

# MMWR

## MORBIDITY AND MORTALITY WEEKLY REPORT

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### Epidemiologic Notes and Reports

#### Nosocomial Outbreak of *Rhizopus* Infections Associated with Elastoplast\* Wound Dressings — Minnesota

Between July 19 and September 15, 1977, 6 patients in a Minnesota hospital developed infections caused by *Rhizopus oryzae*. Elastoplast adhesive dressings had been applied in all patients before they developed infection.

On July 19, a 22-year-old man developed erythematous raised plaques and pustules along the lateral margins of a surgical wound incision 5 days after Harrington rod insertion for kyphosis. The lesions were cultured and grew both *Rhizopus* and *Bacillus* species; they resolved after local treatment. Seven days later and 4 days after insertion of a Harrington rod to stabilize the thoracic spine, a 22-year-old woman contracted a severe pustular eruption along the superior margin of her postoperative wound. Cultures for bacteria were negative, but *Rhizopus* species was isolated. Contact dermatitis was suspected, and the patient recovered uneventfully after topical application of triamcinolone cream. A third case occurred in a 15-year-old woman on August 8, 3 days after Harrington rod insertion for thoracolumbar scoliosis. Raised plaques with vesicles and pustules had developed along the wound margins. Cultures of pustules grew *Rhizopus* species, *Staphylococcus epidermidis*, and *Bacillus* species. A skin biopsy showed mycelial fragments on microscopic examination. The lesions underwent spontaneous epithelialization and healed within 10 days. In retrospect, it was noted that all 3 patients had had operative wound dressings applied with Elastoplast.

On August 11, a 7-year-old boy with lymphocytic leukemia in relapse developed a buttocks abscess that required incision and drainage. A pure culture of *Rhizopus* species was recovered. The abscess enlarged to involve gluteal muscle. A second case developed in a 6-year-old girl with lymphocytic leukemia on August 26. A deep buttocks abscess required extensive surgical debridement. Cultures grew only *Rhizopus* species. These infections responded to systemic therapy with amphotericin-B. Both patients had had iliac crest bone marrow biopsies several weeks before the appearance of the buttocks lesions and had had Elastoplast dressings applied to prevent local bleeding.

On September 15, an 8-day-old premature male infant

with respiratory distress syndrome developed acute abdominal distension and signs of peritonitis. At laparotomy, gastric perforation was discovered. A gangrenous appendix was also noted. Tissue from both resected areas showed aseptate hyphal fragments invading blood vessels. A nasogastric feeding tube inserted on admission had been secured with Elastoplast. In addition, on the day before surgery, purulent drainage had developed along the umbilical stump where an umbilical catheter had been secured with Elastoplast. A culture for bacteria was negative; a fungal culture was not done. Several days after surgery, the superior margin of the abdominal wound became infected, and *Rhizopus* species was cultured from purulent drainage and from a stool specimen. The infant has been successfully treated with systemic amphotericin-B.

Further epidemiologic investigation revealed no other cases of mucormycosis or infections resembling those described above in postoperative, diabetic, oncologic, or other immunocompromised patients or in neonates in recent months. Review of the mycology laboratory records showed no increase in recovery of *Rhizopus* species except for this cluster of isolates.

Elastoplast bandages are stored in a stockroom in boxes until distribution, often in single rolls. There is no system for recording lot numbers, and consequently the distribution to various hospital sites could not be accurately determined.

Fungal cultures taken directly from 3-inch Elastoplast adhesive bandages retrieved from 4 locations in the hospital—a patient's room, a bone marrow laboratory, an orthopedic dressing cart, and an operating room storeroom—have grown *Rhizopus* species. Investigations by both the Food and Drug Administration and the manufacturer confirmed *Rhizopus* species in cultures of the product and in environmental samples taken in the plant. All isolations from diseased patients and Elastoplast in the hospital and in the plant have been speciated as *R. oryzae*. In the affected hospital, Elastoplast rolls have been withdrawn from all patient-care areas pending further investigation.

\*Use of trade names is for identification only and does not constitute endorsement by the PHS, U.S. Dept HEW.

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*Nosocomial Infections — continued*

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**Editorial Note:** Elastoplast dressings are widely used in hospitals to apply pressure to operative and other wound sites. Since they usually provide adhesive coverage for sterile dressings, they are neither distributed as sterile by the manufacturer nor stored so as to be safe from any environmental contamination in hospitals. The epidemiologic association between *Rhizopus* infection and exposure to Elastoplast dressings was confirmed by the isolation of *Rhizopus* species from unused dressings obtained from several hospital locations and in the investigations at the manufacturer's plant.

Disease caused by *Rhizopus* species is exceedingly rare. These microorganisms and related opportunistic fungi in the Mucoraceae family of phycomycetes produce most commonly a clinical syndrome, mucormycosis, that occurs primarily in patients with severe host deficiencies such as leukemia in relapse, diabetic ketoacidosis, or severe malnutrition.

In a review of mucormycosis patients reported through 1968, only 8 (3%) of 225 were considered to have primary cutaneous disease (1), but cutaneous lesions have been associated with disseminated disease in a patient with leukemia (2), burn wounds (3), and cellulitis accompanying the rhinocerebral form (3,4).

*R. oryzae* is ubiquitous in the hospital environment (5), and patients are presumably exposed to this and related microorganisms commonly without developing disease. The fact that 6 patients, including 3 without serious underlying host disorders, acquired *Rhizopus* infection after exposure to contaminated Elastoplast dressings suggests that the dressings may have been heavily contaminated.

**References**

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2. Meyer R, Kaplan MH, Ong M, Armstrong D: Cutaneous lesions in disseminated mucormycosis. JAMA 225:737-738, 1973
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**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 <sup>††</sup>	CUMULATIVE, FIRST 4 WEEKS		
	January 28, 1978	January 29, 1977 <sup>†</sup>		January 28, 1978	January 29, 1977 <sup>†</sup>	MEDIAN 1973-1977 <sup>††</sup>
Aseptic meningitis	37	35	35	152	160	162
Brucellosis	2	1	2	5	11	7
Chickenpox	3,476	5,628	4,715	11,749	19,152	17,091
Diphtheria	2	1	4	5	1	9
Encephalitis	8	12	11	31	52	50
Primary	4	1	4	9	4	12
Post-Infectious	300	313	204	1,076	1,127	767
Type B	542	690	726	1,832	2,495	2,705
Type A	138	183				
Type unspecified	6	5	4	28	17	12
Hepatitis, Viral	260	849	525	853	3,478	1,624
Type B	60	51	29	148	160	113
Type A	60	51	27	148	160	109
Type unspecified	—	—	—	—	—	1
Malaria	401	611	1,320	1,297	2,036	5,002
Mumps	51	19	—	170	64	—
Pertussis	150	223	223	531	737	719
Rubella (German measles)	—	2	2	—	6	4
Tetanus	458	606	520	1,509	1,790	1,790
Tuberculosis	—	1	1	3	9	8
Tularemia	3	7	7	18	23	23
Typhoid fever	—	2	—	2	6	6
Typhus, tick-borne (Rky. Mt. spotted fever)	—	—	—	—	—	—
Veneral Diseases:						
Gonorrhea	17,323	19,776	19,776	68,320	75,965	75,965
Civilian	555	672	508	1,537	2,206	2,206
Military	411	507	507	1,335	1,811	1,875
Syphilis, primary and secondary	1	7	7	16	24	25
Civilian	—	—	—	—	—	—
Military	26	52	52	156	187	185
Rabies in animals	—	—	—	—	—	—

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

	CUM.		CUM.
Anthrax	—	Poliomyelitis, total	—
Botulism	—	Paralytic	—
Congenital rubella syndrome	—	Psittacosis: NYC 1	2
Leprosy: Tex. 1	2	Rabies in man	—
Leptospirosis	1	Trichinosis	6
Plague	—	Typhus, murine: Tex. 1	2

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

<sup>††</sup>Medians for Gonorrhea and Syphilis are based on data for 1975-1977

\*Delayed reports (1977) Cong. rubella syndrome: Tex. 1

Table III  
Cases of Specified Notifiable Diseases: United States  
Weeks Ending January 28, 1978 and January 29, 1977 - 4th Week

AREA REPORTING	ASEPTIC MENIN- GITIS	BRUCEL- LOSIS	CHICKEN- POX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS, VIRAL			MALARIA	
						Primary: Arthropod- borne and Unspecified		Post In- fectious	Type B	Type A	Type Unspecified		
						1978	1977†	1978	1978	1978	1978		
UNITED STATES .....	37	2	3,476	2	5	8	12	4	300	542	138	6	28
NEW ENGLAND .....	1	1	338	-	-	-	-	-	13	10	6	-	1
Maine .....	1	-	78	-	-	-	-	-	-	-	-	-	-
New Hampshire* .....	-	-	84	-	-	-	-	-	-	-	-	-	-
Vermont .....	-	-	13	-	-	-	-	-	-	-	-	-	-
Massachusetts .....	-	1	100	-	-	-	-	-	1	5	6	-	1
Rhode Island .....	-	-	46	-	-	-	-	-	1	3	-	-	-
Connecticut .....	-	-	17	-	-	-	-	-	11	2	-	-	-
MIDDLE ATLANTIC .....	3	-	400	-	-	2	1	-	41	34	13	-	12
Upstate New York* .....	-	-	99	-	-	-	1	-	3	5	-	-	-
New York City .....	3	-	35	-	-	-	-	-	8	9	3	-	8
New Jersey .....	-	-	NN	-	-	-	-	-	10	14	8	-	-
Pennsylvania .....	-	-	266	-	-	2	-	-	20	6	2	-	4
EAST NORTH CENTRAL .....	3	-	1,418	-	-	-	2	-	37	78	8	-	-
Ohio .....	-	-	78	-	-	-	1	-	6	26	-	-	-
Indiana .....	1	-	-	-	-	-	-	-	2	-	1	-	-
Illinois .....	-	-	294	-	-	-	-	-	8	14	1	-	-
Michigan .....	2	-	662	-	-	-	1	-	18	26	5	-	-
Wisconsin .....	-	-	384	-	-	-	-	-	3	12	1	-	-
WEST NORTH CENTRAL .....	1	-	497	-	-	-	-	-	9	43	5	1	3
Minnesota .....	-	-	4	-	-	-	-	-	3	22	-	1	1
Iowa .....	-	-	173	-	-	-	-	-	1	5	2	-	-
Missouri .....	-	-	2	-	-	-	-	-	3	12	3	-	2
North Dakota .....	-	-	2	-	-	-	-	-	-	-	-	-	-
South Dakota .....	-	-	20	-	-	-	-	-	-	-	-	-	-
Nebraska .....	-	-	54	-	-	-	-	-	2	2	-	-	-
Kansas .....	1	-	242	-	-	-	-	-	-	2	-	-	-
SOUTH ATLANTIC .....	5	1	245	-	-	-	3	3	47	74	20	1	2
Delaware* .....	-	-	2	-	-	-	-	-	-	1	1	-	-
Maryland .....	-	-	20	-	-	-	-	-	4	12	2	-	1
District of Columbia .....	-	-	-	-	-	-	-	-	-	-	-	-	-
Virginia* .....	3	1	16	-	-	-	2	1	14	5	3	-	-
West Virginia* .....	-	-	123	-	-	-	-	-	3	8	-	-	-
North Carolina .....	-	-	NN	-	-	-	1	-	2	6	4	-	-
South Carolina .....	-	-	5	-	-	-	-	-	2	-	4	1	1
Georgia .....	-	-	-	-	-	-	-	-	6	19	-	-	-
Florida* .....	2	-	79	-	-	-	-	2	16	23	6	-	-
EAST SOUTH CENTRAL .....	6	-	44	-	-	-	-	-	11	7	2	-	-
Kentucky .....	2	-	19	-	-	-	-	-	-	-	-	-	-
Tennessee .....	1	-	NN	-	-	-	-	-	9	4	2	-	-
Alabama .....	3	-	22	-	-	-	-	-	2	1	-	-	-
Mississippi .....	-	-	3	-	-	-	-	-	-	2	-	-	-
WEST SOUTH CENTRAL .....	5	-	117	-	-	-	4	-	29	85	18	2	3
Arkansas .....	-	-	3	-	-	-	-	-	3	9	-	-	-
Louisiana .....	-	-	NN	-	-	-	-	-	7	14	3	2	2
Oklahoma .....	4	-	-	-	-	-	1	-	4	7	2	-	-
Texas .....	1	-	114	-	-	-	3	-	15	55	13	-	1
MOUNTAIN .....	1	-	203	-	-	-	-	1	12	65	10	-	-
Montana .....	-	-	38	-	-	-	-	-	-	8	-	-	-
Idaho .....	-	-	46	-	-	-	-	-	-	5	-	-	-
Wyoming .....	-	-	-	-	-	-	-	-	-	-	-	-	-
Colorado .....	-	-	101	-	-	-	-	-	3	11	3	-	-
New Mexico .....	1	-	4	-	-	-	-	1	2	12	2	-	-
Arizona .....	-	-	NN	-	-	-	-	-	5	17	4	-	-
Utah .....	-	-	10	-	-	-	-	-	2	12	1	-	-
Nevada .....	-	-	4	-	-	-	-	-	-	-	-	-	-
PACIFIC .....	12	-	214	2	5	6	2	-	101	146	56	2	7
Washington .....	2	-	197	2	5	-	-	-	3	6	8	-	1
Oregon .....	-	-	1	-	-	-	-	-	8	8	6	-	-
California* .....	8	-	-	-	-	5	2	-	89	123	40	2	6
Alaska .....	-	-	1	-	-	1	-	-	1	6	-	-	-
Hawaii .....	2	-	15	-	-	-	-	-	-	3	2	-	-
Guam .....	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
Puerto Rico .....	-	-	6	-	-	1	-	-	-	10	2	1	1
Virgin Islands .....	-	-	-	-	-	-	-	-	-	-	-	-	-

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

\*The following delayed reports will be reflected in next week's issue: Chickenpox: Ups. NY +42, W. Va. +125, Calif. +45; Hep. B: N. H. +1, Del. -1, Va. -2, W. Va. +1, Fla. -3; Hep. A: Del. +1, W. Va. +2, Fla. +1.

**Table III-Continued**  
**Cases of Specified Notifiable Diseases: United States**  
*Weeks Ending January 28, 1978 and January 29, 1977 — 4th 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 .....	260	853	3,478	60	148	160	401	1,297	51	150	531	-
NEW ENGLAND .....	11	25	75	5	9	6	12	108	-	2	12	-
Maine .....	-	10	-	-	1	1	7	81	-	1	4	-
New Hampshire .....	1	3	44	2	2	-	-	2	-	-	2	-
Vermont .....	-	2	27	-	-	-	-	-	-	-	-	-
Massachusetts .....	9	9	-	1	3	1	1	8	-	-	4	-
Rhode Island .....	-	-	-	1	1	-	1	3	-	-	-	-
Connecticut .....	1	1	4	1	2	4	3	14	-	1	2	-
MIDDLE ATLANTIC .....	14	91	511	11	30	25	21	78	6	30	64	-
Upstate New York .....	9	57	44	1	11	5	8	28	3	5	9	-
New York City .....	2	22	20	3	8	7	3	22	1	2	4	-
New Jersey .....	-	1	11	4	6	11	8	17	-	18	23	-
Pennsylvania* .....	3	11	436	3	5	2	2	11	2	5	28	-
EAST NORTH CENTRAL .....	120	411	1,127	2	11	19	206	456	22	71	234	-
Ohio .....	2	8	52	-	1	11	7	38	4	7	8	-
Indiana .....	-	14	553	1	4	-	-	26	-	-	15	-
Illinois .....	12	22	102	-	-	2	108	161	16	-	-	-
Michigan .....	100	348	89	1	5	3	71	168	1	60	184	-
Wisconsin .....	6	19	331	-	1	3	20	63	1	4	27	-
WEST NORTH CENTRAL .....	2	7	865	2	9	6	26	207	2	1	22	-
Minnesota .....	-	-	63	-	2	-	1	5	-	-	1	-
Iowa .....	1	4	540	-	1	1	1	10	2	-	1	-
Missouri* .....	-	-	76	1	4	5	5	66	-	1	2	-
North Dakota .....	-	-	2	-	-	-	-	3	-	-	-	-
South Dakota .....	-	-	4	-	-	-	-	-	-	-	15	-
Nebraska .....	-	-	3	-	-	-	-	2	-	-	-	-
Kansas .....	1	3	177	1	2	-	19	121	-	-	3	-
SOUTH ATLANTIC .....	51	112	33	17	38	30	17	76	6	11	38	-
Delaware .....	-	1	-	-	-	1	-	6	-	-	1	-
Maryland .....	-	-	-	1	1	3	4	9	-	-	-	-
District of Columbia .....	-	-	-	-	-	-	-	-	-	-	-	-
Virginia .....	24	52	19	3	6	3	1	20	1	1	10	-
West Virginia* .....	13	29	14	-	1	4	3	8	1	7	19	-
North Carolina .....	5	13	-	3	8	5	3	13	2	-	2	-
South Carolina* .....	6	10	-	-	4	4	-	7	-	-	-	-
Georgia .....	-	-	-	2	6	4	2	3	2	-	-	-
Florida .....	3	7	-	8	12	6	4	10	-	3	6	-
EAST SOUTH CENTRAL .....	37	109	64	5	6	16	39	128	2	7	34	-
Kentucky .....	4	25	22	4	4	9	2	27	1	3	9	-
Tennessee* .....	26	70	42	1	1	6	35	91	1	4	22	-
Alabama .....	-	-	-	-	1	1	2	10	-	-	-	-
Mississippi .....	7	14	-	-	-	-	-	-	-	-	3	-
WEST SOUTH CENTRAL .....	11	34	101	6	17	33	29	118	6	2	7	-
Arkansas .....	1	1	1	1	2	1	6	13	1	-	-	-
Louisiana .....	4	8	1	1	1	19	3	3	-	-	-	-
Oklahoma .....	3	4	7	-	1	-	-	-	1	-	2	-
Texas .....	3	21	92	4	13	13	20	102	4	2	5	-
MOUNTAIN .....	-	23	213	1	1	4	12	28	1	4	10	-
Montana .....	-	22	114	-	-	-	4	4	-	-	-	-
Idaho .....	-	-	11	-	-	1	3	5	-	-	-	-
Wyoming .....	-	-	-	-	-	-	-	-	-	-	-	-
Colorado .....	-	1	32	-	-	1	2	8	-	-	-	-
New Mexico .....	-	-	34	-	-	-	3	4	1	-	-	-
Arizona .....	-	-	18	1	1	2	-	-	-	-	2	-
Utah .....	-	-	2	-	-	-	-	7	-	3	7	-
Nevada .....	-	-	2	-	-	-	-	-	-	1	1	-
PACIFIC .....	14	41	489	11	27	21	39	98	6	22	110	-
Washington .....	-	7	57	2	5	2	14	22	1	5	15	-
Oregon .....	-	1	6	3	3	1	6	16	-	2	11	-
California .....	10	29	378	6	19	13	17	55	3	15	83	-
Alaska .....	-	-	48	-	-	4	1	1	2	-	-	-
Hawaii .....	4	4	-	-	-	1	1	4	-	-	1	-
Guam .....	NA	-	1	-	-	-	NA	-	NA	NA	-	-
Puerto Rico .....	8	13	32	-	-	-	32	67	-	-	-	-
Virgin Islands .....	1	1	-	-	-	-	-	-	-	-	-	-

†Delayed reports received for calendar year 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 issue: Measles: Pa. +2, S.C. -1, Tenn. -1; Mumps: W. Va. +1; Pertussis: Mo. +3; Rubella: W. Va. +16, Tenn. +1.

Table III-Continued  
 Cases of Specified Notifiable Diseases: United States  
 Weeks Ending January 28, 1978 and January 29, 1977 - 4th Week

REPORTING AREA	TUBERCULOSIS		TULA-REMA	TYPHOID FEVER		TYPHUS-FELER 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 .....	458	1,509	3	3	18	-	2	17,323	68,320	75,965	411	1,335	1,811	156	
NEW ENGLAND .....	23	48	-	-	-	-	-	336	1,739	1,937	17	43	59	-	
Maine .....	-	3	-	-	-	-	-	23	110	143	-	-	2	-	
New Hampshire .....	1	2	-	-	-	-	-	14	85	73	-	-	-	-	
Vermont .....	-	4	-	-	-	-	-	12	41	41	-	-	2	-	
Massachusetts* .....	16	20	-	-	-	-	-	194	816	856	11	29	41	-	
Rhode Island .....	-	5	-	-	-	-	-	20	100	99	-	1	-	-	
Connecticut .....	6	14	-	-	-	-	-	73	587	725	6	13	14	-	
MIDDLE ATLANTIC .....	40	228	-	-	5	-	2	1,640	6,629	9,217	55	154	260	1	
Upstate New York .....	21	30	-	-	2	-	-	414	721	739	-	-	12	1	
New York City* .....	NA	117	-	-	2	-	-	681	2,367	5,384	43	102	169	-	
New Jersey .....	19	81	-	-	-	-	-	152	1,545	1,017	3	27	41	-	
Pennsylvania .....	NA	-	-	-	1	-	2	393	1,996	2,077	9	25	38	-	
EAST NORTH CENTRAL .....	78	188	-	-	1	-	-	1,577	7,016	11,086	10	41	201	3	
Ohio .....	16	59	-	-	1	-	-	292	1,853	3,221	5	16	58	-	
Indiana .....	1	33	-	-	-	-	-	67	875	530	-	5	5	1	
Illinois* .....	42	42	-	-	-	-	-	423	1,146	3,992	-	7	110	1	
Michigan .....	19	47	-	-	-	-	-	476	2,321	2,397	4	10	20	-	
Wisconsin .....	NA	7	-	-	-	-	-	319	821	946	1	3	8	1	
WEST NORTH CENTRAL .....	17	48	1	-	1	-	-	930	3,699	4,219	8	30	37	58	
Minnesota .....	1	11	-	-	-	-	-	221	763	665	-	7	11	28	
Iowa .....	3	8	-	-	-	-	-	119	524	504	1	2	3	11	
Missouri .....	7	15	1	-	1	-	-	273	1,348	1,879	2	10	14	7	
North Dakota .....	1	2	-	-	-	-	-	26	84	59	-	-	1	11	
South Dakota .....	4	6	-	-	-	-	-	17	121	116	-	1	-	-	
Nebraska .....	-	-	-	-	-	-	-	87	315	316	1	1	1	-	
Kansas .....	1	6	-	-	-	-	-	187	544	680	4	9	7	1	
SOUTH ATLANTIC .....	125	371	1	-	2	-	-	4,435	17,583	17,592	91	391	542	18	
Delaware .....	-	-	-	-	-	-	-	40	314	282	1	3	2	-	
Maryland .....	32	101	1	-	-	-	-	528	2,620	2,022	7	22	41	-	
District of Columbia .....	5	16	-	-	-	-	-	288	1,014	1,242	12	33	58	-	
Virginia .....	6	9	-	-	1	-	-	514	1,581	1,843	7	40	42	-	
West Virginia .....	3	21	-	-	-	-	-	48	262	250	-	-	-	-	
North Carolina* .....	23	76	-	-	-	-	-	743	2,572	2,544	8	28	84	-	
South Carolina .....	14	41	-	-	-	-	-	415	1,516	1,483	1	14	29	2	
Georgia .....	14	33	-	-	-	-	-	747	3,290	3,476	24	95	96	14	
Florida .....	28	74	-	-	1	-	-	1,112	4,414	4,450	31	156	190	2	
EAST SOUTH CENTRAL .....	35	156	1	-	1	-	-	1,603	5,572	5,847	13	53	54	2	
Kentucky* .....	-	17	-	-	1	-	-	335	497	834	2	3	6	2	
Tennessee .....	12	42	1	-	-	-	-	314	1,603	2,615	2	17	20	-	
Alabama .....	9	41	-	-	-	-	-	678	1,870	1,531	2	11	10	-	
Mississippi .....	14	56	-	-	-	-	-	276	1,602	1,067	7	22	18	-	
WEST SOUTH CENTRAL .....	62	153	-	-	1	-	-	2,596	10,743	10,776	76	231	241	35	
Arkansas .....	5	20	-	-	-	-	-	164	572	836	3	9	3	4	
Louisiana .....	22	61	-	-	-	-	-	296	1,314	1,202	31	53	53	-	
Oklahoma .....	7	15	-	-	-	-	-	340	928	803	-	5	9	12	
Texas .....	28	57	-	-	1	-	-	1,796	7,929	7,935	32	164	176	19	
MOUNTAIN .....	14	54	-	-	-	-	-	673	2,504	2,906	17	36	39	1	
Montana .....	1	10	-	-	-	-	-	27	165	166	-	-	-	-	
Idaho .....	-	-	-	-	-	-	-	16	75	153	-	-	2	-	
Wyoming .....	-	-	-	-	-	-	-	7	44	73	-	3	2	-	
Colorado .....	-	-	-	-	-	-	-	180	691	751	4	10	15	-	
New Mexico .....	1	8	-	-	-	-	-	95	355	323	6	10	8	-	
Arizona .....	6	28	-	-	-	-	-	201	631	864	5	9	9	1	
Utah .....	3	3	-	-	-	-	-	53	152	152	-	1	2	-	
Nevada .....	3	5	-	-	-	-	-	94	391	424	2	3	1	-	
PACIFIC .....	64	263	-	3	7	-	-	3,533	12,835	12,385	124	356	378	38	
Washington .....	NA	-	-	-	-	-	-	214	616	884	NA	-	10	-	
Oregon .....	2	9	-	-	-	-	-	280	892	944	2	5	16	-	
California .....	51	200	-	3	7	-	-	2,822	10,726	9,947	120	345	348	37	
Alaska .....	-	-	-	-	-	-	-	147	352	371	1	1	1	1	
Hawaii .....	11	54	-	-	-	-	-	70	249	239	1	5	3	-	
Guam .....	NA	-	-	NA	-	NA	-	NA	-	30	NA	-	-	-	
Puerto Rico .....	7	21	-	-	-	-	-	57	190	207	7	32	53	-	
Virgin Islands .....	-	-	-	-	-	-	-	5	21	15	1	2	-	-	

†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 issue: TB: Mass. +6, Ill. +54, N.C. -1; GC: NYC +653; Syphilis: NYC +31; An. rabies: Ky. +1

Table IV  
Deaths in 121 United States Cities\*  
Week Ending January 28, 1978 - 4th 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> .....	791	529	207	28	12	77	<b>SOUTH ATLANTIC</b> .....	1,239	765	331	84	24	97
Boston, Mass. ....	197	110	68	8	5	13	Atlanta, Ga. ....	155	85	48	15	3	8
Bridgeport, Conn. ....	37	21	9	5	1	3	Baltimore, Md. ....	256	173	57	12	6	9
Cambridge, Mass. ....	31	22	9	-	-	10	Charlotte, N. C. ....	70	40	23	4	3	7
Fall River, Mass. ....	43	34	8	-	-	1	Jacksonville, Fla. ....	110	64	32	11	2	13
Hartford, Conn. ....	65	37	19	5	2	5	Miami, Fla. ....	116	64	40	9	1	5
Lowell, Mass. ....	44	31	12	1	-	3	Norfolk, Va. ....	52	28	18	2	2	3
Lynn, Mass. ....	26	23	3	-	-	1	Richmond, Va. ....	91	49	28	7	2	4
New Bedford, Mass. ....	34	27	5	1	-	2	Savannah, Ga. ....	59	31	15	6	4	9
New Haven, Conn. ....	61	40	19	2	-	1	St. Petersburg, Fla. ....	112	97	11	4	-	13
Providence, R.I. ....	70	57	9	2	1	9	Tampa, Fla. ....	92	55	26	5	-	12
Somerville, Mass. ....	15	13	2	-	-	2	Washington, D. C. ....	83	51	20	7	1	7
Springfield, Mass. ....	48	36	11	-	-	15	Wilmington, Del. ....	43	28	13	2	-	7
Waterbury, Conn. ....	43	28	14	1	-	3	<b>EAST SOUTH CENTRAL</b> .....	757	452	204	36	35	60
Worcester, Mass. ....	77	50	19	3	3	9	Birmingham, Ala. ....	100	61	23	5	4	4
<b>MIDDLE ATLANTIC</b> .....	3,324	2,253	774	173	61	255	Chattanooga, Tenn. ....	45	22	18	3	1	8
Albany, N. Y. ....	52	32	17	1	1	-	Knoxville, Tenn. ....	80	59	21	-	-	3
Allentown, Pa. ....	13	6	7	-	-	-	Louisville, Ky. ....	70	45	17	4	3	11
Buffalo, N. Y. ....	183	112	58	8	1	14	Memphis, Tenn. ....	184	101	52	10	16	2
Camden, N. J. ....	36	25	10	-	1	3	Mobile, Ala. ....	78	42	24	7	1	7
Elizabeth, N. J. ....	33	25	7	1	-	2	Montgomery, Ala. ....	71	43	16	4	6	7
Erie, Pa. ....	39	26	10	2	1	4	Nashville, Tenn. ....	129	79	33	3	4	18
Jersey City, N. J. ....	78	45	28	3	1	2	<b>WEST SOUTH CENTRAL</b> .....	1,424	824	400	100	55	73
Newark, N. J. ....	91	46	27	9	7	7	Austin, Tex. ....	59	39	11	4	2	9
New York City, N. Y. ....	1,508	1,027	333	94	20	97	Baton Rouge, La. ....	46	29	13	3	-	6
Paterson, N. J. ....	53	35	14	1	3	6	Corpus Christi, Tex. ....	44	22	18	2	1	1
Philadelphia, Pa. ....	491	330	108	29	14	49	Dallas, Tex. ....	247	142	65	20	14	13
Pittsburgh, Pa. ....	264	187	57	11	5	25	El Paso, Tex. ....	62	29	17	7	5	9
Reading, Pa. ....	51	40	10	1	-	5	Fort Worth, Tex. ....	114	73	27	4	3	4
Rochester, N. Y. ....	170	126	32	5	3	20	Houston, Tex. ....	303	152	109	21	11	6
Schenectady, N. Y. ....	34	29	5	-	-	1	Little Rock, Ark. ....	58	31	20	3	4	4
Scranton, Pa. ....	41	33	8	-	-	3	New Orleans, La. ....	159	100	40	11	6	1
Syracuse, N. Y. ....	66	46	14	1	3	3	San Antonio, Tex. ....	163	91	49	13	3	6
Trenton, N. J. ....	58	37	16	4	-	9	Shreveport, La. ....	96	64	18	7	6	6
Utica, N. Y. ....	37	26	10	1	-	1	Tulsa, Okla. ....	73	52	13	5	-	8
Yonkers, N. Y. ....	26	20	3	2	1	4	<b>MOUNTAIN</b> .....	603	379	133	37	27	26
<b>EAST NORTH CENTRAL</b> .....	2,521	1,557	661	133	86	144	Albuquerque, N. Mex. ....	58	37	12	4	3	8
Akron, Ohio ....	62	35	19	3	3	-	Colorado Springs, Colo. ....	36	23	6	2	3	1
Canton, Ohio ....	51	37	11	1	1	4	Denver, Colo. ....	171	103	37	17	5	6
Chicago, Ill. ....	584	353	148	38	24	31	Las Vegas, Nev. ....	23	16	4	1	1	1
Cincinnati, Ohio† .....	169	107	46	8	5	8	Ogden, Utah ....	19	9	6	2	1	3
Cleveland, Ohio ....	161	100	41	11	4	2	Phoenix, Ariz. ....	124	85	27	4	3	2
Columbus, Ohio ....	175	102	50	8	9	11	Pueblo, Colo. ....	26	14	8	2	1	3
Dayton, Ohio ....	110	77	24	2	4	4	Salt Lake City, Utah ....	49	32	9	1	4	2
Detroit, Mich. ....	341	186	110	22	11	14	Tucson, Ariz. ....	97	60	24	4	6	-
Evansville, Ind. ....	92	70	19	2	1	10	<b>PACIFIC</b> .....	1,858	1,192	441	109	53	78
Fort Wayne, Ind. ....	36	27	6	-	-	4	Berkeley, Calif. ....	18	13	3	2	-	1
Gary, Ind. ....	17	6	7	3	1	1	Fresno, Calif. ....	76	48	8	8	6	1
Grand Rapids, Mich. ....	56	31	17	3	4	10	Glendale, Calif. ....	33	26	7	-	-	-
Indianapolis, Ind. ....	214	124	59	14	4	8	Honolulu, Hawaii ....	61	33	22	3	1	5
Madison, Wis. ....	42	33	4	1	2	4	Long Beach, Calif. ....	166	101	49	5	6	7
Milwaukee, Wis. ....	139	94	34	8	1	12	Los Angeles, Calif. ....	526	334	124	32	14	17
Peoria, Ill. ....	25	17	3	1	2	14	Oakland, Calif. ....	67	38	14	6	5	5
Rockford, Ill. ....	38	20	11	1	4	4	Pasadena, Calif. ....	36	30	5	-	-	-
South Bend, Ind. ....	36	28	7	1	-	1	Portland, Oreg. ....	160	101	48	3	4	10
Toledo, Ohio ....	90	54	22	6	3	2	Sacramento, Calif. ....	73	47	19	3	2	1
Youngstown, Ohio ....	83	56	23	-	3	-	San Diego, Calif. ....	140	84	36	11	2	7
<b>WEST NORTH CENTRAL</b> .....	894	592	205	30	40	55	San Francisco, Calif. ....	174	115	40	12	5	5
Des Moines, Iowa ....	74	51	18	3	-	3	San Jose, Calif. ....	62	40	17	4	-	1
Duluth, Minn. ....	21	14	7	-	-	2	Seattle, Wash. ....	169	116	35	9	7	8
Kansas City, Kans. ....	43	22	16	1	4	1	Spokane, Wash. ....	55	36	9	6	1	7
Kansas City, Mo. ....	160	104	37	5	12	12	Tacoma, Wash. ....	42	30	5	5	-	3
Lincoln, Neb. ....	39	31	6	-	1	2	<b>TOTAL</b> .....	13,411	8,543	3,356	730	393	865
Minneapolis, Minn. ....	92	61	20	3	4	5	Expected Number .....	12,507	7,665	3,205	735	432	521
Omaha, Neb. ....	106	72	23	2	8	6							
St. Louis, Mo. ....	235	155	50	13	6	14							
St. Paul, Minn. ....	68	46	16	1	2	3							
Wichita, Kans. ....	56	36	12	2	3	7							

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

†Estimate based on average percent of regional total.

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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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Current Trends

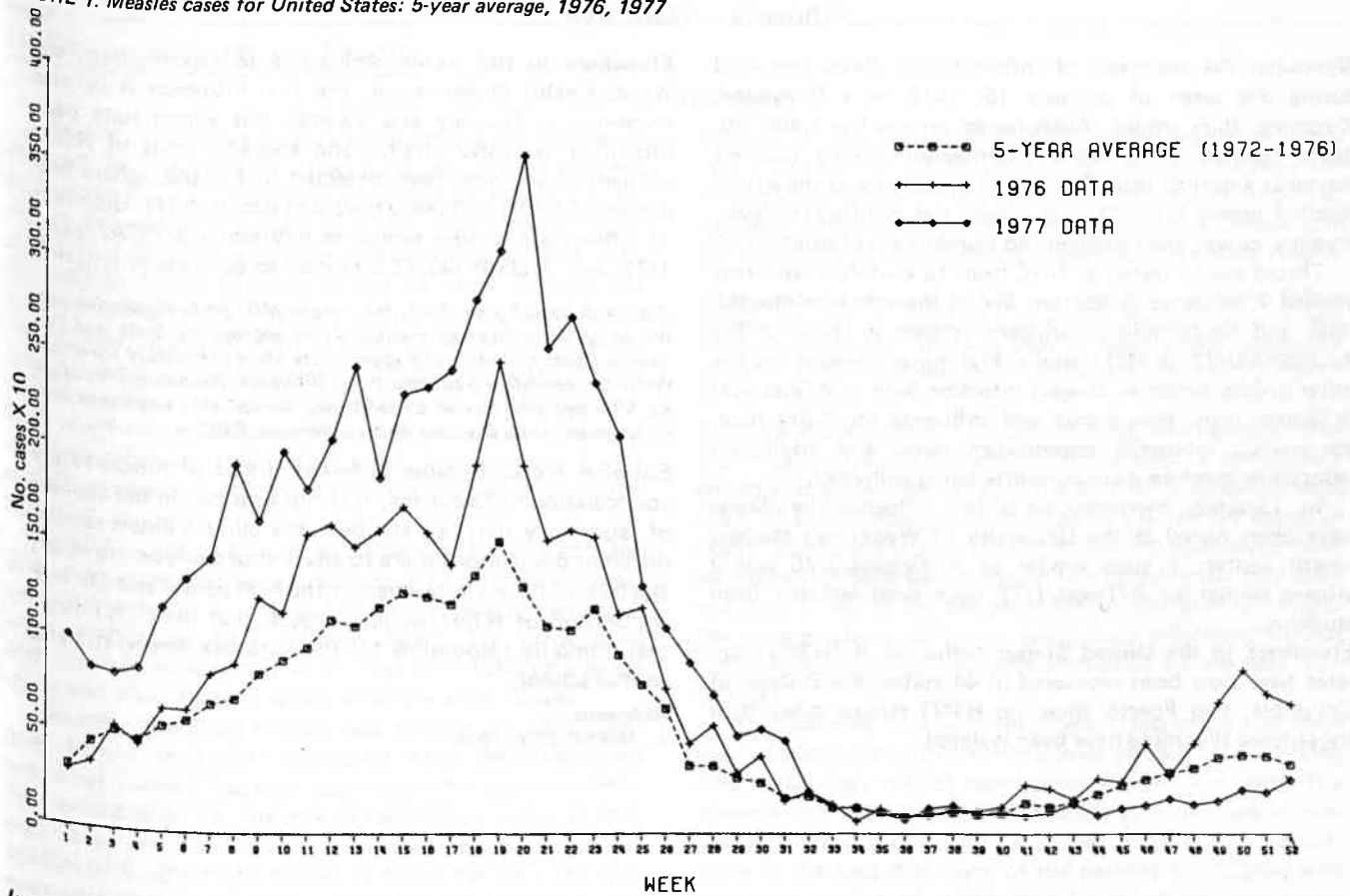
**Measles — United States, 1977**

For the third consecutive year there has been an increase in the number of reported cases of measles in the United States. In 1977, 54,847 cases of measles were reported to CDC, according to preliminary totals. This represents a 33.4% increase over the final figure of 41,126 reported in 1976 and is the largest number of measles cases reported since 1971. This overall increase, however, is due to an increase during the first 40 weeks of 1977 only (Figure

1). During weeks 41-52, the beginning of a new measles season, there was a 62% decrease as compared with the corresponding period in 1976. This same trend appears to be continuing as of the third week of 1978 and, based on observations from previous years, may indicate that the number of measles cases reported in 1978 will be lower than that observed in 1977.

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

FIGURE 1. Measles cases for United States: 5-year average, 1976, 1977



International Notes

**Ciguatera Fish Poisoning in Tourists to the British Virgin Islands**

On January 10, 1978, an outbreak of ciguatera fish poisoning among American tourists returning from the Caribbean area was reported to CDC. According to the report, 8 members of a party of 10 had dined on broiled red snapper on January 4, 1978, at a restaurant in the British Virgin Islands. Four to 8 hours after the meal, 7 became ill with nausea, diarrhea, malaise, and vomiting, which subsided within 12 hours, followed by generalized pruritus (including palms and soles), paresthesias, hyper- and paradoxical sensitivity to temperature, headaches, myalgias, tooth pain, and weakness. One week after returning home, 3 of the 7 were still unable to go back to work because of generalized weakness and unusual sensory phenomena.

Interviews with local doctors on Virgin Gorda and Tortola (British Virgin Islands) as well as on St. Thomas and

St. John (US Virgin Islands) uncovered no recent cases of ciguatera poisoning which could be traced to the restaurant. Contact with the restaurant revealed that the party had consumed a single large red snapper. The fisherman who caught it has been asked to catch several others from his regular fishing ground to be used in biological tests for the toxin.

*Reported by L Romaine, MD, Fredrick, Maryland; KH Acree, MD, State Epidemiologist, Maryland State Dept of Health; R Thomas, MBChB, MD, Chief Medical Officer, British Virgin Islands; CW Smith, MD, LJ Cass, MD, US Virgin Islands; Special Studies Br, Chronic Diseases Div, Bur of Epidemiology, CDC.*

**Editorial Note:** Although ciguatera fish poisoning is not a notifiable disease, it is the most common foodborne illness due to a chemical toxin reported to CDC (1). While 95% of the American cases are reported from Florida and Hawaii,

*Fish Poisoning — continued*

the disease occurs throughout the Caribbean and the South Pacific. In the Caribbean, illness has been associated with eating red snapper, amberjack, barracuda, and grouper. The toxin, possibly elaborated by a dinoflagellate, appears to be concentrated throughout the food chain, so that larger fish are more likely to be toxic (2), and the viscera of the fish, often used in soups and broths, tend to be more toxic than the muscle tissue (3). The fish themselves do not look or taste spoiled, however, and cooking does not destroy the heat-stable toxin. No good screening test for freshly caught

fish is currently available, but a radioimmune assay and biological assays involving mice, cats, and mongooses have been used to confirm the presence of the toxin in fish suspected to have caused human illness.

*References*

1. CDC: Foodborne & Waterborne Disease Outbreaks, Annual Summary 1975, issued September 1976
2. Hughes JM, Merson MH: Fish and shellfish poisoning. *N Engl J Med* 295:1117-1120, 1976
3. Halstead BW, Courville DA: Poisonous and Venomous Marine Animals of the World. Vol 2: Vertebrates. Washington, DC, GPO, 1967, pp 63-330

**Influenza — Worldwide**

**Wyoming:** An outbreak of influenza-like illness occurred during the week of January 15, 1978, in a Cheyenne, Wyoming, high school. Absenteeism among the 1,400 students reached 60%, while absenteeism among teachers stayed at a normal rate. The overall attack rate at the school reached nearly 80%. Clinical illness was typified by fever, myalgia, cough, and headache; no students were hospitalized.

Throat swabs tested at CDC from 12 acutely ill students yielded 7 influenza A isolates. Six of these have hemagglutinin and neuraminidase antigens related to those of the A/USSR/90/77 (H1N1) strain. Preliminary results on the other isolate, however, suggest infection with an A/Victoria/3/75-like virus. Pneumonia and influenza mortality data, age-specific industrial absenteeism data, and additional laboratory specimens are currently being collected.

In Laramie, increased visits for influenza-like illness have been noted at the University of Wyoming's student health center; 1 virus similar to A/Victoria/3/75 and 2 viruses similar to A/Texas/1/77 have been isolated from students.

**Elsewhere in the United States:** Influenza A (H3N2) isolates have now been recovered in 44 states, the District of Columbia, and Puerto Rico; no H1N1 strains other than those from Wyoming have been isolated.

**Elsewhere in the world:** According to reports from the World Health Organization, the first influenza A isolates recovered in Norway and Sweden this winter have been identified as H3N2 strains, and sporadic cases of H3N2 influenza have now been detected in Finland, where outbreaks of H1N1 influenza have also occurred (1). Isolations of influenza A viruses similar to A/Victoria/3/75, A/Texas/1/77, and A/USSR/90/77 continue to be made in England.

*Reported by DT Lee, PhD, HS Parish, MD, State Epidemiologist, Wyoming State Dept of Health; Other appropriate State and Territorial Epidemiologists and appropriate State Laboratory Directors; WHO Collaborating Laboratory for Influenza, Respiratory Virology Br, Virology Div, Bur of Laboratories, Surveillance and Assessment Br, Immunization Div, Bur of State Services, CDC.*

**Editorial Note:** Because different strains of influenza are cocirculating in Cheyenne, it is not possible, in the absence of laboratory data, to attribute the clinical illness seen in different populations there to any 1 virus subtype. However, the lack of illness in teachers at the high school and the high proportion of H1N1 isolates suggest that the H1N1 strain was primarily responsible for the outbreak among students in that school.

*Reference*

1. MMWR 27:8, 1978

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