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International Notes

Human-to-Human Transmission of Rabies via a Corneal Transplant — France

On November 28, 1979, a 36-year-old man from eastern France died of rabies, 41 days after receiving a corneal transplant. The donor was a 57-year-old woman who had died following a flaccid quadriplegia syndrome. The recipient had received a left corneal graft for keratoconus on October 10. On November 12, 33 days after the transplant, he complained of influenza-like symptoms and left retro-orbital headache. Over the next 4 days he developed swelling of the left parotid, hypersalivation, pain and weakness in the legs, pain on swallowing, right upper quadrant abdominal pain, and leukocytosis. He was hospitalized on November 20. Subsequent quadriparesis and elevated cerebrospinal fluid (CSF) protein levels suggested Guillain-Barré syndrome. Facial asymmetry, dysarthria, difficulty swallowing, and cerebellar dysmetria were noted. The patient became comatose on November 22 and died on November 28. Rabies was suspected during the course of the recipient's illness and confirmed at autopsy by fluorescent-antibody (FA) staining, serology, and isolation of the virus from brain tissue. The recipient had no known contact with animals outside his home, and his dog is currently in good health.

The donor of the cornea was a long-time resident in Egypt, who had lived in France for 2 months before the onset of illness. She presented September 20, 1979, to a Paris hospital with thoraco-lumbar back pain. By October 2, she had developed facial asymmetry, loss of deep-tendon reflexes, diffuse myalgias, paresthesias in her lower limbs, difficulty swallowing, and delirium. Flaccid paraplegia progressed to quadriplegia, and she became comatose on October 8. On October 9 she died; the clinical diagnoses were lower-motor-neuron quadriplegia, encephalitis, and myocarditis. The eye was removed 4-5 hours after death and stored in a physiologic solution; the next day, the cornea was removed, desiccated, and transplanted to the recipient. Viral serologic studies on the donor were negative for herpes simplex, herpes zoster, adenovirus, cytomegalovirus, influenza, parainfluenza, respiratory syncytial virus, and arboviruses. Upon discovery of rabies in the recipient, histologic and electron-microscopic examination of the donor's brain revealed diffuse encephalomyelitis with the presence of numerous Negri bodies. The donor is known to have had exposure, while in Egypt, to a dog who died.

Reported by Dr. A Galian, Dr. JM Guerin, Dr. M Lamotte, Dr. Y Le Charpentier, Dr. J Mikol, L'Hopital de Gonesse, Gonesse, France; Dr. JB Dureux, Dr. Gerard, Dr. E de Lavergne, L'Hopital de Nancy, Nancy, France; Dr. P Atanasiu, Dr. P Ravisse, Dr. P Sureau, L'Institut Pasteur, Paris, France; Respiratory and Special Pathogens Br, Viral Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: This is the second reported case of rabies transmitted by a corneal transplant (*1*). The temporal association of the recipient's illness, the lack of other exposure, and the retro-orbital pain in the eye that received the cornea support the diagnosis of transplant-acquired rabies. Rabies antigen has been demonstrable in corneas of infected animals (*2*) and humans by FA techniques, and rabies virus has been recovered from

Rabies – Continued

human eye tissue (*3*). As in the first transplant-associated case, the diagnosis of rabies was not suspected before the donor's death because of an atypical clinical presentation and the lack of a clear history of animal exposure. This case underscores the difficulty and the importance of suspecting the diagnosis of rabies in cases of unusual progressive paralysis. Persons with a neurologic illness of unknown etiology are not appropriate donors for transplant tissue.

References

1. MMWR 1979;28:109.
2. Schneider LG. The cornea test: a new method for the intra-vitam diagnosis of rabies. Zentralbl Veterinaermed [B] 1969;16:24-31.
3. Hough SA, Burton RC, Wilson RW, et al. Human-to-human transmission of rabies virus by a corneal transplant. N Eng J Med 1979;300:603-4.

Malaria – Haiti

In early December, CDC was notified of 6 cases of *Plasmodium falciparum* malaria that had occurred among 2 travel groups that visited Haiti during October and November. The groups came from New York and Puerto Rico. One patient died. None of the travelers had taken adequate malaria chemoprophylaxis.

The fatal case occurred in a 59-year-old Puerto Rican missionary, who spent 17 days in Haiti and returned to Puerto Rico on November 17 with fever and chills. He was hospitalized on November 25 and died 2 days later. The diagnosis of *P. falciparum* malaria was made on examination of blood smears. The indirect immunofluorescence test revealed reciprocal titers of 4096 for *P. falciparum*, 256 for *P. vivax*, and 256 for *P. malariae*. No anti-malarial chemotherapy was taken by the patient.

Among 10 travelers from Puerto Rico who stayed in Haiti between November 16 and November 19, 3 presented with fever and chills on December 8. Examination of blood smears revealed *P. falciparum* in all 3 patients, and chloroquine therapy was administered.

Another group of 60 travelers from New York spent 5 days in Haiti near Thanksgiving Day. Two presented with fever and chills 2 weeks later and were diagnosed as having influenza. As symptoms persisted, the patients were hospitalized, and *P. falciparum* was identified in blood smears. Chloroquine therapy was administered.

Members of the 2 travel groups were subsequently contacted individually, informed of the possibility of malaria infection, and instructed to contact their local health department immediately should fever, chills, headache, or other symptoms of malaria develop.

Press releases were issued by the New York City and Puerto Rico departments of health, warning of the risk of malaria and emphasizing the necessity of malaria chemoprophylaxis.

An advisory memorandum on the risk of malaria for travelers to Haiti has been issued to the public health community and the travel industry by CDC.

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Editorial Note: Malaria is endemic in Haiti; the World Health Organization (WHO) lists all areas of Haiti, including urban ones, as malarious (*1*). *P. falciparum* appears to be the principal plasmodium species present in Haiti (*2*), and all strains isolated thus far have

Malaria — Continued

been shown to be chloroquine sensitive *in vitro*. All travelers to Haiti and other malarious areas should receive malaria chemoprophylaxis (*3,4*).

References

1. WHO. Synopsis of the world malaria situation. Weekly Epidemiological Record 1979;54:169-75.
2. CDC. Malaria surveillance annual summary 1978. Atlanta: CDC, 1979.
3. MMWR 1978;27:81-90.
4. CDC. Health information for international travel. MMWR 1979;28:71-9.

Current Trends

Trends in Surgical Wound Infection Rates — United States

Reported rates of surgical wound infection* decreased 16% from 86.0 to 72.1 infections per 10,000 patients discharged in 1975 through 1978 from the hospitals participating in the National Nosocomial Infections Study (NNIS). During this period, 40,925 surgical wound infections were reported. Surgical wound infection rates decreased in all categories of hospitals with the largest decrease (26%) reported by university hospitals, intermediate decreases (16%-19%) by municipal, community-teaching, and federal hospitals, and the smallest decrease (9%) by community hospitals.

Infection rates by specific service showed a 15% decrease in the incidence of surgical wound infections for the surgery service and a 17% decrease for the gynecology service; there was a 26% increase for the obstetrics service, however (Table 1). All categories of hospitals showed a decrease in rates for the surgery service. For gynecology, infection rates over the 4-year period remained relatively stable in municipal hospitals but decreased in all other kinds of hospitals. For obstetrics, all categories of hospitals showed a fairly

TABLE 1. Surgical wound infection rates,* by service, National Nosocomial Infections Study, 1975-1978

Service	1975	1976	1977	1978
Surgery	170.1	160.8	150.2	144.6
Obstetrics	75.2	85.5	100.1	95.1
Gynecology	125.7	106.3	110.5	104.4
All services†	86.0	80.8	76.1	72.1

*Per 10,000 patients discharged.
†Numerator and denominator include patients discharged from medicine, pediatrics, and newborn nursery.

*Defined as those infections involving an operative wound or deep organs, tissues, or cavities exposed during an operative procedure. Infections occurring at a site not involved with the operation are not reported as being surgically related. The denominator is the number of patients discharged from specific surgical services or, for overall rates, from all hospital services. Rates are not based on the number of surgical procedures performed, as these are not reported in NNIS.

Surgical Wound Infections – Continued

large increase in infection rates except for university hospitals, which showed a decrease between 1975 and 1977.

Over 61% of the surgical wound infections were incisional infections; this rate varied from 72% for surgery services, to 38% for gynecology, and 26% for obstetrics. The largest and most consistent decrease in the rates of surgical wound infection was of incisional wounds of patients on the surgery service. For all patients, the rate of incisional wound infection decreased 22% from 1975 through 1978 compared with a decrease of 7% in the rate for surgical wound infections at all other sites. These included gynecologic (18.5%) and intra-abdominal/retroperitoneal (8.2%) sites, the musculoskeletal system and deep soft tissue (3.5%), the urinary tract (3.1%), the lower respiratory tract (2.6%), and the central nervous system (1.2%). Municipal hospitals reported a considerably higher rate of female genital tract infections, especially endometritis; federal hospitals reported a much higher infection rate of the musculoskeletal system and deep soft tissue than did other hospital categories. Bacteremia complicated 2.2% of the incisional wound infections and 5.3% of the wound infections at other sites.

The pathogens isolated most frequently from surgical wound infections were *Staphylococcus aureus* (15.4%) and *Escherichia coli* (15.2%). Other pathogens included group D streptococci, primarily enterococci (10.3%), *Proteus* spp. (7.2%), *Klebsiella* spp. (5.4%),

(Continued on page 33)

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

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

DISEASE	3rd WEEK ENDING		MEDIAN	CUMULATIVE, FIRST 3 WEEKS		
	January 19, 1980	January 20, 1979*	1975-1979	January 19, 1980	January 20, 1979*	MEDIAN 1975-1979
Aseptic meningitis	55	47	43	158	174	123
Brucellosis	1	–	2	3	4	5
Chickenpox	4,291	5,339	4,946	9,008	12,583	12,583
Diphtheria	–	1	3	–	11	11
Encephalitis: Primary (arthropod-borne & unspec.)	9	6	10	24	19	31
Post-infectious	1	2	1	2	3	7
Hepatitis, Viral: Type B	248	229	281	613	657	747
Type A	466	548	637	1,070	1,415	1,813
Type unspecified	185	232	169	452	526	468
Malaria	41	9	7	56	21	20
Measles (rubeola)	81	157	297	151	356	613
Meningococcal infections: Total	72	46	43	136	133	89
Civilian	72	46	41	136	133	89
Military	–	–	–	–	–	–
Mumps	249	269	638	522	633	1,532
Pertussis	14	26	26	37	88	88
Rubella (German measles)	38	104	174	98	249	405
Tetanus	3	–	1	3	–	3
Tuberculosis	424	536	507	957	1,262	1,248
Tularemia	1	6	1	4	9	8
Typhoid fever	2	4	4	7	11	13
Typhus fever, tick-borne (Rky. Mt. spotted)	–	3	1	–	4	2
Venereal diseases:						
Gonorrhea: Civilian	18,874	18,570	18,570	46,787	52,877	52,877
Military	466	418	418	1,140	1,571	1,571
Syphilis, primary & secondary: Civilian	442	492	489	1,252	1,354	1,354
Military	11	5	7	27	11	17
Rabies in animals	74	52	49	179	133	133

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1980		CUM. 1980
Anthrax	–	Poliomyelitis: Total	–
Botulism	1	Paralytic	–
Congenital rubella syndrome (Calif. 3)	5	Psittacosis (Colo. 1, Calif. 4)	5
Leprosy † (Texas 2, Calif. 1, Hawaii 1)	6	Rabies in man	–
Leptospirosis † (Hawaii 1)	2	Trichinosis	1
Plague	–	Typhus fever, flea-borne (endemic, murine)	–

*Delayed reports received for calendar year 1979 are used to update last year's weekly and cumulative totals.

†Delayed reports: Leprosy: Pac. Tr. Terr. +1 (1979); Leptospirosis: Mo. +1 (1980); Psittacosis: Ohio +2 (1979)

TABLE III. Cases of specified notifiable diseases, United States, weeks ending January 19, 1980, and January 20, 1979 (3rd week)

REPORTING AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKENPOX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS (VIRAL), BY TYPE			MALARIA	
						Primary		Post-infectious	B	A	Unspecified		
	1980	1980	1980	1980	CUM. 1980	1980	1979*	1980	1980	1980	1980	1980	CUM. 1980
UNITED STATES	55	1	4,291	–	–	9	6	1	248	466	185	41	56
NEW ENGLAND	–	–	636	–	–	2	–	–	3	9	11	–	2
Maine	–	–	135	–	–	–	–	–	–	–	–	–	–
N.H.†	–	–	–	–	–	–	–	–	–	1	1	–	–
Vt.	–	–	64	–	–	–	–	–	–	–	–	–	–
Mass.	–	–	207	–	–	–	–	–	1	5	8	–	2
R.I.	–	–	17	–	–	–	–	–	–	–	–	–	–
Conn.†	–	–	213	–	–	2	–	–	2	3	2	–	–
MID. ATLANTIC	13	–	161	–	–	1	1	–	34	22	10	1	2
Upstate N.Y.	2	–	94	–	–	–	1	–	10	7	3	–	–
N.Y. City	4	–	67	–	–	1	–	–	22	6	5	1	2
N.J.†	7	–	NN	–	–	–	–	–	2	9	2	–	–
Pa.†	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–
E.N. CENTRAL	2	–	1,764	–	–	–	1	–	10	53	9	1	1
Ohio†	–	–	62	–	–	–	–	–	1	4	3	1	1
Ind.	–	–	155	–	–	–	1	–	2	1	3	–	–
Ill.†	–	–	431	–	–	–	–	–	–	30	1	–	–
Mich.	2	–	658	–	–	–	–	–	7	17	2	–	–
Wis.	–	–	458	–	–	–	–	–	–	1	–	–	–
W.N. CENTRAL	4	1	841	–	–	–	2	–	4	14	6	–	2
Minn.	–	–	–	–	–	–	–	–	–	4	–	–	1
Iowa	1	–	404	–	–	–	1	–	2	1	2	–	1
Mo.†	3	1	98	–	–	–	–	–	2	6	4	–	–
N. Dak.	–	–	14	–	–	–	–	–	–	–	–	–	–
S. Dak.	–	–	7	–	–	–	–	–	–	2	–	–	–
Nebr.	–	–	7	–	–	–	1	–	–	–	–	–	–
Kans.	–	–	311	–	–	–	–	–	–	1	–	–	–
S. ATLANTIC	7	–	362	–	–	1	–	–	59	48	15	6	6
Del.	–	–	4	–	–	–	–	–	1	–	–	–	–
Md.†	1	–	11	–	–	–	–	–	10	2	3	–	–
D.C.†	–	–	–	–	–	–	–	–	–	–	–	–	–
Va.	2	–	2	–	–	–	–	–	2	8	4	2	2
W. Va.	1	–	238	–	–	–	–	–	2	3	–	1	1
N.C.	1	–	NN	–	–	1	–	–	7	6	2	1	1
S.C.	1	–	4	–	–	–	–	–	14	2	3	–	–
Ga.	–	–	–	–	–	–	–	–	18	21	–	–	–
Fla.†	1	–	103	–	–	–	–	–	5	6	3	2	2
E.S. CENTRAL	4	–	68	–	–	–	–	1	15	25	1	–	–
Ky.	3	–	61	–	–	–	–	1	4	9	–	–	–
Tenn.	1	–	NN	–	–	–	–	–	7	8	1	–	–
Ala.	–	–	5	–	–	–	–	–	3	7	–	–	–
Miss.	–	–	2	–	–	–	–	–	1	1	–	–	–
W.S. CENTRAL	8	–	148	–	–	1	–	–	19	105	42	–	–
Ark.	–	–	1	–	–	–	–	–	1	3	4	–	–
La.	–	–	NN	–	–	–	–	–	3	16	2	–	–
Okla.	2	–	–	–	–	–	–	–	4	7	3	–	–
Tex.	6	–	147	–	–	1	–	–	11	79	33	–	–
MOUNTAIN	2	–	91	–	–	1	2	–	9	66	42	2	6
Mont.†	–	–	36	–	–	–	1	–	–	2	–	–	–
Idaho	–	–	1	–	–	–	–	–	–	8	–	–	–
Wyo.	–	–	–	–	–	–	1	–	–	–	–	–	1
Colo.	2	–	33	–	–	1	–	–	5	29	2	–	1
N. Mex.	–	–	1	–	–	–	–	–	1	2	–	–	–
Ariz.	–	–	NN	–	–	–	–	–	1	14	26	1	3
Utah	–	–	20	–	–	–	–	–	–	5	8	–	–
Nev.	–	–	–	–	–	–	–	–	2	6	6	1	1
PACIFIC	15	–	220	–	–	3	–	–	95	124	49	31	37
Wash.	3	–	219	–	–	1	–	–	3	17	5	1	1
Oreg.	–	–	–	–	–	–	–	–	13	16	5	–	–
Calif.†	12	–	–	–	–	2	–	–	77	89	39	30	35
Alaska	–	–	–	–	–	–	–	–	–	1	–	–	1
Hawaii	–	–	1	–	–	–	–	–	2	1	–	–	–
Guam	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–
P.R.	–	–	4	–	–	–	–	–	–	2	–	–	–
V.I.	–	–	–	–	–	–	–	–	–	–	–	–	–
Pac. Trust Terr.	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–

NN: Not notifiable. NA: Not available.

*Delayed reports received for 1979 are not shown below but are used to update last year's weekly and cumulative totals.

†The following delayed reports will be reflected in next week's cumulative totals: Asep. meng.: N.J. +9; Mo. +1; Bruc.: Md. +1; Chickenpox: Conn. +1, Pa. +88; Ill. +211, Mo. +78, Md. +41, Fla. +22, Calif. +21; Enceph: N.J. +2; Hep. B: N.J. −1, Pa. +20, Ohio −1, Ill. +14, Mo. +4, Md. +22, Fla. +1, Mont. +1; Hep. A: N.H. +2, N.J. +2, Pa. +18, Ill. +18, Mo. +8, Md. +11, Fla. +1, Mont. −1; Hep. unsp.: N.J. +2, Pa. +5, Ill. +2, Mo. +2, Md. +14, D.C. +1.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending January 19, 1980, and January 20, 1979 (3rd week)

REPORTING AREA	MEASLES (RUBEOLA)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1980	CUM. 1980	CUM. 1979*	1980	CUM. 1980	CUM. 1979*	1980	CUM. 1980	1980	1980	CUM. 1980	CUM. 1980
UNITED STATES	81	151	356	72	136	133	249	522	14	38	98	3
NEW ENGLAND	11	15	2	3	4	4	44	73	1	3	7	–
Maine	–	–	–	–	–	–	6	28	–	–	–	–
N.H.	4	4	–	–	–	1	–	–	–	3	6	–
Vt.	6	10	2	–	–	–	–	–	–	–	–	–
Mass.†	–	–	–	1	1	3	16	16	1	–	1	–
R.I.	1	1	–	–	–	–	1	5	–	–	–	–
Conn.	–	–	–	2	3	–	21	24	–	–	–	–
MID. ATLANTIC	17	24	15	5	14	22	22	30	–	2	4	–
Upstate N.Y.	6	6	4	1	9	7	1	4	–	1	1	–
N.Y. City	11	18	8	2	3	8	4	9	–	1	2	–
N.J.†	–	–	–	2	2	5	17	17	–	–	1	–
Pa.†	NA	–	3	–	–	2	NA	–	NA	NA	–	–
E.N. CENTRAL	14	35	137	7	12	10	66	188	3	8	37	–
Ohio	2	2	–	5	5	–	23	65	–	–	–	–
Ind.†	1	1	9	–	1	3	6	8	2	1	9	–
Ill.†	1	1	77	2	2	–	15	19	–	–	–	–
Mich.	5	15	40	–	4	7	10	62	–	6	22	–
Wis.	5	16	11	–	–	–	12	34	1	1	6	–
W.N. CENTRAL	9	11	45	2	4	2	31	40	–	6	6	1
Minn.	8	8	–	1	1	–	1	1	–	–	–	1
Iowa	–	1	–	–	–	1	3	5	–	–	–	–
Mo.†	–	–	44	–	2	1	22	23	–	3	3	–
N. Dak.	–	–	1	1	1	–	–	–	–	1	1	–
S. Dak.	–	–	–	–	–	–	–	–	–	–	–	–
Nebr.	1	2	–	–	–	–	–	6	–	–	–	–
Kans.	–	–	–	–	–	–	5	5	–	2	2	–
S. ATLANTIC	10	12	16	11	29	46	30	51	–	3	6	1
Del.	–	–	–	–	–	1	2	9	–	–	–	–
Md.†	–	–	1	–	6	2	6	6	–	–	–	–
D.C.	–	–	–	–	–	–	–	–	–	–	–	–
Va.	1	1	1	2	4	4	1	3	–	–	1	–
W. Va.	–	1	7	–	1	1	6	8	–	2	3	–
N.C.	1	1	–	3	7	5	12	17	–	1	1	–
S.C.	–	–	–	1	3	8	–	–	–	–	–	1
Ga.	–	–	–	2	3	8	–	–	–	–	–	–
Fla.†	8	9	7	3	5	17	3	8	–	–	1	–
E.S. CENTRAL	6	9	3	9	14	8	5	37	–	4	6	–
Ky.	5	8	2	2	5	2	5	29	–	2	3	–
Tenn.	–	–	–	2	2	5	–	2	–	2	3	–
Ala.	–	–	–	5	7	1	–	–	–	–	–	–
Miss.	1	1	1	–	–	–	–	6	–	–	–	–
W.S. CENTRAL	–	2	45	4	7	16	21	27	3	–	2	–
Ark.	–	–	4	–	–	2	1	1	–	–	–	–
La.	–	–	–	1	1	1	–	–	–	–	–	–
Okla.	–	–	–	–	–	2	–	–	1	–	–	–
Tex.	–	2	41	3	6	11	20	26	2	–	2	–
MOUNTAIN	8	12	17	5	11	8	14	36	2	–	1	–
Mont.	–	–	4	1	1	1	–	3	–	–	–	–
Idaho	–	–	–	–	–	1	–	1	–	–	–	–
Wyo.	–	–	–	–	1	–	–	–	–	–	–	–
Colo.	–	–	–	2	6	–	4	8	2	–	–	–
N. Mex.	–	–	–	–	–	2	–	–	–	–	–	–
Ariz.	8	9	–	–	1	3	–	9	–	–	–	–
Utah	–	–	11	1	1	1	10	15	–	–	1	–
Nev.†	–	3	2	1	1	–	–	–	–	–	–	–
PACIFIC	6	31	76	26	41	17	16	40	5	12	29	1
Wash.	–	1	44	6	17	3	7	12	2	2	3	–
Oreg.	–	–	–	3	3	1	3	11	–	–	3	–
Calif.	6	28	32	17	21	12	6	16	3	10	23	1
Alaska	–	–	–	–	–	–	–	1	–	–	–	–
Hawaii	–	2	–	–	–	1	–	–	–	–	–	–
Guam	NA	–	–	–	–	–	NA	–	NA	NA	–	–
P.R.	–	–	–	–	–	–	1	1	–	–	–	–
V.I.	–	–	1	–	–	–	–	–	–	–	–	–
Pac. Trust Terr.	NA	–	2	–	–	–	NA	–	NA	NA	–	–

NA: Not available.

*Delayed reports received for 1979 are not shown below but are used to update last year's weekly and cumulative totals.

†The following delayed reports will be reflected in next week's cumulative totals: Measles: Ill. +1, Mo. +15, Md. +1, Nev. –2; Men. inf.: N.J. +3 civ. +1 mil., Pa. +2, Ind. +1, Md. +1, Fla. +2; Mumps: Mass. –1, Pa. +23, Ill. +4, Mo. +6, Md. +4; Pertussis: Pa. +1; Rubella: N.J. +1, Pa. +1, Ill. +1, Fla. +3, Nev. +2; Tetanus: Pa. +1.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending January 19, 1980, and January 20, 1979 (3rd week)

REPORTING AREA	TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		VENEREAL DISEASES (Civilian)						RABIES (in Animals)
								GONORRHEA			SYPHILIS (Pri. & Sec.)			
	1980	CUM. 1980	CUM. 1980	1980	CUM. 1980	1980	CUM. 1980	1980	CUM. 1980	CUM. 1979*	1980	CUM. 1980	CUM. 1979*	CUM. 1980
UNITED STATES	424	957	4	2	7	–	–	18,874	46,787	52,877	442	1,252	1,354	179
NEW ENGLAND	18	38	–	1	1	–	–	541	1,601	1,344	9	38	31	1
Maine	–	–	–	–	–	–	–	36	102	114	–	–	–	1
N.H.	–	1	–	–	–	–	–	20	58	50	–	–	1	–
Vt.	–	1	–	–	–	–	–	22	52	18	–	–	–	–
Mass.	14	17	–	–	–	–	–	210	601	557	7	16	21	–
R.I.	2	7	–	1	1	–	–	29	64	119	2	2	–	–
Conn.	2	12	–	–	–	–	–	224	724	486	–	20	9	–
MID. ATLANTIC	65	144	–	–	–	–	–	1,623	4,022	4,649	74	184	176	–
Upstate N.Y.	10	16	–	–	–	–	–	373	465	283	6	6	–	–
N.Y. City	38	77	–	–	–	–	–	1,037	2,637	2,007	62	162	138	–
N.J.†	17	25	–	–	–	–	–	213	499	825	6	11	21	–
Pa.†	NA	26	–	NA	–	NA	–	NA	421	1,534	NA	5	17	–
E.N. CENTRAL	43	81	–	–	2	–	–	2,734	6,912	8,197	27	89	230	20
Ohio	7	26	–	–	–	–	–	1,159	3,113	1,873	20	29	51	–
Ind.	8	18	–	–	–	–	–	358	613	342	1	16	5	2
Ill.†	20	25	–	–	–	–	–	389	679	3,106	2	23	147	10
Mich.	5	5	–	–	2	–	–	654	1,705	1,998	2	14	18	–
Wis.	3	7	–	–	–	–	–	174	802	878	2	7	9	8
W.N. CENTRAL	17	38	3	–	–	–	–	794	1,902	2,399	5	8	13	40
Minn.	2	11	–	–	–	–	–	164	397	412	–	1	3	4
Iowa	–	2	–	–	–	–	–	99	296	341	1	1	2	20
Mo.†	10	13	2	–	–	–	–	248	492	808	2	4	4	7
N. Dak.	–	2	–	–	–	–	–	9	33	44	1	1	–	5
S. Dak.	–	–	–	–	–	–	–	31	70	89	–	–	–	3
Nebr.	–	–	1	–	–	–	–	69	194	139	1	1	–	–
Kans.	5	10	–	–	–	–	–	174	420	566	–	–	4	1
S. ATLANTIC	108	218	–	–	–	–	–	4,455	11,994	12,824	117	260	340	10
Del.†	–	2	–	–	–	–	–	60	202	185	–	1	4	–
Md.†	19	23	–	–	–	–	–	406	518	1,670	7	15	19	–
D.C.†	–	2	–	–	–	–	–	258	544	810	6	11	31	–
Va.	13	32	–	–	–	–	–	609	1,139	1,185	8	21	40	–
W. Va.	13	23	–	–	–	–	–	58	170	198	–	–	2	–
N.C.	20	42	–	–	–	–	–	849	1,975	1,719	7	19	43	–
S.C.	5	25	–	–	–	–	–	358	1,411	1,066	1	5	16	3
Ga.	10	18	–	–	–	–	–	1,132	2,491	2,283	41	85	82	5
Fla.	28	51	–	–	–	–	–	725	3,544	3,708	47	103	103	2
E.S. CENTRAL	22	87	1	–	–	–	–	2,028	4,191	5,151	38	113	86	9
Ky.	4	11	–	–	–	–	–	314	636	756	6	11	7	4
Tenn.	11	11	1	–	–	–	–	774	1,729	1,890	27	56	41	5
Ala.	7	32	–	–	–	–	–	587	903	1,448	5	15	18	–
Miss.	–	33	–	–	–	–	–	353	923	1,057	–	31	20	–
W.S. CENTRAL	17	42	–	–	–	–	–	2,536	6,449	7,500	121	295	193	69
Ark.	–	–	–	–	–	–	–	144	480	672	–	3	12	10
La.	7	25	–	–	–	–	–	343	574	992	33	67	17	–
Okla.	1	3	–	–	–	–	–	412	790	619	1	2	2	10
Tex.	9	14	–	–	–	–	–	1,637	4,605	5,217	87	223	162	49
MOUNTAIN	35	68	–	–	1	–	–	708	1,948	2,288	9	23	18	3
Mont.	–	–	–	–	–	–	–	18	61	147	–	–	–	–
Idaho	1	1	–	–	–	–	–	20	84	92	1	1	1	–
Wyo.	–	–	–	–	–	–	–	37	71	59	1	2	–	–
Colo.†	24	38	–	–	1	–	–	246	498	561	1	10	9	–
N. Mex.	2	11	–	–	–	–	–	152	348	305	3	5	6	–
Ariz.	7	16	–	–	–	–	–	93	445	670	–	–	–	3
Utah	–	–	–	–	–	–	–	36	101	103	2	2	–	–
Nev.	1	2	–	–	–	–	–	106	340	351	1	3	2	–
PACIFIC	99	241	–	1	3	–	–	3,455	7,768	8,525	42	242	267	27
Wash.	12	18	–	–	–	–	–	291	766	580	–	–	11	–
Oreg.	6	20	–	–	–	–	–	331	472	639	2	5	10	–
Calif.	78	198	–	1	3	–	–	2,728	6,257	6,988	39	233	244	27
Alaska†	–	–	–	–	–	–	–	66	185	202	1	1	–	–
Hawaii	3	5	–	–	–	–	–	39	88	116	–	3	2	–
Guam	NA	–	–	NA	–	NA	–	NA	–	6	NA	–	–	–
P.R.	–	–	–	–	–	–	–	51	51	65	11	11	23	2
V.I.	–	–	–	–	–	–	–	3	5	8	–	3	–	–
Pac. Trust Terr.	NA	–	–	NA	–	NA	–	NA	–	27	NA	–	–	–

NA: Not available.

*Delayed reports received for 1979 are not shown below but are used to update last year's weekly and cumulative totals.

†The following delayed reports will be reflected in next week's cumulative totals: TB: N.J. +15, Pa. +8, Ill. +31, Mo. +10, Del. –2, Md. +20, Colo. –2; Tularemia: Md. +1; T. fever: Colo. –1; GC: N.J. +645 civ. +22 mil., Pa. +555 civ., Ill. +204 civ., Mo. +440 civ., Md. +393 civ., D.C. +228 civ., Alaska: +10 civ.; Syphilis: N.J. +8, Pa. +12, Ill. +25, Mo. +3, Md. +13, D.C. +10; An. rabies: Mo. +10.

TABLE IV. Deaths in 121 U.S. cities,* week ending January 19, 1980 (3rd week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P & I** TOTAL
	ALL AGES	>65	45-64	25-44	<1	
NEW ENGLAND	723	474	169	32	24	34
Boston, Mass.	214	130	58	12	8	8
Bridgeport, Conn.	45	34	7	1	1	4
Cambridge, Mass.	25	18	5	–	1	1
Fall River, Mass.	17	11	5	1	–	–
Hartford, Conn.	71	38	18	5	6	3
Lowell, Mass.	29	25	4	–	–	1
Lynn, Mass.	29	18	7	4	–	1
New Bedford, Mass.	31	23	8	–	–	1
New Haven, Conn.	44	29	11	1	1	1
Providence, R.I.	70	44	19	2	4	3
Somerville, Mass.	7	6	1	–	–	–
Springfield, Mass.	52	37	10	2	2	3
Waterbury, Conn.	36	26	6	2	–	1
Worcester, Mass.	53	35	10	2	1	7
MID. ATLANTIC	2,610	1,734	627	129	58	119
Albany, N.Y.	57	37	13	3	2	1
Allentown, Pa.	25	19	6	–	–	2
Buffalo, N.Y.	150	92	47	2	5	7
Camden, N.J.	38	21	12	2	3	2
Elizabeth, N.J.	35	26	8	–	1	2
Erie, Pa.†	35	29	6	–	–	2
Jersey City, N.J.	96	79	7	4	2	2
Newark, N.J.	75	38	22	7	6	5
N.Y. City, N.Y.	1,494	983	350	91	28	64
Paterson, N.J.	26	14	10	1	1	1
Philadelphia, Pa.†	147	90	47	5	3	4
Pittsburgh, Pa.†	73	50	19	1	1	1
Reading, Pa.	29	22	7	–	–	2
Rochester, N.Y.	104	75	20	3	5	17
Schenectady, N.Y.	20	14	6	–	–	–
Scranton, Pa.†	25	20	4	1	–	2
Syracuse, N.Y.	96	62	26	5	1	2
Trenton, N.J.	39	29	7	2	–	–
Utica, N.Y.	23	18	4	1	–	2
Yonkers, N.Y.	23	16	6	1	–	1
E.N. CENTRAL	2,594	1,603	657	149	100	52
Akron, Ohio	90	57	23	2	6	–
Canton, Ohio	32	22	7	1	1	–
Chicago, Ill.	606	363	155	37	30	13
Cincinnati, Ohio	189	119	44	14	8	4
Cleveland, Ohio	200	119	65	7	5	3
Columbus, Ohio	178	111	44	14	5	7
Dayton, Ohio	105	60	30	7	4	3
Detroit, Mich.	288	167	69	25	14	4
Evansville, Ind.	38	26	8	1	2	–
Fort Wayne, Ind.	58	35	12	4	3	2
Gary, Ind.	19	11	6	–	1	1
Grand Rapids, Mich.	61	42	13	2	1	–
Indianapolis, Ind.	178	108	41	9	8	2
Madison, Wis.	46	28	11	4	3	6
Milwaukee, Wis.	157	116	31	7	2	–
Peoria, Ill.	30	17	10	1	1	2
Rockford, Ill.	47	27	15	3	–	1
South Bend, Ind.	63	43	17	1	1	1
Toledo, Ohio	138	85	36	9	3	2
Youngstown, Ohio	71	47	20	1	2	1
W.N. CENTRAL	808	554	165	24	36	27
Des Moines, Iowa	53	35	10	2	2	2
Duluth, Minn.	56	40	7	3	2	2
Kansas City, Kans.	44	31	11	–	1	4
Kansas City, Mo.	133	98	25	5	2	5
Lincoln, Nebr.	29	23	4	1	–	2
Minneapolis, Minn.	120	84	18	5	8	4
Omaha, Nebr.	102	68	22	2	7	3
St. Louis, Mo.	159	99	45	3	6	1
St. Paul, Minn.	68	52	9	2	5	2
Wichita, Kans.	44	24	14	1	3	2

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P & I** TOTAL
	ALL AGES	>65	45-64	25-44	<1	
S. ATLANTIC	1,348	813	333	105	66	48
Atlanta, Ga.	150	100	32	12	3	7
Baltimore, Md.	190	113	43	15	14	1
Charlotte, N.C.	78	44	18	11	1	5
Jacksonville, Fla.	108	61	28	9	6	3
Miami, Fla.	160	103	43	10	1	2
Norfolk, Va.	58	30	17	4	6	2
Richmond, Va.	101	59	35	2	4	7
Savannah, Ga.	44	28	9	5	2	5
St. Petersburg, Fla.	121	102	14	5	–	9
Tampa, Fla.	85	44	24	10	5	1
Washington, D.C.	203	102	60	17	18	2
Wilmington, Del.	50	27	10	5	6	4
E.S. CENTRAL	800	486	209	43	24	38
Birmingham, Ala.	135	81	33	8	8	4
Chattanooga, Tenn.	58	46	9	2	1	6
Knoxville, Tenn.	49	36	8	1	–	1
Louisville, Ky.	112	61	36	4	4	8
Memphis, Tenn.	194	109	55	17	2	6
Mobile, Ala.	65	41	15	4	3	3
Montgomery, Ala.	53	30	17	1	3	5
Nashville, Tenn.	134	82	36	6	3	5
W.S. CENTRAL	1,458	850	368	116	64	42
Austin, Tex.	62	47	7	4	2	1
Baton Rouge, La.	46	26	14	2	1	1
Corpus Christi, Tex.	33	20	9	2	1	1
Dallas, Tex.	182	106	52	11	7	2
El Paso, Tex.	74	40	12	7	13	9
Fort Worth, Tex.	95	59	26	6	1	5
Houston, Tex.	399	197	114	41	13	4
Little Rock, Ark.	45	31	12	1	–	4
New Orleans, La.	182	108	46	20	6	–
San Antonio, Tex.	149	108	23	8	7	3
Shreveport, La.	67	31	23	6	7	1
Tulsa, Okla.	124	77	30	8	6	11
MOUNTAIN	670	433	127	45	43	32
Albuquerque, N.Mex.	71	48	10	6	3	8
Colo. Springs, Colo.	36	26	5	2	3	3
Denver, Colo.	139	92	18	14	13	5
Las Vegas, Nev.	65	34	22	4	2	6
Ogden, Utah	26	15	1	–	9	2
Phoenix, Ariz.	146	93	31	9	7	2
Pueblo, Colo.	32	21	7	1	1	2
Salt Lake City, Utah	50	31	11	2	3	4
Tucson, Ariz.	105	73	22	7	2	–
PACIFIC	2,192	1,471	454	124	75	72
Berkeley, Calif.	22	19	2	1	–	1
Fresno, Calif.	91	62	12	7	8	10
Glendale, Calif.	32	23	6	2	–	2
Honolulu, Hawaii	66	36	19	4	5	5
Long Beach, Calif.	120	86	23	6	5	6
Los Angeles, Calif.	648	443	134	39	14	2
Oakland, Calif.	104	54	32	8	6	2
Pasadena, Calif.	34	26	5	3	–	2
Portland, Oreg.	116	71	25	9	7	–
Sacramento, Calif.	81	51	18	3	5	3
San Diego, Calif.	236	156	48	9	10	3
San Francisco, Calif.	174	110	42	14	4	4
San Jose, Calif.	158	114	21	9	5	6
Seattle, Wash.	180	124	42	8	1	6
Spokane, Wash.	66	47	14	2	2	12
Tacoma, Wash.	64	49	11	–	3	8
TOTAL	13,203	8,418	3,109	767	490	464

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza

†Because of changes in reporting methods in these 4 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

Surgical Wound Infections — Continued

Staphylococcus epidermidis (4.8%), *Pseudomonas aeruginosa* (4.6%), and *Enterobacter* spp. (4.1%). Nongroup D streptococci were isolated from 5.4% of the infections; group B streptococci caused 1.6% of the infections and group A streptococci, 0.7%. *Bacteroides fragilis* was isolated from 2.9% of the infections, and other anaerobic species were isolated from 6.7%. Anaerobes were isolated almost twice as frequently from patients on the obstetrics (15.3%) and gynecology (13.9%) services as from those on general surgery (8.4%), and more frequently from non-incisional (12.3%) than from incisional (8.3%) sites. No cultures were obtained from 6.5% of the infections, and no pathogens were isolated from an additional 4.7%.

Wound infections on the surgery service occurred with a seasonal pattern, showing a distinct increase in rate of infections during the summer months compared with the remainder of the year; in addition, a smaller peak of infections frequently occurred during the mid-winter months of January or February. No seasonal pattern was apparent in the frequency of surgical wound infections on the obstetrics and gynecology services. By pathogen, the summer seasonal increase was apparent for infections caused by *S. aureus, P. aeruginosa*, and *Klebsiella* spp. It was not apparent, however, for *E. coli*, group D streptococci, or *Bacteroides* spp.

Reported by Hospital Infections Br, Bacterial Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: From 1975 through 1978, an average of 83 hospitals participated each year in NNIS, with an average of 77.7 reporting each month; a mean of only 2.8 hospitals joined or left NNIS each year. Although each hospital in NNIS is responsible for conducting surveillance for nosocomial infections, the infections are reported in a standard fashion, using definitions provided by CDC.

Although the patient-discharge denominator used for calculating infection rates in NNIS does not allow a rate to be calculated by the number or type of operative procedures, it does provide a consistent basis for calculating rates. Data from the National Center for Health Statistics' Hospital Discharge Survey for 1974 and 1977 (*1,2*) show that in both years 41.8% of hospitalized patients had a surgical operation and an average of 1.4 operations were performed per patient with surgery. The fact that these data show no change in the overall frequency of surgical procedures suggests that the decreasing rate of incisional wound infections reported by NNIS hospitals is real and not due to a decreasing frequency of surgical procedures. Because of the limited nature of data collected by the surveillance system, information is not available through NNIS to evaluate the reason for the changing frequency in the rate of infections on the different services. The increase in the rate of infections for the obstetric service, in contrast to the decreasing rates for the other services, may be linked with the increasing frequency of cesarian section (*3,4*).

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Epidemiologic Notes and Reports

Wound Botulism — Texas, California, Washington

Texas, California, and Washington have each recently reported cases of wound botulism. These cases bring to 21 the total number of recorded cases of wound botulism in the United States since 1943, when the syndrome was first reported.

Texas: On May 17, 1979, a 35-year-old man sustained a crush injury to his left hand while at work. He was taken immediately to a local hospital, where the wound was debrided. Over the next 2 weeks he underwent 5 operative procedures on his hand, including open reduction and internal fixation of the metacarpals and extensive debridement with excision on all the interosseous muscles. During the course of these operative procedures, he was placed on intravenous therapy with cephalosporins.

On June 4, the patient noted some dysphagia, and his spouse commented that his voice had changed. In a neurologic consultation, obtained the following day, vertical nystagmus, ptosis, difficulty with speech, and right-arm weakness were noted. Sensation and deep-tendon reflexes were normal. Within the next 2 days, the patient noted progressive weakness, and his breathing became labored. The patient required intubation on June 6.

Because wound botulism was suspected, 2 vials of trivalent botulinal antitoxin were administered on June 6, and the patient was switched to therapy with penicillin. Cultures taken during a dressing change on June 5 subsequently grew *Clostridium botulinum*, and serum was found to be positive for type A botulinal toxin. On June 8, the patient's hand was amputated and a tracheostomy was performed. The patient's course was complicated by bilateral pneumonia, but he responded well to antibiotics. He was taken off the respirator after 31 days and was discharged from the hospital 80 days after the original injury.

California: On May 27, 1979, a 6-year-old, hearing-impaired boy sustained a compound fracture of his left arm in a fall from a swing. Following open reduction of the fracture, he was treated for 2 days with an intravenous cephalosporin and was discharged on oral cephalosporin therapy.

Six days after the injury, the child indicated the presence of abdominal and throat discomfort, and his mother noted that he appeared lethargic and had a poor appetite. On June 3, he was admitted to a community hospital with the diagnosis of dehydration and weakness; he was transferred to a neighboring medical center on June 5.

On arrival at the medical center, the child was noted to be hypoxic and hypercapnic ($p\ CO_2 = 110$) and was immediately intubated. He was not alert, but did respond to painful stimuli with semi-purposeful weak movements of his extremities; muscle tone was flaccid, with brisk and symmetric deep-tendon reflexes. His pupils were widely dilated and sluggishly reactive to light, with absent doll's eye movements and gag reflex. When the patient's cast was removed, there was a 1.5-cm surgical laceration on the volar aspect of the wrist. A small amount of serosanguineous fluid was expressible, but there was no induration, crepitus, or lymphadenopathy. An extensive neurologic evaluation demonstrated no evidence of an intracranial lesion, and within several days of admission, after his electrolyte and respiratory abnormalities had been corrected, the patient's mental status returned to normal.

On June 8, the patient received 3 vials of botulinal antitoxin and was placed on intravenous penicillin. Cultures of the patient's wound, taken on June 7, subsequently grew a

Wound Botulism — Continued

variety of organisms including *C. botulinum* type B; type A botulinal toxin was found in the patient's serum.

By the 36th hospital day, the patient was able to walk, although with difficulty; he required intermittent ventilatory support for 46 days. His hospital course was complicated by osteomyelitis, which responded well to intravenous antibiotic therapy.

Washington: On October 29, 1979, a 29-year-old farmer from Oregon partially severed his left hand in a potato conveyor belt. The wound was promptly debrided at a local hospital, and the patient was placed on therapy with an oral cephalosporin.

The wound did not heal well, and 1 week later the patient was transferred to a hospital in Seattle. On admission, the hand was thoroughly debrided, and 3 necrotic digits were removed. Cultures prepared at the time grew enterococcus, *Serratia*, and Beta-hemolytic streptococci, and the patient was placed on broad-spectrum antibiotic coverage. On November 15-16, the patient began to complain of difficulty swallowing, and during the next several days he began to experience increasing problems with dysarthria and diplopia; no neurologic signs were noted on examination, however. On November 19, he suffered a respiratory arrest, was intubated, and was placed on a respirator.

Wound cultures taken on November 17 subsequently grew *C. botulinum*, type A; the patient's serum, however, was negative for toxin when tested on November 26. The patient has shown gradual improvement in muscle strength, but remains dependent on a respirator.

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Editorial Note: Wound botulism is a rare disease, but with the widespread distribution of botulinal spores in the environment the diagnosis should always be considered in wound cases in which there is development of characteristic neurologic signs and symptoms.

The period of time from injury to onset of symptoms in the 21 reported cases in the United States has ranged from 4 to 18 days. The median age for all cases has been 19 years, with a range of 6-44 years (*1*); wound botulism in a neonate (resulting from infection of the umbilical stump) has never been reported, although it is theoretically possible. Antibiotic therapy does not preclude development of the disease, as is demonstrated in the 3 cases reported here.

CDC considers wound botulism to be confirmed in a person with symptoms of botulism when *C. botulinum* is cultured from the wound or when toxin is detected in the

(Continued on next page)

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Wound Botulism — Continued

patient's serum. The California case reported here is unique because the patient had type A botulinal toxin in his blood, while *C. botulinum* type B was cultured from the wound; presumably, the patient had an infection with both types.

Reference

1. CDC. Botulism in the United States, 1899-1977: handbook for epidemiologists, clinicians, and laboratory workers. Atlanta: CDC, 1979.

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