	14	2	4	2
Montgomery, Ala.	48	32	11	5	-	7
Nashville, Tenn.	113	71	31	8	1	10
W.S. CENTRAL	1,461	827	365	130	74	55
Austin, Tex.	58	39	14	5	-	4
Baton Rouge, La.	60	40	10	5	1	3
Corpus Christi, Tex.	48	29	13	1	3	-
Dallas, Tex.	234	137	63	19	8	7
El Paso, Tex.	51	36	7	5	2	3
Fort Worth, Tex.	102	56	20	6	18	5
Houston, Tex.	395	184	107	57	17	7
Little Rock, Ark.	52	29	13	3	3	3
New Orleans, La.	119	64	36	8	5	1
San Antonio, Tex.	186	118	43	11	8	12
Shreveport, La.	58	34	16	6	2	2
Tulsa, Okla.	98	61	23	4	7	8
MOUNTAIN	653	396	158	38	40	29
Albuquerque, N. Mex.	54	31	17	3	3	2
Colo. Springs, Colo.	34	23	6	1	1	-
Denver, Colo.	122	78	27	6	5	5
Las Vegas, Nev.	65	31	22	8	3	5
Ogden, Utah	12	9	1	-	1	1
Phoenix, Ariz.	158	97	36	9	11	3
Pueblo, Colo.	27	20	5	1	-	2
Salt Lake City, Utah	63	38	12	3	8	3
Tucson, Ariz.	118	69	32	7	8	8
PACIFIC	2,047	1,309	458	130	75	75
Berkeley, Calif.	21	13	5	2	-	1
Fresno, Calif.	56	36	14	5	-	3
Glendale, Calif.	31	23	5	3	-	-
Honolulu, Hawaii	58	35	14	4	3	2
Long Beach, Calif.	104	67	24	4	4	3
Los Angeles, Calif.	725	465	146	50	26	18
Oakland, Calif.	83	54	19	6	2	3
Pasadena, Calif.	23	16	5	1	-	-
Portland, Oreg.	131	89	30	4	5	3
Sacramento, Calif.	70	41	17	1	5	7
San Diego, Calif.	151	95	41	9	4	-
San Francisco, Calif.	161	98	40	13	8	1
San Jose, Calif.	168	118	30	11	5	11
Seattle, Wash.	161	92	47	11	5	14
Spokane, Wash.	49	32	11	1	5	7
Tacoma, Wash.	55	35	10	5	3	2
TOTAL	12,269	7,582	2,958	845	471	565

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza

†Because of changes in reporting methods in these 4 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

Measles – Continued

In school outbreaks, control efforts directed only at schools with known cases may be inadequate because of contact among students from various schools. Therefore, it is best to exclude children who lack an adequate history of measles vaccination or immunity not only from schools reporting cases, but also from surrounding schools. The greater the number of surrounding schools involved in the exclusion process, the greater the likelihood of stopping further measles transmission.

Reference

1. Orenstein WA, Irvin J, Jennings MR, et al. Measles in a rural Ohio county. Am J Epidemiol 1980; 111:777-89.

Tuberculosis – California

In 1979, a total of 3,639 newly active cases of tuberculosis were reported in California, for a case rate of 16.0 per 100,000 population. This was 288 cases more than in 1978, when the case rate was 15.0 per 100,000. Through October of 1980, 130 more cases were recorded than during the same period in 1979.

The pattern of tuberculosis in California differs from that seen nationwide. Between 1970 and 1979, the national case rate decreased from 18.3 to 12.6 , whereas in California it only changed from 16.8 to 16.0. This is because the decrease in tuberculosis cases in native-born populations has been offset in California, and in a few other states, by an influx of immigrants from areas of the world where tuberculosis is still very common.

The age distribution of tuberculosis patients in California also differs from that seen nationwide. In many areas of the country, transmission of tuberculous infection to children is now uncommon, and a tuberculosis-free generation is growing up. Active tuberculosis in older persons stems mostly from infection acquired years ago, often in childhood.

But in California tuberculosis is still a disease of younger populations. Slightly over 50% of all reported cases in California are under 45 years of age while, nationally, only 38% are below this age. In Hispanics and Southeast Asian refugees in California, nearly 70% of cases are under 45 years of age. In the last few years children under 15 years of age have accounted for approximately 8% of all reported cases in California. Nationally, this age group represents 5.5% of the total.

In 1979, about 33% of all tuberculosis patients in California were white; 33%, Hispanic; 22%, Asian; and 11%, black. There is considerable variation among counties. The proportion of cases among Asians, for instance, varies from 2% in Tulare County to 34% in Orange County to 58% in San Francisco County.

Reported by the California Dept of Health Services, in the California Morbidity Weekly Report (1); and the Tuberculosis Control Div, Center for Prevention Services, CDC.

Editorial Note: Nearly 400,000 Southeast Asian refugees have arrived in the United States in the last few years. Based on their declared place of destination, about one-third of them are located in California. The actual figure is probably higher because of secondary migration into California from other states. Approximately 1%-2% of newly arriving Southeast Asian refugees have tuberculous disease, but they are not infectious on arrival because treatment began before they departed from the resettlement camps. These refugees pose no public health threat, but they do require re-examination, a full

Tuberculosis – Continued

course of therapy, and continued close monitoring. Preventive treatment of their family members is also necessary. Skin-test surveys indicate that about 50% of refugees have been infected with *Mycobacterium tuberculosis.* Because most future cases will arise from this group of infected persons, efforts should be made to skin test all refugees and provide preventive therapy to those for whom it is indicated.

References

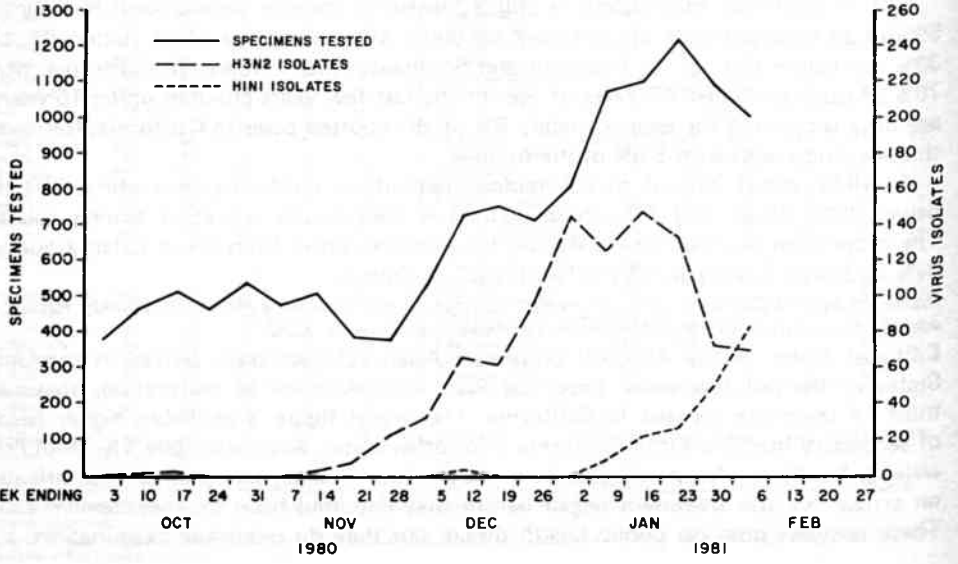
1. California Department of Health Services: Tuberculosis in California. California Morbidity Weekly Report 1980 Oct 24.
2. CDC. Preventive therapy of tuberculosis infection. MMWR 1975;24:71-2, 77-8.

Current Trends

Antigenic Analysis of Influenza A Viruses

Laboratory reports submitted to CDC by collaborating laboratories in the United States thus far this winter indicate that influenza A(H3N2) activity peaked in January 1981, but that increasingly more influenza A(H1N1) isolates were recovered in late January and early February (Figure 1). The ages of patients from whom virus was isolated were stated on 8,568 (61%) of 14,061 laboratory reports. Although the proportion of influenza A(H3N2) infections documented by virus isolation was only slightly higher for children and young adults than for older persons, 89% of influenza A(H1N1) isolates were obtained from younger persons (Table 1).

FIGURE 2. Laboratory surveillance for influenza virus infection and virus isolates by WHO collaborating laboratories in the United States, 1980-1981



Influenza – Continued

TABLE 1. Distribution of specimens tested for influenza isolates, by age group, reported by collaborating laboratories in the United States, October 3, 1980-February 20, 1981

	No. (%) of laboratory reports for persons of known age		
	< 28 yrs.	⩾ 28 yrs.	Total of known age
Specimens tested	6,202 (72)	2,366 (28)	8,568 (100)
Influenza A(H3N2) isolates	516 (57)	389 (43)	905 (100)
Influenza A(H1N1) isolates	161 (89)	19 (11)	180 (100)

Antigenic analysis of specimens from this winter's epidemic showed that most influenza A(H3N2) isolates were intermediate between A/Texas/1/77 and A/Bangkok/1/79, being equally inhibited by antisera to both these reference strains. Very few (<2%) A/Texas/1/77-like strains were isolated, whereas about 15% of isolates were very close to A/Bangkok/1/79.

Influenza A(H1N1) isolates from the United States were found to be antigenically heterogenous, as were those from outbreaks in India and the United Kingdom in 1980. Most of the isolates were well inhibited by antiserum to A/Brazil/11/78, but about 5%-10% were inhibited 4- to 8-fold less by A/Brazil/11/78 serum than was the reference strain. Reciprocal hemagglutination-inhibition tests showed that even strains well inhibited by A/Brazil/11/78 antisera (e.g., A/England/333/80) were somewhat different from A/Brazil/11/78 in that they were better inhibited by antiserum to the more distinct variants isolated in 1980, such as A/India/6263/80 (Table 2).

The predominant influenza A(H1N1) strains in the United States this winter are all considered to be slight variants from A/Brazil/11/78, since they generally resemble A/England/333/80 or A/India/6263/80. In some other countries (e.g., Hungary, Israel), however, widespread epidemics this winter of influenza A(H1N1) among young persons were caused by A/Brazil/11/78-like strains.

Reported by the World Health Organization Collaborating Center for Influenza, Center for Infectious Diseases, CDC.

TABLE 2. Hemagglutination-inhibition (HI) reactions of influenza A(H1N1) variants* from 1980

Antigen	Ferret sera			
	A/USSR/92/77	A/Brazil/11/78	A/England/333/80	A/India/6263/80
A/USSR/90/77	320	320	640	40
A/Brazil/11/78	80	640	640	40
A/England/333/80	80	320	1280	160
A/India/6263/80	20	80	160	320

*The antigenic character of influenza virus hemagglutinin can be assessed by HI testing of virus isolates, using sera obtained from ferrets infected with prototype reference strains. The HI antibody titers obtained with the homologous virus (underlined in the table) are compared with those obtained with recent influenza isolates (Antigen). Antigenic differences between 2 viruses, reflected in reciprocal tests with antisera to both viruses, may be symmetrical (i.e., differences are seen with both sera) or asymmetrical (difference seen with only 1 serum). Titer differences of ⩾4-fold are considered significant when comparing reactions of 2 viruses with any serum.

Erratum, Vol. 30, No. 7

p79. In the article "Influenza A in a Hospital — Illinois," RN Harroff, Div of Laboratories, Illinois Dept of Public Health, should have been included as a contributor.

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