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## MORBIDITY AND MORTALITY WEEKLY REPORT

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Current Trends

### Kawasaki Disease — United States

Since 1975, 232 suspect cases of Kawasaki disease (formerly referred to as mucocutaneous lymph node syndrome, MCLS, MLNS, or MCLNS) have been reported to CDC. Kawasaki disease was documented\* in 112 of 117 patients about whom information sufficient to confirm or rule out the diagnosis was provided.

Cases have been reported from 31 states, Puerto Rico, and the District of Columbia — areas that together contain 80% of the total U.S. population. The male-to-female ratio was 1.5 to 1.0; 57% were white, 18% black, and 25% oriental or part oriental. The mean age was 3.8 years and the modal age 3 years, with an age range from 3 months to 13 years.

*Reported by the Enteric and Neurotropic Viral Diseases Br, Viral Diseases Div, Bur of Epidemiology, CDC.*

**Editorial Note:** Kawasaki disease is an acute febrile illness of prepubertal children associated with a characteristic picture of erythema of the conjunctivae and mucous membranes of the upper respiratory tract, erythema and indurative edema of the peripheral extremities, maculopapular rash, desquamation, and usually lymphadenopathy, often confined to the anterior cervical chain. Thrombocytosis (from 500,000 to 2,000,000/mm<sup>3</sup>) and elevated white blood cell count and erythrocyte sedimentation rates are usual. Meningitis, arthralgia, arthritis, proteinuria, sterile pyuria, diarrhea, and elevated liver enzymes are also seen. Throat culture, antistreptolysin-O titers, streptozyme test, and culture and serologic examination for rubeola, rubella, rickettsiae, and other infectious agents are negative. Deaths are almost always related to cardiac involvement, notably infarction secondary to diseased coronary arteries, or myocardial failure or arrhythmia due to myocarditis. It has recently been demonstrated that infantile periarteritis nodosa (IPN) is a severe and often fatal form of Kawasaki disease in the first few months of life (2). Cases of IPN have been described in the United States by pathologists for decades, suggesting that Kawasaki disease may have long existed but gone unrecognized. IPN was not seen in Japan prior to 1960, when Kawasaki disease cases were first noticed.

\*CDC diagnostic criteria and features of the illness are detailed elsewhere (1).

Since instituting disease surveillance in 1975, CDC has received a steadily increasing flow of reports of children with Kawasaki disease. As in Japan, where it is epidemic, disease in the United States does not appear to be limited by geographic, seasonal, socioeconomic, or environmental barriers. In addition to Japan and the United States, cases have also been diagnosed in Korea, Taiwan, the Philippines, Australia, Canada, Mexico, England, Scotland, Belgium, the Netherlands, Spain, Italy, Greece, West Germany, Sweden, and Turkey.

Because of well-organized biannual nationwide surveys, Japanese investigators have compiled detailed information on more than 10,000 cases. In Japan, the male-to-female ratio is 1.5 to 1.0, the median age 1 year, and the case-fatality ratio less than 2% (1). The Japanese have also observed small geographic clusters, recurrences, and second cases within families.

The etiology of Kawasaki disease has not been determined. Working independently, 3 laboratories have reported organisms (1 in spleen, 1 in buffy coat, and 1 in lymph nodes) morphologically similar to rickettsiae, but the evidence is inconclusive. Seroconversion to antigenic determinants of a number of infectious agents has been noted in cases initially suspected but deleted because the case definition specifies that other infectious diseases be ruled out. These agents include varicella-zoster virus, rubella, rubeola, para-influenza 2, and leptospira. Although HLA typing of patients and controls has been unrewarding (3), the disease has been reported with disproportionate frequency from Hawaii, where a majority of children are oriental or part oriental. Only 1 of 45 known cases from that state has been of purely Caucasian background. (Thirty-seven percent of the population of Hawaii is Caucasian.)

**References**

1. Morens DM, O'Brien RJ: Kawasaki disease in the United States. *J Infect Dis* 137:91-93, 1978
2. Landing BH, Larson EJ: Are infantile periarteritis nodosa with coronary artery involvement and fatal mucocutaneous lymph node syndrome the same? Comparison of 20 patients from North America with patients from Hawaii and Japan. *Pediatrics* 59:651-662, 1977
3. Matsuda I, Hattori S, Nagata N, Fruse A, Nambu H, Itakura K, Wakisaka A: HLA antigens in mucocutaneous lymph node syndrome. *Am J Dis Child* 131:1417-1418, 1977

## International Notes

### Penicillinase-( $\beta$ -Lactamase-) Producing *Neisseria gonorrhoeae* — Worldwide

$\beta$ -lactamase-producing *Neisseria gonorrhoeae* was reported in England and the United States in early 1976. Since then it has been detected in 16 additional countries — Australia, Belgium, Canada, Denmark, Ghana, Hong Kong Territories, Japan, the Netherlands, New Zealand, Norway, the Philippines, Republic of Korea, Singapore, South Africa, Sweden, and Switzerland. Contact-tracing efforts around cases reported to the World Health Organization (WHO) have demonstrated in a significant proportion the importation of  $\beta$ -lactamase-producing infection from a foreign source rather than local origination. In Europe and the United States, importation has been either from East Asia or the West Coast of Africa.

The virulence of  $\beta$ -lactamase-producing strains appears to vary in different geographic locations. This difference is thought to reflect the varying selective pressures, such as suboptimal antibiotic usage, prevailing in these areas. Despite the fact that in the United States the strains have been detected in 26 states plus Guam, these strains have failed to establish a geographic focus. Results of more intensive surveillance in the United States in areas where  $\beta$ -lactamase-producing *N. gonorrhoeae* organisms have previously been found demonstrate a prevalence varying from 0-2% among gonococcal isolates.

In Liverpool, England, at one time in 1976,  $\beta$ -lactamase-producing strains constituted 9% of the gonococcal isolates screened. With control efforts, containment was successful, and in 1977 only 3 cases have been reported from the area.

In contrast, in certain areas of the Philippines the reported prevalence of  $\beta$ -lactamase-producing strains among gonococcal isolates varies between 30-40%. Despite effective control programs that have significantly reduced the rate of gonorrhea morbidity, the prevalence of  $\beta$ -lactamase producers remains essentially the same.

In areas not favorable for the maintenance of  $\beta$ -lactamase producers, contact-tracing has often failed to demonstrate a chain of infection beyond 2-4 generations of spread. This may be related to the instability of the  $\beta$ -lactamase plasmid in a non-selective environment.

Studies reveal the existence of 2 different types of  $\beta$ -lactamase-producing gonococci with different geographic origins. The 2 types may be differentiated on the basis of the size of the  $\beta$ -lactamase plasmid. There is concern that such plasmids could be transmitted to other bacterial pathogens, such as the meningococcus.

The clinical spectrum of  $\beta$ -lactamase-producing gonococcal infections appears to be similar to other gonococcal infections.

(Continued on page 15)

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

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

DISEASE	1st WEEK ENDING		MEDIAN 1973-1977	CUMULATIVE, FIRST 1 WEEK		
	January 7, 1978	January 8, 1977		January 7, 1978	January 8, 1977	MEDIAN 1973-1977
Aseptic meningitis	28	51	45	28	51	45
Brucellosis	3	4	1	3	4	1
Chickenpox	1,780	2,974	2,795	1,780	2,974	2,795
Diphtheria	-	-	2	-	-	2
Encephalitis	Primary	23	14	4	23	14
	Post-Infectious	2	1	2	1	2
Hepatitis, Viral	Type B	181	160	181	280	160
	Type A	339	542	560	339	542
	Type unspecified	104	124	-	104	124
Malaria	4	3	3	4	3	3
Measles (rubeola)	160	997	287	160	997	287
Meningococcal infections, total	Civilian	15	37	24	15	37
	Military	-	-	-	-	-
		15	37	24	15	37
Mumps	206	369	844	206	369	844
Pertussis	14	8	-	14	8	-
Rubella (German measles)	70	111	129	70	111	129
Tetanus	-	1	1	-	1	1
Tuberculosis	260	210	-	260	210	-
Tularemia	1	1	3	1	1	3
Typhoid fever	4	1	5	4	1	5
Typhus, tick-borne (Rky. Mt. spotted fever)	2	3	1	2	3	1
Venereal Diseases:						
Gonorrhea	Civilian	16,077	18,212	---	16,077	18,212
	Military	213	488	---	213	488
Syphilis, primary and secondary	Civilian	250	408	---	250	408
	Military	5	7	---	5	7
Rabies in animals	37	43	32	37	43	32

Table II. Notifiable Diseases of Low Frequency: United States

	CUM.		CUM.
Anthrax:	-	Poliomyelitis, total:*	-
Botulism:*	-	Paralytic:	-
Congenital rubella syndrome:*	-	Psittacosis:*	-
Leprosy:*	-	Rabies in man:	-
Leptospirosis: Calif. 1	1	Trichinosis: * N.J. 1, Mo. 1	2
Plague:	-	Typhus, murine: * Tex. 1	1

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

\* Delayed reports (1977): Botulism: Colo. +1; Cong. rubella syn.: N.H. -1; Leprosy: Tex. +9, Calif. +1; Polio, unsp.: Wash. +1; Psittacosis: Tex. +1; Trichinosis: R.I. +6, Ups. N.Y. +1; Typhus, murine: Calif. +1

Table III  
Cases of Specified Notifiable Diseases: United States  
Weeks Ending January 7, 1978 and January 8, 1977 - 1st Week

AREA REPORTING	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKEN-POX	DIPHTHERIA		ENCEPHALITIS		HEPATITIS, VIRAL			MALARIA		
						Primary: Arthropod-borne and Unspecified		Post Infectious	Type B	Type A			Type Unspecified
						1978	1977 <sup>†</sup>	1978	1978	1978			1978
UNITED STATES	28	3	1,780	-	-	4	23	2	181	339	104	4	4
NEW ENGLAND	-	1	353	-	-	1	-	-	8	4	4	1	1
Maine	-	-	93	-	-	-	-	-	1	-	-	-	-
New Hampshire	-	-	11	-	-	-	-	-	-	-	-	-	-
Vermont	-	1	11	-	-	-	-	-	-	-	-	-	-
Massachusetts	-	-	95	-	-	1	-	-	5	3	2	1	1
Rhode Island	-	-	104	-	-	-	-	-	2	1	-	-	-
Connecticut	-	-	39	-	-	-	-	-	-	-	2	-	-
MIDDLE ATLANTIC	2	-	184	-	-	-	3	-	7	12	4	1	1
Upstate New York	1	-	113	-	-	-	-	-	5	9	2	-	-
New York City	-	-	45	-	-	-	1	-	2	3	2	1	1
New Jersey	-	-	NN	-	-	-	1	-	NA	NA	NA	-	-
Pennsylvania	1	-	26	-	-	-	1	-	NA	NA	NA	-	-
EAST NORTH CENTRAL	3	-	312	-	-	-	10	-	22	31	-	-	-
Ohio	1	-	57	-	-	-	8	-	8	20	-	-	-
Indiana	-	-	-	-	-	-	-	-	-	-	-	-	-
Illinois	-	-	22	-	-	-	-	-	NA	NA	NA	-	-
Michigan	2	-	233	-	-	-	1	-	14	11	-	-	-
Wisconsin	-	-	-	-	-	-	1	-	-	-	-	-	-
WEST NORTH CENTRAL	2	1	391	-	-	-	2	-	7	36	1	-	-
Minnesota	-	-	-	-	-	-	2	-	3	5	-	-	-
Iowa	-	-	135	-	-	-	-	-	1	4	1	-	-
Missouri	2	1	4	-	-	-	-	-	2	9	-	-	-
North Dakota	-	-	9	-	-	-	-	-	-	-	-	-	-
South Dakota	-	-	6	-	-	-	-	-	1	2	-	-	-
Nebraska	-	-	6	-	-	-	-	-	-	16	-	-	-
Kansas	-	-	231	-	-	-	-	-	-	-	-	-	-
SOUTH ATLANTIC	2	-	224	-	-	1	2	-	32	22	8	1	1
Delaware	-	-	10	-	-	-	-	-	-	-	-	-	-
Maryland	-	-	11	-	-	1	-	-	15	12	-	1	1
District of Columbia	-	-	-	-	-	-	-	-	-	-	-	-	-
Virginia	2	-	3	-	-	-	1	-	13	2	5	-	-
West Virginia	-	-	196	-	-	-	1	-	2	3	-	-	-
North Carolina	-	-	NN	-	-	-	-	-	2	4	-	-	-
South Carolina	-	-	4	-	-	-	-	-	-	1	3	-	-
Georgia	-	-	-	-	-	-	-	-	-	-	-	-	-
Florida	-	-	-	-	-	-	-	-	-	-	-	-	-
EAST SOUTH CENTRAL	3	1	58	-	-	-	3	2	6	10	1	-	-
Kentucky	1	1	24	-	-	-	2	1	2	4	-	-	-
Tennessee	-	-	NN	-	-	-	1	-	3	4	-	-	-
Alabama	2	-	26	-	-	-	-	1	1	2	1	-	-
Mississippi	-	-	8	-	-	-	-	-	-	-	-	-	-
WEST SOUTH CENTRAL	-	-	82	-	-	-	1	-	7	11	10	-	-
Arkansas	-	-	24	-	-	-	-	-	-	2	2	-	-
Louisiana	-	-	NN	-	-	-	-	-	-	-	-	-	-
Oklahoma	-	-	-	-	-	-	-	-	-	1	-	-	-
Texas	-	-	58	-	-	-	1	-	7	8	8	-	-
MOUNTAIN	-	-	113	-	-	-	-	-	2	57	21	-	-
Montana	-	-	44	-	-	-	-	-	-	27	-	-	-
Idaho	-	-	14	-	-	-	-	-	-	2	-	-	-
Wyoming	-	-	1	-	-	-	-	-	-	-	-	-	-
Colorado	-	-	29	-	-	-	-	-	-	-	-	-	-
New Mexico	-	-	4	-	-	-	-	-	1	7	4	-	-
Arizona	-	-	NN	-	-	-	-	-	1	21	17	-	-
Utah	-	-	21	-	-	-	-	-	-	-	-	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-
PACIFIC	16	-	63	-	-	2	2	-	90	156	55	1	1
Washington	-	-	44	-	-	-	-	-	4	10	8	-	-
Oregon	4	-	2	-	-	-	-	-	5	30	3	-	-
California	12	-	-	-	-	2	1	-	81	116	44	1	1
Alaska	-	-	7	-	-	-	1	-	-	-	-	-	-
Hawaii	-	-	10	-	-	-	-	-	-	-	-	-	-
Guam	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
Puerto Rico	-	-	-	-	-	-	-	-	-	-	-	-	-
Virgin Islands	-	-	-	-	-	-	-	-	-	-	-	-	-

<sup>†</sup>Delayed reports received for calendar year 1977 are not shown below but are used to update last year's weekly and cumulative totals.

Table III-Continued  
 Cases of Specified Notifiable Diseases: United States  
 Weeks Ending January 7, 1978 and January 8, 1977 - 1st Week

REPORTING AREA	MEASLES (Rubeola)			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	160	150	997	15	15	37	206	206	14	70	70	-
NEW ENGLAND	3	3	10	1	1	-	31	31	-	3	3	-
Maine	3	3	-	-	-	-	22	22	-	-	-	-
New Hampshire	-	-	-	-	-	-	-	-	-	1	1	-
Vermont	-	-	10	-	-	-	-	-	-	-	-	-
Massachusetts	-	-	-	-	-	-	2	2	-	2	2	-
Rhode Island	-	-	-	-	-	-	1	1	-	-	-	-
Connecticut	-	-	-	1	1	-	6	6	-	-	-	-
MIDDLE ATLANTIC	44	44	172	4	4	5	12	12	1	12	12	-
Upstate New York	38	38	2	2	2	2	3	3	1	1	1	-
New York City	5	5	2	1	1	1	5	5	-	1	1	-
New Jersey	-	-	7	1	1	2	1	1	-	-	-	-
Pennsylvania	1	1	161	-	-	-	3	3	-	10	10	-
EAST NORTH CENTRAL	27	27	259	1	1	6	30	30	-	14	14	-
Ohio	2	2	12	-	-	6	10	10	-	-	-	-
Indiana	-	-	145	-	-	-	-	-	-	-	-	-
Illinois	-	-	12	-	-	-	11	11	-	-	-	-
Michigan	25	25	34	1	1	-	9	9	-	14	14	-
Wisconsin	-	-	66	-	-	-	-	-	-	-	-	-
WEST NORTH CENTRAL	2	2	437	2	2	3	95	95	2	8	8	-
Minnesota	-	-	-	-	-	-	-	-	-	-	-	-
Iowa	2	2	349	1	1	1	4	4	-	-	-	-
Missouri	-	-	22	-	-	2	27	27	2	-	-	-
North Dakota	-	-	-	-	-	-	-	-	-	-	-	-
South Dakota	-	-	-	-	-	-	-	-	-	7	7	-
Nebraska	-	-	-	-	-	-	-	-	-	-	-	-
Kansas	-	-	66	1	1	-	64	64	-	1	1	-
SOUTH ATLANTIC	13	13	8	-	-	8	5	5	4	11	11	-
Delaware	1	1	-	-	-	-	1	1	-	1	1	-
Maryland	-	-	-	-	-	1	-	-	-	-	-	-
District of Columbia	-	-	-	-	-	-	-	-	-	-	-	-
Virginia	5	5	3	-	-	-	1	1	-	1	1	-
West Virginia	7	7	5	-	-	2	1	1	3	7	7	-
North Carolina	-	-	-	-	-	1	1	1	-	-	-	-
South Carolina	-	-	-	-	-	1	1	1	1	-	-	-
Georgia	-	-	-	-	-	-	-	-	-	-	-	-
Florida	-	-	-	-	-	3	-	-	-	2	2	-
EAST SOUTH CENTRAL	42	42	14	-	-	4	6	6	-	9	9	-
Kentucky	16	16	3	-	-	3	-	-	-	4	4	-
Tennessee	19	19	11	-	-	-	1	1	-	2	2	-
Alabama	-	-	-	-	-	1	5	5	-	-	-	-
Mississippi	7	7	-	-	-	-	-	-	-	3	3	-
WEST SOUTH CENTRAL	3	3	10	4	4	6	11	11	-	2	2	-
Arkansas	-	-	1	1	1	-	4	4	-	-	-	-
Louisiana	-	-	-	-	-	3	-	-	-	-	-	-
Oklahoma	-	-	1	-	-	-	-	-	-	-	-	-
Texas	3	3	8	3	3	3	7	7	-	2	2	-
MOUNTAIN	18	18	53	-	-	2	4	4	1	2	2	-
Montana	18	18	51	-	-	-	-	-	-	-	-	-
Idaho	-	-	-	-	-	1	-	-	-	-	-	-
Wyoming	-	-	-	-	-	-	-	-	-	-	-	-
Colorado	-	-	-	-	-	-	1	1	1	-	-	-
New Mexico	-	-	2	-	-	-	-	-	-	-	-	-
Arizona	-	-	-	-	-	1	-	-	-	-	-	-
Utah	-	-	-	-	-	-	3	3	-	2	2	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-
PACIFIC	8	8	24	3	3	3	12	12	6	9	9	-
Washington	1	1	4	-	-	-	-	-	6	-	-	-
Oregon	-	-	-	-	-	-	3	3	1	-	-	-
California	7	7	20	3	3	1	9	9	5	9	9	-
Alaska	-	-	-	-	-	2	-	-	-	-	-	-
Hawaii	-	-	-	-	-	-	-	-	-	-	-	-
Guam	NA	-	-	-	-	-	NA	-	NA	NA	-	-
Puerto Rico	-	-	3	-	-	-	-	-	-	-	-	-
Virgin Islands	-	-	-	-	-	-	-	-	-	-	-	-

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

Table III-Continued  
 Cases of Specified Notifiable Diseases: United States  
 Weeks Ending January 7, 1978 and January 8, 1977 - 1st 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	260	260	1	4	4	2	2	16,077	16,077	18,212	250	250	408	37
NEW ENGLAND	6	6	-	-	-	-	-	396	396	459	8	8	15	-
Maine	-	-	-	-	-	-	-	28	28	36	-	-	-	-
New Hampshire	-	-	-	-	-	-	-	12	12	17	-	-	-	-
Vermont	2	2	-	-	-	-	-	4	4	7	-	-	-	-
Massachusetts	1	1	-	-	-	-	-	172	172	129	6	6	9	-
Rhode Island	-	-	-	-	-	-	-	19	19	10	-	-	-	-
Connecticut	3	3	-	-	-	-	-	161	161	260	2	2	6	-
MIDDLE ATLANTIC	52	52	-	3	3	2	2	2,045	2,045	3,470	41	41	45	-
Upstate New York	-	-	-	1	1	-	-	-	-	97	-	-	-	-
New York City	9	9	-	1	1	-	-	718	718	2,712	24	24	27	-
New Jersey	43	43	-	-	-	-	-	830	830	148	8	8	8	-
Pennsylvania	-	-	-	1	1	2	2	497	497	513	9	9	10	-
EAST NORTH CENTRAL	38	38	-	-	-	-	-	1,498	1,498	2,486	4	4	74	-
Ohio	30	30	-	-	-	-	-	488	488	933	1	1	20	-
Indiana	8	8	-	-	-	-	-	193	193	90	1	1	-	-
Illinois	NA	-	-	-	-	-	-	334	334	782	1	1	44	-
Michigan	-	-	-	-	-	-	-	483	483	490	1	1	9	-
Wisconsin	-	-	-	-	-	-	-	-	-	191	-	-	1	-
WEST NORTH CENTRAL	4	4	-	-	-	-	-	643	643	1,056	4	4	8	14
Minnesota	3	3	-	-	-	-	-	174	174	119	3	3	-	12
Iowa	1	1	-	-	-	-	-	NA	-	143	NA	-	1	-
Missouri	-	-	-	-	-	-	-	367	367	620	1	1	4	2
North Dakota	-	-	-	-	-	-	-	17	17	13	-	-	1	-
South Dakota	-	-	-	-	-	-	-	30	30	23	-	-	-	-
Nebraska	-	-	-	-	-	-	-	55	55	25	-	-	1	-
Kansas	-	-	-	-	-	-	-	-	-	113	-	-	1	-
SOUTH ATLANTIC	37	37	1	-	-	-	-	4,036	4,036	3,697	100	100	110	5
Delaware	-	-	-	-	-	-	-	18	18	37	1	1	-	-
Maryland	20	20	1	-	-	-	-	614	614	410	11	11	-	-
District of Columbia	-	-	-	-	-	-	-	194	194	308	10	10	13	-
Virginia	-	-	-	-	-	-	-	350	350	365	6	6	8	-
West Virginia	5	5	-	-	-	-	-	68	68	52	-	-	-	-
North Carolina	7	7	-	-	-	-	-	482	482	626	4	4	12	-
South Carolina	5	5	-	-	-	-	-	201	201	456	5	5	13	2
Georgia	NA	-	-	-	-	-	-	738	738	752	30	30	26	2
Florida	-	-	-	-	-	-	-	1,371	1,371	691	33	33	38	1
EAST SOUTH CENTRAL	38	38	-	-	-	-	-	1,115	1,115	1,692	15	15	16	-
Kentucky	6	6	-	-	-	-	-	53	53	292	-	-	2	-
Tennessee	4	4	-	-	-	-	-	664	664	606	6	6	9	-
Alabama	10	10	-	-	-	-	-	319	319	448	5	5	3	-
Mississippi	18	18	-	-	-	-	-	79	79	346	4	4	2	-
WEST SOUTH CENTRAL	10	10	-	-	-	-	-	2,650	2,650	2,805	38	38	54	11
Arkansas	2	2	-	-	-	-	-	72	72	240	-	-	-	-
Louisiana	5	5	-	-	-	-	-	406	406	207	-	-	9	-
Oklahoma	3	3	-	-	-	-	-	213	213	210	-	-	3	5
Texas	-	-	-	-	-	-	-	1,959	1,959	2,148	38	38	42	6
MOUNTAIN	13	13	-	-	-	-	-	575	575	734	-	-	7	-
Montana	6	6	-	-	-	-	-	68	68	69	-	-	-	-
Idaho	-	-	-	-	-	-	-	29	29	35	-	-	-	-
Wyoming	-	-	-	-	-	-	-	10	10	12	-	-	-	-
Colorado	-	-	-	-	-	-	-	161	161	162	-	-	2	-
New Mexico	3	3	-	-	-	-	-	58	58	64	-	-	-	-
Arizona	4	4	-	-	-	-	-	145	145	221	-	-	4	-
Utah	-	-	-	-	-	-	-	16	16	39	-	-	-	-
Nevada	-	-	-	-	-	-	-	88	88	132	-	-	1	-
PACIFIC	62	62	-	1	1	-	-	3,119	3,119	1,813	40	40	79	7
Washington	NA	-	-	-	-	-	-	NA	-	294	NA	-	3	-
Oregon	1	1	-	-	-	-	-	127	127	40	1	1	5	-
California	38	38	-	1	1	-	-	2,914	2,914	1,328	36	36	71	7
Alaska	-	-	-	-	-	-	-	30	30	101	-	-	-	-
Hawaii	23	23	-	-	-	-	-	48	48	50	3	3	-	-
Guam	NA	-	-	NA	-	NA	-	NA	-	8	NA	-	-	-
Puerto Rico	3	3	-	-	-	-	-	47	47	63	6	6	14	-
Virgin Islands	-	-	-	-	-	-	-	4	4	3	-	-	-	-

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

Table IV  
Deaths in 121 United States Cities\*  
Week Ending January 7, 1978 — 1st 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>	793	528	197	36	16	62	<b>SOUTH ATLANTIC</b>	1,001	595	267	72	43	56
Boston, Mass.	226	133	68	11	4	12	Atlanta, Ga.	142	77	46	12	4	5
Bridgeport, Conn.	61	38	17	3	1	8	Baltimore, Md.	141	83	41	8	2	4
Cambridge, Mass.	13	12	1	—	—	2	Charlotte, N. C.	49	20	21	5	3	1
Fall River, Mass.	31	29	2	—	—	2	Jacksonville, Fla.	83	53	21	5	4	8
Hartford, Conn.	84	52	25	6	—	8	Miami, Fla.	96	52	29	6	8	1
Lowell, Mass.	35	26	9	—	—	3	Norfolk, Va.	63	44	10	4	3	3
Lynn, Mass.	26	17	7	2	—	2	Richmond, Va.	92	54	29	6	3	8
New Bedford, Mass.	25	18	5	1	1	1	Savannah, Ga.	41	24	12	4	—	5
New Haven, Conn.	73	45	17	3	8	1	St. Petersburg, Fla.	110	92	14	3	1	9
Providence, R.I.	60	39	15	4	1	8	Tampa, Fla.	74	41	16	7	4	8
Somerville, Mass.	14	9	2	2	—	2	Washington, D. C.	73	33	16	8	17	2
Springfield, Mass.	52	37	12	2	—	6	Wilmington, Del.	40	22	12	4	1	2
Waterbury, Conn.	36	32	3	1	—	2	<b>EAST SOUTH CENTRAL</b>	619	364	174	41	16	28
Worcester, Mass.	57	41	14	1	1	5	Birmingham, Ala.	75	35	29	4	4	2
<b>MIDDLE ATLANTIC</b>	2,734	1,786	655	136	70	171	Chattanooga, Tenn.	63	34	16	4	4	2
Albany, N. Y.	69	42	16	1	5	—	Knoxville, Tenn.	52	37	9	4	2	—
Allentown, Pa.	15	10	3	1	—	—	Louisville, Ky.	107	68	22	11	3	12
Buffalo, N. Y.	113	77	22	5	4	15	Memphis, Tenn.	104	67	31	5	—	3
Camden, N. J.	43	27	11	1	—	5	Mobile, Ala.	61	33	19	5	—	—
Elizabeth, N. J.	26	17	7	2	—	3	Montgomery, Ala.	47	27	17	2	1	4
Erie, Pa.	63	42	15	4	1	—	Nashville, Tenn.	113	63	31	6	2	5
Jersey City, N. J.	69	51	15	—	3	2	<b>WEST SOUTH CENTRAL</b>	1,190	670	319	95	52	32
Newark, N. J.	71	31	29	5	4	5	Austin, Tex.	16	11	2	2	1	—
New York City, N. Y.†	1,375	911	314	76	29	73	Baton Rouge, La.	60	41	14	3	1	1
Paterson, N. J.	58	34	15	4	3	8	Corpus Christi, Tex.	38	19	12	3	2	3
Philadelphia, Pa.	296	193	75	15	6	23	Dallas, Tex.	146	65	51	14	6	1
Pittsburgh, Pa.	119	67	35	7	7	6	El Paso, Tex.	53	29	13	4	3	7
Reading, Pa.	44	35	8	1	—	4	Fort Worth, Tex.	95	51	29	6	8	2
Rochester, N. Y.	141	89	37	4	4	13	Houston, Tex.	263	147	68	21	10	1
Schenectady, N. Y.	33	24	9	—	—	2	Little Rock, Ark.	50	29	15	3	2	4
Scranton, Pa.	37	25	8	2	—	3	New Orleans, La.	166	93	35	15	12	2
Syracuse, N. Y.	71	43	19	2	3	2	San Antonio, Tex.	152	107	56	16	5	2
Trenton, N. J.	35	22	9	2	1	2	Shreveport, La.†	58	38	15	3	1	2
Utica, N. Y.	21	15	3	3	—	4	Tulsa, Okla.	56	40	9	5	1	7
Yonkers, N. Y.	38	31	5	1	—	1	<b>MOUNTAIN</b>	600	370	138	46	15	31
<b>EAST NORTH CENTRAL</b>	2,724	1,723	732	161	72	126	Albuquerque, N. Mex.	89	42	29	8	2	10
Akron, Ohio	66	45	16	2	1	—	Colorado Springs, Colo.	34	26	2	3	—	5
Canton, Ohio	66	42	11	6	4	5	Denver, Colo.	102	60	27	9	1	5
Chicago, Ill.	738	421	157	53	23	28	Las Vegas, Nev.	53	26	18	5	1	2
Cincinnati, Ohio	136	93	32	4	3	7	Ogden, Utah	21	17	3	—	—	2
Cleveland, Ohio	222	138	69	10	2	3	Phoenix, Ariz.	127	80	28	7	7	5
Columbus, Ohio	136	88	34	7	4	—	Pueblo, Colo.	26	17	4	4	—	2
Dayton, Ohio	116	67	34	4	4	4	Salt Lake City, Utah	56	39	8	4	3	—
Detroit, Mich.	366	210	109	32	5	11	Tucson, Ariz.	52	63	19	6	1	—
Evansville, Ind.	60	41	13	3	3	5	<b>PACIFIC</b>	1,727	1,098	410	105	50	57
Fort Wayne, Ind.	45	32	9	2	—	4	Berkeley, Calif.	21	12	7	2	—	—
Gary, Ind.	17	6	7	3	1	1	Fresno, Calif.	63	33	16	2	4	4
Grand Rapids, Mich.	93	73	14	4	2	13	Glendale, Calif.	22	16	5	—	1	—
Indianapolis, Ind.	179	116	42	13	6	4	Honolulu, Hawaii	66	33	17	8	7	1
Madison, Wis.	25	19	2	2	1	3	Long Beach, Calif.	94	64	23	5	1	2
Milwaukee, Wis.	201	140	60	9	9	12	Los Angeles, Calif.	522	323	127	45	7	20
Peoria, Ill.	39	23	11	3	1	18	Oakland, Calif.	80	53	16	4	4	2
Rockford, Ill.	50	34	9	—	5	6	Pasadena, Calif.	41	28	13	—	2	—
South Bend, Ind.	36	25	10	1	—	1	Portland, Oreg.	112	69	30	4	6	4
Toledo, Ohio	94	62	27	1	—	1	Sacramento, Calif.	64	41	13	2	3	1
Youngstown, Ohio	69	48	16	2	1	—	San Diego, Calif.	156	102	34	7	2	4
<b>WEST NORTH CENTRAL</b>	789	524	172	28	40	35	San Francisco, Calif.	164	104	43	10	2	1
Des Moines, Iowa	51	32	13	—	5	2	San Jose, Calif.	60	42	14	3	—	2
Duluth, Minn.	29	18	7	2	2	4	Seattle, Wash.	162	109	33	8	7	6
Kansas City, Kans.	25	13	8	1	1	—	Spokane, Wash.	59	45	11	—	2	7
Kansas City, Mo.	136	93	25	7	6	6	Tacoma, Wash.	44	24	11	5	2	3
Lincoln, Nebr.	38	27	13	—	—	4	<b>TOTAL</b>	12,177	7,658	3,034	720	374	598
Minneapolis, Minn.	103	71	18	6	7	1	Expected Number	12,341	7,532	3,169	728	431	488
Omaha, Nebr.	85	53	22	—	8	3							
St. Louis, Mo.	200	133	41	9	7	2							
St. Paul, Minn.	69	47	15	2	2	2							
Wichita, Kans.	53	37	9	1	2	11							

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

†Estimate based on average percent of regional total

The Morbidity and Mortality Weekly Report, circulation 70,000, 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.

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*Neisseria Gonorrhoeae* — Continued

in terms of severity of symptoms, the percent of asymptomatic infection, and complications.

*In vitro* susceptibility (agar-plate dilution method using an inoculum of 10<sup>3</sup> colony forming units) of  $\beta$ -lactamase-producing gonococci to several drugs has been examined in an attempt to find alternative treatment regimens. As expected, the high level of penicillin resistance (minimal inhibitory concentration [MIC] usually >2 $\mu$ g/ml) is reflected in the reported 80-100% failure rates following penicillin treatment in cases infected with  $\beta$ -lactamase producers. The failure rates of 30-40% seen with tetracycline correlate with their MIC distribution; more than 50% of the  $\beta$ -lactamase-producing isolates in the United States and East Asia have an MIC to tetracycline of 1.0  $\mu$ g/ml (moderately resistant) or greater. Approximately 35% of these isolates were resistant to 1.0  $\mu$ g/ml of erythromycin.

All  $\beta$ -lactamase producers have been sensitive to spectinomycin. In the United States the failure rate with spectinomycin 2.0 g intramuscularly is less than 5% for uncomplicated anogenital infections. Only a few non- $\beta$ -lactamase-producing gonococcal isolates have been detected over the past 4 years with absolute resistance to spectinomycin. Widespread indiscriminate use of the drug may also select out spectinomycin-resistant penicillinase-producing strains.

Alternatives to spectinomycin that are currently being evaluated include cefuroxime and cotrimoxazole. Cefuroxime is a new cephalosporin currently under investigation; it has been successful as a single-session parenteral regimen with a small number of  $\beta$ -lactamase-producing gonococcal infections. Further studies are needed.

Cotrimaxazole (80 mg trimethoprim/400 mg sulfamethoxazole per tablet) has been tried in a 9-tablet, single daily dose regimen for 3 consecutive days in males with

gonococcal urethritis caused by  $\beta$ -lactamase producers acquired in the Philippines. A failure rate of 9.1% was observed. More studies with this drug are planned.

Although containment of  $\beta$ -lactamase-producing gonococcal infections has been possible in several areas, total eradication seems unlikely. No country is protected against importation. It is the recommendation of the WHO Scientific Group on Neisseria and Gonococcal Infections (Geneva, November 1976) that a surveillance program for  $\beta$ -lactamase-producing gonococci be set up in all countries.

This can be done initially by requiring a periodic sample of patients treated for gonococcal infections to return for a post-treatment culture within 3-7 days following therapy. All positive post-treatment cultures should then be tested for penicillin resistance or specifically for penicillinase production.\*

Once a  $\beta$ -lactamase-producing gonococcal infection is detected, contact-tracing around the case should be initiated, and more intensive surveillance should be done. In any community, if surveillance indicates that  $\beta$ -lactamase producers account for a significant proportion of gonococcal infections, appropriate changes in the degree of laboratory surveillance and in treatment recommendations should be considered. In the interest of global surveillance, all cases of  $\beta$ -lactamase-producing gonococcal infections should be reported to WHO.

*Reported by the World Health Organization in the Weekly Epidemiologic Record 52:357-359, 1977*

\*Information on these techniques is available from Dr. A. Reyn, Centre for Reference and Research in Gonococci, Neisseria Department, Statens Serum-institut, Copenhagen, Denmark, or from Chief, Antimicrobics Investigations Section, Clinical Bacteriology Branch, Bacteriology Division, Bureau of Laboratories, CDC.

Current Trends

**Reye Syndrome — United States**

During the period December 1, 1976-November 30, 1977, 425 suspect cases of Reye syndrome were reported in the United States.

Cases were reported from 43 states and the District of Columbia. Preliminary analysis is based largely on 248 case investigation forms returned to CDC. As in 1973-74, occurrence of Reye syndrome paralleled reported isolations of influenza B (Figure 1). Males were affected more frequently than females (56% and 44%, respectively). Ninety-three percent of children were white, 6% black, 1% Native American, and less than 1% oriental. Children of all ages were affected (range: 1 month - 23 years), with a median age of 8, a modal age of 7, and a mean age of 8. Two patients 23 years of age were reported, one with influenza B virus isolated from muscle tissue at autopsy. Persons over 14 years of age accounted for only 4% of cases.

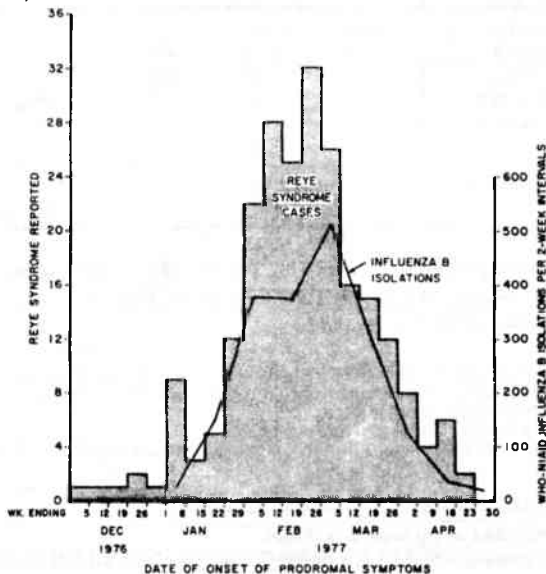
Thirty-eight percent of patients died, 11% survived with neurologic sequelae, and 51% survived without recognized complications.

*Reported by Enteric and Neurotropic Viral Diseases Br, Viral Diseases Div, Bur of Epidemiology, CDC.*

**Editorial Note:** The 1977 nationwide outbreak appears to be of similar magnitude to one in 1973-74, when 379 cases were documented from December 15, 1973, to June 30,

1974 (1). The 1977 case total is not considered final, however, since 1977 cases are still being reported. The 1973-74

*FIGURE 1. Weekly Reye syndrome reports to CDC and biweekly WHO-NIAID reports of influenza B isolations, December 1, 1976-April 30, 1977*



*Reye Syndrome — Continued*

outbreak was also temporally and geographically related to influenza B activity. Other similar features include the predominance of Caucasian children, rarity of disease in persons over age 16, and high case-fatality ratio.

It is difficult to estimate the actual number of cases of Reye syndrome because of incomplete reporting, difficulties encountered in diagnosing milder cases, and the probable existence of subclinical disease. A recent comparison of

International Notes**Influenza — United States, U.S.S.R., Hong Kong**

**United States:** A total of nearly 500 influenza A (H3N2) viruses have now been isolated in the United States, with some isolates from all regions of the contiguous 48 states, Hawaii, and Puerto Rico. The largest number of viruses has been isolated in the middle Atlantic and east north central states. Strain-characterization of about 250 viruses suggests that one-quarter resemble A/Victoria/3/75 and three-quarters resemble A/Texas/1/77. Results of tests at the World Health Organization (WHO) Collaborating Center for Influenza, Atlanta, have confirmed the presence of both antigenic variants in 9 states—New Jersey, Illinois, Michigan, Wisconsin, Missouri, Maryland, Colorado, New Mexico, and Arizona.

**U.S.S.R., Hong Kong:** Serologic reactions of A/USSR/77 and A/Hong Kong/77 influenza A (H1N1) isolates with reference influenza A (H1N1) strains representative of viruses circulating from 1946 to 1957 have been measured in reciprocal hemagglutination (HI) and neuraminidase inhibition (NI) tests using postinfection ferret sera. Results obtained using an A/USSR/77 strain (Table 1) are representative of reactions observed with other 1977 isolates of H1N1 influenza. In HI tests, A/USSR/77 cross-reacts best with

cases reported to CDC with cases reported to the National Reye's Syndrome Foundation suggests that disease may be considerably under-reported. However, reporting bias may result in falsely elevated estimates of the case-fatality ratio.

*Reference*

1. Corey L, Rubin RJ, Hattwick MAW, Noble GR, Cassidy E: A nationwide outbreak of Reye's syndrome: Its epidemiologic relationship to influenza B. *Am J Med* 61:615-625, 1976

viruses isolated in 1947 and 1950. Although the 1950 reference strain used, A/FW/1/50, appears to be less susceptible to inhibition in HI tests than other strains, the pattern of reactions indicates that A/FW/1/50 is somewhat more closely related to A/USSR/77 than is A/FM/1/47. Results of NI tests consistently show a significant antigenic difference between the neuraminidase of A/USSR/77 and A/FM/1/47 (H1N1) strains. The neuraminidase of A/USSR/77 appears most similar to that of A/FW/1/50 in reciprocal NI tests.

Reference antigen and antiserum prepared with A/USSR/90/77 will be distributed shortly by CDC to all laboratories collaborating with the WHO international influenza surveillance program to facilitate identification of H1N1 viruses. If any untypable influenza-like viruses are isolated in other laboratories in the United States, state health departments should be notified so that arrangements may be made for antigenic characterization of these viruses.

*Reported by appropriate State Laboratory Directors; State and Territorial Epidemiologists; WHO Collaborating Center for Influenza, Respiratory Virology Br, Virology Div, Bur of Laboratories, Surveillance and Assessment Br, Immunization Div, Bur of State Services, CDC.*

TABLE 1. Serologic cross reactions of A/USSR/77 (H1N1) virus with reference influenza A H1N1 strains measured using postinfection ferret sera

Antigen	Hemagglutination inhibition <sup>1</sup> by antisera					Neuraminidase inhibition <sup>2</sup> by antisera						
	A/Cam/46	A/FM/1/47	A/FW/1/50	A/FLW/1/52	A/Denver/1/57	A/USSR/77	A/Cam/46	A/FM/1/47	A/FW/1/50	A/FLW/1/52	A/Denver/1/57	A/USSR/77
A/Cam/46	1280	80				40	210	250	5			
A/FM/1/47	40	640	640			1280	290	320	20			
A/FW/1/50		80	160			320			50	10	10	90
A/FLW/1/52		80		1280		40			30	50	20	40
A/Denver/1/57					640				10	5	60	30
A/USSR/77		160	640			1280			30	5	20	80

<sup>1</sup> Blank denotes titer <20

<sup>2</sup> Blank denotes titer <3

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HEW Publication No. (CDC) 78-8017