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Epidemiologic Notes and Reports

Outbreak of a Distinct Strain of Penicillinase-Producing *Neisseria gonorrhoeae* – King County, Washington

In 1986, penicillinase-producing *Neisseria gonorrhoeae* (PPNG) infections accounted for approximately 2% of gonorrhea reported in the United States, a 90% increase over the 1985 percentage (*1*). The majority of PPNG cases were reported in Florida, New York, and California. Except for a brief outbreak in 1980 (*2*), King County (Seattle), Washington, had reported sporadically occurring cases of PPNG until the incidence began to increase in the second half of 1986.

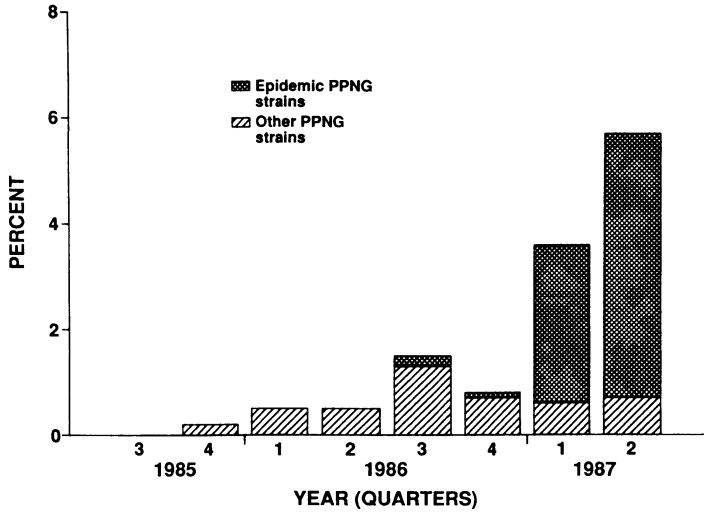
The incidence of PPNG increased substantially in King County in 1987. Eighty-four (5%) of the 1,784 cases of gonorrhea reported in King County from January 1 through June 30, 1987, were PPNG, whereas 30 (0.8%) of the 3,990 gonorrhea cases reported in 1986 were PPNG. The PPNG cases reported during the first half of 1987 included two cases of disseminated gonococcal infection (DGI) and one case of adult gonococcal ophthalmia. Eight (5%) of 164 reported cases of gonococcal pelvic inflammatory disease were PPNG. Thirty-one (37%) of the PPNG infections occurred in women; 52 (62%), in heterosexual men; and one, in a bisexual man. The increase appears to be limited to King County since immediately adjacent counties reported only 13 PPNG cases during the same time period. The evidence in this outbreak does not indicate that PPNG was imported from other areas of the United States or from other countries.

Seventy-five (89%) of the PPNG isolates found during the first half of 1987 belong to a single auxotype/serovar (A/S) class of *N. gonorrhoeae* (Figure 1). The epidemic strain is a proline-requiring auxotype, Protein IA-4 serovar. The proportion of PPNG cases caused by other A/S classes remained stable in the community. All PPNG isolates of the epidemic strain have had characteristic antimicrobial susceptibilities, with minimum inhibitory concentration ranges: penicillin G >8 μg/mL, tetracycline 0.125-0.5 μg/mL, spectinomycin 16 μg/mL, cefoxitin 0.5-1.0 μg/mL, and ceftriaxone 0.001-0.004 μg/mL.

To control this outbreak, the Seattle-King County Department of Public Health has intensified its case finding, interviewing, and partner-tracing efforts and has advised all clinical facilities to increase their screening efforts. The health department, in cooperation with the King County Medical Society and local media, has advised all

Neisseria gonorrhoeae — *Continued*

FIGURE 1. Percentage of total gonorrhea cases due to penicillinase-producing *Neisseria gonorrhoeae* (PPNG) — Seattle-King County, Washington, 1985-1987



health providers to use only ceftriaxone or spectinomycin as initial therapy for all persons suspected or proven to have gonorrhea (*3*). In accordance with CDC treatment guidelines (*3,4*), a 7-day course of tetracycline or doxycycline for possible coexistent chlamydial infection continues to be recommended for all patients with gonorrhea. Providers have also been advised to confirm all suspected cases by culture to allow screening for β-lactamase production and to immediately report all confirmed PPNG infections by telephone to the health department.

Reported by: RJ Rice, MD, HH Handsfield, MD, R Tulloch, Seattle-King County Dept of Public Health and University of Washington, Seattle; L Klopfenstein, M Donnelly, JM Kobayashi, MD, State Epidemiologist, Washington Dept of Social and Health Svcs. Sexually Transmitted Diseases Laboratory Program, Center for Infectious Diseases; Div of Sexually Transmitted Diseases, Center for Prevention Svcs, CDC.

Editorial Note: PPNG outbreaks caused by organisms belonging to a single A/S class are uncommon. Recent reported outbreaks from Denver (*5*), Miami (*6*), and Amsterdam (*7*) have all implicated multiple strains in endemic transmission. It is unclear whether multiple-strain outbreaks arise because of importation of different PPNG strains into a community or through the conjugal transfer of plasmids that code for β-lactamase from native PPNG strains to non-PPNG gonococci.*

Single-strain PPNG epidemics in the United States were suspected in 1980 (*2*) in Seattle and in Shreveport, Louisiana. At that time, complete A/S classification was not possible. In single-strain epidemics, eradication of PPNG from a community may be feasible. In the United States (*2*) and in Sweden (*8*), eradication efforts have been more successful in areas where single-strain PPNG has been suspected. A/S classification may be useful as an adjunct to the management guidelines for the control of antibiotic-resistant strains of *N. gonorrhoeae* recently published by CDC (*3*).

References

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*Scientists hypothesize that conjugal transfer of β-lactamase plasmids may occur when an infection consists of PPNG and non-PPNG strains (a mixed infection).

Neisseria gonorrhoeae — *Continued*

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International Notes

Human Rabies Despite Treatment With Rabies Immune Globulin and Human Diploid Cell Rabies Vaccine — Thailand

On March 6, 1987, a rabid dog severely bit a ten-year-old Thai boy on the left calf and forehead and on the right eyelid through to the bulbar conjunctiva. The wounds were immediately flushed with saline alone and sutured at a local hospital. Tetanus toxoid and suckling mouse rabies vaccine were given intramuscularly (IM). The following day, 21 hours after exposure, the patient received 1 mL human diploid cell rabies vaccine (HDCV) IM in the gluteal area and 20 IU/kg of human rabies immune globulin (HRIG) IM in the opposite gluteal area. Subsequent 1 mL injections of HDCV were given IM in the gluteal area on days 2, 6, and 13. Twenty-one days after exposure, the patient developed fever, headache, lethargy, vomiting, and progressive paralysis of all extremities. The patient died 15 days later, 36 days after exposure. His brain tissue was positive for rabies virus by direct fluorescent antibody.

Reported by: P Lumbiganon, MD, V Bunyahotra, MD, C Pairojkul, MD, Khon Kaen University, Khon Kaen; Thailand Ministry of Public Health, Bangkok, Thailand. Viral and Rickettsial Zoonoses Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: This is the second laboratory-confirmed case of rabies reported to have occurred despite administration of HDCV and HRIG within 24 hours of exposure. The previous case involved a 20-year-old South African male who received HRIG 13 hours after a rabid mongoose bit his finger. One milliliter of HRIG was infiltrated around the wound, and the remainder of the dosage was given IM in the deltoid (*1*). All injections of HDCV (days 0, 3, 7, and 14) were given IM in the gluteal area. On day 21, the patient developed paresthesia of the bitten arm. He died of rabies 16 days later.

There are several possible explanations for the observed failure of HDCV and HRIG to protect against rabies in these cases. Although the timing of vaccine administration was similar to the recommended schedule in both cases (*2*), vaccine was given in the gluteal area. A reduced antibody response has been shown when hepatitis B vaccine

Human Rabies — Continued

is administered in the gluteal area instead of the deltoid (*3*). Presumably, subcutaneous fat in the gluteal area may interfere with the immunogenicity of HDCV. Moreover, only saline solution was used to flush the Thai patient's wounds. Cleaning bite wounds with saline alone has been shown to be less effective in decreasing the risk of rabies than cleaning with anti-viral solutions, such as soap and water (*4*). Finally, persons with severe bites to the head and digits, sites of rich innervation, are more likely to develop rabies than persons bitten elsewhere (*5*). Inoculation of rabies virus near or into the peripheral nerves might bypass the protection conferred by rabies immune globulin and vaccine, both of which are ineffective after the virus invades the nervous system. Evidence did not indicate immune deficiency in these patients or decreased immunogenicity of the vaccine lots. Also, HDCV has been shown to be stable even when exposed to high ambient temperatures for up to 11 weeks (*6*).

(Continued on page 765)

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

Disease	46th Week Ending			Cumulative, 46th Week Ending		
	Nov. 21, 1987	Nov. 15, 1986	Median 1982-1986	Nov. 21, 1987	Nov. 15, 1986	Median 1982-1986
Acquired ImmunodeficiencySyndrome (AIDS)	850	254	N	17,775	11,817	N
Aseptic meningitis	161	257	237	10,145	9,627	9,306
Encephalitis: Primary (arthropod-borne & unspec)	21	17	31	1,150	1,089	1,179
Post-infectious	2	2	-	90	95	95
Gonorrhea: Civilian	12,482	17,068	17,068	681,960	787,151	787,151
Military	561	457	403	14,650	14,943	18,958
Hepatitis: Type A	372	500	444	21,564	20,197	20,174
Type B	469	477	493	22,366	22,841	22,841
Non A, Non B	39	55	N	2,585	3,143	N
Unspecified	41	75	104	2,759	3,882	5,087
Legionellosis	20	15	N	779	721	N
Leprosy	-	-	5	174	227	215
Malaria	12	22	20	774	1,011	920
Measles: Total*	15	5	5	3,529	5,858	2,443
Indigenous	14	5	N	3,111	5,555	N
Imported	1	-	N	418	303	N
Meningococcal infections: Total	57	37	45	2,549	2,204	2,377
Civilian	57	37	45	2,548	2,202	2,373
Military	-	-	-	1	2	7
Mumps	167	108	49	11,439	4,576	2,928
Pertussis	41	37	35	2,216	3,833	2,105
Rubella (German measles)	1	8	13	319	490	683
Syphilis (Primary & Secondary): Civilian	631	511	511	31,323	23,883	24,698
Military	3	3	3	139	146	263
Toxic Shock syndrome	7	6	N	291	316	N
Tuberculosis	419	428	415	18,753	19,380	19,380
Tularemia	1	7	6	179	143	236
Typhoid Fever	6	3	5	295	288	340
Typhus fever, tick-borne (RMSF)	6	2	6	580	720	808
Rabies, animal	48	83	94	4,128	4,919	4,919

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1987		Cum. 1987
Anthrax	1	Leptospirosis	33
Botulism: Foodborne	10	Plague	9
Infant	44	Poliomyelitis, Paralytic	-
Other	2	Psittacosis	75
Brucellosis	98	Rabies, human	-
Cholera	4	Tetanus (N.J. 1)	36
Congenital rubella syndrome	5	Trichinosis	33
Congenital syphilis, ages < 1 year	127	Typhus fever, flea-borne (endemic, murine) (Tex. 1)	33
Diphtheria	3		

*There were no cases of internationally imported measles reported for this week.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending November 21, 1987 and November 15, 1986 (46th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1987	1987	Cum. 1987	Cum. 1987	Cum. 1987	Cum. 1986	1987	1987	1987	1987	1987	Cum. 1987
UNITED STATES	17,775	161	1,150	90	681,960	787,151	372	469	39	41	20	174
NEW ENGLAND	706	9	40	2	21,188	19,135	12	34	-	5	-	12
Maine	26	1	4	-	608	771	-	1	-	-	-	-
N.H.	27	4	2	-	357	503	-	1	-	-	-	2
Vt.	12	1	5	-	201	240	-	3	-	-	-	-
Mass.	416	2	17	1	7,431	7,599	6	17	-	5	-	9
R.I.	53	1	3	1	1,934	1,602	2	5	-	-	-	-
Conn.	172	-	9	-	10,657	8,420	4	7	-	-	-	1
MID. ATLANTIC	4,942	38	129	7	106,684	135,973	37	85	6	8	8	19
Upstate N.Y.	573	8	47	3	14,840	16,238	6	14	5	-	2	-
N.Y. City	2,645	10	12	-	57,022	78,836	14	52	1	7	6	19
N.J.	1,152	3	9	-	14,703	17,552	8	10	-	1	-	-
Pa.	572	17	61	4	20,119	23,347	9	9	-	-	-	-
E.N. CENTRAL	1,155	28	335	12	104,211	106,300	28	44	5	4	6	8
Ohio	235	14	153	5	23,411	26,222	4	12	3	2	2	3
Ind.	88	2	50	-	8,287	11,214	10	5	-	1	-	-
Ill.	534	-	25	7	30,486	24,539	8	5	-	-	-	1
Mich.	210	12	71	-	33,424	32,918	6	22	2	1	4	3
Wis.	88	-	36	-	8,603	11,155	-	-	-	-	-	1
W.N. CENTRAL	401	4	84	-	27,750	33,720	20	19	1	-	-	-
Minn.	110	1	51	-	4,138	4,844	3	3	1	-	-	-
Iowa	25	-	13	-	2,715	3,445	-	1	-	-	-	-
Mo.	202	2	1	-	14,722	16,572	13	10	-	-	-	-
N. Dak.	2	-	1	-	253	281	-	-	-	-	-	-
S. Dak.	2	-	-	-	549	701	-	3	-	-	-	-
Nebr.	18	-	10	-	1,802	2,542	3	1	-	-	-	-
Kans.	42	1	8	-	3,571	5,335	1	1	-	-	-	-
S. ATLANTIC	3,121	23	155	33	179,461	203,672	41	104	6	3	4	6
Del.	28	-	6	1	3,061	3,358	-	-	-	-	-	-
Md.	406	-	19	6	20,469	23,892	7	16	1	1	1	2
D.C.	405	1	-	-	11,892	15,186	1	4	-	-	-	-
Va.	213	7	34	2	13,123	16,647	4	5	-	-	2	-
W. Va.	20	2	54	-	1,273	1,985	-	2	-	-	-	-
N.C.	156	1	26	-	26,442	31,525	3	17	1	2	1	-
S.C.	70	-	1	-	14,087	17,435	4	15	1	-	-	1
Ga.	436	6	1	-	32,055	33,742	3	12	-	-	-	-
Fla.	1,387	6	14	24	57,059	59,902	19	33	3	-	-	3
E.S. CENTRAL	259	22	56	7	51,711	63,110	6	31	4	-	1	-
Ky.	43	7	27	1	5,206	6,951	5	2	2	-	1	-
Tenn.	58	2	12	-	18,197	23,931	-	8	1	-	-	-
Ala.	130	10	17	1	16,232	18,454	-	14	1	-	-	-
Miss.	28	3	-	5	12,076	13,774	1	7	-	-	-	-
W.S. CENTRAL	1,903	9	141	4	77,510	90,615	48	36	4	7	1	4
Ark.	48	-	2	2	8,730	8,678	1	2	-	-	-	-
La.	297	-	28	-	13,054	15,611	6	13	2	-	-	-
Okla.	98	2	24	1	8,349	10,516	15	3	2	3	1	-
Tex.	1,460	7	87	1	47,377	55,810	26	18	-	4	-	4
MOUNTAIN	528	10	73	4	17,767	23,190	38	37	4	2	-	2
Mont.	5	-	1	-	494	608	3	1	-	-	-	-
Idaho	10	-	-	-	621	793	21	2	-	-	-	1
Wyo.	3	-	1	-	389	491	-	1	-	-	-	-
Colo.	205	7	42	-	3,947	5,954	2	4	1	2	-	-
N. Mex.	45	3	5	-	1,961	2,457	3	1	-	-	-	-
Ariz.	168	-	18	1	6,042	7,557	-	15	3	-	-	-
Utah	37	-	1	3	552	988	3	4	-	-	-	-
Nev.	55	-	5	-	3,761	4,342	6	9	-	-	-	1
PACIFIC	4,760	18	137	21	95,678	111,436	142	79	9	12	-	123
Wash.	298	-	11	4	7,863	8,359	40	13	-	3	-	6
Oreg.	147	-	-	-	3,604	4,773	35	12	3	-	-	-
Calif.	4,229	18	121	17	81,918	95,040	66	50	5	9	-	94
Alaska	13	-	2	-	1,546	2,382	1	4	1	-	-	-
Hawaii	73	-	3	-	747	1,134	-	-	-	-	-	23
Guam	3	-	-	-	177	184	-	-	-	-	-	-
P.R.	84	-	1	1	1,743	2,159	-	2	-	-	-	5
V.I.	-	-	-	-	253	247	-	-	-	-	-	-
Pac. Trust Terr.	-	-	-	-	344	424	-	-	-	-	-	47
Amer. Samoa	-	-	-	-	71	51	-	-	-	-	-	1

N: Not notifiable U: Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending November 21, 1987 and November 15, 1986 (46th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1987	1987	Cum. 1987	1987	Cum. 1987	Cum. 1986	Cum. 1987	1987	Cum. 1987	1987	Cum. 1987	Cum. 1986	1987	Cum. 1987	Cum. 1986
UNITED STATES	774	14	3,111	1	418	5,858	2,549	167	11,439	41	2,216	3,833	1	319	490
NEW ENGLAND	51	-	119	-	162	103	215	1	59	1	151	157	-	1	9
Maine	2	-	3	-	-	13	13	-	1	-	28	2	-	1	-
N.H.	2	-	61	-	102	43	20	1	11	1	39	81	-	-	1
Vt.	-	-	11	-	15	-	18	-	7	-	4	3	-	-	1
Mass.	20	-	27	-	38	36	104	-	22	-	51	41	-	-	4
R.I.	8	-	1	-	1	2	14	-	2	-	3	6	-	-	2
Conn.	19	-	16	-	6	9	46	-	16	-	26	24	-	-	1
MID. ATLANTIC	105	-	525	-	57	1,763	327	4	244	10	268	196	-	12	36
Upstate N.Y.	33	-	26	-	14	101	111	-	102	3	154	124	-	10	27
N.Y. City	20	-	444	-	19	727	34	-	10	5	13	10	-	1	5
N.J.	26	-	32	-	7	909	62	2	67	-	17	18	-	1	4
Pa.	26	-	23	-	17	26	120	2	65	2	84	44	-	-	-
E.N. CENTRAL	51	7	351	-	25	1,070	386	42	6,317	2	226	379	-	37	77
Ohio	13	-	1	-	4	10	128	8	113	2	74	158	-	-	1
Ind.	7	-	-	-	-	38	38	3	932	-	17	35	-	-	-
Ill.	7	7	178	-	18	677	97	11	2,587	-	15	38	-	27	67
Mich.	18	-	29	-	-	59	99	19	1,020	-	48	35	-	9	8
Wis.	6	-	143	-	3	286	24	1	1,665	-	72	110	-	1	1
W.N. CENTRAL	27	-	208	-	22	339	106	28	1,402	4	134	1,340	-	2	14
Minn.	8	-	19	-	20	49	29	7	781	-	13	47	-	-	1
Iowa	6	-	-	-	-	134	5	19	435	1	57	19	-	1	1
Mo.	7	-	188	-	1	31	31	1	31	2	33	22	-	-	1
N. Dak.	-	-	1	-	-	25	1	-	6	-	12	5	-	-	1
S. Dak.	-	-	-	-	-	-	3	-	90	-	3	14	-	-	-
Nebr.	5	-	-	-	-	1	6	-	4	-	1	10	-	-	-
Kans.	1	-	-	-	1	99	31	1	55	1	15	1,223	-	1	10
S. ATLANTIC	134	6	154	1	13	819	422	4	289	1	306	745	-	18	9
Del.	2	-	32	-	-	1	6	-	-	-	5	227	-	2	-
Md.	31	-	6	-	2	35	40	-	28	1	18	163	-	3	-
D.C.	18	-	-	-	1	2	10	-	1	-	-	-	-	1	-
Va.	25	-	1	-	-	60	66	-	74	-	50	40	-	1	-
W. Va.	2	-	-	-	-	2	4	-	39	-	50	25	-	-	-
N.C.	13	-	2	1§	4	4	50	2	29	-	119	74	-	1	-
S.C.	6	-	2	-	-	301	39	-	19	-	-	18	-	-	-
Ga.	5	-	8	-	1	93	83	-	40	-	23	132	-	2	-
Fla.	32	6	103	-	5	321	124	2	59	-	41	66	-	8	9
E.S. CENTRAL	15	-	3	-	3	70	133	1	1,275	-	47	49	-	3	4
Ky.	3	-	-	-	-	6	23	-	223	-	2	5	-	2	4
Tenn.	1	-	-	-	-	56	58	1	990	-	15	18	-	1	-
Ala.	5	-	1	-	3	2	43	-	61	-	24	25	-	-	-
Miss.	6	-	2	-	-	6	9	N	N	-	6	1	-	-	-
W.S. CENTRAL	52	-	444	-	4	723	176	81	1,208	5	274	238	-	11	70
Ark.	1	-	-	-	-	283	21	-	291	-	12	20	-	2	-
La.	1	-	-	-	-	4	22	77	644	1	49	15	-	-	-
Okla.	5	-	3	-	1	39	24	N	N	4	162	119	-	5	-
Tex.	45	-	441	-	3	397	109	4	272	-	51	84	-	4	70
MOUNTAIN	41	-	479	-	19	330	85	2	223	1	186	266	-	25	24
Mont.	-	-	127	-	1	8	4	-	6	-	6	19	-	8	2
Idaho	3	-	-	-	-	1	6	-	5	-	56	42	-	1	-
Wyo.	2	-	-	-	2	-	-	-	-	-	5	4	-	1	1
Colo.	13	-	5	-	4	10	30	1	30	-	64	66	-	-	1
N. Mex.	2	-	310	-	9	38	6	N	N	1	12	25	-	-	-
Ariz.	17	-	35	-	1	258	26	1	165	-	33	65	-	5	2
Utah	1	-	-	-	1	13	9	-	12	-	10	41	-	10	15
Nev.	3	-	2	-	1	2	4	-	5	-	-	4	-	-	3
PACIFIC	298	1	828	-	113	641	699	4	422	17	624	463	1	210	247
Wash.	25	-	34	-	10	167	74	-	57	2	94	147	-	2	17
Oreg.	6	-	19	-	81	12	31	N	N	-	70	12	-	2	4
Calif.	262	1	775	-	17	433	578	4	343	2	220	288	1	134	220
Alaska	3	-	-	-	1	-	6	-	7	-	5	3	-	2	-
Hawaii	2	-	-	-	4	29	10	-	15	13	235	16	-	70	6
Guam	-	-	2	-	-	5	5	-	5	-	-	-	-	1	4
P.R.	1	8	771	-	-	36	5	-	12	2	20	19	-	3	62
V.I.	-	-	-	-	-	-	-	1	17	-	-	-	-	1	-
Pac. Trust Terr.	-	-	1	-	-	-	1	-	5	-	1	-	-	1	2
Amer. Samoa	-	-	1	-	-	2	-	-	7	-	-	-	-	-	1

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International §Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending November 21, 1987 and November 15, 1986 (46th Week)

Reporting Area	Syphilis (Civilian) (Primary& Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1987	Cum. 1986	1987	Cum. 1987	Cum. 1986	Cum. 1987	Cum. 1987	Cum. 1987	Cum. 1987
UNITED STATES	31,323	23,883	7	18,753	19,380	179	295	580	4,128
NEW ENGLAND	570	434	-	567	627	1	28	8	7
Maine	1	19	-	22	34	-	1	-	3
N.H.	3	13	-	18	29	-	-	-	-
Vt.	4	9	-	14	16	-	1	-	-
Mass.	269	227	-	312	345	1	16	4	-
R.I.	11	19	-	58	42	-	3	-	1
Conn.	282	147	-	143	161	-	7	4	3
MID. ATLANTIC	5,799	3,350	1	3,424	3,851	1	35	25	367
Upstate N.Y.	223	173	1	455	555	1	9	11	54
N.Y. City	4,327	1,870	-	1,686	2,011	-	5	5	-
N.J.	619	594	-	596	652	-	21	1	15
Pa.	630	713	-	687	633	-	-	8	298
E.N. CENTRAL	780	776	2	2,121	2,270	3	33	42	151
Ohio	93	110	1	378	398	1	10	26	17
Ind.	54	103	-	211	250	-	4	1	17
Ill.	403	363	-	945	982	-	11	7	45
Mich.	174	160	1	500	540	-	5	5	27
Wis.	56	40	-	87	100	2	3	3	45
W.N. CENTRAL	163	193	1	546	568	63	11	53	861
Minn.	18	31	-	109	132	-	5	-	203
Iowa	26	8	-	37	44	4	2	1	253
Mo.	76	101	1	297	279	40	3	18	53
N. Dak.	1	6	-	8	10	1	-	-	96
S. Dak.	11	9	-	24	27	9	-	1	202
Nebr.	11	12	-	25	15	2	-	3	16
Kans.	20	26	-	46	61	7	1	30	38
S. ATLANTIC	10,773	7,217	-	4,020	3,849	5	32	221	1,169
Del.	64	52	-	37	43	1	-	2	-
Md.	556	403	-	348	279	-	4	46	380
D.C.	353	268	-	142	140	-	2	-	41
Va.	296	314	-	391	324	2	9	21	337
W. Va.	12	20	-	93	111	-	1	7	64
N.C.	650	461	-	473	535	2	3	80	8
S.C.	662	619	-	418	499	-	-	33	51
Ga.	1,506	1,333	-	711	645	-	-	29	189
Fla.	6,674	3,747	-	1,407	1,273	-	13	3	99
E.S. CENTRAL	1,708	1,574	-	1,686	1,713	8	4	98	294
Ky.	22	63	-	381	381	3	2	13	131
Tenn.	672	566	-	511	509	1	1	58	81
Ala.	450	459	-	495	540	1	1	15	75
Miss.	564	486	-	299	283	3	-	12	7
W.S. CENTRAL	3,972	4,671	1	2,226	2,462	70	29	117	558
Ark.	231	230	-	266	339	37	2	12	117
La.	781	803	-	272	391	3	-	-	13
Okla.	143	131	1	214	223	27	5	87	32
Tex.	2,817	3,507	-	1,474	1,509	3	22	18	396
MOUNTAIN	609	537	2	438	473	16	15	12	334
Mont.	9	7	-	13	27	2	-	10	147
Idaho	5	14	-	17	21	1	-	-	9
Wyo.	3	4	-	-	-	-	-	1	71
Colo.	110	122	1	40	58	5	-	-	7
N. Mex.	50	62	-	85	87	1	10	-	3
Ariz.	268	219	1	230	214	3	4	-	76
Utah	22	18	-	24	31	2	-	1	7
Nev.	142	91	-	29	35	2	1	-	14
PACIFIC	6,949	5,131	-	3,725	3,567	12	108	4	387
Wash.	129	160	-	216	180	4	8	-	-
Oreg.	269	103	-	113	111	5	2	1	-
Calif.	6,533	4,837	-	3,159	3,062	2	91	3	384
Alaska	4	-	-	62	55	1	-	-	3
Hawaii	14	31	-	175	159	-	7	-	-
Guam	2	1	-	26	34	-	-	-	-
P.R.	820	790	-	271	305	-	-	-	65
V.I.	9	1	-	2	1	-	-	-	-
Pac. Trust Terr.	222	238	-	144	76	-	20	-	-
Amer. Samoa	2	-	-	1	5	-	1	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending November 21, 1987 (46th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	715	522	126	42	8	17	55
Boston, Mass.	198	130	44	10	6	8	27
Bridgeport, Conn.	71	51	6	12	1	1	2
Cambridge, Mass.	26	18	5	2	-	1	5
Fall River, Mass.	23	17	5	1	-	-	-
Hartford, Conn.	34	24	5	3	-	2	-
Lowell, Mass.	26	20	3	1	1	1	2
Lynn, Mass.	18	16	2	-	-	-	1
New Bedford, Mass.	29	24	5	-	-	-	2
New Haven, Conn.	48	32	11	3	-	2	3
Providence, R.I.	60	51	8	1	-	-	1
Somerville, Mass.	6	4	2	-	-	-	-
Springfield, Mass.	66	50	11	4	-	1	6
Waterbury, Conn.	45	34	8	3	-	-	4
Worcester, Mass.	65	51	11	2	-	1	2
MID. ATLANTIC	2,881	1,890	561	274	80	70	143
Albany, N.Y.	47	36	6	1	2	2	-
Allentown, Pa.	19	15	4	-	-	-	-
Buffalo, N.Y.	101	73	20	6	1	1	9
Camden, N.J.	43	25	5	2	3	3	1
Elizabeth, N.J.§	18	14	2	2	-	-	-
Erie, Pa.†	45	32	10	2	1	-	3
Jersey City, N.J.	54	29	9	11	2	3	3
N.Y. City, N.Y.	1,571	997	313	188	40	33	72
Newark, N.J.	81	36	16	12	14	3	5
Paterson, N.J.	26	17	4	2	-	2	2
Philadelphia, Pa.	396	251	86	31	12	16	20
Pittsburgh, Pa.†	73	49	20	3	1	-	1
Reading, Pa.	39	34	4	1	-	-	3
Rochester, N.Y.	117	91	19	4	1	2	13
Schenectady, N.Y.	29	23	5	-	1	-	1
Scranton, Pa.†	37	30	7	-	-	-	1
Syracuse, N.Y.	93	70	15	2	2	4	5
Trenton, N.J.	46	30	10	5	-	1	2
Utica, N.Y.	24	19	5	-	-	-	1
Yonkers, N.Y.	22	19	1	2	-	-	1
E.N. CENTRAL	2,483	1,666	508	170	65	72	107
Akron, Ohio	65	47	12	1	3	2	3
Canton, Ohio	41	25	11	3	2	-	3
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	175	108	47	14	3	3	11
Cleveland, Ohio	165	108	32	12	7	6	1
Columbus, Ohio	174	126	27	14	4	1	15
Dayton, Ohio	134	90	29	6	7	2	5
Detroit, Mich.	268	173	49	25	11	10	10
Evansville, Ind.	53	39	9	-	3	2	3
Fort Wayne, Ind.	60	38	18	3	-	1	3
Gary, Ind.	25	13	5	6	1	-	2
Grand Rapids, Mich.	71	45	12	9	2	3	9
Indianapolis, Ind.	182	117	39	14	6	6	3
Madison, Wis.	38	29	8	1	-	-	1
Milwaukee, Wis.	173	128	33	4	1	7	10
Peoria, Ill.	47	30	11	1	2	3	3
Rockford, Ill.	41	32	8	-	-	1	4
South Bend, Ind.	57	44	7	4	1	1	2
Toledo, Ohio	97	79	13	3	1	1	2
Youngstown, Ohio	53	33	13	5	1	1	1
W.N. CENTRAL	868	598	173	54	17	26	46
Des Moines, Iowa	81	65	11	3	1	1	7
Duluth, Minn.	20	15	4	-	-	1	-
Kansas City, Kans.	30	22	4	1	1	2	-
Kansas City, Mo.	114	77	21	9	5	2	7
Lincoln, Nebr.	55	37	15	-	1	2	3
Minneapolis, Minn.	175	124	37	10	2	2	16
Omaha, Nebr.	84	51	15	12	3	3	3
St. Louis, Mo.	174	112	43	10	2	7	6
St. Paul, Minn.	75	56	9	8	-	2	1
Wichita, Kans.	60	39	14	1	2	4	3

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-84	25-44	1-24	<1	Total
S. ATLANTIC	1,332	765	321	123	57	66	56
Atlanta, Ga.	213	112	47	22	13	19	6
Baltimore, Md.	215	125	54	19	6	11	11
Charlotte, N.C.	86	50	26	7	-	3	3
Jacksonville, Fla.	94	47	27	10	8	2	3
Miami, Fla.	102	51	25	13	9	4	-
Norfolk, Va.	63	37	16	5	1	4	4
Richmond, Va.	72	48	15	2	4	3	8
Savannah, Ga.	57	38	11	6	2	-	3
St. Petersburg, Fla.	84	63	11	5	2	3	8
Tampa, Fla.	78	43	25	4	3	3	4
Washington, D.C.	242	138	57	25	9	13	4
Wilmington, Del.	26	13	7	5	-	1	2
E.S. CENTRAL	734	480	154	45	28	27	36
Birmingham, Ala.	110	69	26	10	2	3	2
Chattanooga, Tenn.	63	45	10	4	1	3	4
Knoxville, Tenn.	58	40	9	5	3	1	5
Louisville, Ky.	107	70	20	7	6	4	4
Memphis, Tenn.	187	121	40	10	9	7	15
Mobile, Ala.	67	42	12	4	4	5	1
Montgomery, Ala.	32	20	10	1	1	-	1
Nashville, Tenn.	110	73	27	4	2	4	4
W.S. CENTRAL	1,333	805	305	130	42	51	51
Austin, Tex.	55	34	16	4	1	-	2
Baton Rouge, La.	42	24	8	5	1	4	2
Corpus Christi, Tex.	64	35	19	6	1	3	3
Dallas, Tex.	190	99	40	30	10	11	4
El Paso, Tex.	66	34	13	6	1	12	3
Fort Worth, Tex	103	65	28	7	2	1	2
Houston, Tex.§	308	176	74	34	13	11	7
Little Rock, Ark.	52	39	8	4	1	-	5
New Orleans, La.	136	91	27	9	7	2	-
San Antonio, Tex.	203	127	49	20	3	4	15
Shreveport, La.	17	15	2	-	-	-	-
Tulsa, Okla.	97	66	21	5	2	3	8
MOUNTAIN	758	475	161	76	23	22	32
Albuquerque, N. Mex.	80	43	19	15	1	2	4
Colo. Springs, Colo.	45	32	5	3	2	3	9
Denver, Colo.	137	69	31	26	6	5	6
Las Vegas, Nev.	110	59	37	8	5	-	3
Ogden, Utah	31	23	4	2	2	-	-
Phoenix, Ariz.	171	116	34	9	4	8	3
Pueblo, Colo.§	25	20	3	2	-	-	2
Salt Lake City, Utah	40	25	6	4	2	3	1
Tucson, Ariz.	119	88	22	7	1	1	4
PACIFIC	2,121	1,419	399	177	55	56	125
Berkeley, Calif.	28	21	5	2	-	-	-
Fresno, Calif.	88	55	18	5	2	8	9
Glendale, Calif.	33	25	3	3	1	-	2
Honolulu, Hawaii	71	42	16	10	-	3	9
Long Beach, Calif.	88	57	21	4	2	4	11
Los Angeles Calif.	546	344	114	55	22	1	17
Oakland, Calif.	73	44	21	4	2	1	9
Pasadena, Calif.	35	27	3	-	-	5	3
Portland, Oreg.	146	107	20	9	2	6	11
Sacramento, Calif.	151	100	27	17	3	4	4
San Diego, Calif.	198	133	38	16	5	6	17
San Francisco, Calif.	217	139	38	28	5	6	9
San Jose, Calif.	171	123	32	7	2	7	11
Seattle, Wash.	140	109	17	5	6	3	4
Spokane, Wash.	84	60	14	6	2	2	7
Tacoma, Wash.	52	33	12	6	1	-	2
TOTAL	13,225††	8,620	2,708	1,091	375	407	651

*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. Figures are estimates based on average of past 4 weeks.

Human Rabies — Continued

Approximately 18,000 persons receive rabies postexposure prophylaxis in the United States per year (CDC, unpublished data). Severe attacks by rabid wild animals and dogs like that suffered by the Thai patient are rare in developed countries. No treatment failures have been reported when the recommended postexposure prophylaxis regimen of wound cleaning, HRIG, and 5 doses of HDCV have been strictly observed (*2*). Although the reasons these two patients developed rabies are unknown, proper wound management and proper administration of HRIG and HDCV might have prevented disease. Wounds inflicted by animals suspected or confirmed to be rabid should be immediately and thoroughly cleaned with soap and water. If anatomically possible, up to half of the HRIG dose should be infiltrated around the wound and the rest given IM in the gluteal area or lateral thigh. For postexposure prophylaxis, adults and children should always receive HDCV IM in the deltoid. Infants can be given the vaccine in the anterolateral upper thigh.

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Perspectives in Disease Prevention and Health Promotion

Premature Mortality in New Hampshire

The New Hampshire Division of Public Health Services has analyzed mortality data on deaths occurring in New Hampshire from 1980 through 1985 to determine the adequacy of current prevention and control activities and to identify possible gaps in public health services. These data were analyzed using three measures: 1) rates of years of potential life lost (YPLL) before age 65, 2) premature mortality rates (deaths occurring before age 65), and 3) crude mortality rates. YPLL were calculated using the CDC methodology (*1*). Sex-specific YPLL rates for 12 major causes of death were derived and compared with national rates. Age-adjustment was performed by the direct method using the 1982 U.S. white population* as the standard.

From 1980 through 1985, New Hampshire residents had a total of 242,478 YPLL, or an average yearly total of 40,413 YPLL. Unintentional injuries were the leading cause and accounted for 21% of the total YPLL, followed by malignant neoplasms (18%), heart disease (15%), suicides and homicides (8%), congenital anomalies (7%), and other causes (31%) (Table 1). Males accounted for 65% of the total YPLL. YPLL rates for males were higher than those for females for all causes except malignant

*The population of New Hampshire is 98.9% white, according to 1980 Bureau of the Census data.

Premature Mortality — Continued

neoplasms, for which the rates were similar. The New Hampshire age-adjusted YPLL rate for all causes of death combined was 8% lower than the national rate. However, cause-specific YPLL rates exceeded national rates for pneumonia and influenza, sudden infant death syndrome, and chronic obstructive lung disease. In New Hampshire, males lose 11% more years of potential life from diabetes than men in the general U.S. population, and females lose 25% more years of potential life from pneumonia and influenza than females in the general population. The rankings of the 12 leading causes of death, based on YPLL and premature and crude mortality rates, differed considerably (Table 2).

Reported by: E Schwartz, MD, MPH, State Epidemiologist, and staff, New Hampshire State Dept of Health and Welfare. Div of Surveillance and Epidemiologic Studies, Epidemiology Program Office, CDC.

TABLE 1. Years of potential life lost (YPLL) before age 65 and YPLL rate ratios,* by sex and cause of death — New Hampshire, 1980-1985

		Males		Females		Total	
Rank	Cause of Mortality (ICD, 9th Revision)	YPLL No.	YPLL Rate Ratio*	YPLL No.	YPLL Rate Ratio*	YPLL No.	YPLL Rate Ratio*
	Total (All Causes)	157,605	0.91	84,873	0.93	242,478	0.92
1	Unintentional Injuries (E800-E949)	38,232	0.82	12,819	0.88	51,051	0.83
2	Malignant Neoplasms (140-208)	21,112	0.96	21,373	1.04	42,485	1.00
3	Heart Diseases (390-398, 402, 404-429)	26,837	1.00	8,673	0.97	35,510	1.00
4	Suicides/Homicides (E950-E978)	15,136	0.68	4,584	0.67	19,720	0.68
5	Congenital Anomalies (740-759)	9,254	1.06	6,848	0.90	16,102	0.99
6	Premature Birth (765, 769)	5,265	1.01	2,860	0.78	8,125	0.91
7	Sudden Infant Death† (798)	4,160	1.08	2,535	1.02	6,695	1.05
8	Cerebrovascular Disease (430-438)	2,670	0.99	2,080	0.87	4,750	0.94
9	Chronic Liver Diseases (571)	2,808	0.76	1,410	0.90	4,218	0.81
10	Pneumonia and Influenza (480-487)	1,748	0.97	1,491	1.25	3,239	1.08
11	Chronic Obstructive Pulmonary Diseases and Allied Conditions (490-496)	1,575	1.07	960	0.92	2,535	1.01
12	Diabetes Mellitus (250)	1,410	1.11	825	0.80	2,235	0.96

*New Hampshire YPLL rate age-adjusted to 1982 U.S. white population and divided by the 1982 rate for the U.S. white population.

†Includes deaths occurring at less than one year.

Premature Mortality — Continued

TABLE 2. Rankings of the 12 leading causes of mortality, by years of potential life lost (YPLL) before age 65, premature mortality* rates, and crude mortality rates — New Hampshire, 1980-1985

Rank	YPLL*	Premature Mortality* Rates	Crude Mortality Rates
1	Unintentional Injury	Malignant Neoplasms	Heart Disease
2	Malignant Neoplasms	Heart Disease	Malignant Neoplasms
3	Heart Disease	Unintentional Injury	Cerebrovascular Disease
4	Suicides/Homicides	Suicides/Homicides	Unintentional Injury
5	Congenital Anomalies	Cerebrovascular Disease	COPD†
6	Premature Birth	Chronic Liver Diseases	Pneumonia/Influenza
7	Sudden Infant Death	COPD†	Diabetes Mellitus
8	Cerebrovascular Disease	Congenital Anomalies	Suicides/Homicides
9	Chronic Liver Diseases	Diabetes Mellitus	Chronic Liver Diseases
10	Pneumonia/Influenza	Pneumonia/Influenza	Congenital Anomalies
11	COPD†	Premature Birth	Premature Birth
12	Diabetes Mellitus	Sudden Infant Death	Sudden Infant Death

*Deaths occurring before age 65.
†Chronic obstructive pulmonary disease.

Editorial Note: Crude and age-adjusted mortality data have traditionally been used as a yardstick to evaluate the importance of public health problems. These measures count each death equally, independent of the age of the decedent. However, since most deaths occur among older individuals, crude and age-adjusted mortality data reflect diseases of the elderly. Measures based on premature deaths or YPLL emphasize causes of death that affect younger individuals during their early, productive years and, thus, provide a different view of a population's mortality burden. Since 1982, national data regarding premature mortality have been published by CDC, and statewide analyses have recently been reported (*1-3*).

In New Hampshire, as in the rest of the country, the leading causes of YPLL include injuries, malignant neoplasms, and heart disease. An estimated two-thirds of the deaths in the United States are attributable to a preventable precursor and are thus premature (*4*). A recent study revealed that six precursors of premature death (use of tobacco, use of alcohol, injury risks, high blood pressure, overweight, and gaps in primary prevention) accounted for 75% of all YPLL nationally (*4*). The challenge to further reduce the current burden of unnecessary morbidity and mortality will require traditional as well as innovative measures designed to modify these precursors (*5*).

The choice of an epidemiologic measure suitable for public health planning depends on the goals of decision-makers. If the goal of public health programs is to reduce premature mortality, prevention and control efforts should focus on the leading causes of YPLL. Alternatively, if the goal is to achieve a more uniform overall mortality pattern, efforts should be targeted at causes or populations with elevated mortality rate ratios. Thus, epidemiologic data can form the basis for setting public health priorities. However, the choice of epidemiologic indicators may have a substantial bearing on the focus of the public health agenda (*5*).

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Premature Mortality — Continued

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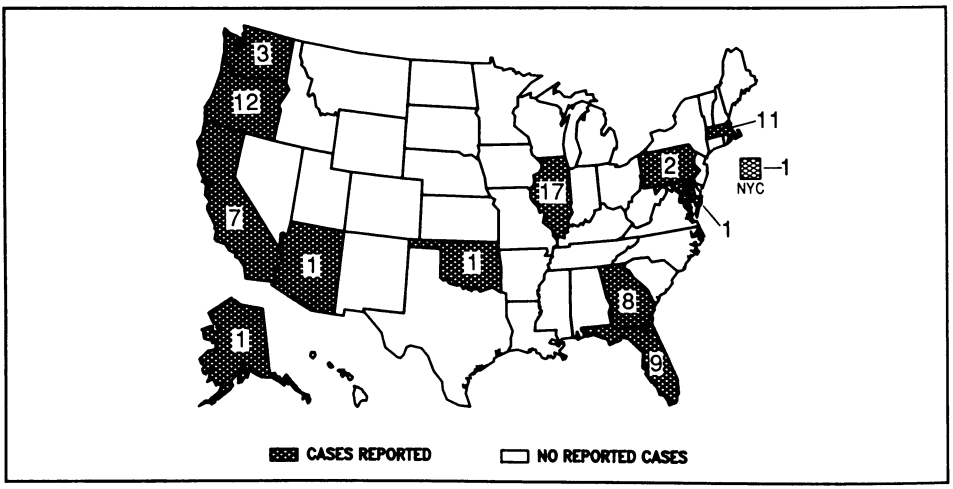
FIGURE 1. Reported measles cases — United States, Weeks 42-45, 1987



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DEPARTMENT OF
HEALTH & HUMAN SERVICES
Public Health Service
Centers for Disease Control
Atlanta, GA 30333

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