

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

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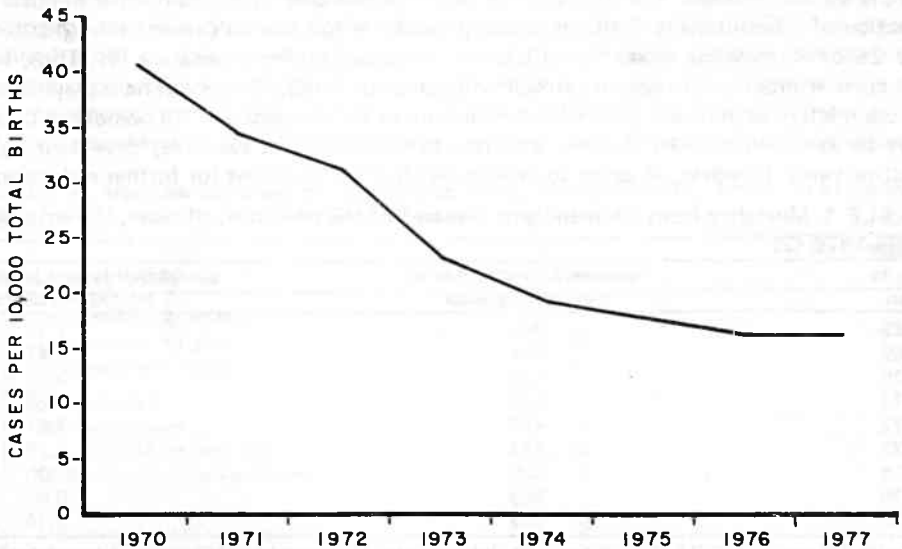
Current Trends

Rh Hemolytic Disease, United States, 1968-1977

Rh hemolytic disease is a genetic disorder for which 3 intervention strategies have been developed: exchange transfusion of affected infants, intrauterine transfusion of severely affected fetuses who would otherwise die *in utero*, and the administration of immune globulin (RhIG) to unsensitized Rh-negative women following elective and spontaneous abortion, amniocentesis, or the delivery of an Rh-positive infant. The last strategy became available in 1968 and held the promise of total prevention of perinatal morbidity and mortality due to Rh hemolytic disease. This article reviews trends in morbidity and mortality due to this disease in recent years.

Morbidity: Incidence rates for Rh hemolytic disease (Figure 1) have been ascertained through CDC's Birth Defects Monitoring Program (BDMP), which collects information from hospital discharge summaries on newborns on approximately 1 million births annually (7). With these figures—which represent approximately one-third of all U.S. births—used as a base, the overall incidence of Rh hemolytic disease in the United States was determined to have dropped 54% from 40.7 cases per 10,000 total births (live and still births) in 1970 to 19.0 per 10,000 total births in 1974. However, during 1975-1977, the rate of decline diminished, and the incidence stabilized. By 1977, the national rate had

FIGURE 1. Incidence of Rh hemolytic disease of the newborn, United States, 1970-1977



Rh Hemolytic Disease — Continued

dropped to 16.3 per 10,000 births, only 8% lower than the 1975 rate of 17.8 per 10,000 births. The largest annual drop in incidence occurred between 1972 and 1973, 4 years after the introduction of RhIG.

Mortality: Mortality rates and numbers of deaths due to hemolytic disease of the newborn in the United States from 1968 through 1976 were compiled from death certificates (Table 1) (2). Hemolytic disease of the newborn includes mortality due to Rh incompatibility as well as ABO and unspecified blood factor incompatibilities. However, since nearly all mortality from hemolytic disease is due to Rh incompatibility, these data are useful in observing national trends for Rh hemolytic disease.

A steady decline in the mortality rate from hemolytic disease is apparent throughout all years of observation. Paralleling incidence rates, the largest annual drop in the national mortality rate occurred between 1972-1973. In the years following 1973, the rate of decline has slowed but not stabilized.

Reported by Births Defects Br, Chronic Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: Fetuses severely affected by hemolytic disease die *in utero*. Information concerning the number of fetal deaths attributed to hemolytic disease is not available on a national basis. Therefore, the mortality data presented here, based upon the death certificates of liveborn infants, underestimate the perinatal mortality rate from hemolytic disease.

Mortality due to Rh hemolytic disease began to decline before the availability of RhIG in 1968. The decline was due to the intervention strategies of fetal and neonatal transfusion and the demographic trend toward birth at younger maternal ages and lower parity. The widespread use of RhIG and the accentuated drop in morbidity and mortality between 1972-1973 suggest that RhIG has contributed substantially in recent years to the observed decline.

The plateau in incidence which has occurred may be caused by a gap in service delivery, such as failure to administer RhIG following interrupted pregnancies, amniocenteses, or Rh-incompatible pregnancies. This possibility is supported by the estimated 18% of Rh-negative women who did not receive RhIG following an abortion or Rh-incompatible pregnancy in 1976 (3). The plateau may be explained also by the current U.S. obstetric practice of administering RhIG at delivery, which is too late to prevent sensitization in the 2% of Rh-negative women who become sensitized during pregnancy (4). Thus, with the current practice of postpartum administration of RhIG, Rh hemolytic disease cannot be completely eliminated. Some further decline in the incidence of Rh hemolytic disease may be expected as older women, sensitized before RhIG was available, leave their reproductive years. However, in order to determine effective strategies for further reduction of

TABLE 1. Mortality from Rh hemolytic disease* of the newborn, all races, United States, 1968-1976 (2)

Year	Number of deaths due to hemolytic disease	Mortality rate (deaths/10,000 live births)
1968	941	2.72
1969	891	2.47
1970	830	2.22
1971	635	1.79
1972	498	1.53
1973	374	1.19
1974	320	1.00
1975	269	0.85
1976	233	0.74

*Codes 774 and 775 ICDA (Eighth Revision, International Classification of Diseases. Adapted for Use in the United States).

Rh Hemolytic Disease — Continued

incidence, the exact reasons why sensitization continues to occur—whether because of gaps in service delivery, failure to administer RhIG antenatally, or other causes—must be determined and epidemiologically analyzed.

References

1. CDC: Congenital Malformations Surveillance Report, January-December 1977. Issued June 1978
2. U.S. National Office of Vital Statistics: Vital Statistics of the United States, 1968-1976
3. Wysowski DK, Flynt JW, Goldberg MF, Connell FA: Epidemiologic surveillance of Rh hemolytic disease in the U.S., 1968-1975 (in press)
4. Bowman JM: Suppression of Rh isoimmunization. *Obstet Gynecol* 52:385-393, 1978

*Epidemiologic Notes and Reports***Measles — Texas, 1978**

In the first 45 weeks of 1978, a total of 833 measles cases were reported to the Texas State Department of Health. Military authorities reported 556 (67%) of these cases, most of which were in new recruits.

Age data were available for 235 civilian cases. One hundred and twenty-four patients (53%) were less than 5 years old. Eighty-two (35%) were 10 years or older.

Forty-two of these cases were reported during October from Harris County, Texas, including Houston. Twenty-six cases occurred in students from 4 junior high schools; 16 cases occurred in students from 1 senior high school. The Texas Department of Health provided assistance to the Houston City Health Department and the school district in an effort to screen records, assure immunization where required, and prevent further spread of measles.

Vaccine histories were available on all 42 cases from Harris County and on 46 civilian cases from the rest of the state (Table 2).

Reported by A Payne, DrPH, J Watson, MD, City of Houston Health Dept; F Jensen, MD, Harris County Health Dept; L Chandler, RN, CR Webb Jr, State Epidemiologist, Texas State Dept of Health, in the Texas Morbidity Reports, October, 1978; Immunization Div, Bur of State Services, CDC.

Editorial Note: The Advisory Committee on Immunization Practices (ACIP) has recently defined proof of measles immunity as documentation of either (a) physician-diagnosed measles or laboratory evidence of measles immunity or (b) adequate immunization with live measles vaccination when 12 or more months of age (1). Lack of such proof in 69% of the Texas patients for whom data were available (Table 2) is consistent with recently

TABLE 2. Vaccine histories of 88 measles cases, Harris County, Texas, January-October, 1978

Vaccine status and details		Cases	Percent of total
Adequate	Vaccinated-documented		
	Live vaccine ≥ 1 year	27	31
	Live vaccine < 1 year	20	23
Inadequate	Not vaccinated		
	No reason given	9	10
	Less than 15 months old	20	23
	Claimed prior measles illness	4	5
	Other		
Vaccinated—undocumentable	2	2	
Unknown or uncertain history	6	7	

Measles — Continued

reported experience in other states (2-4). In many areas, secondary schools have experienced difficulties in locating immunization records of all students. Students should be considered to be susceptible to measles until such documentation has been provided.

The occurrence of large numbers of measles cases in military personnel is of particular interest. Perhaps because of the unique epidemiologic environment of military training, measles has been a problem for the U.S. military at least since the Civil War, when 21,676 cases, with 551 deaths, were reported in 1 year (5). During World War I, approximately 30,000 U.S. soldiers per year were hospitalized with measles (6). Several military training bases in addition to those in Texas have recently reported measles outbreaks. As recently stated by the ACIP, attaining measles control in these settings may require careful evaluation of susceptibility and vaccination of those who are susceptible (1).

References

1. Advisory Committee on Immunization Practices: Measles prevention. MMWR 27:427-430, 435-437, 1978
2. MMWR 27:42, 1978
3. MMWR 27:244-245, 1978
4. MMWR 27:369-370, 1978
5. Woodward JJ: Outlines of the Chief Camp Diseases of the United States Armies. New York, Hafner Publishing Co, 1964, p 267
6. Cooch JW: Measles in U.S. Army recruits. Am J Dis Child 103:94-96, 1962

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

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

DISEASE	4th WEEK ENDING		MEDIAN 1973-1977**	CUMULATIVE, FIRST 45 WEEKS		
	December 2, 1978	December 3, 1977*		December 2, 1978	December 3, 1977*	MEDIAN 1973-1977**
Aseptic meningitis	139	77	77	5,711	4,371	3,855
Brucellosis	1	4	4	140	210	210
Chickenpox	2,439	2,293	1,987	136,398	174,228	153,624
Diphtheria	6	—	1	72	80	179
Encephalitis: Primary (arthropod-borne & unspec.)	18	20	20	937	1,077	1,335
Post-infectious	1	5	4	186	196	251
Hepatitis, Viral: Type B	298	307	221	13,623	15,066	10,843
Type A	547	556	625	26,787	28,215	32,086
Type unspecified	238	171	—	8,366	8,145	—
Malaria	8	8	6	666	498	387
Measles (rubella)	280	152	237	25,903	54,228	25,781
Meningococcal infections: Total	35	44	21	2,156	1,639	1,318
Civilian	35	44	21	2,133	1,628	1,290
Military	—	—	—	23	11	26
Mumps	292	333	905	15,298	19,415	51,777
Pertussis	32	48	—	1,881	1,794	—
Rubella (German measles)	85	148	115	17,353	19,629	15,770
Tetanus	3	2	1	76	76	83
Tuberculosis	681	596	579	26,905	27,700	28,742
Tularemia	4	2	1	131	151	133
Typhoid fever	11	12	4	481	364	380
Typhus fever, tick-borne (Rky. Mt. spotted)	7	5	4	994	1,109	800
Veneral diseases:						
Gonorrhea: Civilian	20,944	20,172	19,191	936,838	923,923	923,923
Military	405	529	476	23,567	24,663	26,797
Syphilis, primary & secondary: Civilian	428	438	438	19,988	18,880	22,139
Military	8	11	8	280	289	317
Rabies in animals	69	53	42	2,926	2,850	2,737

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1978		CUM. 1978
Anthrax	5	Poliomyelitis: Total	4
Botulism † (Colo. 2, Calif. 2)	70	Paralytic	2
Cholera (Mich. 1)	12	Psittacosis (La. 1, Utah 1, Calif. 3)	100
Congenital rubella syndrome	25	Rabies in man	1
Leprosy (NYC 1, Calif. 2, Hawaii 5)	146	Trichinosis (Pa. 1)	48
Leptospirosis	59	Typhus fever, flea-borne (endemic, murine) (Tex. 1)	38
Plague	8		

* 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 report will be reflected in next week's cumulative total: Botulism: Wis. +1.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending December 2, 1978, and December 3, 1977 (48th week)

REPORTING AREA	ASEPTIC MENIN- GITIS	BRU- CEL- LOSIS	CHICKEN- POX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS (VIRAL), BY TYPE			MALARIA	
						Primary		Post in- fectious	B	A	Unspecified		
						1978	1977*	1978	1978	1978	1978		
UNITED STATES	139	1	2,439	6	72	18	20	1	298	547	238	8	666
NEW ENGLAND	3	-	333	-	-	-	-	-	10	13	7	-	29
Maine	-	-	74	-	-	-	-	-	1	5	-	-	1
N.H.†	1	-	-	-	-	-	-	-	1	1	-	-	4
Vt.	-	-	1	-	-	-	-	-	-	-	1	-	7
Mass.	-	-	74	-	-	-	-	-	1	2	6	-	7
R.I.	-	-	108	-	-	-	-	-	2	2	-	-	5
Conn.†	2	-	76	-	-	-	-	-	5	3	-	-	12
MID. ATLANTIC	18	-	225	-	1	1	3	-	41	26	9	-	143
Upstate N.Y.	2	-	108	-	-	1	-	-	8	9	2	-	19
N.Y. City	5	-	30	-	1	-	3	-	13	6	3	-	65
N.J.†	3	-	NN	-	-	-	-	-	20	11	4	-	28
Pa.	8	-	87	-	-	-	-	-	NA	NA	NA	-	31
E.N. CENTRAL	9	-	1,079	-	-	4	5	1	53	76	13	2	49
Ohio†	-	-	94	-	-	2	2	1	13	21	-	1	8
Ind.†	-	-	321	-	-	2	-	-	5	5	7	-	4
Ill.	1	-	78	-	-	-	1	-	13	32	2	-	14
Mich.	4	-	337	-	-	-	2	-	19	15	2	1	21
Wis.	4	-	249	-	-	-	-	-	3	3	2	-	2
W.N. CENTRAL	7	1	183	-	2	5	1	-	8	57	17	-	26
Minn.	-	1	-	-	-	-	-	-	4	18	1	-	4
Iowa †	3	-	96	-	-	5	-	-	1	2	1	-	-
Mo.	3	-	54	-	1	-	-	-	-	3	3	-	10
N. Dak.†	-	-	19	-	-	-	-	-	-	-	-	-	-
S. Dak.	-	-	-	-	-	-	-	-	-	25	10	-	1
Nebr.†	1	-	-	-	1	-	-	-	-	6	1	-	5
Kans.†	-	-	14	-	-	-	1	-	3	3	1	-	6
S. ATLANTIC	23	-	180	-	-	3	3	-	59	57	36	2	116
Del.	-	-	-	-	-	-	-	-	6	-	-	-	1
Md.	3	-	12	-	-	1	-	-	31	19	17	-	25
D.C.†	-	-	5	-	-	-	-	-	-	4	-	-	6
Va.†	7	-	33	-	-	1	-	-	6	7	4	2	22
W. Va.	-	-	105	-	-	-	-	-	1	2	-	-	1
N.C.	8	-	NN	-	-	1	2	-	4	2	-	-	10
S.C.	-	-	1	-	-	-	-	-	1	1	-	-	4
Ga.	-	-	2	-	-	-	1	-	-	-	-	-	12
Fla.	5	-	24	-	-	-	-	-	10	22	14	-	35
E.S. CENTRAL	5	-	120	-	-	-	5	-	13	20	1	-	6
Ky.	-	-	108	-	-	-	-	-	2	1	-	-	2
Tenn.	3	-	NN	-	-	-	1	-	9	12	1	-	1
Ala.	-	-	6	-	-	-	-	-	-	1	-	-	1
Miss.	2	-	6	-	-	-	4	-	2	6	-	-	2
W.S. CENTRAL	15	-	99	-	1	1	-	-	25	74	57	-	32
Ark.	-	-	-	-	1	-	-	-	3	9	4	-	1
La.†	3	-	NN	-	-	-	-	-	5	8	7	-	3
Okla.	-	-	-	-	-	-	-	-	6	6	5	-	1
Tex.†	12	-	99	-	-	1	-	-	11	51	41	-	27
MOUNTAIN	4	-	58	-	4	-	-	-	5	64	46	-	9
Mont.	-	-	21	-	-	-	-	-	-	2	-	-	-
Idaho†	1	-	3	-	-	-	-	-	-	4	-	-	-
Wyo.	-	-	-	-	-	-	-	-	-	-	-	-	-
Colo.	3	-	34	-	2	-	-	-	1	3	2	-	5
N. Mex.	-	-	-	-	-	-	-	-	1	5	2	-	1
Ariz.	-	-	NN	-	1	-	-	-	3	38	38	-	2
Utah	-	-	-	-	-	-	-	-	-	9	4	-	-
Nev.	-	-	-	-	1	-	-	-	-	3	-	-	1
PACIFIC	55	-	162	6	64	4	3	-	84	160	52	4	256
Wash.	-	-	150	6	60	-	-	-	6	28	8	-	8
Oreg.	7	-	-	-	-	-	-	-	3	20	12	-	9
Calif.†	46	-	-	-	1	4	2	-	75	109	32	4	213
Alaska	1	-	5	-	3	-	1	-	-	1	-	-	4
Hawaii	1	-	7	-	-	-	-	-	-	2	-	-	22
Gum†	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
P.R.†	-	-	6	-	-	-	-	-	3	6	3	-	4
V.I.	-	-	-	-	-	-	-	-	-	-	-	-	1
Pac. Trust Terr.	-	-	34	-	-	-	-	-	-	-	4	-	-

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, Conn.+8, Ohio+6, Ind.+7, Kans.-3, La.-1, Tex.-1; Bruc.: Iowa+7, Nebr.+1, P.R.+3; Chickenpox: Iowa+166, D.C.+1, Calif.+12, Guam+1; Enceph.: Conn.+9, Ind.+4, Iowa+18, Va.+1, La.-1; Hep B: N.J.-6, Kans.-1, D.C.+3; Hep A: N.J.-5, Iowa+1, N. Dak.+3, Kans.-2, La.-1, Idaho-1; Hep. unsp.: N.J.-8, Iowa+3, Guam+1

TABLE III (Cont. 'd). Cases of specified notifiable diseases, United States, weeks ending December 2, 1978, and December 3, 1977 (48th 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	280	25,903	54,228	35	2,156	1,639	292	15,298	32	85	17,353	76
NEW ENGLAND	4	2,048	2,514	2	121	71	9	847	1	4	784	3
Maine	—	1,319	173	—	10	3	4	547	—	—	155	—
N.H.†	4	83	511	—	9	4	—	17	—	—	107	—
Vt.	—	52	294	—	2	7	—	6	—	—	27	2
Mass.	—	258	638	—	43	23	1	95	1	3	249	—
R.I.	—	38	64	—	20	2	2	53	—	—	42	—
Conn.	—	328	834	2	37	32	2	129	—	—	204	1
MID. ATLANTIC	18	2,247	8,502	6	360	219	24	721	7	14	3,073	5
Upstate N.Y.	6	1,423	3,861	1	115	50	2	232	4	—	547	2
N.Y. City	11	391	797	2	81	58	3	161	3	2	146	—
N.J.†	—	74	197	1	71	54	6	156	—	7	1,620	—
Pa.	1	359	3,647	2	93	57	13	172	—	5	760	3
E.N. CENTRAL	39	11,309	11,713	2	233	187	140	6,264	13	40	8,665	4
Ohio	—	494	1,861	—	73	67	65	1,233	3	—	1,382	1
Ind.	—	217	4,365	1	40	15	2	351	2	8	627	1
Ill.	1	1,236	1,857	—	30	40	21	1,979	3	1	1,794	1
Mich.	32	7,858	1,165	1	75	49	36	1,523	4	25	3,281	1
Wis.	6	1,504	2,465	—	15	16	16	1,178	1	6	1,581	—
W.N. CENTRAL	47	478	9,534	1	77	69	2	2,006	1	1	696	9
Minn.	2	40	2,634	—	23	19	—	22	—	—	130	2
Iowa†	—	57	4,317	—	5	10	1	161	1	—	66	—
Mo.	38	72	1,048	1	31	26	—	1,174	—	—	111	2
N. Dak.	4	211	29	—	3	1	—	17	—	—	82	—
S. Dak.	—	—	75	—	3	5	—	7	—	—	112	1
Nebr.	—	5	214	—	—	2	1	26	—	—	34	—
Kans.	3	93	1,217	—	12	6	—	599	—	1	161	4
S. ATLANTIC	78	5,438	4,698	5	541	371	18	942	2	2	1,069	17
Del.	—	7	22	—	19	23	—	56	—	—	38	—
Md.	—	51	372	1	38	25	—	80	—	—	7	2
D.C.†	—	1	14	—	2	1	—	2	—	—	1	—
Va.	2	2,836	2,751	—	66	36	1	185	—	—	247	1
W. Va.	—	1,065	267	1	17	10	1	185	1	1	336	—
N.C.	—	122	65	3	102	77	3	79	1	—	198	3
S.C.	—	199	159	—	37	37	—	17	—	—	29	4
Ga.	—	36	768	—	62	51	—	70	—	—	27	—
Fla.	76	1,121	280	—	198	111	13	268	—	1	186	7
E.S. CENTRAL	1	1,433	2,053	7	175	166	23	1,238	2	5	538	5
Ky.	—	122	1,191	1	31	32	17	261	—	2	148	2
Tenn.	1	963	734	1	45	44	3	458	1	1	208	—
Ala.	—	101	78	—	49	55	1	431	—	2	24	—
Miss.	—	247	50	5	50	35	2	88	1	—	158	3
W.S. CENTRAL	9	1,273	2,194	2	301	310	41	1,914	—	2	964	15
Ark.	—	16	33	—	23	20	8	618	—	—	58	1
La.	—	351	80	—	122	136	—	65	—	—	486	2
Okla.†	1	19	67	1	19	15	—	4	—	—	17	3
Tex.	8	887	2,014	1	137	139	33	1,227	—	2	403	9
MOUNTAIN	1	264	2,551	1	51	40	11	448	—	—	223	4
Mont.	—	105	1,163	1	5	6	—	147	—	—	18	—
Idaho	—	1	163	—	5	7	2	22	—	—	2	1
Wyo.	—	—	19	—	—	2	1	2	—	—	—	—
Colo.	—	37	508	—	3	1	5	109	—	—	49	1
N. Mex.	—	—	257	—	11	10	3	20	—	—	3	—
Ariz.	1	57	325	—	15	10	—	21	—	—	100	—
Utah	—	44	23	—	6	3	—	119	—	—	38	2
Nev.	—	20	93	—	6	1	—	8	—	—	13	—
PACIFIC	83	1,413	10,469	9	297	206	24	918	6	17	1,341	14
Wash.†	49	391	555	2	47	32	5	205	—	3	131	1
Oreg.	23	405	367	2	31	18	6	129	—	6	147	—
Calif.	11	604	9,447	5	204	119	12	543	5	8	1,043	13
Alaska	—	1	60	—	10	33	—	12	1	—	8	—
Hawaii	—	12	36	—	5	4	1	29	—	—	12	—
Guam†	NA	25	5	—	1	1	NA	38	NA	NA	4	1
P.R.	2	288	1,029	—	10	1	23	1,551	—	—	17	9
V.I.	—	6	14	—	1	—	—	1	—	—	1	—
Pac. Trust Terr.	4	53	—	—	1	—	5	15	—	—	2	—

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, Iowa +1, D.C. +1, Wash. -1; Men. inf.: N.J. +1; Mumps: Iowa +10, Guam +1; Pertussis: Iowa +6, Okla. -1, Rubella: Iowa -3

TABLE IV. Deaths in 121 U.S. cities,* week ending
December 2, 1978 (48th week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P & I** TOTAL	REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P & I** TOTAL
	ALL AGES	>65	45-64	25-44	<1			ALL AGES	>65	45-64	25-44	<1	
NEW ENGLAND	758	490	201	32	18	37	S. ATLANTIC	1,251	735	339	94	42	52
Boston, Mass.	195	108	66	9	5	10	Atlanta, Ga.	136	65	44	12	9	2
Bridgeport, Conn.	42	31	9	1	1	2	Baltimore, Md.	315	175	93	25	10	9
Cambridge, Mass.	23	18	5	-	-	1	Charlotte, N.C.	69	33	22	7	4	1
Fall River, Mass.	33	21	10	2	-	-	Jacksonville, Fla.	110	61	34	9	2	10
Hartford, Conn.	63	38	19	3	2	2	Miami, Fla.	125	76	35	7	3	2
Lowell, Mass.	31	24	6	1	-	-	Norfolk, Va.	50	28	14	3	3	6
Lynn, Mass.	29	18	10	1	-	-	Richmond, Va.	84	50	24	3	4	3
New Bedford, Mass.	37	29	6	-	-	1	Savannah, Ga.	40	30	9	1	-	5
New Haven, Conn.	56	39	12	3	2	1	St. Petersburg, Fla.	113	95	12	2	4	4
Providence, R.I.	70	50	12	4	3	7	Tampa, Fla.	77	48	21	7	-	5
Somerville, Mass.	10	8	1	-	-	1	Washington, D.C.	84	41	24	13	3	2
Springfield, Mass.	55	35	16	3	1	4	Wilmington, Del.	48	33	7	5	-	3
Waterbury, Conn.	43	24	12	4	2	6							
Worcester, Mass.	71	47	17	1	2	1							
MID. ATLANTIC	2,439	1,557	613	155	59	103	E.S. CENTRAL	785	483	202	50	29	38
Albany, N.Y.	59	34	17	4	2	-	Birmingham, Ala.	94	54	28	5	6	6
Allentown, Pa.	20	17	3	-	-	-	Chattanooga, Tenn.	73	44	20	5	3	5
Buffalo, N.Y.	173	103	46	8	9	8	Knoxville, Tenn.	59	46	7	4	-	-
Camden, N.J.	38	24	12	1	1	3	Louisville, Ky.	130	82	32	8	6	8
Elizabeth, N.J.	42	31	10	1	-	1	Memphis, Tenn.	165	102	47	11	1	7
Erie, Pa.†	46	29	11	2	2	4	Mobile, Ala.	71	40	21	3	5	3
Jersey City, N.J.	38	21	11	2	3	1	Montgomery, Ala.	62	42	9	3	4	5
Newark, N.J.	69	31	22	10	3	2	Nashville, Tenn.	131	73	38	11	4	4
N.Y. City, N.Y.	1,584	1,014	395	107	34	64	W.S. CENTRAL	1,295	726	314	117	62	39
Paterson, N.J.	41	29	9	3	-	3	Austin, Tex.	60	30	17	4	2	6
Philadelphia, Pa.†	275	160	80	20	8	14	Baton Rouge, La.	47	26	18	1	1	3
Pittsburgh, Pa.†	93	56	28	5	1	5	Corpus Christi, Tex.	29	17	2	3	3	2
Reading, Pa.	42	27	14	-	-	4	Dallas, Tex.	147	85	37	12	5	3
Rochester, N.Y.	108	65	28	9	4	6	El Paso, Tex.	52	29	17	3	1	3
Schenectady, N.Y.	30	22	7	1	-	2	Fort Worth, Tex.	88	54	19	8	4	3
Scranton, Pa.†	35	27	8	-	-	2	Houston, Tex.	275	130	70	40	13	3
Syracuse, N.Y.	87	64	16	3	2	2	Little Rock, Ark.	71	37	21	4	4	2
Trenton, N.J.	43	31	9	2	1	4	New Orleans, La.	188	106	40	20	9	-
Utica, N.Y.	35	23	8	2	-	2	San Antonio, Tex.	202	122	44	16	13	4
Yonkers, N.Y.	29	21	6	2	-	1	Shreveport, La.	43	26	8	4	4	4
							Tulsa, Okla.	93	64	21	2	3	6
E.N. CENTRAL	2,620	1,608	651	149	120	76	MOUNTAIN	649	390	171	39	20	23
Akron, Ohio	69	48	10	4	5	-	Albuquerque, N. Mex.	73	36	17	8	5	5
Canton, Ohio	41	29	9	1	-	1	Colo. Springs, Colo.	33	17	12	3	-	3
Chicago, Ill.	614	345	164	56	27	14	Denver, Colo.	142	78	47	6	1	7
Cincinnati, Ohio	156	88	48	5	11	5	Las Vegas, Nev.	38	19	11	7	1	-
Cleveland, Ohio	187	118	46	6	10	2	Ogden, Utah	28	22	2	1	3	3
Columbus, Ohio	133	82	26	12	7	4	Phoenix, Ariz.	159	95	46	8	6	1
Dayton, Ohio	135	94	30	6	3	1	Pueblo, Colo.	24	19	4	-	-	1
Detroit, Mich.	295	175	83	16	14	5	Salt Lake City, Utah	49	36	9	-	2	2
Evansville, Ind.	56	42	14	-	-	4	Tucson, Ariz.	103	68	23	6	2	1
Fort Wayne, Ind.	69	44	16	4	3	4							
Gary, Ind.	30	10	8	1	4	2	PACIFIC	1,801	1,133	437	103	62	65
Grand Rapids, Mich.	87	65	13	1	4	9	Berkeley, Calif.	24	17	3	3	1	-
Indianapolis, Ind.	149	83	44	6	12	2	Fresno, Calif.	93	54	19	7	4	2
Madison, Wis.	50	31	8	4	3	6	Glendale, Calif.	21	14	6	-	-	1
Milwaukee, Wis.	180	116	48	7	8	3	Honolulu, Hawaii	57	32	18	3	2	-
Peoria, Ill.	55	32	15	2	3	3	Long Beach, Calif.	83	52	24	4	2	3
Rockford, Ill.	45	26	10	5	1	4	Los Angeles, Calif.	473	284	132	29	14	19
South Bend, Ind.	80	49	19	4	4	3	Oakland, Calif.	55	35	12	5	2	3
Toledo, Ohio	125	89	23	7	1	3	Pasadena, Calif.	42	34	5	2	-	1
Youngstown, Ohio	64	42	17	2	-	1	Portland, Ore.	114	78	23	2	8	3
W.N. CENTRAL	911	586	215	55	34	25	Sacramento, Calif.	85	55	17	6	2	4
Des Moines, Iowa	84	62	15	4	-	2	San Diego, Calif.	175	114	36	8	8	2
Duluth, Minn.	32	21	6	4	1	2	San Francisco, Calif.	153	94	37	12	5	3
Kansas City, Kans.	24	13	7	1	1	-	San Jose, Calif.	190	124	35	12	10	8
Kansas City, Mo.	164	108	39	6	10	3	Seattle, Wash.	138	83	45	7	-	7
Lincoln, Nebr.	50	35	10	2	1	4	Spokane, Wash.	56	35	15	-	3	6
Minneapolis, Minn.	114	72	26	8	5	1	Tacoma, Wash.	42	28	10	3	1	3
Omaha, Nebr.	103	66	23	10	2	-							
St. Louis, Mo.	193	117	51	14	7	7	TOTAL	12,508	7,798	3,143	794	446	458
St. Paul, Minn.	86	56	20	4	4	2	Expected Number	10,977	6,750	2,761	669	411	377
Wichita, Kans.	61	36	18	3	3	4							

*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. Fatal deaths are not included.

**Pneumonia and influenza

†Because of changes in reporting methods in these 4 Pennsylvania cities, there will now be 117 cities involved in the generation of the expected values used to monitor pneumonia and influenza activity in the United States. Data from these 4 cities will appear in the tables but will not be included in the totals for the United States and the Middle Atlantic Region.

Current Trends

Rubella and Congenital Rubella, United States, 1977-1978

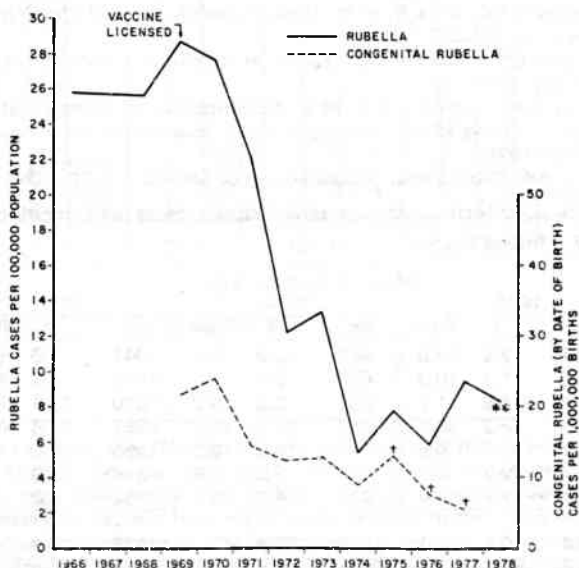
Although the distribution of over 83 million doses of rubella vaccine since 1969 has resulted in approximately a 70% decrease in reported rubella activity, fluctuations in rubella incidence continue to occur (Figure 2). During the first 47 weeks of 1978, 17,262 cases of rubella have been reported, an 11.4% decrease in reported cases compared to the corresponding time period in 1977. This is in contrast to the 63.3% increase in the total number of cases reported in 1977 (20,395 cases) compared with 1976 (12,491 cases). Although the final reported number of children born with the congenital rubella syndrome between 1975 and 1978 is unavailable, trends in the reported number of these cases have paralleled reported rubella activity fairly closely since 1970 (Figure 2).

Further analysis of surveillance data on reported rubella cases is available through 1977. Adolescents and young adults continue to make up an increasingly large proportion of cases. In 1977, as in 1976, slightly more than 70% of the rubella cases of known age occurred in persons 15 years of age and older (Table 3). This same age group accounted for approximately 62% of such cases in 1975 and less than 25% of these cases in prevaccine years (1).

In the period 1966-1967, the incidence rate of reported rubella has declined dramatically only in persons less than 15 years of age (Figure 3). The modest decline in rates for the older age groups that was observed shortly after the licensure of rubella vaccine has not persisted. Between 1975 and 1977 these rates have been increasing, with the greatest increases in the 20- to 24- (74.7%) and the 25- to 29- (81.8%) year-olds (Table 3). The highest reported attack rate, however, continues to occur in those 15-19 years of age.

Reported by Immunization Div, Bur of State Services, CDC.

FIGURE 2. Reported rubella (by year of report) and congenital rubella (by year of birth) cases, by year, United States, 1966-1978*



*1978 congenital rubella data are unavailable.

**1978 annual incidence rate for rubella was extrapolated from the number of cases reported for the first 47 weeks of 1978.

†Reporting for recent years is incomplete as some cases are not diagnosed until later in childhood.

Rubella and Congenital Rubella — Continued

Editorial Note: Rubella vaccine delivery in the United States has been aimed primarily toward preschool and elementary school-aged children. Vaccination of older individuals, particularly females of childbearing age, has had only secondary emphasis. This has largely been due to the great concern of inadvertent vaccination of pregnant women and possible untoward effects of the vaccine virus on the developing fetus (2,3). This pattern of vaccine delivery, together with the attendant decreases in rubella activity primarily in the younger age groups, has led to a persistence of the 10%-25% susceptibility rate to rubella in the adolescent and adult populations (4-6) that was observed in prevaccine (7) and early postvaccine years (7).

These facts are consistent with the continuing outbreaks of rubella in secondary schools (7), colleges (8,9), military installations (10), and places of employment—most importantly among hospital personnel (11). They also suggest that further decreases in congenital rubella cannot be expected by use of the vaccine alone unless there is an increased effort to vaccinate females of childbearing age in conjunction with continued vaccination of young children (12).

This combined approach is necessary since data from the United Kingdom indicate that selective vaccination of 11- to 14-year-old girls and postpubertal women at high risk of exposure to rubella does not result in a rapid reduction in reported cases of either rubella in females of childbearing age (13) or congenital rubella (14). Vaccinating females of childbearing age as well as young children will decrease the number of susceptible pregnant women as well as their degree of exposure to or contact with active cases of rubella.

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TABLE 3. Percent distribution of reported rubella cases and incidence rate,* by age group, 1975-1977, United States

Age (years)	1975			1976			1977			Percent Change 1975-1977	
	No.	%	Rate	No.	%	Rate	No.	%	Rate	%	Rate
<1-4	1016	12.2	12.8	684	10.2	8.3	941	7.8	10.4	-36.1	-18.8
5-9	938	11.3	10.9	629	9.4	6.8	1012	8.4	10.0	-25.7	-8.3
10-14	1209	14.6	11.9	651	9.8	6.2	1610	13.3	14.2	-8.9	+19.3
15-19	3836	46.2	36.8	2927	43.8	25.9	5867	48.6	47.0	+5.2	+27.7
20-24	900	10.8	9.5	1128	16.9	10.9	1950	16.1	16.6	+49.1	+74.7
25-29	182	2.2	2.2	344	5.2	3.6	346	2.9	4.0	+31.8	+81.8
30+	223	2.7	0.4	315	4.7	0.6	352	2.9	0.6	+7.4	+50.0
Total with known age	8304	49.9	—	6678	53.4	—	12078	59.2	—	—	—
Unknown age	8348	50.1	—	5813	46.6	—	8317	40.8	—	—	—
TOTAL	16652	100.0	7.8	12491	100.0	5.8	20395	100.0	9.4	—	+20.5

*Incidence rate = cases per 100,000 population extrapolated from the age distribution of cases from 40 states

Rubella and Congenital Rubella - Continued

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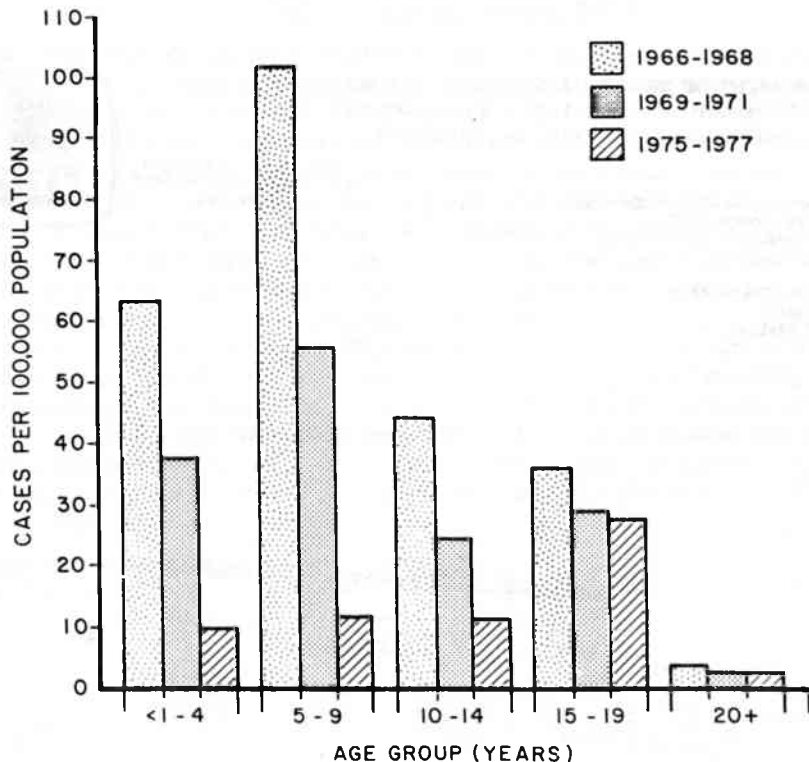
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FIGURE 3. Reported rubella incidence rates* in Massachusetts, New York City, and Illinois, by age group and selected periods, 1966-1977



*Average annual incidence rate for each 3-year period.

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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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Epidemiologic Notes and Reports**Follow-Up on Botulism — Colorado**

No new restaurant-associated cases of botulism have been reported in Denver. All 7 previously reported patients are clinically improving; 2 remain hospitalized. Investigations to determine the source of botulinal toxin contamination of the implicated potato salad are continuing.

Reported by TA Edell, MD, Acting State Epidemiologist, J Emerson, DVM, Colorado State Dept of Health; Food and Drug Administration; Bacteriology Div, Bur of Laboratories, Enteric Diseases Br, Bacterial Diseases Div, Bur of Epidemiology, CDC.

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