

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

- 199 Recovery of Virus-Like Particles Associated With Non-A, Non-B Hepatitis
 International Notes
 200 Legionnaires' Disease — England, Wales
 Recommendation of the Public Health Service
 Advisory Committee on Immunization
 Practices
 205 Influenza Vaccine — Preliminary Statement

Epidemiologic Notes and Reports

Recovery of Virus-Like Particles Associated With Non-A, Non-B Hepatitis

Virus-like particles associated with non-A, non-B (NANB) hepatitis in humans have for the first time been recovered from an experimentally infected chimpanzee and visualized at the Hepatitis Laboratories Division, Bureau of Epidemiology, CDC (Figure 1). NANB hepatitis accounts for approximately 90% of post-transfusion hepatitis in the United States.

The presumed viral agent was originally contained in a commercial plasma product (antihemophilic factor: Factor VIII) that caused NANB hepatitis in 2 patients who received transfusions of the material. Three lots of the Factor VIII product incriminated in the cases of viral hepatitis in these 2 patients, 1 in Minnesota and the other in Wisconsin, were collected from the respective hospitals or manufacturer. For both patients, serodiagnostic tests ruled out acute infection with hepatitis A virus (HAV), hepatitis B virus (HBV), cytomegalovirus (CMV) and Epstein-Barr virus (EBV). In 1 patient mild anicteric NANB hepatitis developed 38 days after infusion of Factor VIII (lot "A"); in the other patient severe icteric NANB hepatitis developed 20 days after infusion of Factor VIII (lots "B" and "C").

NANB hepatitis was experimentally induced in 4 colony-born chimpanzees by intravenous inoculation of the implicated Factor VIII materials. Two chimpanzees each had 30 ml of lot "A" infused, and 2 other chimpanzees each had 5 ml of a pool of lots "B" and "C" infused. In all 4 animals enzymatic evidence of liver damage (elevated serum glutamic pyruvic transaminase [SGPT]) developed, and 3 had liver histopathologic changes consistent with a diagnosis of viral hepatitis. One animal (#771) had pronounced SGPT elevations beginning on day 19 after inoculation, peaking on day 29. None of the 4 infected chimpanzees had serologic evidence of acute infection, or reinfection, with HAV, HBV, CMV, or EBV. Prior to inoculation, 1 animal was anti-HAV positive, and another was positive for both anti-HAV and anti-HBs. The other 2 animals were seronegative for both HAV and HBV.

NANB hepatitis was subpassaged in 2 other colony-born chimpanzees that had been intravenously inoculated with 15 ml of acute-phase plasma obtained from animal #771 29 days after it had been inoculated. These animals had elevated SGPT 19 and 26 days after inoculation, giving

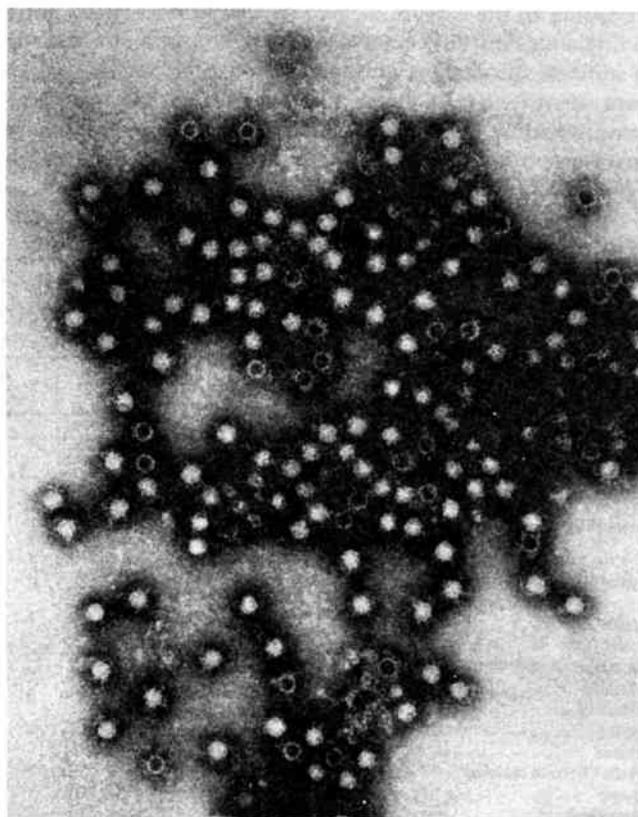


FIGURE 1. Electron micrograph of candidate non-A, non-B hepatitis virus particles aggregated by convalescent serum from a case of non-A, non-B hepatitis. Magnification, 90,950 X.

them incubation periods similar to that of the donor chimpanzee. These findings verified experimentally for the first time that commercially produced Factor VIII materials can induce NANB hepatitis in chimpanzees and that the disease can be subpassaged with resultant incubation periods similar to that of the donor. These findings also confirm earlier studies (1,2) that show chimpanzees are susceptible to infection with the agent (or agents) of human NANB hepatitis.

Virus particles 27 nm in diameter have been visualized by immune electron microscopy (IEM) in a homogenate

Hepatitis - Continued

prepared from a liver-wedge biopsy obtained from animal #771 (Figure 1). Empty and full virus particles that were aggregated by antibody were visualized by IEM in cesium chloride (CsCl) gradient fractions of an isopycnicly banded liver homogenate using convalescent serum from both patients described above. These CsCl gradient fractions were negative for HAV by radioimmunoassay and IEM and were also negative by IEM for the "core" (HBcAg) of the HBV virion. Specific and sensitive immunofluorescent assays of the liver biopsy for HAV, HBcAg, and HBsAg showed it to be uniformly negative for these viral antigens. The accumulated serologic and biophysical evidence suggests

that these virus particles may represent an etiologic agent of human NANB hepatitis. Studies are in progress at CDC to establish the specific association of this candidate virus with NANB hepatitis and to define its role in the transmission of this disease.

Reported by Hepatitis Laboratories Div, Bur of Epidemiology, CDC.

References

1. Tabor E, Drucker JA, Hoofnagle JH, April M, Gerety RJ, Seefe LB, Jackson DR, Barker LF, Pineda-Tamondong G: Transmission of non-A, non-B hepatitis from man to chimpanzee. *Lancet* 1:463-466, 1978
2. Alter HJ, Holland PV, Purcell RH, Popper H, Transmissible agent in non-A, non-B hepatitis. *Lancet* 1:459-463, 1978

*International Notes***Legionnaires' Disease - England, Wales**

In the period July 1, 1973-April 1, 1978, 31 cases of Legionnaires' disease were identified in England and Wales, according to the Communicable Disease Surveillance Centre in England. Fourteen cases were identified by a ≥ 4 -fold rise in indirect fluorescent antibody (IFA) titer of $\geq 1:128$, 10 were identified by a single IFA titer of $\geq 1:256$, and 7 by demonstration of the Legionnaires' disease bacterium in postmortem lung tissue by immunofluorescent staining.*

*Using the same diagnostic criteria 18 cases of Legionnaires' disease in Scotland have so far been identified at the Department of Laboratory Medicine, Ruchill Hospital, Glasgow.

The mean age for all the cases was 45 years (range: 26-76 years) (Table 1). There were 7 fatalities and an eighth patient died suddenly 6 weeks after the onset of his illness. His death was probably due to a myocardial infarction, as he had apparently recovered from pneumonia. The mean age of the fatal cases was 54 years (range: 26-63 years).

One patient had onset of illness in 1976, 25 in 1977, and 4 in 1978. One other was involved in the outbreak of respiratory illness that occurred in tourists, mainly from

(Continued on page 205)

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

(Cumulative totals include revised and delayed reports through previous weeks)

DISEASE	23rd WEEK ENDING		MEDIAN 1973-1977††	CUMULATIVE, FIRST 23 WEEKS		
	June 10, 1978	June 11, 1977†		June 10, 1978	June 11, 1977†	MEDIAN 1973-1977††
Aseptic meningitis	50	59	50	909	903	870
Brucellosis	2	1	3	59	85	81
Chickenpox	5,258	5,463	4,566	104,761	142,426	129,436
Diphtheria	—	2	2	36	47	102
Encephalitis						
Primary	17	16	16	259	273	330
Post-Infectious	11	7	8	83	90	130
Hepatitis, Viral						
Type B	326	345	203	6,512	7,240	4,864
Type A	584	557	651	12,523	14,062	15,873
Type unspecified	212	149	—	3,864	3,912	—
Malaria	15	15	12	228	182	124
Measles (rubeola)	1,057	2,317	1,191	17,711	44,694	20,552
Meningococcal infections, total	55	32	25	1,276	970	772
Civilian	55	32	25	1,261	965	754
Military	—	—	—	15	5	17
Mumps	636	466	1,557	10,601	13,286	37,269
Pertussis	29	19	—	797	356	—
Rubella (German measles)	1,055	697	697	11,631	15,940	13,003
Tetanus	3	3	1	31	25	27
Tuberculosis	700	592	596	12,923	13,190	14,069
Tularemia	1	3	4	32	52	46
Typhoid fever	8	6	10	182	152	148
Typhus, tick-borne (Rky. Mt. spotted fever)	46	52	46	181	273	180
Venereal Diseases:						
Gonorrhea						
Civilian	18,221	18,307	18,595	407,459	410,394	413,554
Military	584	715	707	10,664	11,931	13,007
Syphilis, primary and secondary						
Civilian	345	394	448	9,086	9,062	11,045
Military	6	6	6	136	135	150
Rabies in animals	71	70	70	1,326	1,296	1,296

Table II. Notifiable Diseases of Low Frequency: United States

	CUM.		CUM.
Anthrax:	3	Poliomyelitis, total:	—
Botulism:	50	Paralytic:	—
Congenital rubella syndrome: N.C. 1	13	Psittacosis: * Va. 1, Tex. 1	50
Leptosy: Tex. 3, Calif. 2	56	Rabies in man:	—
Leptospirosis: * Mass. 1, Va. 1	20	Trichinosis: NYC 2	21
Plague:	1	Typhus, murine:	15

† 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.

* Delayed reports: Leptospirosis: Wash 1 (1978); Psittacosis: Ark. 2 (1977)

Table III
Cases of Specified Notifiable Diseases: United States
Weeks Ending June 10, 1978 and June 11, 1977 — 23rd Week

AREA REPORTING	ASEPTIC MENIN- GITIS	BRUCE- LOSIS	CHICKEN- POX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS, VIRAL			MALARIA	
						Primary: Arthropod- borne and Unspecified		Post In- fectious	Type B	Type A	Type Unspecified		
						1978	1977 [†]	1978	1978	1978	1978		
UNITED STATES	50	2	5,258	-	36	17	16	11	326	584	212	15	228
NEW ENGLAND	2	1	622	-	-	1	-	-	13	13	13	2	9
Maine*	1	-	137	-	-	1	-	-	3	-	-	-	1
New Hampshire	-	-	12	-	-	-	-	-	1	1	-	-	1
Vermont	-	1	5	-	-	-	-	-	-	1	1	-	-
Massachusetts	1	-	279	-	-	-	-	-	2	4	11	-	1
Rhode Island	-	-	82	-	-	-	-	-	-	1	-	-	-
Connecticut	-	-	107	-	-	-	-	-	7	6	1	2	6
MIDDLE ATLANTIC	5	-	543	-	1	2	5	-	66	64	19	3	49
Upstate New York	1	-	249	-	-	-	-	-	29	23	8	1	8
New York City	2	-	169	-	1	1	1	-	13	22	8	1	22
New Jersey	-	-	NN	-	-	-	4	-	13	13	1	1	7
Pennsylvania*	2	-	125	-	-	1	-	-	11	6	2	-	12
EAST NORTH CENTRAL	7	-	2,250	-	-	2	2	2	45	63	17	-	12
Ohio	-	-	344	-	-	1	1	1	11	26	-	-	-
Indiana*	3	-	390	-	-	-	1	-	2	6	7	-	3
Illinois	-	-	329	-	-	-	-	-	10	10	2	-	3
Michigan	4	-	670	-	-	1	-	1	14	19	5	-	5
Wisconsin*	-	-	517	-	-	-	-	-	8	2	3	-	1
WEST NORTH CENTRAL	1	-	389	-	1	-	-	-	17	42	8	1	12
Minnesota	-	-	-	-	-	-	-	-	2	15	-	-	3
Iowa	-	-	131	-	-	-	-	-	4	-	-	-	-
Missouri*	1	-	39	-	1	-	-	-	3	11	5	1	5
North Dakota	-	-	23	-	-	-	-	-	-	4	-	-	-
South Dakota	-	-	1	-	-	-	-	-	-	-	-	-	-
Nebraska	-	-	130	-	-	-	-	-	2	2	-	-	3
Kansas	-	-	65	-	-	-	-	-	6	10	3	-	1
SOUTH ATLANTIC	6	1	463	-	-	2	1	5	43	68	40	5	45
Delaware*	-	-	16	-	-	-	-	-	-	-	1	-	1
Maryland	-	-	70	-	-	-	-	-	10	9	6	-	9
District of Columbia	-	-	-	-	-	-	-	-	-	-	-	-	-
Virginia	1	-	26	-	-	1	-	-	4	4	8	2	12
West Virginia	-	-	209	-	-	-	-	-	-	3	1	-	1
North Carolina	1	-	NN	-	-	1	1	1	2	6	5	-	1
South Carolina	-	-	20	-	-	-	-	-	2	1	-	-	2
Georgia	-	1	15	-	-	-	-	-	10	9	-	2	6
Florida	4	-	107	-	-	-	-	4	15	36	19	1	13
EAST SOUTH CENTRAL	4	-	113	-	-	4	4	2	9	33	1	-	3
Kentucky	-	-	59	-	-	-	-	-	1	1	-	-	1
Tennessee	3	-	NN	-	-	2	2	-	5	12	1	-	1
Alabama	1	-	39	-	-	2	-	-	2	13	-	-	1
Mississippi	-	-	15	-	-	-	2	2	1	7	-	-	-
WEST SOUTH CENTRAL	11	-	225	-	1	1	1	2	21	62	36	-	11
Arkansas*	1	-	-	-	1	-	-	1	-	2	4	-	-
Louisiana*	3	-	NN	-	-	-	-	-	7	15	6	-	3
Oklahoma	-	-	-	-	-	-	-	-	7	7	5	-	-
Texas	7	-	225	-	-	1	1	1	7	38	21	-	8
MOUNTAIN	-	-	119	-	3	-	-	-	18	80	30	-	3
Montana	-	-	17	-	-	-	-	-	1	1	2	-	-
Idaho	-	-	5	-	-	-	-	-	-	4	-	-	-
Wyoming	-	-	-	-	-	-	-	-	-	-	-	-	-
Colorado	-	-	87	-	2	-	-	-	7	13	10	-	1
New Mexico	-	-	-	-	-	-	-	-	8	12	1	-	-
Arizona	-	-	NN	-	-	-	-	-	1	46	16	-	1
Utah	-	-	-	-	-	-	-	-	-	3	-	-	-
Nevada	-	-	10	-	1	-	-	-	1	1	1	-	1
PACIFIC	14	-	534	-	30	5	3	-	94	159	48	4	84
Washington	-	-	484	-	27	-	1	-	3	16	8	-	3
Oregon	-	-	1	-	-	-	-	-	17	48	4	-	3
California	13	-	-	-	-	5	2	-	73	94	35	3	64
Alaska	-	-	2	-	3	-	-	-	-	-	-	1	2
Hawaii	1	-	47	-	-	-	-	-	1	1	1	-	12
Guam	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
Puerto Rico*	-	-	5	-	-	-	-	-	2	2	5	-	4
Virgin Islands	-	-	-	-	-	-	-	-	-	-	-	-	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: Aseptic meningitis: Mo. +1; Chickenpox: Maine +6, Mo. +47; Encephalitis: Ind. +1, Ark. -1, P.R. +1; Hepatitis B: Pa. +11, Wis. -2, Mo. -1, Del. +1, La. -1; Hepatitis A: Pa. +6, Wis. -2; Hepatitis unspecified: Pa. +3, Del. -1

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending June 10, 1978 and June 11, 1977 - 23rd Week

REPORTING AREA	MEASLES (Rubella)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1978	CUMULATIVE		1978	CUMULATIVE		1978	CUM. 1978	1978	1978	CUM. 1978	CUM. 1978
		1978	1977 †		1978	1977 †						
UNITED STATES	1,057	17,711	44,694	55	1,276	970	636	10,601	29	1,055	11,631	31
NEW ENGLAND	36	1,820	2,108	3	61	43	19	647	-	35	607	-
Maine*	28	1,259	87	-	5	3	9	467	-	1	140	-
New Hampshire	1	34	484	-	6	3	-	9	-	1	95	-
Vermont	-	24	286	-	2	4	-	5	-	-	27	-
Massachusetts*	3	184	545	-	15	14	4	65	-	19	155	-
Rhode Island	3	7	51	-	13	-	1	23	-	7	36	-
Connecticut	1	312	655	3	20	19	5	78	-	7	154	-
MIDDLE ATLANTIC	117	1,559	6,446	12	216	126	33	424	3	351	2,348	1
Upstate New York	85	1,050	2,523	4	71	30	12	148	2	43	415	-
New York City	14	173	396	3	52	30	4	101	-	4	57	-
New Jersey	4	56	132	-	42	28	5	88	-	114	1,358	-
Pennsylvania*	14	280	3,395	5	51	38	12	87	1	190	518	1
EAST NORTH CENTRAL	629	7,430	9,138	3	104	105	291	3,960	4	542	5,119	1
Ohio*	44	361	905	3	25	35	62	526	-	98	816	-
Indiana	16	144	4,092	-	21	7	18	220	1	42	484	1
Illinois	21	476	1,198	-	6	27	122	1,341	-	24	300	-
Michigan	477	5,163	793	-	41	24	52	1,135	1	293	2,195	-
Wisconsin*	71	1,286	2,150	-	11	12	37	738	2	85	1,324	-
WEST NORTH CENTRAL	7	334	8,894	3	45	50	23	1,830	-	15	489	3
Minnesota	1	29	2,285	-	8	19	1	14	-	11	59	-
Iowa	1	49	4,165	-	5	7	4	113	-	3	43	-
Missouri*	-	7	975	3	22	14	14	1,113	-	-	81	-
North Dakota	2	178	16	-	3	1	-	9	-	1	70	-
South Dakota	-	-	66	-	2	4	-	6	-	-	80	-
Nebraska	-	4	180	-	-	1	2	17	-	-	34	-
Kansas	3	67	1,207	-	5	4	2	558	-	-	122	3
SOUTH ATLANTIC	122	3,794	3,358	17	336	220	30	566	6	31	880	4
Delaware	-	5	22	-	10	17	5	38	-	2	34	-
Maryland	25	28	297	-	15	15	2	53	-	-	3	1
District of Columbia	-	-	11	-	1	-	-	1	-	-	1	-
Virginia	14	2,212	1,825	1	42	16	1	91	-	9	219	-
West Virginia	71	934	179	1	6	8	8	144	-	16	295	-
North Carolina	-	88	49	8	69	51	2	48	-	1	165	-
South Carolina	4	182	136	1	22	20	-	14	-	-	22	-
Georgia	-	12	706	-	39	34	-	56	3	-	1	-
Florida	8	333	133	6	132	59	12	121	3	3	140	3
EAST SOUTH CENTRAL	83	1,112	1,682	3	105	111	38	878	-	15	316	1
Kentucky	5	90	988	-	16	19	6	172	-	4	54	1
Tennessee	48	803	593	1	27	27	17	386	-	3	119	-
Alabama	27	79	76	2	34	44	11	271	-	2	13	-
Mississippi	3	140	25	-	28	21	4	49	-	6	130	-
WEST SOUTH CENTRAL	19	896	1,909	5	190	169	48	1,388	4	27	783	12
Arkansas	-	10	28	1	15	9	3	560	-	-	57	1
Louisiana*	4	356	73	-	70	61	3	51	1	20	448	1
Oklahoma	-	12	52	-	16	6	-	4	1	-	10	2
Texas*	15	518	1,756	4	89	93	42	773	2	7	268	8
MOUNTAIN	15	195	2,299	1	28	25	133	312	5	2	156	1
Montana	1	96	1,070	-	1	2	124	135	-	-	12	-
Idaho*	-	1	158	-	2	4	-	20	-	-	3	-
Wyoming	-	-	9	-	-	1	-	-	-	-	-	-
Colorado	-	23	470	-	2	1	9	64	-	-	33	-
New Mexico	-	-	249	-	5	7	-	15	4	-	3	-
Arizona	-	17	253	1	11	8	-	5	-	2	73	-
Utah	13	44	5	-	4	1	-	69	-	-	23	1
Nevada	1	14	85	-	3	1	-	4	1	-	9	-
PACIFIC	29	571	8,860	8	191	121	21	596	7	37	933	8
Washington*	3	53	452	-	31	14	4	159	1	1	90	-
Oregon	4	138	305	3	12	16	-	66	3	4	74	-
California	22	376	8,014	5	140	68	16	341	3	32	767	8
Alaska*	-	1	55	-	5	21	-	6	-	-	1	-
Hawaii	-	3	34	-	3	2	1	24	-	-	1	-
Guam	NA	17	4	-	-	-	NA	18	NA	NA	-	-
Puerto Rico*	6	137	711	-	2	-	25	828	1	-	12	3
Virgin Islands	-	6	10	-	-	-	-	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: Maine -5, Mass. -3, Pa. +6, La. -35, Tex. -1, Alaska -1; Men. inf.: Wash. +1; Mumps: Mo. +1, P.R. +3; Rubella: Ohio +164, Wis. -1, Mo. +1, Idaho -1, Alaska +1

Table III-Continued
 Cases of Specified Notifiable Diseases: United States
 Weeks Ending June 10, 1978 and June 11, 1977 - 23rd Week

REPORTING AREA	TUBERCULOSIS		TULA-REMIA	TYPHOID FEVER		TYPHUS-FEVER TICK-BORNE (RMSF)		VENEREAL DISEASES (Civilian Cases Only)						RABIES IN ANIMALS
	1978	CUM. 1978	CUM. 1978	1978	CUM. 1978	1978	CUM. 1978	GONORRHEA		SYPHILIS (Pri. & Sec.)		CUM. 1978		
								1978	CUMULATIVE		1978		CUMULATIVE	
									1978	1977 †			1978	1977 †
UNITED STATES	700	12,923	32	8	182	46	181	18,221	407,459	410,394	345	9,086	9,062	1,326
NEW ENGLAND	21	423	-	1	35	3	5	554	10,572	10,712	14	285	363	56
Maine	1	25	-	-	-	-	-	-	804	779	1	8	9	51
New Hampshire	-	8	-	-	5	-	-	-	478	427	-	4	2	-
Vermont	1	18	-	-	1	-	-	-	265	281	2	3	4	-
Massachusetts	14	248	-	1	20	1	1	268	4,644	4,640	7	182	270	3
Rhode Island	3	30	-	-	4	1	1	36	759	850	1	11	4	-
Connecticut *	2	94	-	-	5	1	3	184	3,622	3,735	3	77	74	2
MIDDLE ATLANTIC	174	2,237	2	-	19	2	7	2,271	44,600	42,887	64	1,232	1,277	29
Upstate New York	9	311	1	-	7	1	4	423	7,393	6,866	-	87	114	24
New York City	97	821	1	-	8	-	-	681	17,352	17,696	47	878	801	-
New Jersey	35	573	-	-	2	1	1	556	7,980	7,115	7	134	167	3
Pennsylvania	33	532	-	-	2	-	2	611	11,875	11,210	10	133	195	2
EAST NORTH CENTRAL	101	1,958	-	-	7	1	2	2,191	59,974	62,323	33	1,000	969	53
Ohio	23	357	-	-	2	-	-	586	15,777	15,555	10	202	246	3
Indiana	4	241	-	-	-	-	-	236	6,178	5,858	1	53	70	4
Illinois	60	728	-	-	1	1	2	459	18,578	20,680	15	619	501	13
Michigan *	9	540	-	-	4	-	-	674	13,907	14,341	5	94	106	2
Wisconsin	5	92	-	-	-	-	-	236	5,534	5,889	2	32	46	31
WEST NORTH CENTRAL	20	447	8	-	10	-	4	854	20,271	21,453	1	215	213	292
Minnesota	3	93	-	-	4	-	-	202	3,689	3,806	-	96	67	101
Iowa	1	47	-	-	2	-	-	80	2,327	2,563	-	23	18	61
Missouri	8	190	7	-	2	-	3	342	8,273	9,077	1	56	75	32
North Dakota	1	20	-	-	-	-	-	13	387	391	-	2	2	45
South Dakota *	-	38	-	-	-	-	-	45	754	566	-	1	1	37
Nebraska	4	9	-	-	-	-	-	28	1,521	1,892	-	7	21	1
Kansas	3	50	1	-	2	-	1	144	3,320	3,158	-	30	29	15
SOUTH ATLANTIC	120	2,738	3	-	22	31	105	4,129	97,272	99,692	73	2,396	2,593	162
Delaware	-	20	-	-	-	1	3	66	1,400	1,347	-	4	16	1
Maryland	27	444	3	-	1	13	20	577	12,726	12,708	6	185	177	-
District of Columbia	10	152	-	-	-	-	-	326	6,654	6,550	12	198	275	-
Virginia *	NA	289	-	-	5	3	25	542	9,160	10,256	9	213	251	3
West Virginia	7	100	-	-	1	-	4	73	1,488	1,467	-	8	1	1
North Carolina *	18	428	-	-	2	9	31	530	13,560	14,858	5	210	374	4
South Carolina	13	231	-	-	1	1	9	653	9,617	9,296	9	115	114	29
Georgia	-	359	-	-	2	4	13	NA	17,113	19,080	32	599	493	114
Florida *	45	715	-	-	9	-	-	1,362	25,554	24,130	-	864	892	10
EAST SOUTH CENTRAL	77	1,250	4	-	1	5	26	1,394	35,060	36,773	21	447	313	70
Kentucky *	24	268	1	-	1	1	4	203	4,175	4,835	3	52	33	40
Tennessee	26	401	3	-	-	4	22	645	12,983	15,011	2	166	99	15
Alabama	4	302	-	-	-	-	-	431	10,364	10,098	3	65	52	15
Mississippi	23	279	-	-	-	-	-	115	7,538	6,829	13	164	129	-
WEST SOUTH CENTRAL	91	1,476	12	2	19	2	29	3,169	57,292	52,751	63	1,378	1,211	452
Arkansas *	7	160	11	-	-	-	10	360	4,470	4,099	-	37	29	69
Louisiana *	19	273	1	-	1	-	-	575	9,536	7,917	13	272	271	10
Oklahoma	15	157	-	-	1	1	12	356	5,192	4,905	2	41	35	104
Texas *	50	886	-	2	17	1	7	1,878	38,094	35,830	48	1,028	876	269
MOUNTAIN	18	370	2	1	11	2	2	605	14,764	16,635	12	196	181	21
Montana	-	28	-	-	-	2	2	40	898	811	-	7	1	2
Idaho	3	14	2	-	5	-	-	39	556	799	-	2	4	-
Wyoming	1	8	-	-	-	-	-	9	340	419	-	4	2	-
Colorado *	4	29	-	-	2	-	-	153	4,217	4,257	6	71	55	-
New Mexico	2	65	-	-	-	-	-	95	2,086	2,406	-	48	34	6
Arizona	4	175	-	1	2	-	-	154	3,606	4,865	3	37	75	12
Utah	3	22	-	-	1	-	-	31	863	944	2	9	4	1
Nevada	1	29	-	-	1	-	-	84	2,198	2,134	1	18	6	-
PACIFIC	78	2,024	1	4	58	-	1	3,054	67,654	67,168	64	1,937	1,942	191
Washington *	NA	82	-	-	3	-	-	122	5,083	5,133	NA	59	88	-
Oregon	1	82	-	1	1	-	-	191	4,679	4,714	2	68	56	1
California	71	1,567	1	1	50	-	1	2,612	54,440	53,690	60	1,786	1,765	188
Alaska *	-	25	-	-	-	-	-	68	2,142	2,172	-	5	13	2
Hawaii	6	268	-	2	4	-	-	61	1,310	1,459	2	19	20	-
Guam	NA	32	-	NA	-	NA	-	NA	82	105	NA	-	1	-
Puerto Rico	10	200	-	-	1	-	-	26	1,092	1,390	15	203	249	11
Virgin Islands *	-	2	-	-	2	-	-	2	90	89	-	6	3	-

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: Mich. -2, Va. -9, N.C. -2, Fla. -1, Ky. -2, V.I. +1; Typhoid fever: Wash. +2; RMSF: Ark. -2; GC: Conn. +18 mil., La. -35 civ. -1 mil., Wash. +74 mil., V.I. +7; Syphilis: La. -1 civ., Tex. -1 civ., Colo. -18 civ., Wash. +22 civ. +3 mil., Alaska +2 civ.; An. rabies: S. Dak. +3, Alaska +4

Table IV
Deaths in 121 United States Cities*
Week Ending June 10, 1978 — 23rd 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	626	388	163	32	21	29	SOUTH ATLANTIC	1,300	719	345	117	54	35
Boston, Mass.	196	109	63	7	10	5	Atlanta, Ga.	155	80	35	21	10	4
Bridgeport, Conn.	31	23	6	1	1	1	Baltimore, Md.	250	142	62	24	5	3
Cambridge, Mass.	18	10	5	2	—	1	Charlotte, N. C.	44	26	7	5	1	2
Fall River, Mass.	23	15	7	1	—	—	Jacksonville, Fla.	81	54	12	8	3	7
Hartford, Conn.	41	22	13	1	2	—	Miami, Fla.	96	54	32	5	2	—
Lowell, Mass.	24	14	7	1	—	3	Norfolk, Va.	67	31	21	10	5	2
Lynn, Mass.	18	12	4	2	—	—	Richmond, Va.	94	50	26	9	4	3
New Bedford, Mass.	19	15	2	1	—	1	Savannah, Ga.	36	21	13	—	1	3
New Haven, Conn.	50	31	11	4	2	1	St. Petersburg, Fla.	98	78	16	2	2	1
Providence, R.I.	68	41	18	4	4	5	Tampa, Fla.	72	41	19	6	1	3
Somerville, Mass.	4	4	—	—	—	—	Washington, D. C.	254	112	88	22	19	5
Springfield, Mass.	57	37	14	2	2	5	Wilmington, Del.	53	30	14	5	1	2
Waterbury, Conn.	28	19	5	3	—	2							
Worcester, Mass.	49	36	8	3	—	5							
							EAST SOUTH CENTRAL	698	402	185	41	27	32
MIDDLE ATLANTIC	2,591	1,562	706	161	82	90	Birmingham, Ala.	100	56	26	4	10	2
Albany, N. Y.	54	32	10	4	4	—	Chattanooga, Tenn.	56	40	9	1	2	5
Allentown, Pa.	22	16	6	—	—	1	Knoxville, Tenn.	40	28	9	—	1	2
Buffalo, N. Y.	74	40	25	7	2	4	Louisville, Ky.	114	64	28	8	5	6
Camden, N. J.	38	23	9	3	2	2	Memphis, Tenn.	155	77	57	8	—	1
Elizabeth, N. J.	27	16	10	1	—	—	Mobile, Ala.	88	47	30	6	2	3
Erie, Pa.	39	29	8	2	—	3	Montgomery, Ala.	40	26	7	3	3	3
Jersey City, N. J.	60	38	17	1	1	1	Nashville, Tenn.	105	64	19	11	4	10
Newark, N. J.	59	29	21	4	3	7							
New York City, N. Y.	1,319	799	343	97	39	34	WEST SOUTH CENTRAL	1,254	671	336	121	43	34
Paterson, N. J.	44	25	12	1	5	3	Austin, Tex.	50	26	11	8	2	4
Philadelphia, Pa.	399	220	123	24	13	12	Baton Rouge, La.	35	23	9	2	—	1
Pittsburgh, Pa.	76	34	31	4	4	5	Corpus Christi, Tex.	40	22	12	2	2	—
Reading, Pa.	38	29	5	3	1	—	Dallas, Tex.	183	105	44	13	5	4
Rochester, N. Y.	125	81	30	6	3	7	El Paso, Tex.	71	38	21	5	3	4
Schenectady, N. Y.	20	11	9	—	—	—	Fort Worth, Tex.	99	56	25	8	4	2
Scranton, Pa.	21	14	6	—	—	1	Houston, Tex.	374	183	101	45	14	5
Syracuse, N. Y.	76	47	22	4	3	—	Little Rock, Ark.	50	26	16	5	3	1
Trenton, N. J.	38	31	7	—	—	5	New Orleans, La.	100	44	36	7	5	—
Utica, N. Y.	18	13	4	—	—	—	San Antonio, Tex.	127	63	36	16	4	3
Yonkers, N. Y.	44	35	8	—	1	5	Shreveport, La.	31	22	6	3	—	—
							Tulsa, Okla.	94	63	19	7	1	10
EAST NORTH CENTRAL	2,294	1,352	613	140	90	61	MOUNTAIN	556	336	126	39	24	16
Akron, Ohio	88	62	19	2	4	—	Albuquerque, N. Mex.	44	23	12	2	1	2
Canton, Ohio	38	27	8	1	1	—	Colorado Springs, Colo.	39	30	5	1	1	3
Chicago, Ill.	571	325	157	34	34	5	Denver, Colo.	122	77	28	6	5	3
Cincinnati, Ohio	122	70	38	6	3	3	Las Vegas, Nev.	51	23	21	3	4	2
Cleveland, Ohio	180	101	52	13	6	3	Ogden, Utah	24	11	8	1	1	2
Columbus, Ohio	89	54	23	8	4	7	Phoenix, Ariz.	125	84	21	12	3	2
Dayton, Ohio	57	66	22	3	2	6	Pueblo, Colo.	17	11	4	2	—	2
Detroit, Mich.	284	151	83	23	14	8	Salt Lake City, Utah	46	21	13	6	5	—
Evansville, Ind.	52	30	15	3	2	3	Tucson, Ariz.	88	56	14	6	4	—
Fort Wayne, Ind.	60	30	19	2	3	—							
Gary, Ind.	21	8	6	4	2	—	PACIFIC	1,781	1,127	436	108	58	38
Grand Rapids, Mich.	53	35	8	2	1	4	Berkeley, Calif.	19	13	5	1	—	—
Indianapolis, Ind.	161	86	49	11	5	3	Fresno, Calif.	56	38	8	4	2	1
Madison, Wis.	50	32	10	3	2	6	Glendale, Calif.	26	20	6	—	—	1
Milwaukee, Wis.	144	57	30	7	1	7	Honolulu, Hawaii	64	40	13	5	5	—
Peoria, Ill.	35	23	6	3	2	2	Long Beach, Calif.	100	60	29	5	5	2
Rockford, Ill.	46	27	12	3	1	1	Los Angeles, Calif.	547	336	147	34	16	13
South Bend, Ind.	42	25	13	—	1	2	Oakland, Calif.	62	42	10	6	3	2
Toledo, Ohio	105	69	26	6	2	—	Pasadena, Calif.	33	27	2	1	2	—
Youngstown, Ohio	56	30	17	6	—	1	Portland, Oreg.	153	106	30	5	7	2
							Sacramento, Calif.	69	45	17	3	1	2
WEST NORTH CENTRAL	765	457	184	31	30	19	San Diego, Calif.	144	94	35	7	1	5
Des Moines, Iowa	58	37	15	3	—	1	San Francisco, Calif.	169	108	38	14	6	2
Duluth, Minn.	28	20	7	—	—	2	San Jose, Calif.	58	32	21	4	—	1
Kansas City, Kans.	37	23	11	1	—	—	Seattle, Wash.	184	107	49	16	6	5
Kansas City, Mo.	126	78	31	3	12	2	Spokane, Wash.	51	33	13	1	3	1
Lincoln, Nebr.	21	16	5	—	—	—	Tacoma, Wash.	46	26	13	2	1	1
Minneapolis, Minn.	114	74	24	7	7	4							
Omaha, Nebr.	98	61	26	4	4	—	TOTAL	11,865	7,054	3,094	790	429	354
St. Louis, Mo.	161	97	45	10	2	5	Expected Number	10,855	6,519	2,810	691	415	353
St. Paul, Minn.	62	52	8	—	1	1							
Wichita, Kans.	60	39	12	3	4	4							

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

The Morbidity and Mortality Weekly Report, circulation 78,000, 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.

Send mailing list additions, deletions, and address changes to: Center for Disease Control, Attn.: Distribution Services, GSO, 1-SB-36, Atlanta, Georgia 30333. When requesting changes be sure to give your former address, including zip code and mailing list code number, or send an old address label.

*Legionnaires' disease — Continued***TABLE 1.** Legionnaires' disease, England & Wales, July 1, 1973-April 1, 1978

Age in years	Number of cases identified		
	Male	Female	Total
20-29	1	0	1
30-39	6	0	6
40-49	6	4	10
50-59	8	1	9
60-69	3	1	4
70-79	1	0	1
Total	25	6	31

Scotland, at a hotel in Benidorm, Spain, in 1973 (7). In Scotland 4 other members of the party have subsequently been shown to have serologic evidence of Legionnaires' disease.

Geographically, over a third (12 cases) of the cases with onset since January 1, 1976, were in residents of the city of Nottingham with dates of onset ranging from June 1976 to February 1978. One case each has been reported from Newcastle, Leeds, Huddersfield, Manchester, Liverpool, Sheffield, Stoke-on-Trent, Oxford, Luton, St. Albans, Bristol, London, and Frimley. Preston reported 3 cases and Bath, 2. Six patients developed their symptoms during, or within 7 days of returning from, a holiday in Spain. Each stayed in a different resort (Figure 2). The person who visited Benidorm in May 1977 stayed in the same hotel as the tourists in whom the outbreak of respiratory illness occurred in 1973 (7). One other patient, a resident of Nottingham, visited the same hotel in early March 1977, and, although he first developed respiratory symptoms 3 days later, he was not admitted to the hospital until May. His serologic changes suggested that the onset of Legionnaires' disease occurred in late April; on this evidence, it was concluded that he probably acquired the infection in Nottingham.

Because of the small number of cases in 1977-25 (Figure 2)—and the fact that investigations for Legionnaires' disease did not start in England until the latter half of 1977, it is not possible to draw conclusions about seasonality.

Recommendation of the Public Health Service Advisory Committee on Immunization Practices

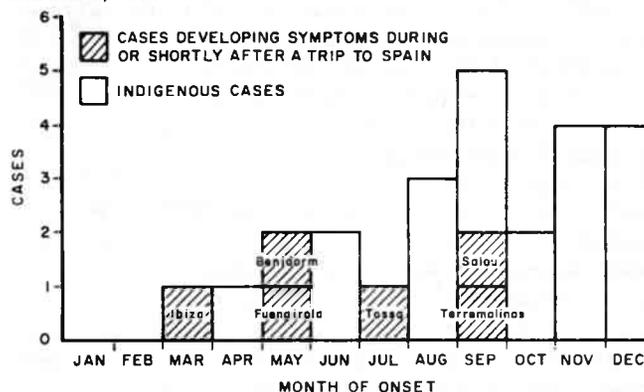
Influenza Vaccine — Preliminary Statement

This preliminary statement will be incorporated into a final statement following the review of data from clinical field trials. The final statement, scheduled for July, 1978, will include specific information on vaccine composition, side effects and adverse reactions, and dosage schedules.

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 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

In 6 of the indigenous cases in Nottingham, however, the onset occurred during a 7-week period in August and September; a common source was not identified.

FIGURE 2. Legionnaires' disease cases, by month of onset, England and Wales, 1977

The majority of the 31 cases reported since 1973 presented with a 4- to 7-day history of fever, malaise, myalgia, and non-productive cough. Other symptoms included breathlessness (45%), pleuritic chest pain (35%), and severe abdominal pain (19%). Six patients complained of diarrhea, 2 of vomiting, and 2 of diarrhea and vomiting. Four patients presented without respiratory symptoms, one of whom was admitted to the hospital with suspected enteric fever. Two patients had gastrointestinal bleeding shortly before admission to the hospital.

The typical clinical and radiologic findings were of lobar or lobular pneumonias which often became multi-lobar. The majority of patients were severely ill, and at least 9 required respiratory assistance. Twelve patients became severely confused shortly before or after admission to the hospital. Recovery was often slow, with a third of the survivors showing radiologic evidence of consolidation as late as 3 months after the onset of the illness.

Reference

1. MMWR 26:344, 1977

Reported by the Communicable Disease Surveillance Centre in the Communicable Disease Report, No. 16, April 21, 1978.

1968 to 1978, more than 150,000 excess deaths are estimated to have occurred during epidemics of influenza A.

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,

Influenza Vaccine — Continued

there may be sufficient antigenic variation within the same subtype over time (antigenic drift) that infection or immunization with one 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 closely related to strains which had circulated throughout the world in the early 1950s. From January through April 1978, the H1N1 virus spread throughout the United States, causing epidemic disease 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.

Epidemics 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. Reformulation of vaccine is recommended, as needed, to counter major antigenic changes and antigenic drift. The primary influenza vaccine for 1978-79 will be an inactivated trivalent preparation of antigens representative of the currently prevalent influenza viruses: A/USSR/90/77 (H1N1), A/Texas/1/77 (H3N2), and B/Hong Kong/5/72. A monovalent vaccine representative of the A/USSR/90/77 (H1N1) virus will also be produced if data from clinical trials indicate that 2 doses of vaccine containing the H1N1 antigens are needed for optimum immunization of any population group.

VACCINE USAGE**General Recommendations**

Annual vaccination is strongly recommended for adults and children of all ages who have such chronic conditions as: (1) heart disease of any etiology, particularly with cardiac insufficiency such as mitral stenosis; (2) chronic bronchopulmonary diseases, such as chronic bronchitis, bronchiectasis, tuberculosis, emphysema, chronic asthma, and cystic fibrosis; (3) chronic renal disease, and (4) diabetes mellitus and other chronic metabolic disorders.

Vaccination is also recommended for older persons, particularly those over age 65 years, 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.

Use in Pregnancy

Although the issue has been much discussed, only in the pandemics of 1918-19 and 1957-58 has strong evidence appeared that related influenza infections to unusually high maternal mortality. 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, and the issue is not settled.

No evidence has been presented to suggest that influenza vaccination of pregnant women poses any special maternal or fetal risks. Physicians prudently limit prescription of drugs and biologics for pregnant women. Taking the above uncertainties into account, physicians should evaluate pregnant women for influenza immunization basically according to the criteria applied to other persons.

SELECTED BIBLIOGRAPHY

- Clinical studies on influenza vaccines—1976. (A conference held at the National Institutes of Health, Bethesda, Maryland, January 20-21, 1977.) *J Infect Dis* 136 (Suppl): S345-S742, 1977
- Dowdle WR, Coleman MT, Gregg MB: Natural history of influenza type A in the United States, 1957-1972. *Prog Med Virol* 17:91-135, 1974
- Eickhoff TC: Immunization against influenza: Rationale and recommendations. *J Infect Dis* 123:446-454, 1971
- Kilbourne ED (ed): *The Influenza Viruses and Influenza*. New York, Academic Press, 1975
- Leneman F: The Guillain-Barre syndrome. *Arch Intern Med* 118: 139-144, 1966
- Parkman PD, Galasso GH, Top FH, Noble GR: Summary of clinical trials of influenza vaccines. *J Infect Dis* 134:100-107, 1978
- Wright PF, Dolin R, LaMontagne JR: Summary of clinical trials of influenza vaccines II. *J Infect Dis* 134:633-638, 1976

**U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE / CENTER FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333**

Director, Center for Disease Control, William H. Foege, M.D.
Director, Bureau of Epidemiology, Philip S. Brachman, M.D.
Editor, Michael B. Gregg, M.D.
Managing Editor, Anne D. Mather, M.A.
Chief, MMWR Statistical Activity, Dennis J. Bregman, M.S.

OFFICIAL BUSINESS FIRST CLASS

Redistribution using indicia is illegal.

HEW Publication No. (CDC) 78-8017



POSTAGE AND FEES PAID
U.S. DEPARTMENT OF HEW
HEW 396

AIR MAIL