CENTERS FOR DISEASE CONTROL

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MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

Outbreak of *Pseudomonas aeruginosa* Serotype 0:9 Associated with a Whirlpool

The largest reported outbreak of whirlpool-associated dermatitis caused by *Pseudomonas aeruginosa*, and the first in which serotype 0:9 has been implicated, occurred among 75 persons from March 5-11, 1981.

The patients, who had visited Atlanta between March 4-10, had an acute illness characterized by a maculo-papular, vesicular, or pustular rash (Figure 1). Seventy (93%) of them were in Atlanta for a national hockey tournament in which 26 teams from 6 different states (Alabama, Georgia, Michigan, New Jersey, North Carolina, Tennessee) and Canada participated. Fifty-three patients (71%) were hockey players. Patients ranged in age from 5-43 (mean age 15 years); 59 were males and 16 were females. Sixty-six (88%) of them stayed in the same hotel in Atlanta, 3 (4%) stayed in another hotel, and 6 (8%) stayed with relatives or friends. Associated symptoms included itching for 60%; ear pain, 48%; weakness, 32%; headache, 28%; sore throat, 28%; axillary lymphadenopathy, 17%; 6% had painful breasts. The rash usually affected the trunk and proximal extremities; for 16.2% of the patients, it also involved the neck, and 13.5% had rash on their faces. The rash lasted an average of 8 days (range 1-21 days); 10 patients had the rash more than once, but the problem resolved without treatment.

A case-control study pointed to an association between cases and use of the whirlpool ($X^2 = 140$, $p < 0.001$) and heated indoor swimming pool ($X^2 = 135$, $p < 0.001$) at the Atlanta hotel where most of the patients had stayed. Three patients had only used the hotel's whirlpool. When patients were compared with controls who had used the whirlpool or swimming pool and had not developed a rash, neither age nor length of time in the water was a significant risk factor. Use of the pools on March 6 and 7, days when unusually large numbers of persons went swimming, seemed to be associated with elevated risk. Showering with soap after swimming appeared to confer some protection, although the difference was not statistically significant. Twelve patients who had each used the whirlpool only once had an estimated incubation period of 6 hours to 5 days (mean 38 hours).

Skin lesions from 28 persons were cultured; *P. aeruginosa* was isolated from 13 (10 were serotype 0:9; 3 were non-typable). In addition, specimens from 6 asymptomatic persons who had used the whirlpool in Atlanta were cultured; only 1 (from the axilla) grew *P. aeruginosa*—serotype 0:11. The recreational facility at the hotel where most patients had stayed was inspected on March 13; the sand filters and automatic chlorinators were functioning properly; water from the whirlpool had a pH of 7.2 and a free chlorine level of 0.6 mg/L, and the swimming pool water had a pH of 7.4 and a free chlorine level of 1.5 mg/L. A culture of a water sample from the indoor swimming pool did not grow

Pseudomonas aeruginosa — Continued

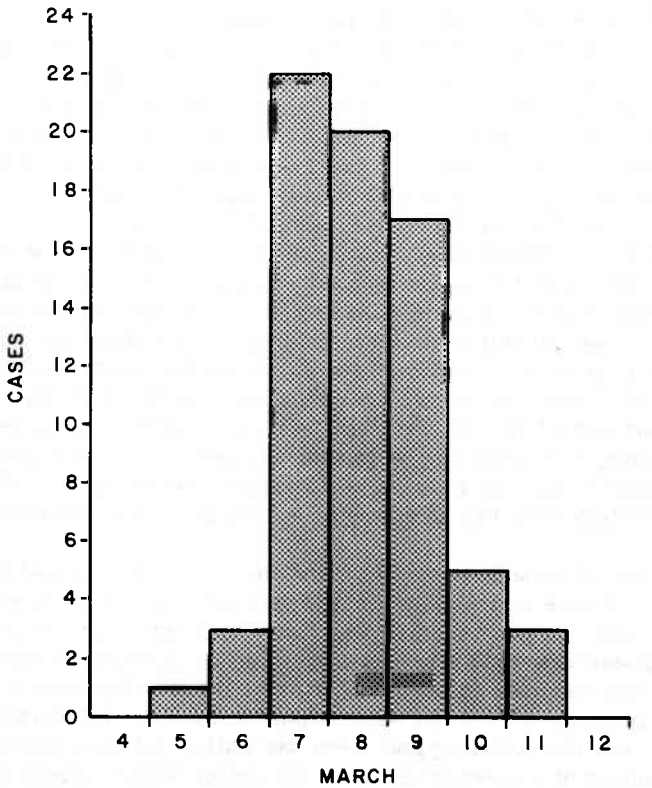
any organisms. A water sample from the whirlpool and a swab from a floor drain grew *P. aeruginosa* serotype 0:9.

Reported by E Helton, RN, TJ Chester, MD, State Epidemiologist, Alabama State Dept of Public Health; T McKinley, MPH, RK Sikes, DVM, State Epidemiologist, Georgia Dept of Human Resources; J Moody, PHN, KA Tait, Oakland County Div of Health, Michigan; R Ashley, S Scheiber, WE Parkin, DVM, State Epidemiologist, New Jersey State Dept of Health; JL Holliday, MD, Guilford County Health Dept, North Carolina; MP Hines, DVM, State Epidemiologist, North Carolina State Dept of Human Resources; RL Parker, DVM, State Epidemiologist, South Carolina State Dept of Health and Environmental Control; M Duffy, Knox County Health Dept, Tennessee; RH Hutcheson Jr, MD, State Epidemiologist, Tennessee State Dept of Public Health; RM Craig, RN, ZM Davison, MD, Scarborough Health Dept, Ontario, Canada, Bacterial Diseases Div, Center for Infectious Diseases, Field Services Div, Epidemiology Program Office, CDC.

Editorial Note: Since 1975, when outbreaks of dermatitis caused by *P. aeruginosa* were first described (*1*), the disease has continued to occur among whirlpool users (*2-6*). In this outbreak, the observation that none of the exposed asymptomatic persons from whom culture specimens were obtained was colonized with the epidemic strain strengthens the hypothesis of a pathogenic role for the bacterium (*4*).

It is interesting to note that the duration of exposure in the whirlpool did not appear to be associated with the occurrence of illness, and that the risk of developing rash appears to be related to the numbers of people who used the whirlpool on a particular day.

FIGURE 1. Cases of dermatitis by date of onset, Atlanta, Georgia, March 1981



Pseudomonas aeruginosa – Continued

Suggested health and safety guidelines for public spas and hot tubs were recently published by CDC (*7*). There are no known reports of outbreaks occurring at facilities in which the pool water has been continuously maintained at pH 7.2-7.8 with free residual chlorine levels of at least 1.0 mg/L.

References

1. McCausland WJ, Cox PJ: *Pseudomonas* infection traced to motel whirlpool. J Environ Health 1975;37:455-9.
2. CDC. Pool-associated rash illness – North Carolina. MMWR 1975;24:349-50.
3. CDC. Skin rash associated with pool exposure – Minnesota. MMWR 1975;24:166-71.
4. Washburn J, Jacobson JA, Marston E, Thorsen B. *Pseudomonas aeruginosa* rash associated with a whirlpool. JAMA 1976;235:2205-7.
5. Sausker WF, Aeling JL, Fitzpatrick JE, Judson FN. *Pseudomonas* folliculitis acquired from a health spa whirlpool. JAMA 1978;239:2362-5.
6. CDC. Rash associated with use of whirlpools – Maine. MMWR 1979;28:182-4.
7. CDC. Suggested health and safety guidelines for public spas and hot tubs. Atlanta: CDC, 1981 (HHS publication no. 99-960).

Diphyllobothriasis Associated with Salmon – United States

An outbreak of fish tapeworm disease (*Diphyllobothrium* sp.) in the United States was heralded by a report to the Los Angeles County Department of Health Services of 4 cases in late 1980. On September 1, a group of physicians had attended a party at which *sushi*, a Japanese-style dish containing raw fish, was served. The *sushi* was made with tuna and red snapper, both purchased fresh in California, and with salmon brought fresh from Alaska. The illness of 2 persons who attended the party is described below:

Case 1: On September 11, a 26-year-old man who had eaten all 3 varieties of raw fish at the party developed abdominal distention, flatulence, belching, intermittent abdominal cramping pain, and diarrhea. His symptoms persisted until September 18, when he passed in his stool approximately 4 feet of tapeworm, identified as *Diphyllobothrium*. His symptoms improved markedly, but borborygmi persisted, associated with fatigability and a 4-pound weight loss. He was treated with niclosamide, and his symptoms rapidly resolved. Follow-up stool examination was negative.

Case 2: On September 13, a 27-year-old woman who had eaten all 3 varieties of raw fish at the September 1 party developed nausea, abdominal cramps, and diarrhea. The diarrhea remitted but she continued to have anorexia, fatigability, intermittent mild abdominal cramping, and constipation. Stool examination on September 22 revealed *Diphyllobothrium* ova and proglottids. She was treated with niclosamide, and her symptoms resolved. Follow-up stool examination was negative.

Two other persons at the party ate all 3 varieties of raw fish; both became infected with fish tapeworm. Another person, who ate only the red snapper, was not affected.

At the same time the above cases were reported, an increased number of requests for niclosamide from other West Coast physicians treating patients for *Diphyllobothrium* infections was noticed by the Parasitic Disease Drug Service at CDC. Requests from California, Oregon, Washington, Alaska, and Hawaii for drugs to treat patients with *Diphyllobothrium* increased nearly 4-fold, from 17 requests in 1979 to 59 in 1980 (excluding re-

Diphyllobothriasis – Continued

quests to treat Southeast Asian refugees, who are concentrated in those states). In the same time period, similar requests from the other 45 states only rose from 157 to 166.

With the cooperation of local and state health officials, a telephone survey was conducted to determine the most likely source of infection for cases in the Pacific Coast states. Of 39 patients interviewed, 32 (82%) could recall eating salmon but denied eating any other fish known to transmit fish tapeworm infection. Those respondents who purchased the fish themselves said they bought it fresh. Although most reported eating the fish raw, a few said it had been prepared by pickling, smoking, or cooking.

The U.S. Food and Drug Administration (FDA) monitors salmon fishing and marketing patterns in Alaska, where three-fourths of the salmon sold in the United States is caught. Until the last few years, most of the salmon caught there was canned or frozen before retail sale. The canning process or adequate freezing destroys any infective *Diphyllobothrium* plerocercoids in the fish. The FDA reports a trend in recent years to ship fresh, unprocessed Alaskan salmon to markets, especially when Alaskan processors are overwhelmed by large salmon runs that occasionally occur. Such a run took place in 1980 in Bristol Bay, Alaska, and large amounts of sockeye salmon (*Oncorhynchus nerka*) were flown fresh to markets in other states. The complete distribution of these fish is unknown.

(Continued on page 337)

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

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

DISEASE	27th WEEK ENDING		MEDIAN 1976-1980	CUMULATIVE, FIRST 27 WEEKS		
	July 11 1981	July 5 1980		July 11 1981	July 5 1980	MEDIAN 1976-1980
Aseptic meningitis	194	110	110	2,197	1,879	1,311
Brucellosis	2	4	3	81	88	88
Chickenpox	1,692	1,692	1,492	161,635	149,459	149,459
Diphtheria	–	–	–	3	2	44
Encephalitis: Primary (arthropod-borne & unspec.)	19	12	14	398	311	323
Post-infectious	3	2	3	48	102	116
Hepatitis, Viral: Type B	346	313	300	10,297	8,678	7,856
Type A	371	458	460	12,995	13,913	15,041
Type unspecified	147	211	165	5,797	5,712	4,592
Malaria	36	35	20	696	954	304
Measles (rubeola)	47	284	451	2,393	11,918	21,683
Meningococcal infections: Total	43	28	28	2,123	1,603	1,431
Civilian	43	28	28	2,111	1,592	1,375
Military	–	–	–	12	11	13
Mumps	51	54	166	2,765	6,552	12,242
Pertussis	16	39	35	516	596	596
Rubella (German measles)	33	60	192	1,498	2,924	10,029
Tetanus	3	2	1	30	32	31
Tuberculosis	401	467	499	13,773	13,771	14,801
Tularemia	2	6	6	98	82	68
Typhoid fever	14	10	10	248	191	191
Typhus fever, tick-borne (Rky. Mt. spotted)	51	27	47	561	432	410
Venereal diseases:						
Gonorrhea: Civilian	16,861	18,280	18,280	501,546	490,027	490,027
Military	233	655	694	14,567	13,975	14,076
Syphilis, primary & secondary: Civilian	432	380	352	15,254	13,287	12,309
Military	9	5	6	189	165	159
Rabies in animals	132	106	68	3,769	3,498	1,616

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1981		CUM. 1981
Anthrax	–	Poliomyelitis: Total	–
Botulism	31	Paralytic	–
Cholera	1	Psittacosis (Ohio 1)	59
Congenital rubella syndrome	5	Rabies in man (Okla. 1)	1
Leprosy (Kans. 1, Va. 1, Tex. 8, Hawaii 3)	122	Trichinosis	91
Leptospirosis (Mo. 1)	21	Typhus fever, flea-borne (endemic, murine) (Tex. 6)	26
Plague	5		

All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending July 11, 1981 and July 5, 1980 (27th week)

REPORTING AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKEN-POX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS (VIRAL), BY TYPE			MALARIA	
						Primary		Post-infectious	B	A	Unspecified		
	1981	1981	1981	1981	CUM. 1981	1981	1980	1981	1981	1981	1981	1981	CUM. 1981
UNITED STATES	194	2	1,692	–	3	19	12	3	346	371	147	36	696
NEW ENGLAND	7	–	203	–	–	1	–	–	13	6	10	–	36
Maine	–	–	21	–	–	–	–	–	5	–	–	–	1
N.H.	1	–	3	–	–	–	–	–	2	2	2	–	3
Vt.	–	–	1	–	–	–	–	–	–	–	–	–	2
Mass.	2	–	111	–	–	–	–	–	2	2	8	–	19
R.I.	3	–	31	–	–	–	–	–	–	–	–	–	2
Conn.	1	–	36	–	–	1	–	–	4	2	–	–	9
MID. ATLANTIC	6	–	158	–	–	4	2	1	90	67	25	5	79
Upstate N.Y.	1	–	73	–	–	–	1	1	17	9	3	1	22
N.Y. City	2	–	63	–	–	1	–	–	11	17	6	2	28
N.J.	2	–	NN	–	–	2	–	–	21	17	11	2	21
Pa.	1	–	22	–	–	1	1	–	41	24	5	–	8
E.N. CENTRAL	25	–	953	–	–	4	3	–	35	38	16	2	32
Ohio	–	–	46	–	–	–	2	–	15	7	3	–	6
Ind.	11	–	84	–	–	3	1	–	8	12	7	–	6
Ill.	–	–	78	–	–	–	–	–	2	9	3	–	9
Mich.	14	–	524	–	–	1	–	–	10	10	3	2	11
Wis.	–	–	221	–	–	–	–	–	–	–	–	–	–
W.N. CENTRAL	4	1	46	–	–	1	–	–	15	15	12	1	20
Minn.	–	–	3	–	–	1	–	–	3	–	1	1	9
Iowa	–	–	9	–	–	–	–	–	–	1	–	–	2
Mo.	1	–	1	–	–	–	–	–	6	6	11	–	2
N. Dak.	–	–	9	–	–	–	–	–	–	–	–	–	1
S. Dak.	–	–	22	–	–	–	–	–	–	1	–	–	1
Nebr.	–	–	–	–	–	–	–	–	4	2	–	–	–
Kans.	3	1	2	–	–	–	–	–	2	5	–	–	5
S. ATLANTIC	43	–	128	–	1	1	1	1	76	59	15	1	76
Del.	–	–	4	–	–	–	–	–	1	1	–	–	1
Md.	3	–	19	–	–	–	–	–	7	2	5	1	17
D.C.	–	–	1	–	–	–	–	–	2	1	–	–	1
Va.	5	–	7	–	–	1	1	–	6	2	1	–	11
W. Va.	–	–	59	–	–	–	–	–	1	–	–	–	3
N.C.	4	–	NN	–	–	–	–	–	2	3	1	–	7
S.C.	–	–	2	–	–	–	–	–	15	3	1	–	1
Ga.	6	–	–	–	–	–	–	–	19	18	–	–	8
Fla.	25	–	36	–	1	–	–	1	23	29	7	–	27
E.S. CENTRAL	21	–	57	–	–	2	–	–	26	31	3	3	7
Ky.	6	–	56	–	–	–	–	–	4	5	–	–	–
Tenn.	13	–	NN	–	–	2	–	–	18	14	2	–	–
Ala.	2	–	1	–	–	–	–	–	2	7	1	3	6
Miss.	–	–	–	–	–	–	–	–	2	5	–	–	1
W.S. CENTRAL	33	1	31	–	–	2	1	1	22	56	21	3	49
Ark.	–	–	–	–	–	–	–	–	1	3	3	–	3
La.	4	–	NN	–	–	1	–	–	2	5	–	–	2
Okla.	1	–	–	–	–	–	–	–	4	15	1	–	4
Tex.	28	1	31	–	–	1	1	1	15	33	17	3	40
MOUNTAIN	7	–	17	–	1	1	–	–	17	35	25	–	23
Mont.	4	–	–	–	1	–	–	–	1	1	1	–	–
Idaho	–	–	–	–	–	–	–	–	–	6	–	–	1
Wyo.	–	–	–	–	–	–	–	–	–	–	4	–	–
Colo.	2	–	15	–	–	1	–	–	4	12	1	–	11
N. Mex.	–	–	–	–	–	–	–	–	1	4	2	–	1
Ariz.	–	–	NN	–	–	–	–	–	3	7	10	–	4
Utah	1	–	1	–	–	–	–	–	–	1	5	–	3
Nev.	–	–	1	–	–	–	–	–	8	4	2	–	3
PACIFIC	48	–	99	–	1	3	5	–	52	64	20	21	374
Wash.	1	–	35	–	–	–	–	–	5	8	2	–	19
Oreg.	–	–	–	–	–	–	–	–	6	8	–	–	9
Calif.	45	–	7	–	–	3	4	–	37	47	18	21	342
Alaska	–	–	10	–	1	–	–	–	4	1	–	–	1
Hawaii	2	–	47	–	–	–	1	–	–	–	–	–	3
Guam	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	1
P.R.	1	–	10	–	–	–	–	–	–	4	3	–	9
V.I.	–	–	1	–	–	–	–	–	–	–	–	1	3
Pac. Trust Terr.	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–

NN: Not notifiable. NA: Not available.

All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending July 11, 1981 and July 5, 1980 (27th week)

REPORTING AREA	MEASLES (RUBEOLA)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	1981	1981	CUM. 1981	CUM. 1981
UNITED STATES	47	2,393	11,918	43	2,123	1,603	51	2,765	16	33	1,498	30
NEW ENGLAND	–	72	660	2	137	100	2	132	–	–	100	1
Maine	–	5	33	1	21	3	–	27	–	–	33	–
N.H.	–	4	327	1	13	5	–	15	–	–	35	–
Vt.	–	1	226	–	6	13	1	5	–	–	–	–
Mass.	–	54	50	–	33	35	–	39	–	–	20	–
R.I.	–	–	2	–	12	7	–	17	–	–	–	–
Conn.	–	8	22	–	52	37	1	29	–	–	12	1
MID. ATLANTIC	21	739	3,537	10	284	278	9	491	–	8	183	1
Upstate N.Y.	1	197	640	–	92	93	6	83	–	7	80	–
N.Y. City	4	57	1,083	2	47	71	3	59	–	1	47	1
N.J.	–	51	773	2	66	60	–	81	–	–	46	–
Pa.	16	434	1,041	6	79	54	–	268	–	–	10	–
E.N. CENTRAL	1	73	2,068	9	253	179	9	786	4	5	322	5
Ohio	–	15	279	3	91	66	2	118	–	–	1	1
Ind.	–	8	86	2	38	32	2	91	1	–	113	–
Ill.	–	21	301	–	62	27	1	153	2	3	78	–
Mich.	1	28	228	4	58	42	3	292	–	2	33	3
Wis.	–	1	1,174	–	4	12	1	132	1	–	97	1
W.N. CENTRAL	–	10	1,281	2	97	69	1	172	1	–	75	3
Minn.	–	6	1,050	–	32	18	–	6	1	–	6	2
Iowa	–	1	20	–	18	8	–	40	–	–	4	–
Mo.	–	1	63	–	28	30	–	27	–	–	3	1
N. Dak.	–	–	–	–	1	1	–	–	–	–	–	–
S. Dak.	–	–	–	–	4	4	–	1	–	–	–	–
Nebr.	–	1	81	–	–	–	–	3	–	–	1	–
Kans.	–	1	67	2	14	8	1	95	–	–	61	–
S. ATLANTIC	6	325	1,801	6	489	373	7	379	5	1	124	6
Del.	–	–	3	–	4	2	–	9	–	–	1	–
Md.	–	2	70	2	36	35	1	72	–	–	1	–
D.C.	–	1	–	–	1	1	–	1	–	–	–	–
Va.	–	6	296	1	62	34	–	106	–	–	6	–
W. Va.	–	8	7	–	19	13	2	61	–	–	22	–
N.C.	–	4	122	–	70	74	–	12	–	–	4	2
S.C.	–	–	154	–	64	48	–	9	3	–	8	1
Ga.	4	105	798	–	81	68	–	33	–	1	33	1
Fla.	2	199	351	3	152	98	4	76	2	–	49	2
E.S. CENTRAL	–	2	324	4	155	150	1	65	–	–	25	2
Ky.	–	–	51	1	44	49	–	31	–	–	14	–
Tenn.	–	–	167	2	45	42	–	20	–	–	10	–
Ala.	–	2	22	1	50	38	1	13	–	–	1	2
Miss.	–	–	84	–	16	21	–	1	–	–	–	–
W.S. CENTRAL	15	843	910	5	361	181	3	161	3	5	130	5
Ark.	–	1	15	2	25	14	–	1	–	–	1	1
La.	–	–	11	–	87	66	–	3	–	–	9	2
Okla.	–	6	765	1	28	16	–	–	–	–	–	1
Tex.	15	836	119	2	221	85	3	157	3	5	120	1
MOUNTAIN	–	31	386	1	72	58	3	101	1	3	70	2
Mont.	–	–	1	–	6	2	1	6	–	–	4	–
Idaho	–	1	–	–	3	4	–	4	–	–	3	–
Wyo.	–	–	–	–	–	2	–	1	–	–	1	–
Colo.	–	8	19	–	31	14	–	40	–	–	27	–
N. Mex.	–	8	11	–	6	7	–	–	–	–	4	–
Ariz.	–	4	302	1	17	10	1	23	–	–	18	1
Utah	–	–	46	–	5	2	1	16	1	1	4	1
Nev.	–	10	7	–	4	17	–	11	–	2	9	–
PACIFIC	4	298	951	4	275	215	16	478	2	11	469	5
Wash.	–	1	168	–	52	38	2	131	–	1	61	–
Oreg.	–	3	–	–	42	39	–	55	–	–	30	–
Calif.	4	292	773	3	171	135	11	269	2	7	369	5
Alaska	–	–	5	1	6	3	1	6	–	–	–	–
Hawaii	–	2	5	–	4	–	2	17	–	3	9	–
Guam	NA	4	5	–	–	1	NA	6	NA	NA	1	–
P.R.	21	233	94	–	10	7	4	102	–	–	3	3
V.I.	4	9	6	–	–	1	–	4	–	–	1	–
Pac. Trust Terr.	NA	–	6	–	–	–	NA	4	NA	NA	1	–

NA: Not available.
All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending July 11, 1981 and July 5, 1980 (27th week)

REPORTING AREA	TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		VENEREAL DISEASES (Civilian)						RABIES (in Animals)
								GONORRHEA			SYPHILIS (Pri. & Sec.)			
	1981	CUM. 1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1980	CUM. 1981
UNITED STATES	401	13,773	98	14	248	51	561	16,861	501,546	490,027	432	15,254	13,287	3,769
NEW ENGLAND	13	397	1	–	12	–	5	396	12,331	12,366	8	332	283	13
Maine	1	24	–	–	1	–	–	23	613	718	–	2	4	7
N.H.	1	11	–	–	–	–	–	18	431	408	–	10	1	1
Vt.	–	12	–	–	–	–	–	5	211	290	–	13	3	–
Mass.	8	228	–	–	7	–	3	216	5,107	5,107	3	219	159	1
R.I.	–	21	–	–	–	–	–	8	630	753	–	19	16	–
Conn.	3	101	1	–	4	–	2	126	5,339	5,090	5	69	100	4
MID. ATLANTIC	74	2,255	10	1	42	–	9	2,541	59,540	52,515	104	2,342	1,925	37
Upstate N.Y.	23	387	10	1	7	–	2	305	9,887	9,678	12	219	157	28
N.Y. City	35	863	–	–	24	–	2	1,200	24,688	20,379	60	1,413	1,273	–
N.J.	7	508	–	–	7	–	3	341	11,260	9,461	23	313	238	5
Pa.	9	497	–	–	4	–	2	695	13,705	12,997	9	397	257	4
E.N. CENTRAL	31	1,791	1	–	14	10	27	2,300	75,112	75,749	7	970	1,261	485
Ohio	16	345	–	–	1	10	25	943	26,565	20,376	2	136	204	39
Ind.	–	148	–	–	–	–	2	254	6,917	7,348	3	108	98	43
Ill.	NA	715	–	–	6	–	–	425	18,818	23,716	–	503	698	374
Mich.	11	490	1	–	5	–	–	394	16,035	17,023	–	174	212	4
Wis.	4	93	–	–	2	–	–	284	6,777	7,286	2	49	49	25
W.N. CENTRAL	8	494	8	1	9	3	19	833	24,042	21,782	12	291	161	1,628
Minn.	1	87	–	–	2	–	–	80	3,733	3,699	5	106	56	291
Iowa	–	49	–	–	2	1	1	112	2,612	2,437	–	13	8	509
Mo.	7	216	7	1	2	–	10	437	11,195	9,170	7	149	78	126
N. Dak.	–	20	–	–	–	–	–	12	331	323	–	4	3	262
S. Dak.	–	36	–	–	1	–	–	37	682	694	–	2	2	209
Nebr.	–	16	1	–	1	–	2	53	1,813	1,830	–	3	6	112
Kans.	–	70	–	–	1	2	6	102	3,676	3,629	–	14	8	119
S. ATLANTIC	115	3,066	8	–	35	22	335	4,106	122,934	121,825	120	4,025	3,148	214
Del.	–	43	1	–	–	–	2	72	1,872	1,688	–	7	8	–
Md.	7	301	–	–	11	–	36	568	13,151	12,921	9	303	218	8
D.C.	10	191	–	–	1	–	–	227	7,702	8,484	10	340	226	–
Va.	8	309	–	–	1	3	47	NA	10,803	10,395	NA	347	286	37
W. Va.	2	101	–	–	4	–	4	110	1,890	1,573	1	10	12	9
N.C.	24	524	1	–	1	15	142	894	19,316	17,813	9	319	226	2
S.C.	16	291	2	–	–	3	66	617	11,929	11,573	10	271	175	14
Ga.	17	488	4	–	2	–	31	881	25,509	22,844	40	1,030	913	101
Fla.	31	818	–	–	15	1	7	737	30,762	34,534	41	1,398	1,084	43
E.S. CENTRAL	27	1,185	2	–	5	4	51	1,724	41,971	39,809	32	979	1,080	244
Ky.	10	319	2	–	–	–	2	231	5,327	5,936	2	46	75	72
Tenn.	11	383	–	–	1	2	36	715	15,856	14,266	17	391	437	135
Ala.	6	324	–	–	2	–	2	246	12,829	11,537	11	272	225	37
Miss.	–	159	–	–	2	2	11	532	7,959	8,070	2	270	343	–
W.S. CENTRAL	50	1,519	50	4	28	9	100	1,990	66,082	63,687	97	3,694	2,580	688
Ark.	5	154	25	–	1	1	16	240	4,773	4,772	4	71	83	92
La.	10	282	2	–	–	–	–	55	10,058	11,275	–	820	604	20
Okla.	6	173	13	–	3	6	65	280	7,105	6,237	3	87	52	133
Tex.	29	910	10	4	24	2	19	1,415	44,146	41,403	90	2,716	1,841	443
MOUNTAIN	5	399	15	1	19	2	13	526	19,738	18,901	9	392	309	114
Mont.	–	23	4	–	4	2	7	20	697	679	–	9	1	69
Idaho	–	6	2	–	–	–	3	32	839	869	–	14	9	–
Wyo.	–	6	1	–	–	–	2	43	465	550	–	8	8	5
Colo.	–	44	4	–	5	–	–	174	5,308	5,055	7	124	84	13
N. Mex.	2	71	1	–	–	–	–	69	2,159	2,362	–	72	51	16
Ariz.	3	184	–	–	9	–	–	129	6,114	5,153	–	80	107	9
Utah	–	27	2	1	1	–	–	25	929	876	2	16	9	–
Nev.	–	38	1	–	–	–	1	34	3,227	3,357	–	69	40	2
PACIFIC	78	2,667	3	7	84	1	2	2,445	79,796	83,393	43	2,229	2,540	346
Wash.	6	199	1	–	3	–	–	198	6,315	6,971	–	66	129	3
Oreg.	–	104	–	–	3	–	–	94	4,915	5,866	4	50	56	3
Calif.	70	2,254	2	7	78	1	2	2,004	65,056	66,836	38	2,069	2,252	327
Alaska	–	39	–	–	–	–	–	79	1,978	2,011	–	5	6	13
Hawaii	2	71	–	–	–	–	–	70	1,532	1,709	1	39	97	–
Guam	NA	7	–	NA	–	NA	–	NA	47	77	NA	–	4	–
P.R.	–	178	–	–	3	–	–	46	1,701	1,400	15	352	291	44
V.I.	–	1	–	1	3	–	–	5	87	108	2	11	10	–
Pac. Trust Terr.	NA	32	–	NA	–	NA	–	NA	165	214	NA	–	–	–

NA: Not available.
All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE IV. Deaths in 121 U.S. cities,* week ending July 11, 1981 (27th week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)						P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	682	453	158	30	23	19	47
Boston, Mass.	208	132	53	10	7	6	25
Bridgeport, Conn.	41	30	8	1	1	1	–
Cambridge, Mass.	27	20	6	1	–	–	3
Fall River, Mass.	30	24	4	1	–	1	1
Hartford, Conn.	65	33	23	3	2	4	2
Lowell, Mass.	24	13	8	2	–	1	3
Lynn, Mass.	15	13	2	–	–	–	–
New Bedford, Mass.	29	21	6	–	2	–	1
New Haven, Conn.	53	39	7	5	2	–	4
Providence, R.I.	59	42	11	3	1	2	3
Somerville, Mass.	5	3	1	1	–	–	–
Springfield, Mass.	39	22	10	1	4	2	2
Waterbury, Conn.	36	27	5	1	3	–	1
Worcester, Mass.	52	34	14	1	1	2	2
MID. ATLANTIC	2,401	1,492	583	175	83	68	81
Albany, N.Y.	61	42	10	3	2	4	–
Allentown, Pa.	18	14	4	–	–	–	1
Buffalo, N.Y.	100	62	24	7	3	4	6
Camden, N.J.	34	20	9	4	1	–	2
Elizabeth, N.J.	34	19	12	3	–	–	–
Erie, Pa.†	62	41	13	3	2	3	1
Jersey City, N.J.	51	30	12	3	2	4	1
N.Y. City, N.Y.	1,227	778	273	111	42	23	40
Newark, N.J.	80	35	31	5	3	6	2
Paterson, N.J.§	28	17	7	2	–	2	1
Philadelphia, Pa.	284	167	78	16	16	7	9
Pittsburgh, Pa.†	57	32	19	3	–	3	1
Reading, Pa.	26	18	5	2	1	–	2
Rochester, N.Y.	121	78	34	3	2	4	8
Schenectady, N.Y.	24	17	5	–	2	–	–
Scranton, Pa.†	23	13	8	2	–	–	1
Syracuse, N.Y.	97	53	29	5	6	4	2
Trenton, N.J.	34	22	8	2	1	1	1
Utica, N.Y.	22	18	1	1	–	2	2
Yonkers, N.Y.	18	16	1	–	–	1	1
E.N. CENTRAL	2,220	1,344	532	150	104	89	56
Akron, Ohio	55	41	8	2	2	2	–
Canton, Ohio	32	15	11	1	5	–	1
Chicago, Ill.	435	234	114	39	26	22	6
Cincinnati, Ohio	160	103	39	5	5	7	21
Cleveland, Ohio	187	92	57	16	9	13	–
Columbus, Ohio	133	87	25	10	9	2	1
Dayton, Ohio	122	75	31	9	5	2	–
Detroit, Mich.	261	160	61	22	14	4	3
Evansville, Ind.	40	30	8	–	1	1	–
Fort Wayne, Ind.	50	34	14	1	–	1	5
Gary, Ind.	9	5	1	1	2	–	–
Grand Rapids, Mich	55	36	8	4	2	5	3
Indianapolis, Ind.	154	78	46	11	8	11	4
Madison, Wis.	32	15	8	5	3	1	1
Milwaukee, Wis.	150	96	34	9	3	8	–
Peoria, Ill.	55	39	11	3	1	1	3
Rockford, Ill.	50	36	8	1	1	4	6
South Bend, Ind.	45	35	6	3	1	–	–
Toledo, Ohio	107	73	25	6	2	1	2
Youngstown, Ohio	88	60	17	2	5	4	–
W.N. CENTRAL	745	441	183	51	27	43	40
Des Moines, Iowa	54	35	12	4	2	1	1
Duluth, Minn.	31	19	7	1	3	1	2
Kansas City, Kans.	54	28	17	4	3	2	4
Kansas City, Mo.	121	74	32	5	1	9	4
Lincoln, Nebr.	32	21	8	1	1	1	6
Minneapolis, Minn.	86	52	16	7	3	8	5
Omaha, Nebr.	75	40	21	8	–	6	1
St. Louis, Mo.	162	94	46	12	4	6	10
St. Paul, Minn.	67	46	13	3	4	1	4
Wichita, Kans.	63	32	11	6	6	8	3
S. ATLANTIC	1,305	738	356	106	45	57	37
Atlanta, Ga.	110	72	25	8	2	3	–
Baltimore, Md.	269	141	76	27	13	10	7
Charlotte, N.C.	58	30	21	2	3	1	4
Jacksonville, Fla.	121	68	36	8	5	4	2
Miami, Fla.	101	50	30	11	2	8	3
Norfolk, Va.	54	28	16	8	1	1	2
Richmond, Va.	71	35	22	7	2	5	5
Savannah, Ga.	30	16	7	3	1	3	2
St. Petersburg, Fla.	126	95	21	5	3	2	2
Tampa, Fla.	76	51	14	3	3	5	7
Washington, D.C.	249	125	79	24	9	12	3
Wilmington, Del.	40	27	9	–	1	3	–
E.S. CENTRAL	671	425	155	43	21	26	31
Birmingham, Ala.	90	52	22	7	3	6	–
Chattanooga, Tenn.	54	33	13	3	1	3	1
Knoxville, Tenn.	46	33	8	1	1	3	–
Louisville, Ky.	112	65	31	7	3	6	12
Memphis, Tenn.	167	115	36	11	5	–	9
Mobile, Ala.	45	28	10	3	1	3	3
Montgomery, Ala.	40	25	9	1	1	4	–
Nashville, Tenn.	117	74	26	10	6	1	6
W.S. CENTRAL	1,148	613	291	125	66	53	30
Austin, Tex.	47	31	12	4	–	–	–
Baton Rouge, La.	39	26	5	1	4	3	3
Corpus Christi, Tex.	46	20	12	4	5	5	–
Dallas, Tex.	142	81	35	17	7	2	1
El Paso, Tex.	40	23	9	3	2	3	2
Fort Worth, Tex.	120	76	26	4	2	12	7
Houston, Tex.	289	123	90	47	20	9	5
Little Rock, Ark.	93	17	19	8	5	4	3
New Orleans, La.	118	72	23	9	8	6	1
San Antonio, Tex.	145	79	31	21	7	7	2
Shreveport, La.	24	14	9	–	–	1	–
Tulsa, Okla.	85	51	20	7	6	1	6
MOUNTAIN	690	401	155	68	46	20	36
Albuquerque, N.Mex.	66	27	14	15	9	1	5
Colo. Springs, Colo.	41	17	15	5	1	3	3
Denver, Colo.	153	97	33	14	8	1	7
Las Vegas, Nev.	73	35	24	7	6	1	3
Ogden, Utah	31	18	7	1	4	1	4
Phoenix, Ariz.	160	103	25	17	9	6	2
Pueblo, Colo.	18	15	2	–	–	1	3
Salt Lake City, Utah	62	32	15	5	7	3	4
Tucson, Ariz.	86	57	20	4	2	3	5
PACIFIC	1,707	1,088	370	127	64	58	62
Berkeley, Calif.	23	14	4	5	–	–	–
Fresno, Calif.	73	32	18	10	6	7	3
Glendale, Calif.§	31	23	6	2	–	–	1
Honolulu, Hawaii	33	15	8	5	4	1	1
Long Beach, Calif.	82	51	16	9	2	4	2
Los Angeles, Calif.§	470	302	102	35	18	13	15
Oakland, Calif.§	85	55	18	6	3	3	3
Pasadena, Calif.	33	22	8	1	2	–	3
Portland, Oreg.	118	76	27	5	5	5	2
Sacramento, Calif.	71	49	11	8	3	–	6
San Diego, Calif.	144	95	32	10	4	3	3
San Francisco, Calif.	150	95	39	8	3	5	1
San Jose, Calif.	187	120	42	11	10	4	15
Seattle, Wash.	121	86	20	6	2	7	2
Spokane, Wash.	55	33	12	4	–	6	2
Tacoma, Wash.	31	20	7	2	2	–	3
TOTAL	11,570††	6,955	2,783	875	479	433	420

*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 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

§Data not available this week. Figures are estimates based on average percent of regional totals.

Diphyllobothriasis – Continued

In order to determine whether salmon continues to pose a health risk to American consumers, the FDA is sampling fish purchased in retail markets. A sample of 10 sockeye salmon ("Copper River Reds" and "Cordova Reds") purchased in Seattle in June 1981 revealed that none was infected with *Diphyllobothrium*; however, all 10 contained numerous larvae of *Anisakis simplex*, a marine roundworm that can also infect humans.

Reported by JA Turner, MD, Harbor-UCLA Medical Center, Torrance; FJ Sorvillo, MPH, Los Angeles County Dept of Health Services; RA Murray, MPH, J Chin, MD, State Epidemiologist, California Dept of Health Services; JP Middaugh, MD, State Epidemiologist, Alaska Dept of Health and Social Services; PD Dietrich, MD, Honolulu; NH Wiebenga, MD, State Epidemiologist, Hawaii Dept of Health; JA Googins, MD, State Epidemiologist, Oregon Dept of Human Resources; J Allard, PhD, State Epidemiologist, Washington State Dept of Social and Health Services; AJ Ruttenber, MD, PhD, Emory University School of Medicine, Atlanta, Georgia; DB Barr, JW Bier, PhD, P Shandruck, JW Swanson, U.S. Food and Drug Administration; Field Services Div, Epidemiology Program Office, Parasitic Disease Drug Service, Parasitic Diseases Div, Center for Infectious Diseases, CDC.

Editorial Note: The growing popularity of raw fish dishes such as Japanese *sushi* and *sashimi*, Latin American *ceviche*, and Dutch green herring is placing consumers at greater risk for helminthic infections. Fish tapeworm disease is acquired by ingestion of plerocercoid larvae of *Diphyllobothrium* species in raw or incompletely cooked fish. The usual sources of this infection on this continent are freshwater fish from the Great Lakes, Canada, and Alaska (*1*). In this outbreak, however, anadromous salmon probably transmitted the infection. Although salmon have been frequently implicated in fish tapeworm disease in Japan (*2,3*), these fish are rarely reported as vectors of human infection in North America (*4*). Zoologic studies, however, have documented a high rate of *Diphyllobothrium* infection in salmon from Alaska (*5,6*).

Although diphyllobothriasis may occur with abdominal discomfort, diarrhea, constipation, and occasional megaloblastic anemia, most cases are asymptomatic. Several species of *Diphyllobothrium* can infect humans. *D. latum* cannot be distinguished from other species by its eggs or proglottids; species determination requires examination of the scolex. In order to document the species, the Parasitic Diseases Division of CDC would like to receive purged scolices from salmon-associated infections; preserved specimens should be submitted only through state health department laboratories.

Fish tapeworm infection is not acquired from properly canned fish. Infection from eating fresh fish can be prevented by cooking until all parts of the fish reach a temperature of at least 56 C (133 F) for 5 minutes. Freezing to −18 C (0 F) for 24 hours or to −10 C (14 F) for 72 hours can also prevent infection. Preparation by placing the fish in a brine solution may be effective if appropriate salt concentration, fillet size, and contact time are observed. Commercially prepared lox (smoked salmon) is usually brined before smoking and should not constitute a source of infection.

Anisakiasis is a roundworm infection acquired from eating raw marine fish, usually herring. It can cause intestinal symptoms, and the parasite occasionally migrates into the body tissues (*7*). Cooking to at least 60 C (140 F) for 5 minutes or freezing to −20 C (−4 F) for 60 hours prevents this infection (*8*).

References

1. Bonsdorff B Von. Diphyllobothriasis in man. London: Academic Press, 1977.
2. Tomita S, Tongu Y, Sakumoto D, et al. Epidemiological survey for *Diphyllobothrium latum* in Okayama prefecture, Japan J Parasit 1979;28:317-21.
3. Eguchi C. *Diphyllobothrium latum* (Linnaeus, 1758). In: Progress of medical parasitology in Japan. Vol 5. Tokyo: Meguro Parasitological Museum, 1973:125-44.

Diphyllobothriasis – Continued

4. Margolis L, Rausch RL, Robertson E. *Diphyllobothrium ursi* from man in British Columbia—first report of this tapeworm in Canada. Can J Public Health November/December 1973;588-9.
5. Pennell DA, Becker CD, Scofield NR. Helminths of sockeye salmon (*Oncorhynchus nerka*) from the Kvichak River system, Bristol Bay, Alaska. U.S. Fish & Wildlife Service, Fishery Bulletin 1973 71:267-77.
6. Rausch RL, Hilliard DK. Studies on the helminth fauna of Alaska. XLIX. The occurrence of *Diphyllobothrium latum* (Linnaeus, 1758) (Cestoda: Diphyllobothriidae) in Alaska, with notes on other species. Can J Zool 1970;48:1201-19.
7. Jackson GJ. The "new disease" status of human anisakiasis and North American cases: a review. J Milk Food Technol 1975;38:769-73.
8. Bier JW. Experimental anisakiasis: cultivation and temperature tolerance determinations. J Milk Food Technol 1976;39:132-7.

Current Trends

Anthrax Contamination of Haitian Goatskin Products

Recent tests of Haitian handicrafts made from goatskin revealed that 6 of 22 (27%) samples were contaminated with *Bacillus anthracis* (Table 1). The test items were collected at the Miami, New York, and San Juan Quarantine Stations in 1980 and 1981. Similar handicrafts were found to be frequently contaminated in 1974 (26%) and in 1976-1977 (55%).

Importation from Haiti of goatskins or products made in part or whole from goatskin with attached hair has not been permitted at U.S. ports of entry since April 19, 1974. Prohibited handicrafts include a variety of products such as drums, mosaic pictures, purses, rugs, and voodoo dolls. The ban was implemented after a Florida resident acquired anthrax from a contaminated goatskin drumhead (*1*). Commercial importation of raw goatskins for tanning in this country is not restricted.

Reported by Bacterial Zoonoses Br, Bacterial Zoonoses Laboratory Sect, Center for Infectious Diseases, and Quarantine Div, Center for Prevention Services, CDC.

Reference

1. CDC. Cutaneous anthrax acquired from imported Haitian drums—Florida. MMWR 1974;23: 142, 147.

TABLE 1. *Bacillus anthracis* culture results for imported Haitian goatskin products, United States, 1974, 1976-1977, and 1980-1981.

Items	1974	1976-1977	1980-1981
Rugs	45/58 (78%)*	11/13 (85%)	3/5 (60%)
Mosaic pictures	20/55 (36%)	10/13 (77%)	1/1 (100%)
Drums	22/219 (10%)	2/16 (13%)	2/13 (15%)†
Goatskins	4/10 (40%)		0/2
Miscellaneous	5/26 (19%)		0/1
Total	96/368 (26%)	23/42 (55%)	6/22 (27%)

*Number positive/Number cultured (percent).

†13 pooled specimens of goatskin drumheads or decorative rings on 60 drums; each pooled specimen represented 3 to 6 drums.

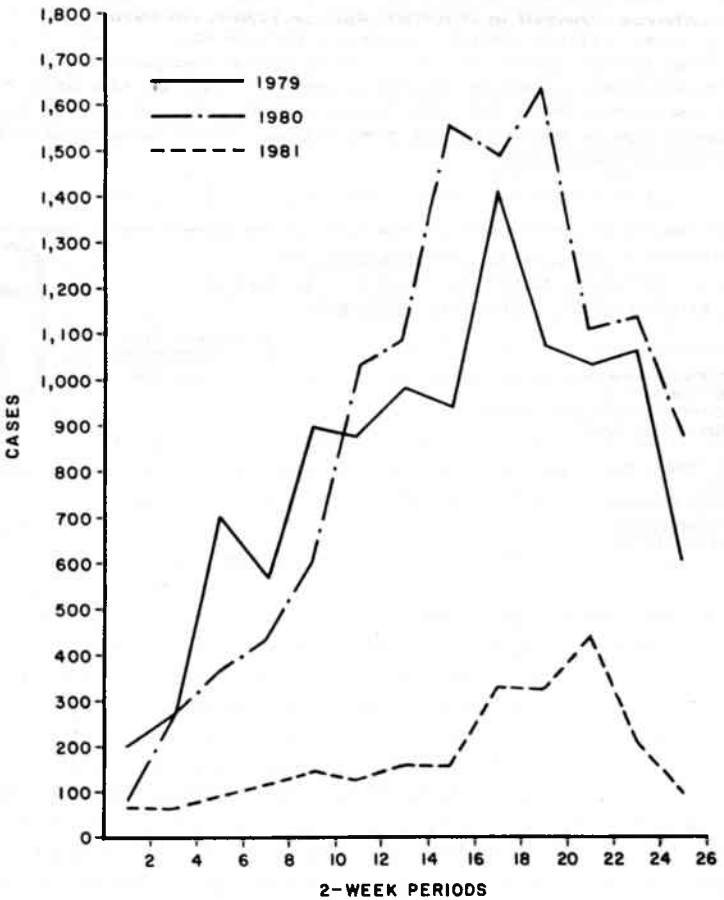
Measles – United States, First 26 Weeks, 1981

A total of 2,347 measles cases were reported in the United States during the first 26 weeks of 1981. This is a record low for the first 6 months of any year and a decrease of 79.8% from the 11,634 cases reported during the same period last year. Fewer than 100 measles cases per week were reported for 19 of the first 26 weeks of 1981, and record low numbers of cases were reported for 25 of the 26 weeks.

As in previous years, incidence of reported measles peaked in the late spring (Figure 2). However, the peak was considerably lower than in 1979 and 1980, years in which measles incidence had already declined to record lows.

During the first 26 weeks of 1981, only 5 states reported measles incidences of ≥5 cases/100,000 population <18 years of age. In contrast, 32 states in 1979 and 27 states in 1980 reported incidences of that magnitude. The highest measles incidence in 1981 was reported from Texas (20.1 cases/100,000 population <18 years of age), followed by

FIGURE 2. Reported measles cases by 2-week periods, United States, 1979, 1980, 1981



Measles – Continued

Pennsylvania (13.4), Florida (8.9), Georgia (6.5), and New York (5.2). Thirteen states reported no measles cases in the first 26 weeks of 1981, as did 5 states in 1980 and 2 in 1979. So far in 1981, 44 states have reported no measles for at least 4 consecutive weeks. In contrast, 31 states in 1980 and 34 states in 1979 were free of reported measles for at least 4 consecutive weeks. In addition, 30 states in 1981 reported no cases of measles in the final 4 weeks of the 26-week period.

Reported by Immunization Div, Center for Prevention Services, CDC.

Editorial Note: The data presented here demonstrate that the measles-elimination effort has been successful in dramatically lowering measles incidence and that the goal of measles elimination is attainable. Although transmission has been interrupted for prolonged periods in most areas of the country, continued intensive efforts will have to be maintained to achieve the goal by October 1982.

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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: Attn: Editor, Morbidity and Mortality Weekly Report, Centers for Disease Control, Atlanta, Georgia 30333.

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