

# M M W R

## MORBIDITY AND MORTALITY WEEKLY REPORT

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Recommendations of the Public Health Service  
Advisory Committee on Immunization Practices

### Influenza Vaccine

#### INTRODUCTION

Influenza occurs in the United States every year, but with great variation in incidence and geographic distribution. It periodically becomes epidemic when the antigens of prevalent influenza viruses have changed enough for a significant proportion of the population to become susceptible. More epidemics are caused by influenza A viruses than by influenza B viruses, and influenza A epidemics are notable for causing mortality in excess of what is normally expected. Furthermore, only influenza A viruses undergo major antigen changes that result in pandemics (worldwide epidemics).

An example of the sudden appearances of antigenically distinctive influenza A viruses occurred in February 1976, when A/New Jersey/76 (swine) influenza virus was identified as the cause of a focal epidemic at Fort Dix, New Jersey. Recognition of the potential of this new virus for supplanting prevalent strains of influenza A, the threat of subsequent pandemic spread, and the Federal program to provide specific swine influenza vaccines in 1976 are well known. The fact that A/New Jersey/76 virus did not spread beyond Fort Dix makes it unlikely that this virus constitutes a risk in 1977-78. Nevertheless, because swine influenza viruses continue to exist in swine in the United States and to cause occasional human cases, primarily in those with agricultural exposures, the swine influenza vaccines remaining from 1976 have been stockpiled in the event of future need.

Thousands of persons have died of influenza in epidemics in the United States in the past 20 years. In the 1957-58 influenza season, when a new influenza A virus (Asian strain) appeared, nearly 70,000 deaths were attributed to it in this country alone. In 1968-69, when the Hong Kong variant caused widespread epidemics in the United States, there were an estimated 33,000 excess deaths. In the intervening years, whenever influenza A epidemics have involved most of the country, 10,000 to 20,000 excess deaths resulted.

Efforts to prevent or control influenza in the United States usually have been aimed at protecting those at the greatest risk of becoming seriously ill or dying. Repeated observations during influenza epidemics have indicated that deaths occur primarily among chronically ill adults

and children and in older persons, especially those over age 65. These "high-risk" persons should be vaccinated annually regardless of the amount of influenza in their geographic areas.

In interpandemic periods, vaccinating the entire population has not been considered to be a reasonable public health objective for several reasons: the limited duration of protection from influenza vaccines, the relatively low attack rates of influenza in community outbreaks, and the usual lack of serious complications of disease in healthy people.

#### INFLUENZA VIRUS VACCINE FOR 1977-78

The Bureau of Biologics, Food and Drug Administration, reviews influenza vaccine formulation regularly and recommends reformulation with contemporary antigens when indicated. Bivalent influenza vaccine for 1977-78 will contain inactivated influenza A and B viruses representative of currently prevalent strains. Each adult dose of vaccine will contain 400 chick cell agglutinating (CCA) units of antigen or its equivalent in the following proportion: 200 CCA units of influenza A virus comparable to the prototype A/Victoria/3/75 (H3N2) and 200 CCA units of B/Hong Kong/5/72 influenza virus.

The 1977-78 vaccine will be available in "split-virus" and "whole-virus" preparations. Split-virus vaccines, which contain antigens produced by chemically disrupting the influenza virus, have been associated with somewhat fewer side effects than whole-virus vaccines, particularly in children. However, the split-virus vaccines appear to be somewhat less effective in eliciting antibodies when given as a single dose to persons who have not been "primed" by exposure to related viruses in nature or through vaccination.

The characteristic side effects and immunogenicity of split-virus and whole-virus influenza vaccines are important in understanding dosage recommendations for various age groups. Adults and older children, most of whom have had experience with influenza antigens related to A/Victoria/3/75 or B/Hong Kong/5/72 either by infection or through vaccination, can be expected to have a good antibody response to a single dose of the 1977-78 bivalent influenza vaccine. Children less than 6 years of age, some of whom have not encountered the currently prevalent viruses, will

*Influenza Recommendations — Continued*

need 2 doses of vaccine given 4 or more weeks apart in order to achieve satisfactory antibody responses. These children will not be adequately protected unless the second dose is given. Furthermore, because children and adolescents tend to experience somewhat more side effects from influenza vaccine than adults, *only* split-virus vaccines should be given to persons less than 18 years of age.

**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 mitral stenosis or cardiac insufficiency, 2) chronic bronchopulmonary diseases, such as chronic bronchitis, bronchiectasis, tuberculosis, emphysema, 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.

Vaccination may also be considered for persons who provide essential community services and may be at increased risk of exposure. Vaccination of such persons and of patients not specified in the high-risk groups should be made on an individual basis giving consideration to the inherent benefits, risks, and costs.

The accompanying table (see p. 199) summarizes vaccine and dosage recommendations by age group for 1977-78. These recommendations are derived from observations made during the field trials of influenza vaccines conducted in 1976. Because information from the immunization of infants and young children is limited, the dosages recommended for them are conservative.

**SIDE EFFECTS AND ADVERSE REACTIONS**

Side effects of influenza vaccine occur infrequently. Three types of responses to influenza vaccines have been described:

1. Fever, malaise, myalgia, and other systemic symptoms of toxicity starting 6-12 hours after vaccination and persisting 1-2 days. These responses to influenza vaccine are usually attributed to characteristics of the influenza virus itself (even though it is inactivated) and constitute most of the side effects of influenza vaccination. Such effects occur most frequently in children and others who have had no experience with influenza viruses comparable to the vaccine antigen(s).
2. Immediate—presumably allergic—responses, such as flare and wheal or various respiratory expressions of hypersensitivity. These reactions are exceedingly uncommon but can occur after influenza vaccination. They probably derive from exquisite sensitivity to some vaccine component, most likely residual egg

*(Continued on page 199)*

**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 1972-1976	CUMULATIVE, FIRST 23 WEEKS		
	June 11, 1977	June 12, 1976		June 11, 1977	June 12, 1976	MEDIAN 1972-1976
Asptic meningitis	51	36	50	857	818	841
Brucellosis	2	2	4	81	117	62
Chickenpox	5,243	5,538	---	139,787	131,017	---
Diphtheria	2	-	2	45	102	102
Encephalitis	Primary	16	13	268	330	360
	Post-Infectious	7	4	90	130	130
Hepatitis, Viral	Type B	341	331	7,114	6,447	4,220
	Type A	567	651	14,078	15,702	19,236
	Type unspecified	158	194	4,078	3,848	
Malaria	15	14	7	172	154	124
Measles (rubeola)	2,356	1,518	1,191	44,267	28,827	20,552
Meningococcal infections, total	34	27	25	979	829	753
Civilian	34	27	24	974	818	736
Military	-	-	-	5	11	18
Mumps	459	1,035	1,663	12,897	28,071	38,351
Pertussis	15	10	---	308	420	---
Rubella (German measles)	698	372	651	15,888	9,090	13,003
Tetanus	3	1	1	22	18	28
Tuberculosis	601	648	---	13,352	14,402	---
Tuleremia	3	1	4	41	55	46
Typhoid fever	5	11	13	161	142	150
Typhus, tick-borne (Rky. Mt. spotted fever)	52	27	45	269	172	172
<b>Venereal Diseases:</b>						
Gonorrhea	18,062	19,701	---	409,804	425,059	---
Civilian	693	417	---	11,827	13,007	---
Military	391	475	---	3,164	11,045	---
Syphilis, primary and secondary	5	4	---	135	150	---
Civilian	62	70	70	1,248	1,199	1,331
Military						
Rabies in animals						

**Table II. Notifiable Diseases of Low Frequency: United States**

	CUM.		CUM.
Anthrax:	-	Poliomyelitis, total:	4
Botulism: Nev. 1	68	Paralytic:	4
Congenital rubella syndrome:	8	Psittacosis: * N. Mex. 1, Calif. 1	27
Leprosy: Calif. 2	52	Rabies in man:	-
Leptospirosis: * La. 1	21	Trichinosis: Conn. 1, Ups. N.Y. 1, Md. 1	49
Plague:	1	Typhus, murine: Ups. N.Y. 2, Tex. 3	30

\*Delayed reports: Leptospirosis: Iowa 1 (1976); Psittacosis: Ark. 1 (1977)

Table III  
Cases of Specified Notifiable Diseases: United States  
Weeks Ending June 11, 1977 and June 12, 1976 - 23rd Week

AREA REPORTING	ASEPTIC MENIN- GITIS	BRUCEL- LOSIS	CHICKEN- POX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS, VIRAL			MALARIA	
						Primary: Arthropod- borne and Unspecified		Post In- fectious	Type B	Type A	Type Unspecified		
						1977	1976	1977	1977	1977	1977		
UNITED STATES .....	51	2	5,243	2	45	16	13	7	341	567	158	15	172
NEW ENGLAND .....	1	-	742	-	-	-	-	2	7	11	9	-	7
Maine .....	-	-	1	-	-	-	-	-	-	-	-	-	-
New Hampshire* .....	-	-	18	-	-	-	-	-	1	1	-	-	-
Vermont .....	-	-	10	-	-	-	-	-	-	-	-	-	1
Massachusetts .....	-	-	363	-	-	-	-	-	-	1	9	-	2
Rhode Island .....	-	-	106	-	-	-	-	-	-	1	-	-	2
Connecticut .....	1	-	244	-	-	-	-	2	6	8	-	-	2
MIDDLE ATLANTIC .....	8	-	783	-	5	4	1	-	64	59	22	3	42
Upstate New York .....	-	-	606	-	-	-	1	-	11	13	6	1	10
New York City .....	3	-	148	-	5	1	-	-	16	11	6	2	20
New Jersey .....	5	-	NN	-	-	3	-	-	9	13	7	-	6
Pennsylvania .....	-	-	29	-	-	-	-	-	28	22	3	-	6
EAST NORTH CENTRAL .....	-	-	2,149	-	-	2	1	1	53	85	9	-	10
Ohio .....	-	-	256	-	-	1	-	-	17	25	-	-	5
Indiana* .....	-	-	55	-	-	1	-	-	2	3	3	-	-
Illinois .....	-	-	532	-	-	-	1	1	7	29	-	-	1
Michigan .....	-	-	907	-	-	-	-	-	23	25	5	-	2
Wisconsin* .....	-	-	399	-	-	-	-	-	4	3	1	-	2
WEST NORTH CENTRAL .....	2	1	172	-	1	-	1	1	16	32	13	3	15
Minnesota .....	-	-	-	-	-	-	-	-	2	1	-	-	4
Iowa* .....	-	-	81	-	-	-	-	-	3	5	2	-	-
Missouri .....	2	1	4	-	1	-	1	-	2	7	6	3	8
North Dakota* .....	-	-	11	-	-	-	-	-	-	-	-	-	-
South Dakota .....	-	-	1	-	-	-	-	-	-	1	-	-	1
Nebraska .....	-	-	11	-	-	-	-	-	7	1	2	-	-
Kansas .....	-	-	64	-	-	-	-	1	2	17	3	-	2
SOUTH ATLANTIC .....	13	-	368	-	-	1	1	2	71	92	24	1	26
Delaware .....	-	-	12	-	-	-	-	-	1	3	-	-	-
Maryland .....	-	-	34	-	-	-	-	-	10	11	2	-	7
District of Columbia .....	-	-	4	-	-	-	-	-	2	1	-	-	1
Virginia* .....	2	-	20	-	-	-	-	-	4	1	5	1	4
West Virginia* .....	3	-	72	-	-	-	-	-	-	3	-	-	1
North Carolina .....	-	-	NN	-	-	1	-	-	5	6	2	-	4
South Carolina .....	2	-	1	-	-	-	-	-	11	3	5	-	-
Georgia .....	-	-	17	-	-	-	-	-	5	16	-	-	4
Florida .....	6	-	208	-	-	-	1	2	33	48	10	-	5
EAST SOUTH CENTRAL .....	2	1	82	-	-	5	3	-	17	29	4	-	3
Kentucky .....	-	-	64	-	-	-	-	-	-	-	-	-	3
Tennessee .....	2	1	NN	-	-	3	-	-	15	14	-	-	-
Alabama .....	-	-	10	-	-	-	-	-	-	2	4	-	-
Mississippi .....	-	-	8	-	-	2	3	-	2	13	-	-	-
WEST SOUTH CENTRAL .....	9	-	172	-	1	1	-	1	16	45	22	1	9
Arkansas* .....	1	-	3	-	-	-	-	-	2	15	4	-	-
Louisiana .....	-	-	NN	-	-	-	-	-	2	-	-	-	-
Oklahoma .....	-	-	4	-	-	-	-	-	2	2	-	-	-
Texas .....	8	-	165	-	1	1	-	1	10	28	18	1	9
MOUNTAIN .....	-	-	287	1	2	-	-	-	9	53	13	-	6
Montana* .....	-	-	9	-	-	-	-	-	-	7	1	-	-
Idaho .....	-	-	14	-	-	-	-	-	-	3	-	-	-
Wyoming .....	-	-	-	-	-	-	-	-	1	2	-	-	1
Colorado .....	-	-	254	-	-	-	-	-	4	2	4	-	4
New Mexico .....	-	-	-	1	1	-	-	-	-	14	-	-	-
Arizona .....	-	-	NN	-	1	-	-	-	4	20	7	-	1
Utah .....	-	-	2	-	-	-	-	-	-	5	1	-	-
Nevada* .....	-	-	8	-	-	-	-	-	-	-	-	-	-
PACIFIC .....	16	-	488	1	36	3	6	-	88	161	42	7	54
Washington .....	-	-	449	1	34	1	-	-	-	2	1	-	4
Oregon .....	6	-	5	-	-	-	-	-	10	14	4	-	1
California* .....	8	-	-	-	1	2	4	-	78	112	37	7	44
Alaska .....	-	-	9	-	1	-	2	-	-	31	-	-	1
Hawaii .....	2	-	25	-	-	-	-	-	-	2	-	-	4
Guam* .....	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
Puerto Rico .....	-	-	17	-	-	-	-	-	-	-	7	-	1
Virgin Islands* .....	-	-	-	-	-	-	-	-	-	-	-	-	-

NN: Not Notifiable

NA: Not Available

\*Delayed Reports: Asep. Meng.: Iowa delete 11 (1976), Ind. delete 1, W. Va. delete 1 (1977); Bruc.: Iowa delete 3 (1976), Ark. add 3, Mont. delete 1 (1977); Chickenpox: Iowa delete 90 (1976), N. Hamp. add 11, Calif. add 16, Guam add 2 (1977); Enceph. Pri.: Iowa delete 6 (1976); Enceph. Post: Iowa delete 2 (1976), Fla. delete 1 (1977); Hep. B: Iowa delete 6 (1976), Fla. delete 1 (1977); Hep. A: Iowa add 6 (1976), Ind. delete 2, Wis. delete 1, N. Dak. delete 7, Va. delete 1, Nev. add 2, Guam add 1, V.I. add 1 (1977); Hep. Unsp.: Iowa add 3 (1976), Guam add 1, V.I. delete 1 (1977).

Table III-Continued  
 Cases of Specified Notifiable Diseases: United States  
 Weeks Ending June 11, 1977 and June 12, 1976 - 23rd Week

REPORTING AREA	MEASLES (Rubella)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1977	CUMULATIVE		1977	CUMULATIVE		1977	CUM. 1977	1977	1977	CUM. 1977	CUM. 1977
		1977	1976		1977	1976						
UNITED STATES .....	2,356	44,267	28,827	34	373	829	459	12,897	15	698	15,888	22
NEW ENGLAND .....	168	2,114	276	2	41	38	19	551	-	26	1,076	-
Maine .....	51	87	3	-	3	-	2	40	-	-	68	-
New Hampshire* .....	10	474	7	-	3	2	-	86	-	1	231	-
Vermont .....	23	288	-	-	4	3	-	5	-	-	63	-
Massachusetts* .....	29	582	24	1	12	11	4	99	-	14	330	-
Rhode Island .....	13	51	14	-	-	4	1	46	-	-	124	-
Connecticut .....	42	632	228	1	19	18	12	275	-	11	260	-
MIDDLE ATLANTIC .....	456	6,449	5,971	6	140	113	72	952	1	262	4,992	1
Upstate New York .....	147	2,527	2,422	1	35	43	10	176	-	101	2,661	-
New York City .....	84	396	348	3	30	30	14	359	-	10	258	-
New Jersey .....	7	132	544	1	28	16	41	283	-	54	1,623	1
Pennsylvania .....	218	3,394	2,657	1	47	24	7	134	1	97	450	-
EAST NORTH CENTRAL ..	414	8,996	12,074	-	95	101	206	4,498	1	155	3,294	1
Ohio .....	86	905	422	-	35	44	17	590	-	39	1,038	-
Indiana .....	116	4,092	2,551	-	7	4	3	249	-	17	865	-
Illinois .....	75	1,198	1,221	-	17	10	60	731	-	5	245	-
Michigan .....	23	793	4,894	-	24	35	67	1,525	1	82	799	1
Wisconsin* .....	114	2,008	2,986	-	12	8	59	1,403	-	12	347	-
WEST NORTH CENTRAL ..	464	8,933	1,049	1	64	60	45	3,037	1	24	453	3
Minnesota .....	252	2,285	321	-	21	13	-	5	-	5	16	1
Iowa* .....	97	4,188	31	-	5	8	4	1,239	-	2	149	-
Missouri* .....	81	890	12	-	27	18	29	837	-	-	32	1
North Dakota .....	-	16	3	-	1	3	-	11	-	-	9	-
South Dakota .....	1	51	2	-	4	2	1	59	-	12	17	-
Nebraska .....	-	180	40	-	1	3	-	54	1	-	2	-
Kansas .....	33	1,323	640	1	5	13	11	832	-	5	228	1
SOUTH ATLANTIC .....	167	3,343	1,682	9	207	165	28	556	-	56	1,469	7
Delaware .....	-	22	122	-	3	2	1	94	-	1	23	-
Maryland .....	11	297	665	2	15	15	3	40	-	-	5	-
District of Columbia ..	-	1	4	-	-	2	-	5	-	-	-	-
Virginia .....	63	1,820	409	-	12	26	-	69	-	7	543	1
West Virginia .....	10	179	156	-	8	4	3	133	-	1	83	-
North Carolina .....	2	49	-	1	52	31	1	31	-	10	410	-
South Carolina .....	7	137	3	-	20	30	1	10	-	34	200	-
Georgia .....	60	706	-	1	36	13	2	10	-	1	47	-
Florida .....	14	132	323	5	61	42	17	164	-	2	158	6
EAST SOUTH CENTRAL ..	80	1,665	681	4	114	72	21	664	1	41	1,835	2
Kentucky .....	59	988	657	-	13	14	1	79	-	-	66	1
Tennessee .....	16	575	9	3	30	31	16	380	1	34	1,655	1
Alabama .....	4	76	-	1	44	20	3	180	-	7	108	-
Mississippi .....	1	26	15	-	21	7	1	25	-	-	6	-
WEST SOUTH CENTRAL ..	35	1,872	589	2	171	130	24	1,098	4	24	680	3
Arkansas .....	-	26	-	-	9	6	1	27	-	-	1	-
Louisiana* .....	2	73	161	1	64	18	-	30	2	-	23	1
Oklahoma .....	1	52	273	-	6	18	1	400	-	-	25	-
Texas .....	32	1,721	155	1	92	88	22	641	2	24	631	2
MOUNTAIN .....	106	2,034	4,753	2	35	24	4	524	5	15	318	1
Montana .....	26	1,070	189	-	2	3	-	4	-	2	11	-
Idaho .....	53	125	1,994	1	4	3	1	116	-	3	8	-
Wyoming .....	5	9	3	-	1	-	-	-	-	-	2	1
Colorado .....	7	470	201	-	1	4	3	242	-	6	226	-
New Mexico .....	3	17	14	1	17	2	-	93	5	-	8	-
Arizona .....	8	253	222	-	8	7	-	-	-	-	10	-
Utah .....	-	5	2,068	-	1	4	-	62	-	2	46	-
Nevada .....	4	85	62	-	1	1	-	7	-	2	7	-
PACIFIC .....	466	8,861	1,752	8	112	126	40	1,017	2	95	1,771	4
Washington* .....	17	452	191	2	15	20	10	247	-	12	419	-
Oregon .....	15	306	118	-	10	10	3	183	-	3	93	-
California .....	422	8,014	1,441	6	68	85	26	547	2	76	1,247	4
Alaska .....	-	55	-	-	17	9	-	24	-	-	1	-
Hawaii .....	12	34	2	-	2	2	1	16	-	4	11	-
Guam* .....	NA	3	9	-	-	-	NA	1	NA	NA	4	-
Puerto Rico .....	39	677	169	-	-	2	13	425	2	1	21	7
Virgin Islands .....	-	10	5	-	-	-	1	172	-	-	-	-

NA: Not Available

\*Delayed Reports: Measles: Iowa add 10 (1976), N. Hamp. add 9, Mass. delete 11, Wis. add 146, Iowa delete 2, Mo. delete 19, Guam add 1 (1977); Men. Inf.: Mo. delete 1, La. delete 1 (1977); Mumps: Iowa add 9 (1976); Pertussis: Wash. add 1 (1977); Rubella: Iowa add 1 (1976), Guam add 2 (1977)

Table III-Continued  
Cases of Specified Notifiable Diseases: United States  
Weeks Ending June 11, 1977 and June 12, 1976 - 23rd Week

REPORTING AREA	TUBERCULOSIS		TULA-REMIA	TYPHOID FEVER		TYPHUS-FEVER TICK-BORNE (RMSF)		VENEREAL DISEASES (Civilian Cases Only)						RABIES IN ANIMALS
	1977	CUM. 1977	CUM. 1977	1977	CUM. 1977	1977	CUM. 1977	GONORRHEA		SYPHILIS (Pri. & Sec.)		CUM. 1977		
								CUMULATIVE		1977	CUMULATIVE			
								1977	1976		1977		1976	
UNITED STATES	601	13,352	41	5	161	52	269	18,062	409,804	425,059	391	9,164	11,045	1,248
NEW ENGLAND	27	493	1	2	10	-	3	305	10,536	11,363	16	363	319	19
Maine	-	37	-	-	-	-	-	34	779	984	1	9	8	17
New Hampshire*	4	15	-	-	-	-	-	27	427	301	-	2	4	1
Vermont	-	21	-	-	-	-	-	10	281	271	-	4	2	-
Massachusetts	17	268	1	2	7	-	-	206	4,640	5,382	12	270	227	-
Rhode Island	2	37	-	-	2	-	2	26	850	775	-	4	12	-
Connecticut	4	115	-	-	1	-	1	2	3,559	3,650	3	74	66	1
MIDDLE ATLANTIC	114	2,134	-	3	30	2	10	2,228	42,933	47,357	46	1,275	1,868	26
Upstate New York	12	335	-	-	4	-	2	491	6,912	7,425	-	112	119	16
New York City	43	715	-	1	12	-	-	664	17,696	21,015	28	801	1,194	-
New Jersey	34	539	-	2	12	2	2	624	7,115	7,412	10	167	244	9
Pennsylvania	25	545	-	-	2	-	6	449	11,210	11,505	8	195	311	1
EAST NORTH CENTRAL	94	2,120	3	-	15	-	-	2,449	62,323	67,293	15	969	958	48
Ohio*	6	320	1	-	5	-	-	321	15,555	16,237	9	246	231	-
Indiana	10	248	-	-	-	-	-	120	5,858	6,205	2	70	52	2
Illinois	53	839	-	-	1	-	-	1,003	20,680	25,043	-	501	535	14
Michigan*	20	613	-	-	9	-	-	784	14,341	14,002	2	106	129	3
Wisconsin	5	100	2	-	-	-	-	221	5,889	5,806	2	46	51	29
WEST NORTH CENTRAL	22	459	5	-	12	2	10	1,146	21,563	21,684	4	221	199	289
Minnesota	6	94	-	-	3	-	-	184	3,806	3,893	2	67	43	94
Iowa*	1	48	-	-	-	-	-	136	2,573	2,728	-	26	19	53
Missouri*	5	191	4	-	5	1	7	526	9,174	8,620	2	77	84	22
North Dakota	-	12	-	-	-	-	-	13	391	317	-	-	-	39
South Dakota	5	22	1	-	-	-	-	31	566	593	-	1	2	59
Nebraska	1	18	-	-	1	-	-	134	1,895	1,877	-	21	13	-
Kansas	4	74	-	-	3	1	3	122	3,158	3,656	-	29	38	22
SOUTH ATLANTIC	121	3,010	8	-	27	32	153	4,202	99,654	103,429	109	2,605	3,314	129
Delaware	-	25	-	-	-	-	-	30	1,347	1,359	-	16	35	1
Maryland	14	434	1	-	-	4	16	573	12,708	14,101	11	177	269	-
District of Columbia	14	150	-	-	-	-	-	284	6,550	7,210	12	275	264	-
Virginia	18	334	-	-	6	11	48	405	10,256	10,852	5	251	283	2
West Virginia*	4	113	-	-	3	-	1	65	1,467	1,311	-	1	17	4
North Carolina*	15	516	2	-	1	14	57	577	14,858	15,165	12	374	635	4
South Carolina	15	288	2	-	-	3	12	419	9,298	10,213	6	114	169	3
Georgia	10	333	3	-	9	-	18	662	19,080	18,935	27	493	470	85
Florida	31	817	-	-	8	-	-	1,187	24,130	24,283	36	904	1,172	30
EAST SOUTH CENTRAL	57	1,161	2	-	3	9	38	1,671	36,272	38,034	13	315	436	41
Kentucky	12	272	1	-	-	4	5	133	4,835	4,772	-	33	65	12
Tennessee*	27	388	1	-	1	5	33	613	14,510	14,935	6	99	176	22
Alabama	9	315	-	-	1	-	3	565	10,098	10,863	1	52	86	7
Mississippi	9	186	-	-	1	-	-	360	6,829	7,464	6	131	109	-
WEST SOUTH CENTRAL	52	1,552	18	-	6	7	54	2,128	52,786	56,788	81	1,294	1,261	433
Arkansas	11	175	11	-	-	3	9	168	4,099	5,503	-	29	43	56
Louisiana*	4	311	-	-	-	-	-	367	7,952	8,272	15	280	267	4
Oklahoma	3	146	4	-	-	4	35	221	4,905	5,158	2	35	49	149
Texas	34	920	3	-	6	-	10	1,372	35,830	37,855	64	950	902	224
MOUNTAIN	16	353	3	-	14	-	1	648	16,549	17,007	3	191	317	55
Montana	1	19	1	-	-	-	1	30	811	839	-	-	3	28
Idaho	2	19	-	-	-	-	-	26	799	883	-	4	12	-
Wyoming	2	7	-	-	-	-	-	24	419	354	-	13	6	-
Colorado	-	54	2	-	7	-	-	158	4,257	4,134	1	55	71	3
New Mexico	-	52	-	-	-	-	-	120	2,397	3,278	-	34	86	-
Arizona	11	169	-	-	3	-	-	257	4,865	5,129	2	75	101	23
Utah	-	15	-	-	4	-	-	33	944	833	-	4	16	1
Nevada	-	18	-	-	-	-	-	NA	2,057	1,557	NA	6	22	-
PACIFIC	98	2,070	1	-	44	-	-	3,285	67,148	62,104	104	1,931	2,333	208
Washington	NA	132	-	-	1	-	-	224	5,133	5,270	NA	76	65	-
Oregon	4	93	-	-	3	-	-	162	4,714	4,616	1	57	56	-
California	83	1,528	1	-	39	-	-	2,738	53,690	49,315	103	1,765	2,162	197
Alaska	-	31	-	-	-	-	-	82	2,152	1,750	-	13	10	11
Hawaii	11	286	-	-	1	-	-	79	1,459	1,153	-	20	40	-
Guam*	NA	31	-	NA	1	NA	-	NA	96	165	NA	1	1	-
Puerto Rico	9	149	-	-	3	-	-	65	1,390	1,175	6	249	248	29
Virgin Islands	-	1	-	-	-	-	-	5	89	120	-	3	34	-

NA: Not Available

\*Delayed Reports: TB: N. Hamp. add 1, Ohio delete 1, Mich. delete 1, N. Carol. delete 2, Guam add 2 (1977); Typhoid Fever: Mo. delete 1 (1977); GC: Tenn. delete 2, La. delete 13, Guam add 6 (1977); Syphilis: La. delete 6 (1977); An. Rabies: Iowa add 2 (1976); W. Va. delete 2 (1977)

Table IV  
Deaths in 121 United States Cities\*  
Week Ending June 11, 1977 - 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		
<b>NEW ENGLAND</b>	592	384	138	36	15	32	<b>SOUTH ATLANTIC</b>	1,003	568	304	57	43	46	
Boston, Mass.	157	86	49	7	7	7	Atlanta, Ga.	130	74	35	11	4	1	
Bridgeport, Conn.	36	26	7	2	-	3	Baltimore, Md.	127	76	41	2	5	4	
Cambridge, Mass.	23	17	5	1	-	3	Charlotte, N. C.	50	25	17	5	1	2	
Fall River, Mass.	20	17	3	-	-	-	Jacksonville, Fla.	88	55	25	3	3	4	
Hartford, Conn.	53	33	10	8	-	2	Miami, Fla.	102	58	36	3	2	3	
Lowell, Mass.	18	12	4	1	-	1	Norfolk, Va.	57	30	13	9	4	4	
Lynn, Mass.	21	15	5	1	-	-	Richmond, Va.	86	45	31	5	3	10	
New Bedford, Mass.	29	20	6	3	-	-	Savannah, Ga.	49	28	17	1	-	5	
New Haven, Conn.	47	34	8	4	-	1	St. Petersburg, Fla.	65	50	14	-	-	5	
Providence, R.I.	53	29	15	4	2	7	Tampa, Fla.	63	31	21	5	4	3	
Somerville, Mass.	4	3	1	-	-	1	Washington, D. C.	146	73	40	12	16	2	
Springfield, Mass.	42	25	9	3	3	2	Wilmington, Del.	40	23	14	1	1	3	
Waterbury, Conn.	39	29	7	2	-	1								
Worcester, Mass.	50	38	8	-	3	4	<b>EAST SOUTH CENTRAL</b>	727	421	195	45	26	34	
							Birmingham, Ala.	95	53	27	3	3	4	
<b>MIDDLE ATLANTIC</b>	2,684	1,641	715	168	76	95	Chattanooga, Tenn.	56	38	12	5	1	2	
Albany, N. Y.	44	28	8	3	5	-	Knoxville, Tenn.	41	25	13	2	-	-	
Allentown, Pa.	22	17	3	1	-	1	Louisville, Ky.	112	65	28	5	9	9	
Buffalo, N. Y.	95	62	22	2	3	4	Memphis, Tenn.	171	100	41	11	7	9	
Camden, N. J.	22	14	3	2	2	2	Mobile, Ala.	76	44	18	10	2	2	
Elizabeth, N. J.	32	25	5	1	1	1	Montgomery, Ala.	44	25	13	3	-	2	
Erie, Pa.	43	31	9	-	2	1	Nashville, Tenn.	132	71	43	6	4	6	
Jersey City, N. J.	42	25	10	5	1	1								
Newark, N. J.	52	23	22	3	3	1	<b>WEST SOUTH CENTRAL</b>	1,243	690	331	82	69	26	
New York City, N. Y.	1,296	781	350	96	31	44	Austin, Tex.	29	21	3	2	-	1	
Paterson, N. J.	33	20	9	2	1	2	Baton Rouge, La.	46	26	13	3	4	2	
Philadelphia, Pa.	384	223	110	26	12	11	Corpus Christi, Tex.	38	25	9	1	2	-	
Pittsburgh, Pa.	157	110	64	12	6	11	Dallas, Tex.	204	104	54	15	10	4	
Reading, Pa.	30	23	6	1	-	-	El Paso, Tex.	55	35	10	1	6	1	
Rochester, N. Y.	136	83	34	7	2	5	Fort Worth, Tex.	84	46	23	7	6	2	
Schenectady, N. Y.	23	15	6	2	-	2	Houston, Tex.	284	125	92	27	15	7	
Scranton, Pa.	53	37	13	2	-	2	Little Rock, Ark.	54	30	13	3	4	1	
Syracuse, N. Y.	94	61	22	2	6	2	New Orleans, La.	145	91	37	7	6	-	
Trenton, N. J.	43	31	9	-	1	2	San Antonio, Tex.	156	90	41	12	10	2	
Utica, N. Y.	18	12	6	-	-	1	Shreveport, La.	66	37	20	1	5	2	
Yonkers, N. Y.	25	20	4	1	-	3	Tulsa, Okla.	82	60	16	3	1	4	
<b>EAST NORTH CENTRAL</b>	2,421	1,347	702	162	111	63	<b>MOUNTAIN</b>	480	294	97	42	22	27	
Akron, Ohio	76	45	21	4	3	-	Albuquerque, N. Mex.	41	26	7	4	1	3	
Canton, Ohio	18	10	6	1	-	1	Colorado Springs, Colo.	28	16	5	4	-	5	
Chicago, Ill.	561	306	159	35	37	17	Denver, Colo.	99	56	18	13	7	6	
Cincinnati, Ohio	194	109	63	8	7	3	Las Vegas, Nev.	45	21	11	5	3	2	
Cleveland, Ohio	182	88	67	12	5	2	Ogden, Utah	21	13	4	2	-	3	
Columbus, Ohio	142	74	46	13	3	5	Phoenix, Ariz.	100	61	25	6	4	1	
Dayton, Ohio	108	58	36	8	3	-	Pueblo, Colo.	26	23	1	2	-	4	
Detroit, Mich.	310	167	92	27	14	1	Salt Lake City, Utah	46	29	8	3	4	-	
Evansville, Ind.	67	40	18	3	2	2	Tucson, Ariz.	74	49	18	3	3	3	
Fort Wayne, Ind.	69	34	18	3	6	-								
Gary, Ind.	17	5	6	5	-	2	<b>PACIFIC</b>	1,775	1,147	415	93	47	48	
Grand Rapids, Mich.	47	36	10	1	-	8	Berkeley, Calif.	17	11	2	2	1	1	
Indianapolis, Ind.	164	97	40	10	9	5	Fresno, Calif.	82	52	18	6	4	-	
Madison, Wis.	28	15	6	2	3	4	Glendale, Calif.	29	22	5	-	1	2	
Milwaukee, Wis.	137	92	34	3	7	7	Honolulu, Hawaii	41	25	9	2	3	-	
Peoria, Ill.	43	20	9	6	5	-	Long Beach, Calif.	87	49	32	1	1	3	
Rockford, Ill.	43	18	13	4	4	4	Los Angeles, Calif.	567	391	116	31	6	23	
South Bend, Ind.	47	29	14	3	1	2	Oakland, Calif.	71	47	14	3	5	1	
Toledo, Ohio	107	63	30	8	2	-	Pasadena, Calif.	32	25	5	1	1	1	
Youngstown, Ohio	61	41	14	6	-	-	Portland, Ore.	129	78	28	7	9	-	
							Sacramento, Calif.	73	39	24	5	2	-	
<b>WEST NORTH CENTRAL</b>	786	487	193	49	27	26	San Diego, Calif.	146	90	39	5	3	3	
Des Moines, Iowa	58	39	14	2	2	-	San Francisco, Calif.	174	108	44	15	3	2	
Duluth, Minn.	31	24	4	1	2	2	San Jose, Calif.	57	39	7	4	1	1	
Kansas City, Kans.	33	18	6	4	1	2	Seattle, Wash.	171	104	46	8	6	4	
Kansas City, Mo.	142	97	34	7	2	3	Spokane, Wash.	55	39	12	1	1	4	
Lincoln, Nebr.	31	23	7	-	1	2	Tacoma, Wash.	44	28	14	2	-	3	
Minneapolis, Minn.	106	58	29	11	3	5								
Omaha, Nebr.	84	55	21	1	2	-	<b>TOTAL</b>	11,711	6,979	3,090	734	436	397	
St. Louis, Mo.	170	97	42	15	13	5	Expected Number	11,224	6,762	2,915	733	374	358	
St. Paul, Minn.	63	45	12	3	-	4								
Wichita, Kans.	68	31	24	5	4	2								

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

The Morbidity and Mortality Weekly Report, circulation 67,500, is published by the Center for Disease Control, Atlanta, Georgia. The data in this report are provisional, based on weekly telegraphs to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday.

The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Send reports to: Center for Disease Control, Attn.: Editor, Morbidity and Mortality Weekly Report, Atlanta, Georgia 30333.

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*Influenza Recommendations — Continued*

TABLE 1. Influenza vaccine dosage by age, 1977-78

Age	Product Type	Dose Volume (ml)	Total CCA Units*	Number of Doses
18 years and older	Whole-virus or Split-virus	0.5	400	1
6-17 years	Split-virus	0.5	400	1
3-5 years	Split-virus	0.25	200	2**
6-35 months	Split-virus	0.15	120	2**

\*Representing equal amounts of A/Victoria/75 and B/Hong Kong/72.

\*\*4 weeks or more between doses; both doses essential for good protection.

protein. Although current influenza vaccines contain only a minute quantity of egg protein, they can, on rare occasions, provoke hypersensitivity reactions. Individuals with known or suspected hypersensitivity to eggs should be given influenza vaccine only under the care and close observation of a physician.

- Guillain-Barré syndrome, usually a self-limited paralysis, is observed within 8 weeks after influenza vaccination in approximately 10 of every million persons vaccinated. It also occurs, but less frequently, in unvaccinated persons. Prior to the intensive surveillance of influenza vaccine that occurred during the swine influenza vaccination program in 1976, serious adverse reactions, such as this syndrome, to influenza vaccines had been virtually unrecognized. While the risk is not high, persons who receive influenza vaccine should be aware of it and should recognize that 5-10% of persons with the Guillain-Barré syndrome

have residual weakness to some degree and approximately 5% of them die.

**PREGNANCY**

Elevated rates of maternal and fetal mortality and of congenital anomalies and other fetal effects resulting from influenza infection during pregnancy have been widely discussed. Numerous reports from the 1918-19 influenza pandemic and a few small but better controlled studies in 1957-58, when the Asian influenza pandemic occurred, suggested that influenza can cause increased maternal and fetal deaths. However, a number of more recent, prospective studies have failed to corroborate those findings. Thus, although there are no persuasive data to document that pregnancy is a risk-factor with influenza, the effect of influenza in pregnancy cannot be forecast with assurance. Physicians generally avoid prescribing unnecessary drugs and biologics for pregnant women, especially in the first trimester; however, there are no data that specifically contraindicate influenza vaccination in pregnancy.

*Epidemiologic Notes and Reports***Ludwig's Angina — Wisconsin**

A 38-year-old truck driver from Beaumont, Texas, presented at a Wisconsin hospital on June 23, 1976, with dyspnea, fever, and malaise. On admission he was noted to be severely tachypneic. Chest X-ray showed bilateral interstitial pulmonary infiltrates and pleural effusions, and arterial blood gases demonstrated severe hypoxia and metabolic acidosis. Blood cultures were obtained, and the patient was placed on penicillin, gentamicin, and chloramphenicol. Within 24 hours he developed increasing respiratory distress and suffered a cardiopulmonary arrest. Upon being resuscitated, he was transferred to a university hospital.

Examination at this hospital on June 24, 1976, showed the patient to be deeply obtunded and in shock. Severe gingivitis was apparent, and enlarged, matted, cervical, and supraclavicular lymph nodes were noted on the left side. An aspirate of these nodes showed rare neutrophils and one pleomorphic gram-negative rod. Examination of the pleural fluid revealed rare, pleomorphic, faintly staining, gram-negative bacilli.

Because the patient had traveled extensively through an area of the United States where plague is endemic, and be-

cause the clinical picture was compatible, pneumonic plague was strongly suspected. Tetracycline was added to the therapeutic regimen, and the patient was placed in strict isolation. CDC was contacted on June 25 to arrange for fluorescent antibody staining of specimens and to discuss the advisability of treating secondary contacts prophylactically. A recommendation was made that all patients who had had contact with the patient during the past 2 days be placed on prophylactic tetracycline pending confirmation of the diagnosis.

On June 25, it was learned that the patient had had a severe toothache and had seen a dentist one day prior to becoming ill. Cultures of the pleural fluid that had been negative 24 hours after being taken at the first hospital were growing an anaerobic gram-positive coccus and an aerobic gram-negative rod. It was then strongly suspected that the patient had a dental abscess with a unilateral infection of the deep cervical spaces which had spread intrathoracically. The patient died with refractory shock and hypoxia later that same day.

*Ludwig's Angina* — Continued

Autopsy confirmed necrotizing gingivitis and an extensive putrid phlegmon of the deep fascial planes of the left side of the neck extending into the mediastinum and pleural spaces. Blood cultures taken on admission to the first hospital subsequently yielded *Peptostreptococcus* and *Bacteroides melaninogenicus*; cultures of the pleural fluid yielded the same organisms and *Streptococcus viridans* and a *Bacillus* species.

**Editorial Note:** Ludwig's angina is a rare infection, usually of dental origin, which begins in the submandibular and submental spaces and spreads downwards through planes of the deep cervical fascia; it rarely extends into the mediastinum. A dental abscess of the mandibular molars can be identified in most cases. Although alpha-hemolytic strepto-

cocci and staphylococci have been most commonly recovered in culture, the infection usually involves anaerobic organisms from the oral cavity. Treatment involves antibiotics, surgical drainage of the fascial spaces, and supportive therapy. Tracheostomy is often required as sub-mental inflammation characteristically forces the tongue upwards and backwards, compromising the airway.

Reported by DG Maki, MD, WA Agger, MD, University of Wisconsin Center for Health Sciences; and Bur of State Services, CDC.

*References*

1. Meyer BR, Lawson W, and Hirschman SZ: Ludwig's angina. Case report, with review of bacteriology and current therapy. *Am J Med* 53:257-260, 1972
2. Johnson JT, Tucker HM: Recognizing and treating deep neck infection. *Postgrad Med* 59:95-100, 1976
3. Gross BD: Ludwig's angina due to *Bacteroides*. *J Oral Surg* 34: 456-460, 1976

Current Trends**Cigarette Smoking in Teenagers — United States**

Four nationwide surveys of teenage smoking habits reveal that the prevalence of smoking in this group is increasing. The results of these surveys, conducted every 2 years from 1968 through 1974, are shown in Table 2.

Smoking among males 12 to 18 years of age rose from 14.7% in 1968 to 18.5% in 1970, and then stabilized at approximately 16% in 1972 and 1974.

In contrast, the proportion of females who smoked in this age group increased steadily from 8.4% in 1968 to 15.3% in 1974, when the number of females smoking almost equaled the number of male smokers. If the teenage female smoker becomes pregnant there is an increased risk of perinatal mortality (MMWR 26[18], 1977).

Reported by the National Clearinghouse for Smoking and Health, Bur of Health Education, and the Family Planning Evaluation Div, Bur of Epidemiology, CDC.

TABLE 2. Percentage of U.S. teenagers\* 12-18 years of age smoking cigarettes\*\*, 1968, 1970, 1972, and 1974

	1968	1970	1972	1974
Males	14.7	18.5	15.7	15.8
Females	8.4	11.9	13.3	15.3

\*Current regular smoker = smokes one or more cigarettes per week.

\*\*Representative samples were randomly selected by computer from a bank of all possible combinations of area codes, telephone exchanges, and subscriber numbers with a sufficient surplus of selections to allow for the elimination of nonresidence telephones or residences containing no teenagers. The standardized questionnaires, which took approximately 15 minutes to complete, were administered by trained professional interviewers.

**Erratum, Vol. 26, No. 22**

p 177 In the article, "Hepatitis—United States, 1975-1976," first column, second paragraph, last line should read: "The average 4-week incidence of

hepatitis B is 0.50 cases/100,000 population," not "weekly," as written.

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