CENTER FOR DISEASE CONTROL

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

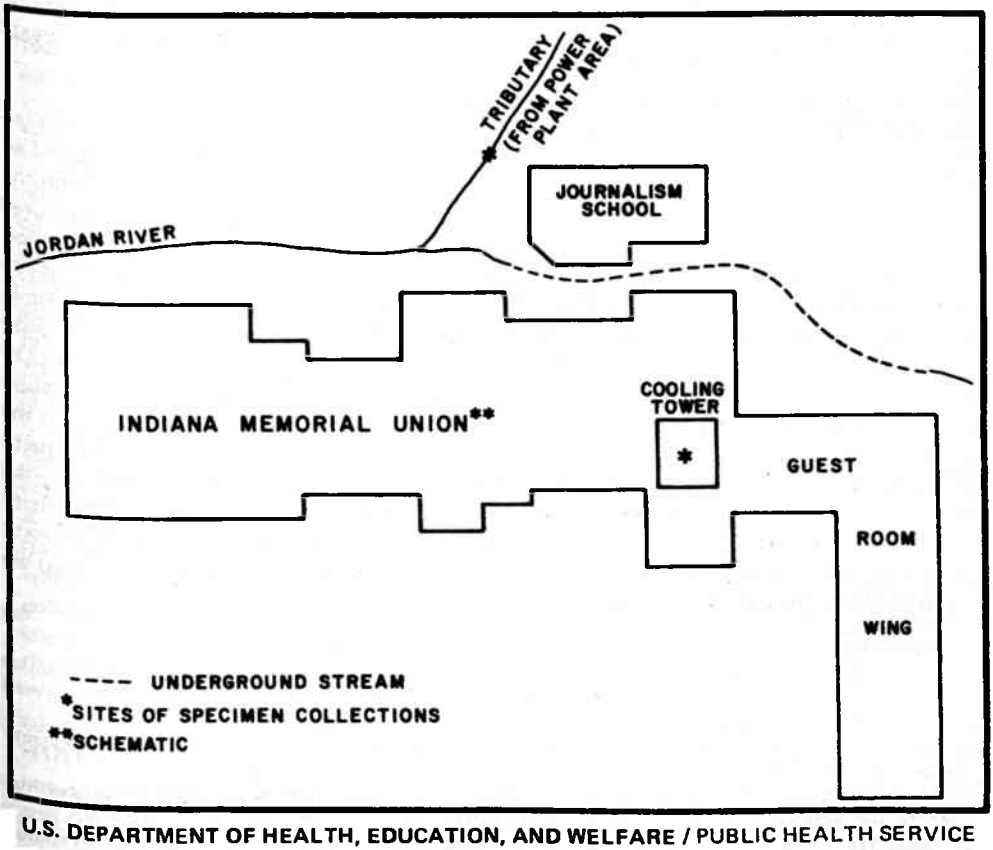
August 11, 1978 / Vol. 27 / No. 32

Epidemiologic Notes and Reports

Isolates of Organisms Resembling Legionnaires' Disease Bacterium from Environmental Sources — Bloomington, Indiana

Organisms closely resembling the Legionnaires' disease bacterium (LDB) have been isolated from 2 environmental specimens collected in the investigation of the outbreak of Legionnaires' disease in Bloomington, Indiana (*1*). The positive specimens include water from an air conditioning cooling tower atop the Indiana Memorial Union — a hotel student union complex in which 19 of 21 confirmed cases had stayed overnight in the 2 weeks before onset of illness — and water from a creek approximately 50 meters from the Union (Figure 1).

FIGURE 1. Sites of collection of environmental specimens from which an organism was isolated that resembles Legionnaires' disease bacterium, Bloomington, Indiana, 1978



LDB Isolation -- Continued

The water specimens were initially examined for LDB by direct fluorescent antibody (FA) methods (*2*) and were positive. Aliquots were inoculated into guinea pigs. Guinea pigs were sacrificed when fever was noted or, if no fever was noted, 7 days after inoculation. Splenic tissue was negative by direct FA, but FA-positive organisms were recovered from yolk sacs of embryonated hens' eggs inoculated with suspensions of guinea pig splenic tissue. The organisms were isolated directly on charcoal yeast extract agar (*3*) from the splenic tissue of a guinea pig inoculated with the creek water. The isolates from the cooling tower were strongly FA-positive, but the creek water isolates gave weak FA staining. Organisms from both sources had colonies on F-G agar (*4*) typical of LDB with browning and fluorescence of the medium. Subcultures did not grow on trypticase soy agar or trypticase soy blood agar. Isolates from each water specimen showed a pattern of cellular fatty acids on gas-liquid chromatography typical of the LDB (*5*). Studies of the DNA homology of these isolates and LDB are in progress; virulence to guinea pigs is being evaluated.

Ten other water specimens from the Union air handling units and tap water and 1 soil specimen collected beneath a tree near the creek have been processed in a similar fashion and have not yielded organisms resembling LDB. Additional specimens from the area are currently being processed.

The cooling tower is located on the roof of the Union, adjacent to and higher than the wing with guest rooms (Figure 1). It is in operation only during warm months and was shut down from November 15, 1977, to April 6, 1978. Studies are underway to determine whether water droplets released from the cooling tower in the process of evaporative cooling could be drawn into air intakes serving hotel rooms and meeting areas. Efforts are also underway to decontaminate the cooling tower water.

Reported by Bacterial Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: In several outbreaks Legionnaires' disease has appeared to be spread through the air (*6-8*). The lack of documented person-to-person spread has suggested an environmental source. In 1 outbreak in 1968, the source appeared to be water from the cooling tower in an air conditioning system (*6*). LDB was recovered in 1977 from stored frozen lung tissue of guinea pigs exposed several years earlier to aerosols of that water. CDC has not recovered LDB from any other water, soil, or other environmental specimens despite processing of more than 100 specimens by a variety of techniques. However, recent advances in techniques for processing specimens from environments with high background levels of microbial flora have improved the chances of recovering LDB organisms from such specimens. One such technique is the intraperitoneal inoculation of guinea pigs with specimens selected on the basis of direct FA. Another advance is the development and use of several differential media that are more supportive of the growth of LDB than is Mueller-Hinton agar supplemented with hemoglobin and IsoVitaleX—the medium on which LDB was first grown *in vitro;* these media permit greater specificity in distinguishing LDB from other bacteria. Water specimens collected during the investigations of other outbreaks from air cooling systems of involved and control buildings are presently being processed with these methods.

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LDB Isolation—Continued

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Recommendation of the Public Health Service

Advisory Committee on Immunization Practices

Influenza Vaccine

INTRODUCTION

Influenza virus infections occur every year in the United States, but they vary greatly in incidence and geographic distribution. Infections may be asymptomatic, or they may produce a spectrum of manifestations, ranging from mild upper respiratory infection to pneumonia and death. Influenza viruses A and B are responsible for only a portion of all respiratory disease. However, they are unique in their ability to cause periodic widespread outbreaks of febrile respiratory disease in both adults and children. Influenza epidemics are frequently associated with deaths in excess of the number normally expected. During the period from 1968 to 1978, more than 150,000 excess deaths are estimated to have occurred during epidemics of influenza A in the United States.

Efforts to prevent or control influenza in the United States have been aimed at protecting those at greatest risk of serious illness or death. Observations during influenza epidemics have indicated that influenza-related deaths occur primarily among chronically ill adults and children and in older persons, especially those over age 65. Therefore, annual vaccination is recommended for these "high-risk" individuals.

Influenza A viruses can be classified into subtypes on the basis of 2 antigens: hemagglutinin (H) and neuraminidase (N). Four types of hemagglutinin (H0-H3) and 2 types of neuraminidase (N1-N2) are recognized among viruses causing widespread disease among humans. Immunity to these antigens reduces the likelihood of infection and reduces the severity of disease in infected persons. However, there may be sufficient antigenic variation within the same subtype over time (antigenic drift) that infection or immunization with 1 strain may not induce immunity to distantly related strains. As a consequence, the antigenic composition of the most current strains is considered in selecting the virus strain(s) to be included in the vaccine.

During 1977-78, 2 H3N2 variants, A/Victoria/75 and A/Texas/77, both related to the 1968 Hong Kong strain of influenza A, were prevalent in the United States. In 1977 a major antigenic variant, A/USSR/77 (H1N1), appeared in China and Russia. This strain is unrelated to the H3N2 strain but is closely related to strains that had circulated throughout the world in the early 1950s. From January through April 1978, the H1N1 virus spread throughout the United States, causing outbreaks in several schools and colleges, and, to a lesser extent, in young persons in the general community. Persons born more than 25 years ago were not affected, presumably because of previous infection with antigenically related strains.

In this country and elsewhere throughout the world, H1N1 strains circulated concurrently with A/Victoria/75 and A/Texas/77-like H3N2 strains. Whether or not the H1N1 strains will replace the H3N2 strains remains uncertain. However, based on present information, continued co-circulation of strains related to A/Texas/77 (H3N2) and A/USSR/77 (H1N1) must be anticipated.

Influenza Vaccine—Continued

Outbreaks caused by influenza B viruses occur less frequently than influenza A epidemics, but influenza B infection can also cause serious illness or death. Influenza B viruses have shown much more antigenic stability than influenza A viruses. Strains of influenza B that were isolated in 1978 in the United States and elsewhere resembled the B/Hong Kong/5/72 virus.

INFLUENZA VIRUS VACCINE FOR 1978-79

The Public Health Service reviews influenza vaccine formulation regularly, recommending changes, when necessary, to counter major antigenic changes and antigenic drift. Influenza vaccine for 1978-79 will consist of inactivated trivalent preparations of antigens representative of influenza viruses expected to be prevalent: A/USSR/77 (H1N1), A/Texas/77 (H3N2), and B/Hong Kong/72. Two alternative vaccine formulations* will be available for different age groups. The formulation recommended for individuals 26 years and older, most of whom have had prior experience with all 3 viruses, will contain 7 μg of hemagglutinin of each antigen. Only 1 dose is required for members of this age group. In contrast, the formulation recommended for persons less than 26 years of age, most of whom lack contact with H1N1 strains, will contain 20 μg of the A/USSR antigen and 7 μg each of the other 2 antigens. Persons in this

*Official names: Influenza Virus Vaccine, Trivalent, Adult Formula; and Influenza Virus Vaccine, Trivalent, Youth Formula

(Continued on page 291)

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

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

DISEASE	31st WEEK ENDING		MEDIAN 1973-1977**	CUMULATIVE, FIRST 31 WEEKS		
	August 5, 1978	August 6, 1977*		August 5, 1978	August 6, 1977*	MEDIAN 1973-1977**
Aseptic meningitis	283	168	115	1,892	1,884	1,522
Brucellosis	3	3	4	90	124	124
Chickenpox	572	528	417	120,811	159,041	143,576
Diphtheria	1	1	1	50	55	121
Encephalitis: Primary (arthropod-borne & unspec.)	28	23	42	396	427	503
Post-infectious	3	5	6	119	131	182
Hepatitis, Viral: Type B	260	276	252	8,732	9,756	6,764
Type A	466	548	671	16,796	18,437	20,835
Type unspecified	150	134		5,212	5,248	
Malaria	21	19	9	398	308	232
Measles (rubeola)	195	481	154	21,939	52,171	23,574
Meningococcal infections: Total	36	20	20	1,599	1,164	971
Civilian	36	20	20	1,579	1,157	950
Military	—	—	—	20	7	21
Mumps	209	125	330	12,724	15,374	42,943
Pertussis	34	58	—	1,083	648	—
Rubella (German measles)	88	87	87	14,528	18,234	14,454
Tetanus	—	1	1	45	37	48
Tuberculosis	531	618	670	17,880	17,940	18,834
Tularemia	2	5	2	61	88	86
Typhoid fever	10	7	7	259	205	224
Typhus fever, tick-borne (Rky. Mt. spotted)	50	44	53	603	721	514
Venereal diseases:						
Gonorrhea: Civilian	23,643	21,165	21,165	574,431	572,933	572,933
Military	649	512	512	15,067	16,141	17,051
Syphilis, primary & secondary: Civilian	477	391	440	12,357	12,168	14,457
Military	6	6	6	175	182	210
Rabies in animals	61	52	60	1,800	1,789	1,752

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1978		CUM. 1978
Anthrax	4	Poliomyelitis: Total	—
Botulism † (Calif. 1)	52	Paralytic	—
Congenital rubella syndrome	21	Psittacosis (Ore. 3)	69
Leprosy (Calif. 2)	90	Rabies in man	—
Leptospirosis	36	Trichinosis †	37
Plague	3	Typhus fever, flea-borne (endemic, murine) (Tex. 1)	26

*Delayed reports received for calendar year 1977 are used to update last year's weekly and cumulative totals.

**Medians for gonorrhea and syphilis are based on data for 1975-1977.

†The following delayed reports will be reflected in next week's cumulative totals: Botulism: Utah +3; Trichinosis: Pa. −8

TABLE III. Cases of specified notifiable diseases, United States, weeks ending August 5, 1978, and August 6, 1977 (31st week)

REPORTING AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKENPOX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS (VIRAL), BY TYPE			MALARIA	
						Primary		Post-infectious	B	A	Unspecified		
	1978	1978	1978	1978	CUM. 1978	1978	1977*	1978	1978	1978	1978	1978	CUM. 1978
UNITED STATES	203	3	572	1	53	28	23	3	260	466	150	21	398
NEW ENGLAND	6	–	40	–	–	–	1	1	7	7	6	1	15
Maine	–	–	6	–	–	–	–	–	1	1	–	–	1
N.H. †	–	–	–	–	–	–	–	–	–	–	–	–	2
Vt.	–	–	3	–	–	–	–	–	–	1	–	–	–
Mass. †	2	–	11	–	–	–	1	1	–	4	6	–	3
R.I.	1	–	13	–	–	–	–	–	2	1	–	–	1
Conn.	3	–	7	–	–	–	–	–	4	–	–	1	8
MID. ATLANTIC	42	1	66	–	1	5	3	–	28	32	12	3	80
Upstate N.Y.	10	1	27	–	–	4	1	–	5	10	6	1	11
N.Y. City	2	–	38	–	1	–	–	–	9	3	4	1	35
N.J.†	20	–	NN	–	–	–	–	–	NA	NA	NA	–	17
Pa.†	10	–	1	–	–	1	2	–	14	19	2	1	17
E.N. CENTRAL	44	–	271	–	–	12	4	–	52	94	10	1	21
Ohio	24	–	25	–	–	8	1	–	9	36	–	–	4
Ind.	9	–	32	–	–	–	1	–	3	8	4	–	3
Ill.	–	–	50	–	–	–	–	–	19	11	–	–	4
Mich.	11	–	95	–	–	3	2	–	16	32	3	1	9
Wis.†	–	–	69	–	–	1	–	–	5	7	3	–	1
W.N. CENTRAL	17	–	14	1	2	–	3	–	9	32	3	–	17
Minn.	–	–	–	–	–	–	–	–	3	14	–	–	4
Iowa	–	–	6	–	–	–	1	–	4	1	1	–	–
Mo.	3	–	1	–	1	–	2	–	1	2	2	–	6
N. Dak.†	–	–	2	–	–	–	–	–	–	1	–	–	–
S. Dak.	–	–	–	–	–	–	–	–	–	–	–	–	1
Nebr.	–	–	5	1	1	–	–	–	–	–	–	–	3
Kans.	14	–	–	–	–	–	–	–	1	14	–	–	3
S. ATLANTIC	24	–	70	–	–	3	3	2	44	43	20	4	78
Del.	–	–	4	–	–	–	–	–	–	–	1	–	1
Md.	10	–	18	–	–	–	1	–	6	7	4	1	17
D.C.	–	–	–	–	–	–	–	–	3	3	–	1	2
Va.	4	–	2	–	–	1	1	–	7	1	2	–	17
W. Va.	–	–	27	–	–	1	–	–	4	5	2	–	1
N.C.	3	–	NN	–	–	1	1	–	2	3	–	1	7
S.C.	2	–	–	–	–	–	–	–	1	1	1	–	4
Ga.	–	–	–	–	–	–	–	–	1	4	–	–	6
Fla.	5	–	19	–	–	–	–	2	20	19	10	1	23
E.S. CENTRAL	12	1	9	–	–	1	–	–	19	15	7	1	4
Ky.†	–	–	6	–	–	–	–	–	7	1	3	–	1
Tenn.	5	–	NN	–	–	–	–	–	8	4	2	–	1
Ala.	3	–	2	–	–	1	–	–	3	6	2	–	1
Miss.	4	1	1	–	–	–	–	–	1	4	–	1	1
W.S. CENTRAL	24	–	26	–	1	2	3	–	32	81	39	2	21
Ark.	7	–	4	–	1	–	–	–	3	6	2	1	1
La.	4	–	NN	–	–	2	–	–	14	12	6	–	3
Okla.	2	–	–	–	–	–	–	–	2	5	5	–	–
Tex.†	11	–	22	–	–	–	3	–	13	58	26	1	17
MOUNTAIN	5	1	43	–	3	–	1	–	11	34	21	–	4
Mont.	1	–	4	–	–	–	–	–	1	–	1	–	–
Idaho	–	1	–	–	–	–	–	–	–	3	1	–	–
Wyo.	–	–	1	–	–	–	–	–	–	–	–	–	–
Colo.†	3	–	31	–	2	–	–	–	5	10	8	–	1
N. Mex.	–	–	–	–	–	–	1	–	–	4	2	–	1
Ariz.	–	–	NN	–	–	–	–	–	2	8	1	–	1
Utah	1	–	7	–	–	–	–	–	–	5	7	–	–
Nev.	–	–	–	–	1	–	–	–	3	4	1	–	1
PACIFIC	29	–	33	–	43	5	5	–	58	128	32	9	158
Wash.	2	–	15	–	39	–	–	–	6	11	2	–	6
Oreg.	9	–	3	–	–	–	–	–	2	17	1	–	3
Calif. †	16	–	–	–	1	4	5	–	44	69	24	9	131
Alaska	–	–	4	–	3	1	–	–	2	1	–	–	3
Hawaii	2	–	11	–	–	–	–	–	4	30	5	–	15
Guam	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–
P.R. †	–	–	–	–	–	–	–	–	–	1	2	–	4
V.I.	–	–	–	–	–	–	–	–	–	–	–	–	1

NN: Not notifiable.
NA: Not available.
*Delayed reports received for 1977 are not shown below but are used to update last year's weekly and cumulative totals.
†The following delayed reports will be reflected in next week's cumulative totals: Asep. meng.: N.H. +1, Pa. –1, Wis. +4, Tex. –1, Colo. –3; Chickenpox: N.H. +2, Pa. +61, Calif. +1, P.R. +2; Enceph.: N.H. +1, Pa. +1, Wis. +2, Tex. –1; Hep. B: Mass. –1, Pa. +20, Wis. +4; Hep. A: N.H. +1, Pa. +10; N. Dak. –1, Ky. –1, Tex. –1; Hep. unsp.: Mass. –1, Pa. +2, Ky. –1; Malaria: N.J. –1.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending August 5, 1978, and August 6, 1977 (31st week)

REPORTING AREA	MEASLES (RUBEOLA)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1978	CUM. 1978	CUM. 1977*	1978	CUM. 1978	CUM. 1977*	1978	CUM. 1978	1978	1978	CUM. 1978	CUM. 1978
UNITED STATES	195	21,939	52,171	36	1,599	1,164	209	12,724	34	88	14,528	45
NEW ENGLAND	2	1,954	2,465	3	84	51	2	713	–	9	715	1
Maine	–	1,309	164	–	6	3	–	484	–	–	147	–
N.H.†	–	45	510	–	9	3	1	13	–	–	98	–
Vt.	–	25	290	–	2	4	–	5	–	–	27	1
Mass.†	2	249	620	3	25	17	–	82	–	6	212	–
R.I.	–	7	61	–	17	1	1	32	–	1	41	–
Conn.†	–	319	820	–	25	23	–	97	–	2	190	–
MID. ATLANTIC	26	2,088	8,260	12	274	152	11	570	–	25	2,879	2
Upstate N.Y.	7	1,348	3,769	6	91	35	5	193	–	11	508	1
N.Y. City	12	329	689	3	65	41	3	131	–	5	115	–
N.J.†	4	73	194	1	48	33	2	128	–	2	1,584	–
Pa.†	3	338	3,608	2	70	43	1	118	–	7	672	1
E.N. CENTRAL	106	9,449	10,974	7	146	127	109	5,086	4	31	6,674	2
Ohio	5	474	1,813	3	53	41	63	854	1	2	1,255	1
Ind.	–	175	4,284	2	28	8	9	293	1	2	552	1
Ill.	23	617	1,574	–	7	33	7	1,629	–	2	416	–
Mich.	67	6,758	914	2	47	33	5	1,336	1	19	2,959	–
Wis.†	11	1,425	2,389	–	11	12	25	974	1	6	1,492	–
W.N. CENTRAL	–	378	9,420	1	54	53	6	1,887	1	1	631	6
Minn.	–	34	2,617	–	12	19	1	18	–	–	127	1
Iowa	–	51	4,262	–	5	8	–	120	–	1	50	–
Mo.	–	11	1,036	–	23	15	2	1,151	1	–	96	–
N. Dak.†	–	192	22	–	3	1	–	11	–	–	81	–
S. Dak.	–	–	66	–	2	4	–	6	–	–	111	1
Nebr.	–	5	209	–	–	1	3	21	–	–	34	–
Kans.	–	85	1,208	1	9	5	–	560	–	–	132	4
S. ATLANTIC	32	4,720	4,439	1	400	268	19	696	8	2	972	8
Del.	–	5	22	–	13	17	–	48	–	–	34	–
Md.	4	46	371	1	21	18	1	62	–	–	6	1
D.C.	–	–	14	–	1	–	–	1	–	–	1	–
Va.	3	2,796	2,634	–	50	20	4	124	–	–	230	–
W. Va.	11	1,022	214	–	9	9	1	160	–	2	324	–
N.C.	2	116	62	–	78	59	3	59	1	–	178	2
S.C.	–	194	147	–	24	28	–	15	2	–	28	1
Ga.	–	17	763	–	46	39	1	64	1	–	4	–
Fla.	12	524	212	–	158	78	9	163	4	–	167	4
E.S. CENTRAL	4	1,371	1,951	3	132	127	33	1,091	3	3	487	1
Ky.	–	115	1,173	2	27	26	2	181	–	3	125	1
Tenn.	4	953	664	1	32	30	1	442	1	–	196	–
Ala.	–	89	77	–	39	47	26	399	–	–	21	–
Miss.	–	214	37	–	34	24	4	69	2	–	147	–
W.S. CENTRAL	13	967	2,040	5	243	207	18	1,618	3	7	892	13
Ark.	–	16	29	–	21	10	3	580	1	–	57	1
La.	–	320	74	2	94	77	1	61	–	–	480	1
Okla.	–	13	54	–	16	10	–	4	–	–	11	2
Tex.	13	618	1,883	3	112	110	14	973	2	7	344	9
MOUNTAIN	1	242	2,485	2	34	30	8	374	6	2	193	1
Mont.	–	102	1,154	–	1	2	4	140	1	–	17	–
Idaho	–	1	161	–	3	4	–	20	–	–	2	–
Wyo.	–	–	17	–	–	1	–	–	–	–	–	–
Colo.	–	29	497	–	2	1	2	76	2	1	45	–
N. Mex.	–	–	254	–	7	8	–	15	–	–	3	–
Ariz.	–	45	247	2	13	10	–	10	3	–	90	–
Utah	–	44	12	–	4	3	2	109	–	–	25	1
Nev.	1	17	93	–	4	1	–	4	–	1	11	–
PACIFIC	11	770	10,137	2	232	149	3	689	9	8	1,085	11
Wash.†	6	140	529	–	39	18	–	164	2	–	93	–
Oreg.	–	144	355	1	22	17	1	79	–	1	101	–
Calif.	4	478	9,159	1	161	86	2	414	7	7	878	11
Alaska	–	–	60	–	6	26	–	7	–	–	3	–
Hawaii	1	8	34	–	4	2	–	25	–	–	10	–
Guam	NA	24	4	–	–	–	NA	33	NA	NA	3	1
P.R.†	1	200	843	–	3	1	4	1,061	1	–	15	5
V.I.	–	6	14	–	1	–	–	1	–	–	1	–

NA: Not available.

*Delayed reports received for 1977 are not shown below but are used to update last year's weekly and cumulative totals.

†The following delayed reports will be reflected in next week's cumulative totals: Measles: N.H. +1, Mass. –3, Pa. +10, N.Dak. –1, P.R. +5; Men. inf.: Conn. –1, N.J. +1, Pa. +3; Mumps: Pa. +3, P.R. +3; Pertussis: Pa. +1, Wis. +5, Wash. +3; Rubella: Mass. +1, Pa. +60.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending August 5, 1978, and August 6, 1977 (31st week)

REPORTING AREA	TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		VENEREAL DISEASES (Civilian)						RABIES (in Animals)
								GONORRHEA			SYPHILIS (Pri. & Sec.)			
	1978	CUM. 1978	CUM. 1978	1978	CUM. 1978	1978	CUM. 1978	1978	CUM. 1978	CUM. 1977*	1978	CUM. 1978	CUM. 1977*	CUM. 1978
UNITED STATES	531	17,880	61	10	259	50	603	23,643	574,431	572,933	477	12,357	12,168	1,800
NEW ENGLAND	22	593	–	–	39	–	8	601	14,863	14,964	9	349	508	66
Maine	1	41	–	–	–	–	–	36	1,124	1,074	–	7	14	59
N.H.†	–	12	–	–	5	–	–	24	684	587	–	4	3	1
Vt.†	1	25	–	–	1	–	–	9	338	396	–	3	6	–
Mass.†	17	346	–	–	23	–	3	263	6,586	6,441	5	215	364	4
R.I.	1	43	–	–	4	–	1	63	1,078	1,230	–	16	7	–
Conn.†	2	126	–	–	6	–	4	206	5,053	5,236	4	104	114	2
MID. ATLANTIC	67	3,088	3	1	29	8	37	2,595	61,302	58,086	62	1,651	1,701	46
Upstate N.Y.	12	449	2	–	7	6	22	668	10,572	9,795	8	133	168	39
N.Y. City	NA	1,129	1	1	16	–	2	744	23,868	22,798	38	1,157	1,067	–
N.J.†	23	756	–	–	4	2	6	349	11,265	10,248	3	182	219	5
Pa.†	32	754	–	–	2	–	7	834	15,597	15,245	13	179	247	2
E.N. CENTRAL	71	2,708	1	3	16	–	14	4,424	86,345	89,557	74	1,349	1,288	99
Ohio	8	485	1	–	5	–	9	834	22,324	23,623	4	249	303	11
Ind.	5	321	–	–	–	–	1	368	8,857	8,252	9	85	98	6
Ill.	30	1,031	–	3	4	–	4	1,903	27,443	29,067	56	846	674	27
Mich.†	21	758	–	–	7	–	–	915	19,896	20,488	2	127	152	5
Wis.	7	113	–	–	–	–	–	404	7,825	8,127	3	42	61	50
W.N. CENTRAL	22	604	11	–	12	1	17	1,099	29,061	30,194	10	290	274	383
Minn.	5	110	–	–	4	–	–	182	5,047	5,510	3	119	86	126
Iowa	3	69	–	–	2	–	–	56	3,236	3,515	5	37	25	78
Mo.†	9	257	10	–	4	1	11	536	12,483	12,606	2	80	98	45
N. Dak.	–	27	–	–	–	–	1	21	535	565	–	2	2	66
S. Dak.†	3	50	–	–	–	–	2	27	1,033	846	–	2	2	46
Nebr.	–	12	–	–	–	–	–	51	2,166	2,626	–	8	24	2
Kans.†	2	79	1	–	2	–	3	226	4,561	4,526	–	42	37	20
S. ATLANTIC	111	3,886	6	1	35	29	349	5,993	140,188	142,056	105	3,255	3,453	237
Del.	2	31	–	–	1	–	4	36	1,841	1,997	–	6	18	1
Md.†	21	588	4	–	6	15	85	745	17,827	17,957	9	250	220	–
D.C.	2	205	–	–	1	–	–	243	8,974	9,365	8	254	364	–
Va.	15	414	2	–	5	–	76	626	13,253	14,580	4	266	335	6
W. Va.†	3	163	–	–	2	–	9	92	1,978	1,948	1	9	1	2
N.C.	28	600	–	–	2	4	111	749	19,993	21,137	10	318	483	5
S.C.	7	345	–	–	4	10	41	723	13,741	13,135	6	166	155	55
Ga.	–	523	–	–	3	–	23	1,190	26,837	27,347	38	798	707	157
Fla.†	33	1,017	–	1	11	–	–	1,589	35,744	34,590	29	1,188	1,170	11
E.S. CENTRAL	50	1,634	5	–	5	8	109	1,824	49,562	51,191	22	631	432	89
Ky.	–	352	2	–	2	1	34	220	6,127	6,914	3	83	52	48
Tenn.	21	501	3	–	1	6	65	653	18,327	20,743	9	218	136	17
Ala.	2	391	–	–	1	–	5	554	14,211	13,898	10	101	85	24
Miss.	27	390	–	–	1	1	5	397	10,897	9,636	–	229	159	–
W.S. CENTRAL	85	2,122	30	4	31	4	62	3,017	78,771	72,065	70	1,956	1,700	592
Ark.†	5	228	20	–	2	–	8	384	6,008	5,615	3	49	43	88
La.	19	365	5	–	3	–	1	573	12,889	10,789	14	417	408	11
Okla.	6	219	3	–	2	–	35	192	7,430	6,734	–	58	50	129
Tex.	55	1,310	2	4	24	4	18	1,868	52,444	48,927	53	1,432	1,199	364
MOUNTAIN	22	522	3	–	14	–	4	861	21,505	23,266	14	254	247	43
Mont.	1	34	–	–	–	–	2	57	1,259	1,183	–	7	4	4
Idaho	–	21	2	–	5	–	1	38	796	1,078	–	7	5	–
Wyo.	–	13	–	–	–	–	–	33	508	582	1	5	2	–
Colo.	4	47	–	–	3	–	–	255	5,939	5,978	5	72	75	16
N. Mex.†	6	84	–	–	2	–	–	195	3,139	3,432	–	60	47	9
Ariz.	6	252	–	–	2	–	–	124	5,567	6,644	7	61	99	12
Utah	–	25	1	–	1	–	–	34	1,152	1,283	–	11	5	2
Nev.	5	46	–	–	1	–	1	125	3,145	3,096	1	31	10	–
PACIFIC	81	2,723	2	1	78	–	3	3,229	92,834	91,554	111	2,622	2,565	245
Wash.†	NA	112	–	–	6	–	–	283	7,306	6,910	NA	102	147	–
Oreg.	1	120	–	–	1	–	2	270	6,418	6,255	3	85	72	5
Calif.	79	2,106	2	1	64	–	1	2,504	74,451	73,438	108	2,402	2,304	232
Alaska	–	46	–	–	–	–	–	117	2,945	3,005	–	7	18	8
Hawaii	1	339	–	–	7	–	–	55	1,714	1,946	–	26	24	–
Guam	NA	37	–	NA	–	NA	–	NA	119	135	NA	–	1	–
P.R.	3	243	–	–	1	–	–	44	1,351	1,910	11	263	328	19
V.I.	–	4	–	–	2	–	–	5	133	118	–	12	6	–

NA: Not available.

*Delayed reports received for 1977 are not shown below but are used to update last year's weekly and cumulative totals.

†The following delayed reports will be reflected in next week's cumulative totals: TB: N.H. –1, Mich. –2, Mo. –1, Kans. –1, Md. –5, Fla. –1, Ark. –2, N. Mex. –1, Wash. +33; T. fever: Mass. –1, Pa. +1, Fla. +1; RMSF: Md. –1; GC: Mass. +10 civ., Conn. +9 mil., Pa. +261 civ., Wash. +94 mil.; Syphilis: Wash. +16; An. rabies: Vt. +1, N.J. +1, Ind. +1, S. Dak. +10, W. Va. +2.

TABLE IV. Deaths in 121 U.S. cities,* week ending August 5, 1978 (31st week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	<1	
NEW ENGLAND	597	379	147	29	17	38
Boston, Mass.	155	90	41	9	7	11
Bridgeport, Conn.	43	35	6	2	–	3
Cambridge, Mass.	11	8	1	1	–	1
Fall River, Mass.	21	17	4	–	–	1
Hartford, Conn.	51	32	14	3	–	1
Lowell, Mass.	19	8	8	2	–	3
Lynn, Mass.	20	11	8	1	–	1
New Bedford, Mass.	35	25	9	–	–	1
New Haven, Conn.	45	25	12	5	–	1
Providence, R.I.	74	42	17	3	8	7
Somerville, Mass.	7	6	1	–	–	1
Springfield, Mass.	40	29	6	1	1	3
Waterbury, Conn.	32	22	8	1	–	3
Worcester, Mass.	44	29	12	1	1	1
MID. ATLANTIC	2,577	1,624	634	150	78	111
Albany, N.Y.	52	26	15	6	4	1
Allentown, Pa.	33	20	10	3	–	–
Buffalo, N.Y.	103	65	26	5	3	6
Camden, N.J.	30	16	9	3	2	2
Elizabeth, N.J.	23	16	4	1	–	1
Erie, Pa.	29	14	10	2	1	1
Jersey City, N.J.	38	23	15	–	–	2
Newark, N.J.	53	24	15	5	4	2
N.Y. City, N.Y.	1,296	837	293	89	28	48
Paterson, N.J.	34	21	5	3	4	3
Philadelphia, Pa.	486	289	137	21	20	22
Pittsburgh, Pa.	53	34	15	3	–	1
Reading, Pa.	24	20	1	1	2	1
Rochester, N.Y.	123	86	25	4	5	7
Schenectady, N.Y.	18	13	4	–	–	–
Scranton, Pa.	30	21	6	1	2	2
Syracuse, N.Y.	70	43	23	–	3	–
Trenton, N.J.	36	23	12	1	–	8
Utica, N.Y.	18	13	3	1	–	1
Yonkers, N.Y.	28	20	6	1	–	3
E.N. CENTRAL	2,211	1,247	624	130	102	58
Akron, Ohio	55	31	14	3	4	–
Canton, Ohio	37	21	13	2	–	–
Chicago, Ill.	554	306	144	46	28	17
Cincinnati, Ohio	166	91	58	7	6	4
Cleveland, Ohio	163	90	53	6	8	3
Columbus, Ohio	130	68	36	11	9	5
Dayton, Ohio	102	65	28	4	3	5
Detroit, Mich.	278	144	85	19	16	7
Evansville, Ind.	36	26	6	1	1	1
Fort Wayne, Ind.	39	25	7	2	3	–
Gary, Ind.	20	8	8	2	–	1
Grand Rapids, Mich.	41	26	10	–	2	6
Indianapolis, Ind.	160	82	51	6	11	–
Madison, Wis.	36	22	9	–	3	1
Milwaukee, Wis.	121	68	35	12	1	3
Peoria, Ill.	35	24	9	–	2	2
Rockford, Ill.	38	29	7	1	1	1
South Bend, Ind.	42	27	13	1	–	5
Toledo, Ohio	109	67	27	2	4	2
Youngstown, Ohio	49	27	11	5	–	–
W.N. CENTRAL	634	408	129	40	28	22
Des Moines, Iowa	43	24	14	2	2	–
Duluth, Minn.	22	10	6	–	3	3
Kansas City, Kans.	38	23	7	3	2	3
Kansas City, Mo.	103	63	16	12	5	2
Lincoln, Nebr.	22	13	6	1	2	1
Minneapolis, Minn.	73	52	12	1	3	3
Omaha, Nebr.	75	47	18	4	2	–
St. Louis, Mo.	150	99	31	11	4	2
St. Paul, Minn.	64	45	11	4	3	5
Wichita, Kans.	44	32	8	2	2	3
S. ATLANTIC	1,178	650	321	84	72	51
Atlanta, Ga.	127	52	44	18	7	2
Baltimore, Md.	121	68	28	14	4	3
Charlotte, N.C.	63	24	25	3	4	–
Jacksonville, Fla.	108	60	27	7	5	6
Miami, Fla.	89	48	27	4	6	5
Norfolk, Va.	61	35	19	1	5	7
Richmond, Va.	93	55	31	3	3	12
Savannah, Ga.	38	19	12	2	4	2
St. Petersburg, Fla.	88	69	11	3	3	5
Tampa, Fla.	74	50	13	6	1	5
Washington, D.C.	262	136	68	23	29	3
Wilmington, Del.	54	34	16	–	1	1
E.S. CENTRAL	633	346	180	34	47	22
Birmingham, Ala.	98	53	26	5	8	–
Chattanooga, Tenn.	57	31	15	4	5	3
Knoxville, Tenn.	35	22	11	1	–	1
Louisville, Ky.	91	52	29	3	3	7
Memphis, Tenn.	143	70	43	8	17	–
Mobile, Ala.	61	37	13	4	4	4
Montgomery, Ala.	51	30	11	2	6	4
Nashville, Tenn.	97	51	32	7	4	3
W.S. CENTRAL	1,170	633	324	97	47	28
Austin, Tex.	34	25	5	1	1	1
Baton Rouge, La.	37	23	9	2	1	–
Corpus Christi, Tex.	49	32	13	2	–	1
Dallas, Tex.	186	94	49	25	7	3
El Paso, Tex.	57	21	18	9	3	7
Fort Worth, Tex.	94	52	30	3	5	1
Houston, Tex.	270	115	98	27	13	1
Little Rock, Ark.	61	36	11	6	5	1
New Orleans, La.	156	99	38	8	2	–
San Antonio, Tex.	104	53	32	6	5	2
Shreveport, La.	54	39	9	1	4	3
Tulsa, Okla.	68	44	12	7	1	8
MOUNTAIN	496	278	126	37	25	10
Albuquerque, N.Mex.	56	29	13	7	4	3
Colo. Springs, Colo.	23	13	6	1	3	–
Denver, Colo.	104	67	24	4	1	2
Las Vegas, Nev.	53	22	18	7	2	–
Ogden, Utah	15	7	4	–	1	1
Phoenix, Ariz.	105	60	27	8	4	3
Pueblo, Colo.	16	11	4	–	1	–
Salt Lake City, Utah	49	28	11	2	6	1
Tucson, Ariz.	75	41	19	8	3	–
PACIFIC	1,613	1,044	373	99	47	34
Berkeley, Calif.	17	15	–	1	1	–
Fresno, Calif.	79	47	18	7	5	3
Glendale, Calif.	16	11	3	1	1	1
Honolulu, Hawaii	42	27	9	2	2	1
Long Beach, Calif.	86	50	27	6	3	–
Los Angeles, Calif.	568	373	128	33	15	15
Oakland, Calif.	67	41	18	5	–	1
Pasadena, Calif.	29	20	6	–	1	–
Portland, Oreg.	117	86	18	6	3	4
Sacramento, Calif.	72	42	17	10	1	2
San Diego, Calif.	103	60	31	5	4	1
San Francisco, Calif.	134	90	27	9	6	–
San Jose, Calif.	58	38	14	5	–	2
Seattle, Wash.	146	88	40	7	5	1
Spokane, Wash.	44	29	10	2	3	2
Tacoma, Wash.	35	27	7	–	–	1
TOTAL	11,109	6,609	2,858	700	463	374
Expected Number	13,921	6,519	2,813	718	429	360

*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

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age group will require 2 doses for satisfactory immunization. Both formulations will be available as "whole-virus" and "split-virus" preparations. Based on past data, split-virus vaccines have been associated with somewhat fewer side effects than whole-virus vaccines in children. Thus, only split-virus vaccines are recommended for persons less than 13 years of age.

VACCINE USAGE

General Recommendations

Annual vaccination is strongly recommended for all individuals at increased risk of adverse consequences from infections of the lower respiratory tract. Conditions predisposing to such risk include: (1) acquired or congenital heart disease associated with altered circulatory dynamics, actual or potential (for example, mitral stenosis, congestive heart failure, or pulmonary vascular overload); (2) any chronic disorder with compromised pulmonary function, such as chronic obstructive pulmonary disease, bronchiectasis, tuberculosis, severe asthma, cystic fibrosis, neuromuscular and orthopedic disorders with impaired ventilation, and residual pulmonary dysplasia following the neonatal respiratory distress syndrome; (3) chronic renal disease with azotemia or the nephrotic syndrome; (4) diabetes mellitus and other metabolic diseases with increased susceptibility to infection; (5) chronic, severe anemia, such as sickle cell disease; and (6) conditions which compromise the immune mechanism, including certain malignancies and immunosuppressive therapy.

Vaccination is also recommended for older persons, particularly those over age 65, because excess mortality in influenza outbreaks occurs in this age group.

In considering vaccination of persons who provide essential community services or who may be at increased risk of exposure, such as medical care personnel, the inherent benefits, risks, and cost of vaccination should be taken into account.

Table 1 summarizes vaccine and dosage recommendations by age group for 1978-79. These recommendations are derived from observations made during the field trials of influenza vaccines conducted in 1978.

TABLE 1. Influenza vaccine dosage, by age, 1978-79

Vaccine formulation	Age (years)	Product type	Dosage (ml)	Number of doses
Adult*	≥ 26	whole-virus split-virus	0.5	1
Youth**	13-25	whole-virus or split-virus	0.5	2†
	< 13	N/A††	N/A††	N/A††

*Contains 7 μg each of A/USSR/77, A/Texas/77, B/Hong Kong/72 hemagglutinin antigens

**Contains 20 μg A/USSR/77 and 7 μg each of A/Texas/77 and B/Hong Kong/72 hemagglutinin antigens

†4 weeks or more between doses; both doses essential for good protection

††N/A = not available; final recommendations for those < 13 years old will be made in approximately 1 month

SIDE EFFECTS AND ADVERSE REACTIONS

Influenza Virus Vaccine for 1978-79 has been associated with few side effects. Local reactions, consisting of redness and induration at the site of injection lasting 1 or 2 days, have been observed in less than one-third of vaccinees. Three types of systemic reactions to influenza vaccines have been described.

1. Fever, malaise, myalgia, and other systemic symptoms of toxicity, although infrequent, occur more often in children and others who have had no experience with influenza viruses containing the vaccine antigen(s). These reactions, which begin 6-12 hours after vaccination and persist 1-2 days, are usually attributed to the influenza virus itself

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(even though it is inactivated) and constitute most of the side effects of influenza vaccination.

2. Immediate—presumable allergic—responses, such as flare and wheal or various respiratory expressions of hypersensitivity occur extremely rarely after influenza vaccination. They probably derive from sensitivity to some vaccine component, most likely residual egg protein. Although current influenza vaccines contain only a small quantity of egg protein, on rare occasions they can provoke hypersensitivity reactions. Individuals with anaphylactic hypersensitivity to eggs should not be given influenza vaccine. This would include persons who, upon ingestion of eggs, develop swelling of the lips or tongue or who experience acute respiratory distress or collapse.

3. Guillain-Barré syndrome (GBS) is an uncommon illness characterized by ascending paralysis which is usually self-limited and reversible. However, 5-10% of persons with GBS have residual weakness, and approximately 5% of cases are fatal. Before 1976, no association of GBS with influenza vaccination was recognized. However, that year GBS appeared in excess frequency among persons who had received swine influenza vaccine. For the 10 weeks following vaccination the excess risk was found to be approximately 10 cases of GBS for every million persons vaccinated. The overall incidence in that period was 5-6 times higher than that in unvaccinated persons. Younger persons (under 25 years) had a lower relative risk than others and also had a lower case-fatality rate. Although there is no comparable information about the association of GBS with other influenza vaccines, it must be assumed that this risk may be present for all of them. Even though the risk (in 1976) was extremely low, persons who receive influenza vaccine should be aware of it and should balance this risk against the risk of influenza and its complications.

USE IN PREGNANCY

Although the issue has been much discussed, only in the pandemics of 1918-19 and 1957-58 has strong evidence appeared relating influenza infections with increased maternal mortality. Although several studies have reported an increased risk of congenital malformations and childhood leukemia among children born to women who had influenza infection during pregnancy, other studies have not shown an increased risk; the issue is not settled.

Physicians prudently limit prescription of drugs and biologics for pregnant women. However, no evidence has been presented to suggest that influenza vaccination of pregnant women poses any special maternal or fetal risk. Furthermore, because influenza vaccine is an inactivated viral preparation, it does not share the theoretical risks that impel caution in the use of live virus vaccines. Taking the above uncertainties into account, physicians should evaluate pregnant women for influenza immunization according to the same chronic illness criteria applied to other persons. (See **General Recommendations**, p. 291).

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Epidemiologic Notes and Reports

Legionnaires' Disease — Atlanta, Georgia

Four confirmed and 3 suspected cases of Legionnaires' disease have occurred in southwest Atlanta, Georgia, residents. Dates of onset for 6 cases were from July 2-7; the seventh was on July 19. The ages of cases ranged from 54 to 73; 5 were men, and 2 were women.

The clinical syndrome was characterized by fever of >103 F (39.4 C), severe weakness, and consolidative pneumonia. A 69-year-old man died and had positive direct immunoflorescence to Legionnaires' bacterium in postmortem lung tissue. The remaining 3 confirmed cases had 4-fold or greater rises in serum indirect fluorescent antibody titer (to a reciprocal titer of ≥256).

Questionnaires and serologic studies in control populations are underway, and environmental sampling is planned in an attempt to identify a common source and to isolate the bacterium. At present no evidence exists that the outbreak is continuing.

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Identification of a New Serogroup of Legionnaires' Disease Bacterium

A new serogroup of Legionnaires' disease bacterium (LDB) has been identified by the Bureau of Laboratories, CDC.

A patient in Togus Veterans Administration Center, Maine, contracted atypical pneumonia on April 2, 1978, and died April 5. Twenty-two days following the onset of illness of this patient, a case of atypical pneumonia occurred in a second patient in the hospital. There was no known contact between the 2 patients. Acute and convalescent phase serum specimens (Togus acute and Togus convalescent) were obtained from the second patient. An LDB (Togus strain) isolated at CDC from a postmortem lung specimen of the first patient was found to be negative in direct fluorescent antibody (FA) staining tests with fluorescein isothiocyante (FITC) conjugates of antibodies prepared in rabbits against 16 other strains of LDB. Conversely, FITC conjugates of antibodies produced in rabbits against cells of the Togus strain stained Togus cells brightly and were negative with cells of the other 16 strains of LDB.

IFA staining titers were performed with the Togus acute and convalescent phase serum specimens using cells of the Philadelphia 1, Detroit, and Togus strains, LDB, as antigens. The convalescent serum specimen obtained from the Detroit-strain case served as the positive control serum. The greater than 4-fold rise in titer (1:32 to 1:256) to Philadelphia 1 antigen of the Togus serum from acute to convalescent phase was indicative of a recent infection with LDB. However, the rise in titer from 1:32 to 1:8,192 when the serum specimens were tested with the Togus antigen indicated that this patient had probably been infected with LDB of the Togus serogroup. Serogroup difference was also shown by the titer (1:128) of the Detroit control serum when it was tested with the Togus antigen; by contrast, the titer was 1:262,144 when tested with either Philadelphia 1 or Detroit antigen.

Reported by HE Lind, PhD, Public Health Laboratory, Maine State Dept of Human Services; Bacteriology Div, Pathology Div, and Virology Div, Bur of Laboratories, Bacterial Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: Adequate screening or diagnostic direct FA staining of the currently recognized LDB groups requires the use of conjugates prepared against strains such as Philadelphia 1 and Togus group. The Togus strain of LDB should be considered in diagnostic procedures for LD based on immunologic reactions. Attempts are underway to identify other LDB strains with serologic characteristics of the Togus group.

International Notes

Poliomyelitis — Canada

As of August 4, 1978, there have been 4 cases of poliomyelitis reported to the Laboratory Centre for Disease Control (LCDC), Canada. Patients include a 26-year-old man in British Columbia, an 8-year-old boy in Alberta, and 2 brothers ages 25 and 14 in Ontario. All cases had onset in late July and were in members of religious groups related to those involved in the outbreak of poliomyelitis in the Netherlands (*1,2*). None of the cases in Canada gave a history of receiving polio vaccine. The patients in British Columbia and in Alberta were known to have had direct contact with visitors from the Netherlands. The 2 cases in Ontario had no known direct contact with visitors from the Netherlands but resided in communities that had hosted recent visitors from that country. Poliovirus type 1 has been isolated from all but the younger brother in Ontario.

The Dutch visitor known to have had contact with the patient in British Columbia on July 10 was also known to have spent a week (July 11-16) with a family in northern Washington State. This visitor, a 17-year-old man, had poliovirus type 1 isolated from a stool specimen collected July 30. Of his 8 known Washington contacts, 7 gave a history of having received polio vaccination. The eighth individual, the sister of the British Columbia patient, had never received poliomyelitis vaccine. All contacts of the Dutch visitor had stool and throat specimens cultured for poliovirus. Because contact was known to have occurred 17 days before the interview by the local health officer, serum samples were obtained for complement fixation (CF) antibody determination. None of the 3 individuals on whom serology was performed had detectable CF titers, suggesting that there had been no recent infection with poliovirus. Stool cultures are pending.

In addition, one of the persons who had contact with an Ontario patient was on a 2-week holiday visiting family in Michigan. Of her 6 known contacts, 3 gave a history of some vaccination. Laboratory results on these contacts are pending.

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PUBLIC HEALTH SERVICE / CENTER FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333 OFFICIAL BUSINESS

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HEW 396

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HEW Publication No. (CDC) 78-8017

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