



# Morbidity and Mortality

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE / PUBLIC HEALTH SERVICE HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION

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## EPIDEMIOLOGIC NOTES AND REPORTS COLLEGE-ASSOCIATED RUBELLA - Oklahoma

Between March 9 and April 5, 1973, St. Gregory's College (enrollment 450) in Shawnee, Oklahoma, reported 44 cases of a rash illness thought to be rubella. The illness was characterized by transient rash (84%), cervical or retroauricular lymphadenopathy (80%), conjunctivitis (91%), and fever (50%). Symptoms in most patients (40/44) developed in the 10-day period between March 9 and 18, 1973 (Figure 1).

Eleven cases were confirmed by a 4-fold or greater rise in the rubella HAI titer. Throat and rectal swab specimens from several students were negative for enteroviruses and adenoviruses.

Of the 450 persons enrolled, 367 are day students and 83 are adults attending evening classes, who have little contact with the other students. All cases were in day students (attack rate = 12%), and the attack rate in females was 1.3

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times greater than in males. Extensive questioning of students failed to reveal any large social or athletic gathering which all ill students had attended in the 10- to 20-day period prior to the epidemic. However, all 44 students with rubella were dormitory residents and ate in the school dining room. Further investigation revealed that 1 student who works in the school dining room reportedly had a rash illness late in February.

A survey of a nearby medical facility and several com-

TABLE I. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES  
(Cumulative totals include revised and delayed reports through previous weeks)

DISEASE	20th WEEK ENDING		MEDIAN 1968-1972	CUMULATIVE, FIRST 20 WEEKS		
	May 19, 1973	May 20, 1972		1973	1972	MEDIAN 1968-1972
Aseptic meningitis . . . . .	48	47	30	743	711	574
Brucellosis . . . . .	1	5	5	51	49	55
Chickenpox . . . . .	5,190	5,001	---	114,064	86,422	---
Diphtheria . . . . .	2	4	4	74	---	66
Encephalitis, primary:						
Arthropod-borne and unspecified . . . . .	25	15	17	398	312	388
Encephalitis, post-infectious . . . . .	7	5	11	100	106	129
Hepatitis, serum (Hepatitis B) . . . . .	169	211	138	2,955	3,691	2,639
Hepatitis, infectious (Hepatitis A) . . . . .	1,104	1,130	1,089	19,848	22,115	21,810
Malaria . . . . .	6	29	58	88	523	1,003
Measles (rubeola) . . . . .	851	1,368	1,368	17,373	19,364	19,364
Meningococcal infections, total . . . . .	28	21	48	685	678	1,309
Civilian . . . . .	28	20	39	668	649	1,167
Military . . . . .	---	1	3	17	29	140
Mumps . . . . .	2,202	2,186	2,580	40,757	43,086	55,030
Rubella (German measles) . . . . .	1,211	1,015	2,329	20,238	15,588	30,714
Tetanus . . . . .	3	3	3	28	37	37
Tuberculosis, new active . . . . .	710	825	---	12,283	12,693	---
Tularemia . . . . .	2	---	2	23	41	38
Typhoid fever . . . . .	11	7	7	320	102	99
Typhus, tick-borne (Rky. Mt. spotted fever) . . . . .	16	14	11	48	45	32
Veneral Diseases:						
Gonorrhea . . . . .	15,056	13,501	---	295,532	261,567	---
Syphilis, primary and secondary . . . . .	535	446	---	10,288	9,135	---
Rabies in animals . . . . .	77	102	80	1,409	1,754	1,544

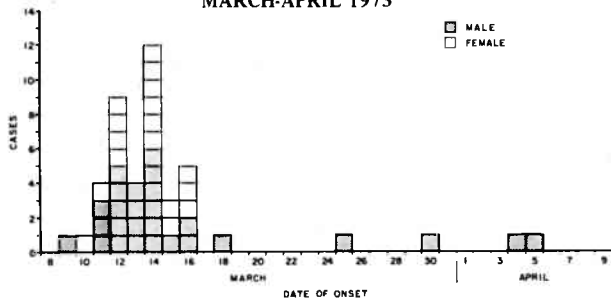
TABLE II. NOTIFIABLE DISEASES OF LOW FREQUENCY

	Cum.		Cum.
Anthrax: . . . . .	1	Poliomyelitis, total: . . . . .	1
Botulism: Pa. - 1, W. Va. - 8 . . . . .	9	Paralytic: . . . . .	1
Congenital rubella syndrome: * Va. - 1 . . . . .	10	Psittacosis: . . . . .	5
Leprosy: Hawaii - 4 . . . . .	46	Rabies in man: . . . . .	---
Leptospirosis: . . . . .	11	Trichinosis: . . . . .	33
Plague: . . . . .	---	Typhus, murine: Tex. - 1 . . . . .	8

\*Delayed reports: Congenital rubella syndrome: Guam 1

RUBELLA - Continued

Figure 1  
44 RUBELLA CASES, BY DATE OF ONSET  
ST. GREGORY'S COLLEGE, SHAWNEE, OKLAHOMA  
MARCH-APRIL 1973



community physicians revealed 9 other cases of rubella among adolescents and adults outside the college campus; 1 of these patients had been ill prior to the outbreak at St. Gregory's.

Surveillance is being improved in Shawnee to document the effect of this outbreak on rubella incidence in the community, where 82% of children 1-11 years of age have been vaccinated against the disease through public programs.

(Reported by Mary Ann Burgess, R.N., Student Health Center, St. Gregory's College; A. Mitchell Bell, M.D., private

physician, Shawnee; Mark A. Roberts, Staff Epidemiologist, Stanley W. Ferguson, Ph.D., State Epidemiologist, and the Virology Section, Laboratory Division, Oklahoma State Department of Health; and an EIS Officer.)

Editorial Note

The explosive nature of this epidemic suggests that the disease was disseminated by an index case who served as a common source of infection. A comparable pattern of rubella transmission was recently reported in an epidemic from Hawaii (1).

A total of 12 states have reported outbreaks of rubella on college campuses in 1973. Most of these outbreaks were confined to the campus and did not involve elementary or preschool children, presumably because effective rubella immunization programs have been directed at young children. The apparent increase in reported rubella among high school and college students may represent a portion of the major rubella epidemic, now limited to unvaccinated groups, predicted for the early 1970s. Exposure and infection of pregnant women has occurred infrequently during the adolescent and college outbreaks investigated, but surveillance for this problem should be maintained.

Reference

1. Hattis RP, Halstead SB, Hermann KL, Witte JJ: Rubella in an immunized island population. JAMA 223:1019-1021, 1973

SUMMARY OF REPORTED CASES OF INFECTIOUS SYPHILIS

CASES OF PRIMARY AND SECONDARY SYPHILIS: By Reporting Area April 1973 and April 1972 - Provisional Data

Reporting Area	April		Cumulative Jan. - Apr.		Reporting Area	April		Cumulative Jan. - Apr.	
	1973	1972	1973	1972		1973	1972	1973	1972
<b>NEW ENGLAND</b>	101	93	410	313	<b>EAST SOUTH CENTRAL</b>	103	114	468	449
Maine	1	2	9	7	Kentucky	21	23	129	73
New Hampshire	-	1	5	4	Tennessee	43	42	147	180
Vermont	1	6	8	9	Alabama	9	15	41	54
Massachusetts	61	58	277	172	Mississippi	30	34	151	142
Rhode Island	1	3	8	13	<b>WEST SOUTH CENTRAL</b>	269	262	930	1,033
Connecticut	37	23	103	108	Arkansas	8	20	60	93
<b>MIDDLE ATLANTIC</b>	412	457	1,940	1,831	Louisiana	76	56	260	260
Upstate New York	20	40	126	151	Oklahoma	21	5	73	35
New York City	264	309	1,233	1,234	Texas	164	181	537	645
Pa. (Excl. Phila.)	20	6	94	52	<b>MOUNTAIN</b>	42	51	209	169
Philadelphia	34	31	153	118	Montana	-	-	-	1
New Jersey	74	71	334	276	Idaho	-	1	5	2
<b>EAST NORTH CENTRAL</b>	193	229	787	909	Wyoming	-	2	2	7
Ohio	22	23	94	115	Colorado	16	9	84	21
Indiana	45	28	119	72	New Mexico	1	10	24	39
Downstate Illinois	6	9	59	54	Arizona	14	20	63	69
Chicago	68	98	296	369	Utah	1	2	7	9
Michigan	44	66	185	285	Nevada	10	7	24	21
Wisconsin	8	5	34	14	<b>PACIFIC</b>	327	286	1,453	1,129
<b>WEST NORTH CENTRAL</b>	32	20	108	91	Washington	9	11	50	38
Minnesota	13	3	40	9	Oregon	2	6	18	17
Iowa	5	5	13	15	California	308	267	1,354	1,061
Missouri	12	11	38	49	Alaska	1	-	6	4
North Dakota	-	-	1	-	Hawaii	7	2	25	9
South Dakota	-	-	1	-	<b>U.S. TOTAL</b>	2,023	2,026	8,513	7,983
Nebraska	-	1	1	6	<b>TERRITORIES</b>	67	68	280	292
Kansas	2	-	14	12	Puerto Rico	64	60	268	263
<b>SOUTH ATLANTIC</b>	544	514	2,208	2,059	Virgin Islands	3	8	12	29
Delaware	11	6	31	22					
Maryland	59	79	255	305					
District of Columbia	62	67	253	266					
Virginia	67	33	250	136					
West Virginia	2	4	7	11					
North Carolina	47	41	210	179					
South Carolina	34	50	213	174					
Georgia	108	90	406	445					
Florida	154	144	583	521					

Note: Cumulative Totals include revised and delayed reports through previous months.

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES FOR WEEKS ENDING MAY 19, 1973 AND MAY 20, 1972 (20th WEEK)

AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKEN-POX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS		
						Primary including unspec. cases		Post Infectious	Serum (Hepatitis B)	Infectious (Hepatitis A)	
						1973	1972	1973	1973	1973	1972
UNITED STATES	48	1	5,190	2	74	25	15	7	169	1,104	1,130
NEW ENGLAND	-	-	922	-	2	2	2	-	2	52	86
Maine*	-	-	8	-	-	-	-	-	-	2	13
New Hampshire*	-	-	40	-	-	-	-	-	-	3	4
Vermont	-	-	25	-	-	-	-	-	-	7	7
Massachusetts	-	-	387	-	-	-	1	-	1	21	37
Rhode Island	-	-	128	-	2	-	-	-	-	2	3
Connecticut	-	-	334	-	-	2	1	-	1	17	22
MIDDLE ATLANTIC	9	-	409	-	-	3	2	1	26	136	206
Upstate New York	3	-	8	-	-	-	1	-	5	51	44
New York City	1	-	193	-	-	-	1	-	10	34	44
New Jersey	3	-	NN	-	-	2	-	-	3	31	45
Pennsylvania	2	-	208	-	-	1	-	1	8	20	73
EAST NORTH CENTRAL	8	-	2,022	-	-	8	5	2	21	181	174
Ohio*	-	-	313	-	-	1	-	-	4	31	44
Indiana	2	-	135	-	-	1	-	-	-	15	15
Illinois	4	-	-	-	-	1	2	2	4	46	37
Michigan	2	-	642	-	-	3	3	-	12	83	69
Wisconsin*	-	-	932	-	-	2	-	-	1	6	9
WEST NORTH CENTRAL	-	-	492	-	7	2	-	-	8	50	38
Minnesota	-	-	38	-	-	-	-	-	4	3	5
Iowa	-	-	312	-	-	-	-	-	-	1	7
Missouri	-	-	61	-	-	2	-	-	3	36	18
North Dakota	-	-	35	-	-	-	-	-	-	-	2
South Dakota	-	-	-	-	7	-	-	-	-	2	-
Nebraska	-	-	10	-	-	-	-	-	1	-	-
Kansas	-	-	36	-	-	-	-	-	-	8	6
SOUTH ATLANTIC	7	-	398	-	-	5	3	-	19	219	181
Delaware	-	-	40	-	-	-	-	-	-	1	6
Maryland	-	-	23	-	-	1	-	-	1	17	12
District of Columbia	-	-	-	-	-	1	-	-	-	2	1
Virginia	3	-	31	-	-	2	1	-	-	15	28
West Virginia*	1	-	220	-	-	-	-	-	-	9	1
North Carolina	-	-	NN	-	-	-	-	-	1	57	42
South Carolina	-	-	78	-	-	-	-	-	2	10	14
Georgia	-	-	6	-	-	1	-	-	-	13	14
Florida	3	-	-	-	-	-	2	-	15	95	63
EAST SOUTH CENTRAL	3	-	85	-	-	-	1	-	10	79	59
Kentucky	-	-	40	-	-	-	1	-	-	27	6
Tennessee	-	-	NN	-	-	-	-	-	4	42	37
Alabama	3	-	44	-	-	-	-	-	5	2	12
Mississippi	-	-	1	-	-	-	-	-	1	8	4
WEST SOUTH CENTRAL	8	-	353	1	4	1	-	-	9	156	155
Arkansas*	-	-	16	-	-	-	-	-	-	1	5
Louisiana*	1	-	NN	-	-	-	-	-	5	10	20
Oklahoma	1	-	55	-	-	1	-	-	1	37	30
Texas	6	-	282	1	4	-	-	-	3	108	100
MOUNTAIN	-	1	158	-	2	2	-	-	9	24	55
Montana	-	1	27	-	-	-	-	-	1	3	4
Idaho	-	-	-	-	-	-	-	-	1	3	8
Wyoming	-	-	-	-	-	-	-	-	-	1	1
Colorado	-	-	83	-	-	-	-	-	4	5	15
New Mexico	-	-	37	-	2	2	-	-	2	8	17
Arizona*	-	-	-	-	-	-	-	-	-	-	10
Utah	-	-	11	-	-	-	-	-	1	3	-
Nevada	-	-	-	-	-	-	-	-	-	1	-
PACIFIC	13	-	351	1	59	2	2	4	65	207	176
Washington	-	-	295	1	54	-	-	-	3	19	9
Oregon	1	-	1	-	3	-	-	-	1	17	29
California	11	-	-	-	2	2	2	4	59	165	127
Alaska	-	-	22	-	-	-	-	-	2	-	1
Hawaii	1	-	33	-	-	-	-	-	-	6	10
Guam*	-	-	-	-	-	-	-	-	-	-	-
Puerto Rico	-	-	15	-	-	-	-	-	3	12	14
Virgin Islands	-	-	-	-	-	-	-	-	-	-	-

\*Delayed reports: Chickenpox: Me. 40, N.H. 10, Ark. 4, Guam 4 Hepatitis A: Me. 5, Ohio delete 3, W. Va. delete 1, Ark. 2, Encephalitis, primary: Wis. 1 La. delete 1, Ariz. 24, Guam 1 Hepatitis B: Ohio 3, Ariz. 1

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TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES  
FOR WEEKS ENDING MAY 19, 1973 AND MAY 20, 1972 (20th WEEK) - Continued

AREA	MALARIA		MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS, TOTAL			MUMPS		RUBELLA	
	1973	Cum. 1973	1973	Cumulative		1973	Cumulative		1973	Cum. 1973	1973	Cum. 1973
				1973	1972		1973	1972				
UNITED STATES	6	88	851	17,373	19,364	28	685	678	2,202	40,757	1,211	20,238
NEW ENGLAND	-	6	257	6,239	1,853	-	30	29	131	1,865	196	2,796
Maine *	-	-	-	20	181	-	-	3	2	148	4	59
New Hampshire *	-	-	5	746	171	-	6	1	7	151	9	320
Vermont	-	2	5	98	95	-	2	-	1	214	-	27
Massachusetts	-	2	132	3,406	311	-	11	15	30	618	107	1,582
Rhode Island	-	-	31	426	348	-	1	8	14	185	7	171
Connecticut	-	2	84	1,543	747	-	10	2	77	549	69	637
MIDDLE ATLANTIC	3	14	61	1,346	755	4	100	79	279	5,100	233	3,104
Upstate New York	2	8	19	351	96	1	36	20	NN	NN	40	271
New York City	-	1	31	683	162	1	19	23	158	3,028	17	300
New Jersey	-	1	8	158	456	2	23	18	29	1,157	159	2,313
Pennsylvania	1	4	3	154	41	-	22	18	92	915	17	220
EAST NORTH CENTRAL	-	11	332	5,745	7,616	9	85	95	388	11,060	271	4,366
Ohio	-	2	4	216	200	2	38	33	48	2,047	7	540
Indiana	-	1	30	482	1,044	-	2	10	28	834	39	799
Illinois	-	6	90	1,276	2,753	4	16	21	-	1,880	76	698
Michigan	-	2	156	2,939	1,331	3	25	27	174	3,097	91	1,159
Wisconsin *	-	-	52	832	2,288	-	4	4	138	3,202	58	1,170
WEST NORTH CENTRAL	-	4	26	342	766	1	57	56	153	3,767	34	1,074
Minnesota	-	1	-	15	14	-	-	11	-	72	6	187
Iowa	-	-	15	224	523	-	11	2	96	2,457	12	162
Missouri	-	1	1	23	145	1	29	18	15	451	8	236
North Dakota	-	1	8	52	42	-	3	-	4	54	4	237
South Dakota	-	-	-	-	4	-	3	2	-	11	-	21
Nebraska	-	-	-	3	17	-	4	7	3	83	-	136
Kansas	-	1	2	25	21	-	7	16	35	639	4	95
SOUTH ATLANTIC	2	11	32	864	1,609	4	109	145	343	4,806	50	1,547
Delaware	-	-	-	5	16	-	-	1	7	212	-	7
Maryland	-	-	-	1	12	1	17	24	22	479	-	8
District of Columbia	-	-	2	2	2	-	2	4	5	27	-	2
Virginia	-	4	3	354	46	2	19	36	46	465	6	369
West Virginia	-	-	-	142	193	-	2	6	90	1,620	26	223
North Carolina	2	3	-	4	28	-	20	21	NN	NN	1	185
South Carolina	-	1	2	50	181	1	8	14	27	315	-	72
Georgia	-	-	1	36	123	-	17	3	5	25	-	7
Florida	-	3	24	270	1,008	-	24	36	141	1,663	17	674
EAST SOUTH CENTRAL	-	2	18	513	918	5	65	58	323	2,832	40	995
Kentucky	-	-	4	337	468	-	24	20	172	928	10	344
Tennessee	-	-	12	141	177	3	23	22	141	1,116	15	354
Alabama	-	2	-	-	124	2	13	10	9	345	14	134
Mississippi	-	-	2	35	149	-	5	6	1	443	1	163
WEST SOUTH CENTRAL	-	9	10	543	1,130	1	106	83	139	2,642	45	1,267
Arkansas *	-	-	-	63	10	-	12	7	7	211	5	102
Louisiana	-	2	1	62	73	-	21	23	-	50	3	86
Oklahoma	-	1	1	40	9	-	10	6	19	291	5	155
Texas	-	6	8	378	1,038	1	63	47	113	2,090	32	924
MOUNTAIN	-	7	18	403	1,339	2	19	12	61	2,006	101	2,147
Montana	-	1	-	12	12	-	4	2	10	182	2	423
Idaho	-	-	-	189	16	-	1	3	2	103	1	20
Wyoming	-	-	-	10	1	-	-	1	-	417	-	5
Colorado *	-	1	16	81	389	2	5	2	21	287	76	1,461
New Mexico	-	1	2	99	89	-	3	1	28	795	21	158
Arizona *	-	4	-	11	683	-	3	1	-	140	-	16
Utah	-	-	-	1	149	-	1	1	-	75	1	61
Nevada	-	-	-	-	-	-	2	1	-	7	-	3
PACIFIC	1	24	97	1,378	3,378	2	114	121	385	6,679	241	2,942
Washington	-	-	50	593	791	-	7	11	72	890	29	444
Oregon	-	2	18	345	37	-	10	10	50	1,291	102	616
California	1	19	28	430	2,459	2	93	96	176	3,785	108	1,862
Alaska	-	2	-	-	11	-	4	1	82	550	-	2
Hawaii	-	1	1	10	80	-	-	3	5	163	2	18
Guam *	-	-	-	3	2	-	-	8	-	5	-	5
Puerto Rico	-	-	86	1,255	350	-	4	2	33	425	-	19
Virgin Islands *	-	-	-	-	1	-	-	2	1	14	-	1

\*Delayed reports: Measles: Me. 1, N.H. 3, Ark. 1, Colo. delete 48,  
Ariz. 1, V.I. delete 1

Mumps: Me. 16, Guam 1

Rubella: Me. 14, Ark. 2, Colo. 48,

Meningococcal infections: Wis. 1, Ariz. 1

Ariz. 1, Guam 3

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES  
FOR WEEKS ENDING MAY 19, 1973 AND MAY 20, 1972 (20th WEEK) - Continued

AREA	TETANUS	TUBERCULOSIS (New Active)		TULA- REMIA	TYPHOID FEVER		TYPHUS-FEVER TICK-BORNE (Rky. Mt. spotted fever)		VENEREAL DISEASES		RABIES IN ANIMALS			
		Cumulative 1973	1973		Cum. 1973	Cumulative 1973	1973	Cum. 1973	1973	Cum. 1973	GONOR- RHEA	SYPHILIS (Pri. & Sec.)	1973	Cum. 1973
											1973	1973		
UNITED STATES	28	710	12,283	23	11	320	16	48	15,056	535	77	1,409		
NEW ENGLAND	1	25	411	-	1	5	-	1	554	11	2	76		
Maine	-	2	30	-	-	-	-	-	24	2	1	45		
New Hampshire	-	1	26	-	-	-	-	-	8	-	1	27		
Vermont	-	2	12	-	-	-	-	-	11	1	-	2		
Massachusetts	-	18	237	-	1	5	-	1	300	5	-	2		
Rhode Island	1	1	30	-	-	-	-	-	29	-	-	-		
Connecticut	-	1	76	-	-	-	-	-	182	3	-	-		
MIDDLE ATLANTIC	4	129	2,499	-	-	21	-	1	2,582	108	-	8		
Upstate New York	-	30	468	-	-	3	-	-	258	6	-	4		
New York City	2	38	914	-	-	7	-	-	1,548	77	-	-		
New Jersey	2	12	443	-	-	6	-	-	342	17	-	-		
Pennsylvania	-	49	674	-	-	5	-	1	434	8	-	4		
EAST NORTH CENTRAL	4	83	1,935	-	1	13	-	-	1,633	31	4	129		
Ohio	1	26	590	-	-	5	-	-	413	5	-	18		
Indiana	-	20	253	-	-	-	-	-	113	5	-	35		
Illinois*	2	12	544	-	-	2	-	-	358	7	-	37		
Michigan	-	25	414	-	1	4	-	-	577	11	1	2		
Wisconsin	1	-	134	-	-	2	-	-	172	3	3	37		
WEST NORTH CENTRAL	4	38	473	4	-	8	-	1	824	2	23	399		
Minnesota	-	2	60	-	-	3	-	-	198	2	8	133		
Iowa	-	3	43	-	-	-	-	-	142	-	8	97		
Missouri	3	22	225	4	-	3	-	1	220	-	1	34		
North Dakota	1	1	16	-	-	-	-	-	10	-	2	66		
South Dakota	-	2	31	-	-	1	-	-	48	-	1	30		
Nebraska	-	3	38	-	-	1	-	-	83	-	-	2		
Kansas	-	5	60	-	-	-	-	-	123	-	3	37		
SOUTH ATLANTIC	5	159	2,366	5	3	217	10	24	2,724	162	5	124		
Delaware	-	5	30	-	-	-	-	1	13	-	-	-		
Maryland *	-	10	223	-	-	4	-	-	229	24	-	7		
District of Columbia	-	3	117	-	-	-	-	-	333	15	-	-		
Virginia	-	27	329	1	-	-	-	4	375	57	1	43		
West Virginia	-	7	126	-	2	2	-	-	89	-	-	14		
North Carolina *	-	31	382	1	-	3	2	7	230	7	-	-		
South Carolina	-	7	230	-	1	2	-	4	336	24	-	1		
Georgia	1	19	401	3	-	1	4	6	172	10	3	41		
Florida	4	50	528	-	-	205	-	-	947	25	1	18		
EAST SOUTH CENTRAL	3	76	1,080	5	1	6	-	4	1,316	27	8	270		
Kentucky *	1	15	277	1	-	1	-	-	194	12	6	146		
Tennessee	1	28	321	3	1	3	-	2	468	7	2	94		
Alabama	1	23	288	-	-	2	-	2	341	2	-	30		
Mississippi	-	10	194	1	-	-	-	-	313	6	-	-		
WEST SOUTH CENTRAL	4	71	1,244	9	1	8	6	16	2,323	58	21	277		
Arkansas *	-	7	137	3	-	2	-	2	114	-	1	66		
Louisiana *	2	12	229	-	-	-	-	-	526	10	2	18		
Oklahoma	1	10	108	4	-	1	6	14	231	2	8	89		
Texas	1	42	770	2	1	5	-	-	1,452	46	10	104		
MOUNTAIN	-	19	391	-	-	3	-	-	502	12	-	11		
Montana	-	3	13	-	-	-	-	-	35	-	-	-		
Idaho	-	1	17	-	-	-	-	-	36	-	-	-		
Wyoming	-	-	7	-	-	-	-	-	8	3	-	-		
Colorado	-	8	75	-	-	-	-	-	135	-	-	-		
New Mexico	-	4	89	-	-	1	-	-	93	2	-	2		
Arizona *	-	1	152	-	-	2	-	-	133	5	-	9		
Utah	-	2	13	-	-	-	-	-	10	-	-	-		
Nevada	-	-	25	-	-	-	-	-	52	2	-	-		
PACIFIC	3	110	1,884	-	4	39	-	1	2,598	124	14	115		
Washington	-	8	161	-	-	-	-	-	218	1	-	-		
Oregon	-	5	102	-	-	2	-	1	119	3	1	1		
California	3	92	1,467	-	4	36	-	-	2,097	120	13	108		
Alaska	-	-	47	-	-	-	-	-	121	-	-	6		
Hawaii	-	5	107	-	-	1	-	-	43	-	-	-		
Guam*	-	-	12	-	-	-	-	-	-	-	-	-		
Puerto Rico	3	9	216	-	1	2	-	-	108	13	2	17		
Virgin Islands	-	-	-	-	-	-	-	-	2	-	-	-		

\*Delayed reports: TB: Ill. 28, N.C. delete 1, Ky. delete 1, Guam 6  
Typhoid: Ark. 1, Ariz. 1  
RMSF: Ark. 2

Gonorrhea: La. delete 3, Guam 13  
Syphilis: La. delete 1  
Rabies: Md. 1

## Morbidity and Mortality Weekly Report

TABLE IV. DEATHS IN 122 UNITED STATES CITIES FOR WEEK ENDING MAY 19, 1973

Week No.

20

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

Area	All Causes			Pneumonia and Influenza All Ages	Area	All Causes			Pneumonia and Influenza All Ages
	All Ages	65 years and over	Under 1 year			All Ages	65 years and over	Under 1 year	
<b>NEW ENGLAND</b>	717	446	20	39	<b>SOUTH ATLANTIC</b>	1,261	687	38	47
Boston, Mass.	213	128	8	15	Atlanta, Ga.	133	65	6	4
Bridgeport, Conn.	46	22	1	2	Baltimore, Md.	217	115	6	3
Cambridge, Mass.	36	22	-	4	Charlotte, N. C.	51	25	1	-
Fall River, Mass.	31	22	-	1	Jacksonville, Fla.	110	46	5	-
Hartford, Conn.	53	29	2	-	Miami, Fla.	113	67	1	1
Lowell, Mass.	28	14	-	1	Norfolk, Va.	65	38	1	6
Lynn, Mass.	23	15	1	-	Richmond, Va.	86	47	1	7
New Bedford, Mass.	24	18	-	-	Savannah, Ga.	33	20	1	3
New Haven, Conn.	55	30	2	1	St. Petersburg, Fla.	92	79	1	5
Providence, R. I.	55	34	3	7	Tampa, Fla.	81	45	4	12
Somerville, Mass.	12	10	1	1	Washington, D. C.	235	119	11	5
Springfield, Mass.	52	43	-	5	Wilmington, Del.	45	21	-	1
Waterbury, Conn.	41	27	-	-	<b>EAST SOUTH CENTRAL</b>	676	373	17	28
Worcester, Mass.	48	32	2	2	Birmingham, Ala.	113	64	2	1
<b>MIDDLE ATLANTIC</b>	3,104	1,804	90	108	Chattanooga, Tenn.	38	16	2	1
Albany, N. Y.	39	17	2	1	Knoxville, Tenn.	33	24	-	-
Allentown, Pa.	27	19	-	3	Louisville, Ky.	155	89	3	7
Buffalo, N. Y.	165	99	6	15	Memphis, Tenn.	119	67	2	1
Camden, N. J.	35	19	1	2	Mobile, Ala.	69	37	1	-
Elizabeth, N. J.	31	22	1	-	Montgomery, Ala.	48	17	3	7
Erie, Pa.	28	17	1	2	Nashville, Tenn.	101	59	4	11
Jersey City, N. J.	58	33	-	2	<b>WEST SOUTH CENTRAL</b>	1,253	664	75	31
Newark, N. J.	67	32	5	1	Austin, Tex.	48	26	1	-
New York City, N. Y. 1	1,476	864	46	43	Baton Rouge, La.	67	36	8	-
Paterson, N. J.	46	26	2	1	Corpus Christi, Tex.	20	7	3	-
Philadelphia, Pa.	593	324	11	14	Dallas, Tex.	167	77	10	3
Pittsburgh, Pa.	151	87	2	6	El Paso, Tex.	63	30	3	2
Reading, Pa.	36	26	-	-	Fort Worth, Tex.	77	47	6	1
Rochester, N. Y.	127	78	7	11	Houston, Tex.	263	133	18	3
Schenectady, N. Y.	20	12	1	1	Little Rock, Ark.	65	31	7	2
Scranton, Pa.	28	17	-	-	New Orleans, La.	151	89	2	2
Syracuse, N. Y.	82	45	3	2	Oklahoma City, Okla.*	88	50	5	1
Trenton, N. J.	38	22	1	2	San Antonio, Tex.	145	74	9	7
Utica, N. Y.	24	19	1	1	Shreveport, La.	39	21	2	2
Yonkers, N. Y.	33	26	-	1	Tulsa, Okla.	60	43	1	8
<b>EAST NORTH CENTRAL</b>	2,474	1,409	105	73	<b>MOUNTAIN</b>	548	312	17	18
Akron, Ohio	78	42	8	-	Albuquerque, N. Mex.	53	26	-	4
Canton, Ohio	44	30	2	3	Colorado Springs, Colo.	34	19	1	4
Chicago, Ill.	665	363	39	18	Denver, Colo.	133	85	-	3
Cincinnati, Ohio	156	96	3	4	Las Vegas, Nev.	53	25	4	-
Cleveland, Ohio	211	118	3	7	Ogden, Utah	19	9	-	2
Columbus, Ohio	131	66	7	4	Phoenix, Ariz.	113	62	5	-
Dayton, Ohio	95	63	2	3	Pueblo, Colo.	15	8	-	3
Detroit, Mich.	332	183	14	12	Salt Lake City, Utah	58	32	6	-
Evansville, Ind.	34	20	-	1	Tucson, Ariz.	70	46	1	2
Fort Wayne, Ind.	39	25	1	2	<b>PACIFIC</b>	1,693	1,074	44	31
Gary, Ind.	36	13	4	1	Berkeley, Calif.	10	7	-	-
Grand Rapids, Mich.	45	30	4	2	Fresno, Calif.	64	41	-	1
Indianapolis, Ind.	175	98	2	6	Glendale, Calif.	29	23	1	1
Madison, Wis.	33	20	-	1	Honolulu, Hawaii	67	34	4	-
Milwaukee, Wis.	146	85	4	4	Long Beach, Calif.	114	76	-	2
Peoria, Ill.	33	19	2	1	Los Angeles, Calif.	570	347	19	11
Rockford, Ill.	29	15	2	1	Oakland, Calif.	97	65	3	1
South Bend, Ind.	35	22	1	1	Pasadena, Calif.	29	23	-	1
Toledo, Ohio	114	77	4	2	Portland, Oreg.	115	69	2	1
Youngstown, Ohio	43	24	3	-	Sacramento, Calif.	45	26	3	-
<b>WEST NORTH CENTRAL</b>	801	506	39	26	San Diego, Calif.	117	69	3	4
Des Moines, Iowa	58	33	2	1	San Francisco, Calif.	163	109	2	1
Duluth, Minn.	28	18	-	4	San Jose, Calif.	52	32	1	2
Kansas City, Kans.	34	17	2	2	Seattle, Wash.	135	93	4	5
Kansas City, Mo.	115	78	3	2	Spokane, Wash.	52	36	2	1
Lincoln, Nebr.	28	16	1	-	Tacoma, Wash.	34	24	-	-
Minneapolis, Minn.	101	67	6	3	<b>Total</b>	12,527	7,275	445	401
Omaha, Nebr.	116	65	10	-	<b>Expected Number</b>	12,504	7,153	536	417
St. Louis, Mo.	206	132	12	6	<b>Cumulative Total (includes reported corrections for previous weeks)</b>	270,240	160,702	9,871	12,659
St. Paul, Minn.	72	50	2	1					
Wichita, Kans.	43	30	1	7					

†Delayed report for week ending May 12, 1973

\*Estimate based on average percent of divisional total

CURRENT TRENDS  
ISOLATION OF NEW INFLUENZA B STRAINS

The isolation of influenza B viruses from sporadic cases occurring in Hong Kong in December 1972 and January 1973 has been reported previously (*Weekly Epidemiological Record*, Vol. 48, No. 13, 1973). These strains were found to contain hemagglutinins showing marked antigenic changes from the viruses isolated previously. Influenza B viruses similar to those isolated in Hong Kong were also recovered from sporadic cases in Australia. During the same period, influenza strains antigenically intermediate between the B/Hong Kong/5/72 strain and the previously prevalent strains were isolated in Hannover (Federal Republic of Germany) and during an epidemic in a boarding school in England. In late March and April 1973, 5 additional influenza B strains were isolated during local outbreaks in the Federal Republic of Germany. Two of these strains were of the "intermediate" type, and 3 were closely related to the older influenza B virus isolated between 1967 and 1971.

The cross reactions between the recent influenza B isolates in the hemagglutination-inhibition test are shown in Table 1. Antisera to previously prevalent strains failed to react significantly with the strains resembling B/Hong Kong/5/72, although such antisera reacted to some degree with the "intermediate" strains from England and the Federal Republic of Germany. B/Hong Kong/5/72 and B/Hong Kong/5/73 antisera also inhibited to some degree the "intermediate" European strains, but not the previously prevalent strains. Preliminary studies indicate that the antigenic variation involves only the hemagglutinin and not the neuraminidase antigen.

Serologic surveys on young adults in England and in the United States show that approximately 7% in England and 1% in the United States possess hemagglutinin-inhibiting antibody

titers of 1:20 or greater to the B/Hong Kong/5/72 strain. Such findings suggest that these populations have had little experience with influenza B viruses resembling B/Hong Kong/5/72. The results in Table 1 suggest that the influenza B strains in the present vaccines may not provide adequate protection against strains resembling B/Hong Kong/5/72. The recovery of strains resembling B/Hong Kong/5/72 from Hong Kong and Australia and "intermediate" strains from England and the Federal Republic of Germany may indicate that they are becoming prevalent, though the earlier strains are still being isolated. A strain which has been passaged in eggs is available for distribution from the International Influenza Centers for use in vaccines.

Two strains identified as B/Hong Kong/5/72 have been isolated from infants in Birmingham, Wolverhampton, United Kingdom.

(Reported by the World Health Organization: *Weekly Epidemiological Record*, Vol. 48, No. 19, May 11, 1973; and Dr. Geoffrey Schild, Director, WHO World Influenza Centre, London, England.)

**Editorial Note**

The isolation of new and different strains of influenza B raises questions as to which strain, if either one, will become dominant worldwide and which should be incorporated into influenza vaccines. As yet, neither strain has been isolated in the United States, and it is too early to predict which, if either, is likely to be the prevailing strain in this country. Hopefully, increased surveillance in countries where the influenza season is now beginning may provide more information upon which to base sound recommendations for vaccine formulation and usage.

**Table 1**  
Antigenic Comparisons of Influenza B Virus Strains - Results of Hemagglutination-Inhibition Tests

Virus Strains	Post-Infection Ferret Serum Specimens									
	B/Lee/40	B/JHB/58	B/Sing/64	B/Roma/67	B/Vict/70	B/Mass/71	B/HK/1/72	B/Eng/847/73	B/HK/5/72	B/HK/5/73
B/Lee/40	960	40	20	20	20	20	<	<	<	<
B/JHB/33/58	80	160	320	80	20	40	20	<	<	<
B/Sing/3/64	40	40	1,920	320	640	640	320	<	<	<
B/Roma/1/67	<	<	160	640	640	1,280	480	20	<	<
B/Vic/98926/70	<	<	320	320	640	1,280	480	20	<	<
B/Mass/1/71	<	<	160	240	320	1,280	480	20	<	<
B/HK/1/72	<	<	80	240	320	1,280	480	-	<	<
B/HK/5/72	<	<	<	<	<	<	<	20	80	80
B/HK/5/73	<	<	<	<	<	20	<	-	320	480
B/HK/8/73	<	<	<	<	<	20	<	-	160	480
B/Vic/102/72	<	<	<	<	<	20	<	-	320	240
B/Eng/847/73	<	-	-	160	320	320	240	320	80	160
B/Hann/1/73	<	-	-	160	160	320	240	-	80	80
B/Hann/2/73	<	-	-	160	320	320	240	-	80	160

< = HI titers of less than 1:20

- = Not tested

**CURRENT TRENDS**  
**FOLLOW-UP ON TECHNICAL PROBLEMS WITH**  
**FTA-ABS TEST FOR SYPHILIS – STABILITY OF**  
**LYOPHILIZED SORBENT**

The Virginia Department of Health recently reported problems with the FTS-ABS test for syphilis, and a question concerning the stability of lyophilized sorbent was raised (MMWR, Vol. 22, No. 12). Studies with reference lyophilized FTA-ABS sorbent at CDC have been completed and show no differences between freshly rehydrated sorbent and sorbent rehydrated and stored in a liquid state at 4° to 8° C for 1 week. These studies were performed with coded sorbent and serum of varying degrees of reactivity including nonreactives. They indicate that this product is stable over the time period in which it is usually used. Studies by 2 commercial laboratories on the stability of liquid sorbent have shown that it has no measurable loss of activity when stored for periods of 24-36 months (1).

(Reported by the Venereal Disease Branch, State and Com-

munity Services Division, and Reagents Evaluation Unit, Biological Reagents Section, Scientific Resources Branch, Laboratory Division, CDC.)

**Reference**

1. Stout GW, Kellogg DS, Falcone VH, McGrew BE, Lewis JS: Preparation and standardization of the sorbent used in the fluorescent treponemal antibody-absorption (FTA-ABS) test. Health Lab Sci 4:5-8, 1967

**Addendum, Vol. 22, No. 16, p. 134**

In the article, "Syphilis – West Virginia," the following should be added to the credits: Ronald G. Bryant, Public Health Advisor, and Staff, Venereal Disease Control Section, West Virginia Department of Health, Charleston,

The Morbidity and Mortality Weekly Report, circulation 30,500, is published by the Center for Disease Control, Atlanta, Ga.

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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.

In addition to the established procedures for reporting morbidity and mortality, the editor welcomes accounts of interesting outbreaks or case investigations of current interest to health officials.

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