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MORBIDITY AND MORTALITY WEEKLY REPORT

Recommendations of the Immunization Practices Advisory Committee (ACIP)

Update: Prevention of *Haemophilus influenzae* Type b Disease

On June 23, 1987, the Immunization Practices Advisory Committee (ACIP) reviewed preliminary postmarketing surveillance data presented at an April 20, 1987, FDA workshop on *Haemophilus influenzae* type b (Hib) polysaccharide vaccines (see article below). These data were evaluated in light of the current ACIP recommendations for use of the vaccine (*1*) and for prophylaxis with rifampin (*2*) in the prevention of invasive Hib disease.

The ACIP believes that the preliminary data from these ongoing studies do not indicate a need for changes in the present recommendations for vaccine use. It should be emphasized that vaccination is not a substitute for prophylaxis with rifampin in children exposed to Hib disease.

References

1. Immunization Practices Advisory Committee. Polysaccharide vaccine for prevention of *Haemophilus influenzae* type b disease. MMWR 1985;34:201-5.
2. Immunization Practices Advisory Committee. ACIP: update: prevention of *Haemophilus influenzae* type b disease. MMWR 1986;35:170-4,179-80.

Current Trends

FDA Workshop on *Haemophilus* b Polysaccharide Vaccine — A Preliminary Report

In April 1985, the Food and Drug Administration (FDA) licensed the first *Haemophilus* b polysaccharide vaccine. Two additional companies were licensed to produce similar vaccines at the end of 1985. Estimation of the efficacy of the vaccines was based on the results of a randomized, controlled clinical trial conducted in Finland. In that trial, which was conducted among children 18-71 months of age, efficacy was estimated to be 90%, with few serious adverse reactions reported (*1*). In addition, each manufacturer performed safety and immunogenicity studies before licensure. Upon licensure, FDA asked each company to conduct postmarketing studies for rare adverse events in larger populations.

FDA Workshop — Continued

After licensure, FDA, CDC, the manufacturers, and individual investigators received spontaneous reports of invasive *Haemophilus influenzae* type b (Hib) disease in previously vaccinated children. One investigator published data suggesting that vaccine failure might be due to an inability to induce an appropriate antibody response (*2*). Several groups of investigators initiated studies to further evaluate the vaccine's efficacy. Investigators from Northern California Kaiser Permanente Health Plan and the Minnesota Department of Health reported observing some cases of invasive Hib disease during the 1-week period immediately following vaccination.

These observations prompted FDA to hold a workshop on April 20, 1987, to discuss the ongoing studies of the vaccine's efficacy. It was recognized that these studies were incomplete at the time of the meeting. The workshop was an open meeting involving experts in *Haemophilus* disease, epidemiology, and statistics. Two issues were addressed: the efficacy of the vaccine and the interpretation of reports of invasive Hib disease in the 7 days following vaccination.

Investigators from the Northern California Kaiser Permanente Health Plan, Yale University and the University of Texas, the Minnesota Department of Health, and CDC presented data. Each of these groups had been conducting studies for 2 years. Because of the normal delay in antibody formation following vaccination, the investigators had considered children to be vaccinated only if they had received vaccine 21 days or more (14 days or more in the CDC study) before the onset of disease. A brief synopsis of the data follows.

The Kaiser group presented data from a prospective cohort study and a case-control study. The former was not randomized and included about 122,000 children between 18 months and 5 years of age. There were 24 cases of invasive Hib disease in the unvaccinated group and two cases in the vaccinated group. The point estimate of the vaccine's efficacy was 89% (95% confidence interval [CI], 52 to 97). A case-control study from this cohort yielded a point estimate of 81% (95% CI, 10 to 96). Four children in this population developed disease within 7 days after vaccination. One of the patients had been immunized specifically because of exposure to Hib.

Yale University and the University of Texas conducted a joint birth-certificate-matched case-control study among children 24 to 59 months of age. Investigators identified 17 cases in Connecticut and 25 in Dallas. Twenty-four percent of the patients and 50% of the controls in Connecticut were vaccinated; in Dallas, 11% of the patients and 32% of the controls were vaccinated. The point estimate of efficacy in Connecticut and Dallas was 89% (95% CI, 69 to 97). In this study, one patient had been vaccinated within 7 days of the date of onset, and one control had been vaccinated within 7 days of the reference date, indicating no increased risk of Hib disease.

The Minnesota Department of Health conducted a birth-certificate-matched case-control study among children 24 to 59 months of age. From September 1985 to March 1987, investigators identified 53 cases. Eight of the patients were excluded because of pre-existing risks for Hib disease.* Fifteen (33%) of the 45 remaining patients were vaccinated, compared with 22 (24%) of the 90 controls. The estimated protective efficacy was -86% (95% CI, -415 to 33). The Minnesota investigators observed three cases of invasive Hib disease within 7 days of vaccination.

CDC conducted a multistate day-care-based case-control study among children 18 to 59 months of age. There were 108 patients and 251 controls. Nineteen percent of the patients and 29% of the controls had been vaccinated. The point estimate of

*Including immunodeficiency, sickle cell anemia, or a previous episode of Hib disease.

FDA Workshop — Continued

efficacy was 44% (95% CI, -5 to 70). Investigators identified four patients with onsets of invasive Hib disease during the first week after vaccination; five controls had been vaccinated during a comparable interval.

Unlike these relatively small observational studies, the clinical trial of vaccine efficacy in Finland was a large, prospective, randomized trial involving over 48,000 recipients of *Haemophilus* b polysaccharide vaccine. This study is considered important because of its design and size. With the exception of the Minnesota study, all the efficacy studies presented at the April 20, 1987, workshop produced results that are not inconsistent with the results of the Finnish trial. However, since the more recent studies were observational, they may be subject to biases not usually found in randomized, controlled trials. These studies are continuing, and the data will be reassessed in the near future.

Although the Finnish study did not identify any cases of Hib disease within 7 days of vaccination, further information is necessary to evaluate the meaning of cases found soon after vaccination in the more recent studies. In any event, physicians should be aware that cases may occur in the week after vaccination, prior to onset of the protective effects of the vaccine.

While further analysis of these data is in progress, it was concluded that, based on evaluation of these preliminary data, the benefits of the vaccine continue to outweigh any potential risk. Therefore, physicians are urged to vaccinate their patients according to present ACIP recommendations.

Any adverse events, including vaccine failure, should be reported either to the manufacturer or to FDA.

Reported by: Div of Bacterial Products, Div of Epidemiology and Biostatistics, Center for Drugs and Biologics, Food and Drug Administration.

References

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2. Granoff DM, Shackleford PG, Suarez BK, et al. *Haemophilus influenzae* type b disease in children vaccinated with type b polysaccharide vaccine. N Engl J Med 1986;315:1584-90.

Perspectives in Disease Prevention and Health Promotion

Premature Mortality Due to Suicide and Homicide — United States, 1984

In 1984, suicide and homicide were responsible for almost 50,000 deaths and over 1.25 million years of potential life lost (YPLL) before age 65 or 11% of all YPLL in the United States (*1,2*). Suicide was the fifth leading cause of YPLL, and homicide was the sixth. Data* on YPLL attributable to suicide and homicide were analyzed individually, by sex, race (white, black, and other races), and weapon or method of injury. To compare differences in YPLL among different race, sex, and age groups independent of differences in population size, crude YPLL rates per 100,000 persons were calculated.

*YPLL was calculated using the National Center for Health Statistics' detailed mortality data from computerized death certificate tapes for 1984, the latest year for which data are available.

Premature Mortality — Continued

Suicide

In 1984, suicide accounted for 645,680 YPLL. Seventy-one percent of the total YPLL attributable to suicide occurred among white males (Table 1). White females accounted for another 19%. White males had the highest crude rate of YPLL due to suicide (474/100,000). They were followed by males of all other races except blacks (350/100,000), by black males (303/100,000), and by white females (118/100,000).

Suicides committed with firearms accounted for 57% of the total YPLL attributable to suicide. Firearms were involved in the largest proportion of YPLL due to suicide for both males (60%) and females (46%), followed by hanging (18%) and poisoning (13%) for males and poisoning (32%) for females (Figure 1).

Homicide

Homicide was responsible for 609,678 YPLL in 1984. Seventy-six percent of the total YPLL due to homicide occurred among males (Table 1). White males accounted for 40% of YPLL attributable to homicide, whereas black males accounted for 34%. In 1984, the crude rate of YPLL due to homicide was highest for black males (1,567/100,000), followed by black females (381/100,000), males of other races (296/100,000), and white males (252/100,000).

Firearms were involved in 61% of the total YPLL attributable to homicide and accounted for a higher proportion of YPLL among males (66%) than among females (45%) (Figure 2). Cutting and piercing instruments were involved in 14% of the YPLL due to homicide. The proportion of homicides involving such instruments was greater for females (20%) than males (12%).

For suicide and homicide, approximately 6 of every 10 years of potential life lost are attributable to deaths from injuries involving firearms. In every race/sex group, firearms accounted for a greater proportion of YPLL due to suicide and homicide than did any other method of injury. Based on 1984 mortality statistics, each firearm suicide causes an average of 22 YPLL, and each firearm homicide causes an average of 34 YPLL. These figures do not include deaths from unintentionally inflicted firearm

TABLE 1. Years of potential life lost (YPLL) due to intentional injuries before age 65, by sex and race — United States, 1984

	YPLL					
	Suicide			Homicide		
Sex and Race	Total	(%)	Rate*	Total	(%)	Rate*
Males						
White	459,984	(71.2)	474.1	244,728	(40.1)	252.3
Black	40,013	(6.2)	302.9	206,985	(33.9)	1566.8
Other	11,310	(1.8)	349.7	9,587	(1.6)	296.4
All	511,307	(79.2)	450.6	461,300	(75.7)	406.6
Females						
White	121,865	(18.9)	118.4	87,732	(14.4)	85.2
Black	8,785	(1.4)	58.8	56,910	(9.3)	380.8
Other	3,723	(0.6)	108.7	3,736	(0.6)	109.0
All	134,373	(20.8)	110.8	148,378	(24.3)	122.3
Total	**645,680**	**(100.0)**	**275.0**	**609,678**	**(100.0)**	**259.7**

*Per 100,000 persons.

Premature Mortality — Continued

FIGURE 1. Percentage of YPLL due to suicide, by weapon/method and sex — United States, 1984

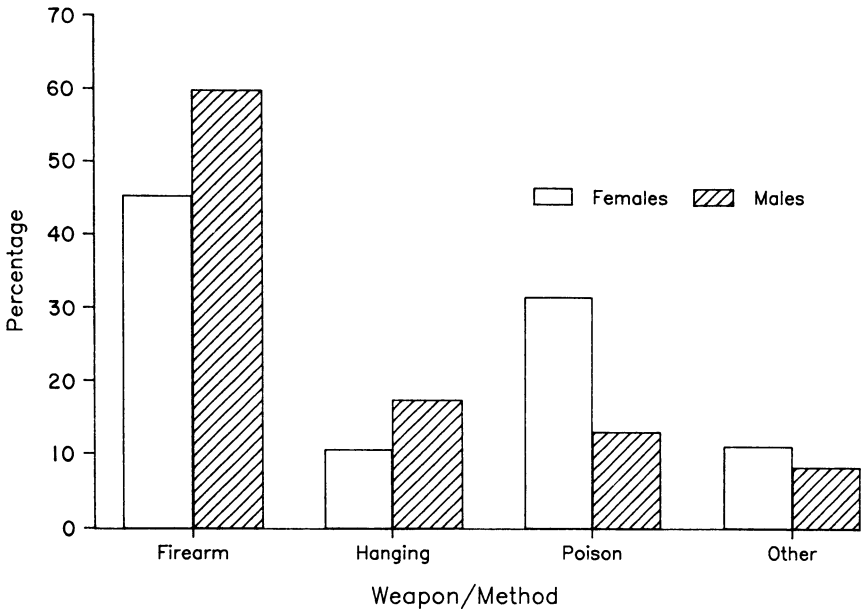
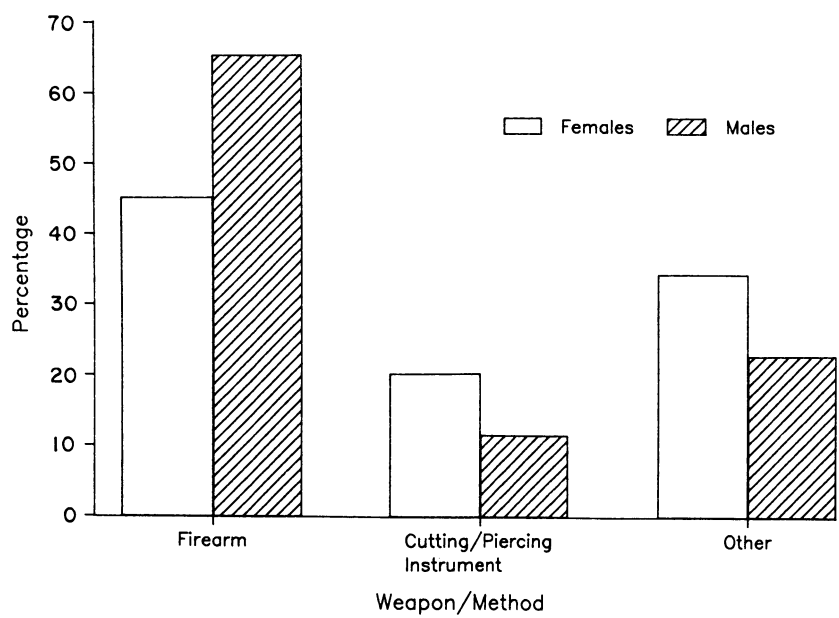


FIGURE 2. Percentage of YPLL due to homicide, by weapon/method and sex — United States, 1984



Premature Mortality — Continued

injuries or from firearm injuries resulting from undetermined causes: in 1984, there were 2,170 such deaths (*3*). Considered as an external means of injury, firearms rank second after motor vehicles as the most frequent cause of mortality due to injury (*4*).

Reported by: Div of Injury Epidemiology and Control, Center for Environmental Health and Injury Control, CDC.

Editorial Note: The patterns of premature mortality from suicide and homicide reported here for 1984 are comparable to those reported for other recent years (*5*). White males again accounted for the largest proportion of YPLL attributable to suicide. They also had the highest rate of YPLL due to suicide. In addition, white males accounted for a slightly greater proportion of YPLL attributable to homicide than did black males. As in previous years, however, black males had the highest rate of YPLL from homicide, followed by black females. These indexes are useful in developing priorities for public health programs and research. In particular, they emphasize the urgent need for efforts to prevent premature mortality from suicide among white males and from homicide among black males and the importance of preventing injuries and deaths involving firearms. Other implications of these patterns have been reviewed previously (*5-11*).

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Epidemiologic Notes and Reports

Multiple Strain Outbreak of Penicillinase-Producing *Neisseria gonorrhoeae* — Denver, Colorado, 1986

In 1986, the Denver Metro Health Clinic (DMHC) detected 40 cases of infection with strains of penicillinase-producing *Neisseria gonorrhoeae* (PPNG). This was a marked increase over the nine cases* found during the preceding 5 years. The increase in cases began during the last 2 months of 1985, when three cases were detected. From

*These nine strains were found among 549 isolates from patients with treatment failures. No strains of PPNG were found among the 789 isolates from systematically selected patients.

Gonorrhoeae – Continued

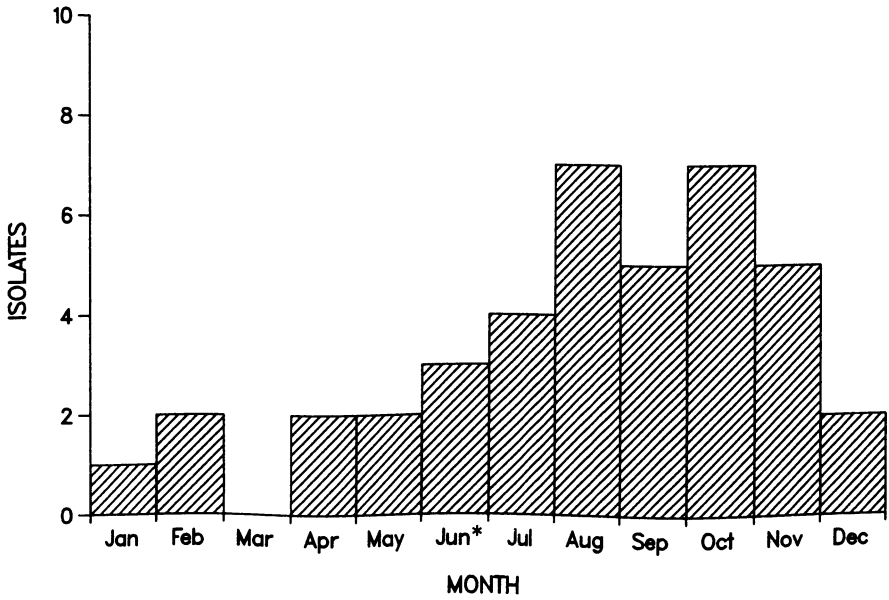
January through May 1986, seven additional cases were identified.[†] Beginning on June 2, 1986, all isolates were routinely screened for β-lactamase, and, over the next 7 months, 33 of 1,358 isolates (2%) were identified as PPNG strains. Four of these occurred among persons referred to the clinic as known sexual contacts of PPNG-positive patients. One was from a patient with possible treatment failure, and 28 were from patients not suspected of infection with PPNG.

The epidemic peaked during the period from August through November (Figure 1). Since the DMHC treats over 50% of all reported cases of gonorrhea in the city and county of Denver, trends among patients in these clinics are considered representative of trends in the greater Denver metropolitan area. On August 18, 1986, the Colorado Department of Health issued an advisory requesting other Denver metropolitan laboratories to begin routinely screening all isolates for β-lactamase. They also recommended treating patients with confirmed or suspected cases of PPNG infection with ceftriaxone or spectinomycin. Because of the persistence of the outbreak, the Denver Disease Control Service issued an advisory for metropolitan Denver in November, reiterating the need for therapy effective against PPNG for all patients with PPNG infection, their sexual partners, and any patient who might be unlikely to comply with tetracycline therapy.

The 40 cases of PPNG occurred among 39 patients (one woman appeared to be re-infected approximately 1 month after her initial treatment). Twenty-four patients (62%) were men, 21 of whom were heterosexual. Twenty-two (92%) of the 24 men had

[†]Five were found by routine screening of systematically selected isolates, and two were from patients referred to DMHC as sexual contacts of patients with confirmed cases of PPNG infection.

FIGURE 1. Isolates of penicillinase-producing *Neisseria gonorrhoeae* in the Denver Metro Health Clinic – Colorado, 1986



*Routine screening of all isolates for β-lactamase began on June 2.

Gonorrhoeae — Continued

symptoms of discharge or dysuria; 12 (80%) of the 15 women also had symptoms of discharge. Results of post-treatment cultures were available for 18 (45%) of the 40 patients. All 18 were culture-negative, comprising six treated with spectinomycin, eight treated with both spectinomycin and tetracycline, and four treated with tetracycline alone.

Thirty-two (82%) of 39 patients (14 women and 18 men) were interviewed by disease-intervention specialists from the Colorado Department of Health. Four (29%) of 14 women gave a history of prostitution, and five (28%) of 18 men gave a history of contact with prostitutes. Nine (28%) of 32 patients gave histories suggesting that they may have become infected outside of Colorado.[§] The 32 patients named 76 sexual contacts, 49 (64%) of whom were traced and evaluated. Sixteen of the contacts

[§]California, four cases; Nebraska, Florida, Tennessee, Michigan, and Thailand one case each.

(Continued on page 542)

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

Disease	32nd Week Ending			Cumulative, 32nd Week Ending		
	August 15, 1987	August 9, 1986	Median 1982-1986	August 15, 1987	August 9, 1986	Median 1982-1986
Acquired Immunodeficiency Syndrome (AIDS)	467	370	N	11,463	7,641	N
Aseptic meningitis	406	418	366	5,015	4,429	3,873
Encephalitis: Primary (arthropod-borne & unspec)	48	34	34	622	579	618
Post-infectious	2	4	2	72	72	72
Gonorrhea: Civilian	14,557	18,889	18,889	477,758	531,554	531,554
Military	584	270	429	10,222	10,109	13,178
Hepatitis: Type A	342	406	422	14,961	13,422	13,229
Type B	432	508	504	15,739	15,927	15,423
Non A, Non B	44	79	N	1,900	2,240	N
Unspecified	35	88	110	1,904	2,844	3,495
Legionellosis	13	25	N	516	383	N
Leprosy	-	-	3	116	175	155
Malaria	16	28	23	489	616	596
Measles: Total*	16	83	29	3,140	5,011	2,172
Indigenous	12	82	N	2,768	4,750	N
Imported	4	1	N	372	255	N
Meningococcal infections: Total	30	33	33	1,963	1,733	1,893
Civilian	30	33	33	1,962	1,731	1,878
Military	-	-	-	1	2	6
Mumps	71	127	25	9,885	3,187	2,335
Pertussis	71	162	65	1,240	1,819	1,318
Rubella (German measles)	8	9	10	272	391	488
Syphilis (Primary & Secondary): Civilian	974	565	565	21,244	15,915	16,932
Military	1	4	4	95	111	213
Toxic Shock syndrome	9	3	N	190	220	N
Tuberculosis	336	544	448	12,602	13,202	13,202
Tularemia	5	8	8	117	80	138
Typhoid Fever	6	18	10	178	179	206
Typhus fever, tick-borne (RMSF)	24	27	29	397	440	534
Rabies, animal	73	107	113	2,973	3,386	3,386

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1987		Cum. 1987
Anthrax	-	Leptospirosis	13
Botulism: Foodborne (Oreg. 1)	5	Plague	6
Infant (Idaho 1)	36	Poliomyelitis, Paralytic	-
Other	-	Psittacosis (Oreg. 1)	57
Brucellosis (Ga. 1, Okla. 1)	70	Rabies, human	-
Cholera	2	Tetanus (Ala. 1)	23
Congenital rubella syndrome (Utah 1)	4	Trichinosis	28
Congenital syphilis, ages < 1 year	-	Typhus fever, flea-borne (endemic, murine)	19
Diphtheria	1	(Md. 1, Tex. 1)	

*One of the 16 reported cases for this week was imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending August 15, 1987 and August 9, 1986 (32nd 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	11,463	406	622	72	477,758	531,554	342	432	44	35	13	116
NEW ENGLAND	466	25	27	2	14,609	12,235	17	26	-	2	-	11
Maine	14	1	1	-	430	552	2	1	-	1	-	-
N.H.	12	2	2	-	252	326	-	-	-	-	-	2
Vt.	4	3	4	-	126	162	-	-	-	-	-	-
Mass.	286	6	12	1	5,319	5,205	10	25	-	1	-	8
R.I.	40	13	3	1	1,221	1,034	-	-	-	-	-	-
Conn.	110	-	5	-	7,261	4,956	5	-	-	-	-	1
MID. ATLANTIC	3,220	83	80	5	78,417	90,313	54	68	1	7	1	6
Upstate N.Y.	435	37	35	3	10,380	10,453	35	8	1	-	1	-
N.Y. City	1,852	14	7	-	41,279	52,938	8	41	-	7	-	6
N.J.	583	17	7	-	10,045	11,641	9	18	-	-	-	-
Pa.	350	15	31	2	16,713	15,281	2	1	-	-	-	-
E.N. CENTRAL	786	132	179	12	69,999	73,175	27	54	2	5	4	4
Ohio	154	36	70	5	15,577	17,083	2	4	2	-	2	1
Ind.	67	19	19	-	5,690	7,587	5	8	-	1	-	-
Ill.	373	1	24	7	21,604	19,357	9	31	-	4	-	1
Mich.	132	75	53	-	21,282	21,624	11	11	-	-	2	1
Wis.	60	1	13	-	5,846	7,524	-	-	-	-	-	1
W.N. CENTRAL	251	12	24	-	19,434	22,985	9	6	1	-	3	-
Minn.	66	-	15	-	3,035	3,231	-	-	-	-	-	-
Iowa	18	4	3	-	1,856	2,300	2	2	-	-	-	-
Mo.	119	5	-	-	10,175	11,502	7	4	1	-	3	-
N. Dak.	1	-	-	-	166	202	-	-	-	-	-	-
S. Dak.	2	1	-	-	357	468	-	-	-	-	-	-
Nebr.	14	-	4	-	1,236	1,793	-	-	-	-	-	-
Kans.	31	2	2	-	2,609	3,489	-	-	-	-	-	-
S. ATLANTIC	1,817	74	78	23	124,823	136,445	31	100	8	5	-	5
Del.	14	3	3	1	2,016	2,170	-	1	-	-	-	-
Md.	193	13	12	5	14,027	15,857	6	23	1	2	-	2
D.C.	231	2	-	-	8,344	10,102	2	1	-	-	-	-
Va.	131	13	23	2	8,942	11,155	7	19	4	-	-	-
W. Va.	15	11	15	-	944	1,380	-	4	1	-	-	-
N.C.	97	9	14	-	18,942	21,202	1	5	-	-	-	-
S.C.	43	1	-	-	10,253	11,974	1	15	-	-	-	1
Ga.	267	4	-	-	21,279	23,312	-	20	-	-	-	-
Fla.	826	18	11	15	40,076	39,293	14	12	2	3	-	2
E.S. CENTRAL	137	24	36	6	36,255	43,007	6	26	2	-	-	-
Ky.	22	10	18	1	3,678	4,790	2	11	-	-	-	-
Tenn.	24	2	8	-	12,697	16,590	2	4	-	-	-	-
Ala.	76	12	10	1	11,647	12,315	2	11	2	-	-	-
Miss.	15	-	-	4	8,233	9,312	-	-	-	-	-	-
W.S. CENTRAL	1,147	16	79	4	54,340	63,342	25	31	3	3	3	4
Ark.	22	-	-	2	6,119	5,915	-	-	-	-	-	-
La.	134	2	14	-	9,822	11,300	2	3	-	-	-	-
Okla.	63	6	12	1	6,024	7,128	6	6	2	1	3	-
Tex.	928	8	53	1	32,375	38,999	17	22	1	2	-	4
MOUNTAIN	311	17	16	3	12,678	15,556	75	39	8	2	2	1
Mont.	2	-	-	-	353	439	2	1	-	-	-	-
Idaho	4	1	-	-	452	519	11	3	2	-	-	-
Wyo.	3	-	-	-	281	352	1	-	-	-	-	-
Colo.	130	13	1	-	2,770	4,068	2	6	2	-	2	-
N. Mex.	20	-	4	-	1,370	1,564	1	2	-	-	-	-
Ariz.	100	2	9	1	4,367	5,082	52	18	-	2	-	-
Utah	18	1	-	2	392	663	3	1	4	-	-	-
Nev.	34	-	2	-	2,693	2,869	3	8	-	-	-	1
PACIFIC	3,328	23	103	17	67,203	74,496	98	82	19	11	-	85
Wash.	140	-	10	3	4,917	5,790	15	12	6	-	-	3
Oreg.	81	-	-	-	2,560	3,024	20	19	3	1	-	-
Calif.	3,039	19	89	14	58,144	63,148	63	48	10	10	-	65
Alaska	9	1	2	-	1,037	1,699	-	-	-	-	-	-
Hawaii	59	3	2	-	545	835	-	3	-	-	-	17
Guam	-	-	-	-	135	109	-	-	-	-	-	-
P.R.	84	1	1	1	1,313	1,401	1	1	1	-	-	5
V.I.	-	-	-	-	153	161	-	-	-	-	-	-
Pac. Trust Terr.	-	-	-	-	273	268	-	-	-	-	-	44
Amer. Samoa	-	-	-	-	47	30	-	-	-	-	-	-

N: Not notifiable U: Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending August 15, 1987 and August 9, 1986 (32nd 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	489	12	2,768	4	372	5,011	1,963	71	9,885	71	1,240	1,819	8	272	391
NEW ENGLAND	32	2	102	-	150	84	167	3	33	1	60	107	-	1	9
Maine	-	-	3	-	-	10	10	-	-	1	7	2	-	1	-
N.H.	1	1	52	-	101	42	16	-	8	-	12	56	-	-	1
Vt.	-	-	10	-	15	-	11	1	3	-	4	3	-	-	1
Mass.	11	-	21	-	27	28	82	2	8	-	24	27	-	-	4
R.I.	6	-	1	-	1	2	14	-	2	-	1	3	-	-	2
Conn.	14	1	15	-	6	2	34	-	12	-	12	16	-	-	1
MID. ATLANTIC	51	9	507	1	48	1,512	241	1	170	2	143	123	-	11	31
Upstate N.Y.	21	-	26	1 †	13	62	83	1	79	1	105	80	-	9	23
N.Y. City	5	9	428	-	15	523	19	-	10	-	-	3	-	1	5
N.J.	11	-	32	-	3	905	48	-	39	1	8	10	-	1	3
Pa.	14	-	21	-	17	22	91	-	42	-	30	30	-	-	-
E.N. CENTRAL	31	-	275	1	24	990	283	49	5,770	12	130	251	1	31	61
Ohio	9	-	1	-	4	10	91	1	81	1	40	92	-	-	1
Ind.	4	-	-	-	-	11	33	43	866	7	13	22	-	-	-
Ill.	6	-	108	1 §	18	630	71	4	2,445	-	7	29	1	23	52
Mich.	11	-	29	-	-	50	73	1	844	4	34	23	-	8	7
Wis.	1	-	137	-	2	284	15	-	1,534	-	36	85	-	-	1
W.N. CENTRAL	15	1	202	-	22	287	88	7	1,290	-	69	142	-	1	10
Minn.	5	1	19	-	20	49	25	2	753	-	10	37	-	-	-
Iowa	3	-	-	-	-	82	3	4	375	-	16	11	-	1	1
Mo.	4	-	182	-	1	31	25	1	22	-	23	11	-	-	1
N. Dak.	-	-	1	-	-	25	1	-	6	-	4	4	-	-	1
S. Dak.	-	-	-	-	-	-	2	-	87	-	3	14	-	-	-
Nebr.	2	-	-	-	-	1	4	-	3	-	1	4	-	-	-
Kans.	1	-	-	-	1	99	28	-	44	-	12	61	-	-	7
S. ATLANTIC	81	-	115	1	11	581	323	-	227	7	221	600	-	13	4
Del.	1	-	32	-	-	1	4	-	-	-	4	222	-	2	-
Md.	20	-	3	-	2	29	31	-	21	-	6	156	-	2	-
D.C.	8	-	-	-	1	2	5	-	1	-	-	-	-	-	-
Va.	15	-	1	-	-	59	56	-	67	2	44	27	-	1	-
W. Va.	2	-	-	-	-	2	1	-	30	-	44	20	-	-	-
N.C.	9	-	2	1 §	3	3	42	-	16	3	86	38	-	1	-
S.C.	3	-	2	-	-	301	32	-	12	-	-	11	-	-	-
Ga.	3	-	-	-	1	92	60	-	40	1	22	90	-	1	-
Fla.	20	-	75	-	4	92	92	-	40	1	15	36	-	6	4
E.S. CENTRAL	8	-	2	-	-	64	92	4	1,219	-	24	34	-	3	2
Ky.	1	-	-	-	-	6	16	-	212	-	1	2	-	2	2
Tenn.	1	-	-	-	-	55	34	1	948	-	6	13	-	1	-
Ala.	1	-	-	-	-	1	34	3	59	-	12	19	-	-	-
Miss.	5	-	2	-	-	2	8	N	N	-	5	-	-	-	-
W.S. CENTRAL	31	-	394	-	4	624	133	3	706	10	116	132	-	10	55
Ark.	1	-	-	-	-	283	17	-	278	-	7	8	-	2	-
La.	-	-	-	-	-	4	10	3	207	2	28	7	-	-	-
Okla.	4	-	2	-	1	39	17	N	N	8	81	89	-	5	-
Tex.	26	-	392	-	3	298	89	-	221	-	-	28	-	3	55
MOUNTAIN	22	-	461	-	19	318	68	-	182	2	110	175	2	24	20
Mont.	-	-	127	-	1	7	3	-	4	-	6	7	2	8	2
Idaho	2	-	-	-	-	1	5	-	3	-	28	33	-	1	-
Wyo.	1	-	-	-	2	-	-	-	-	-	5	1	-	1	-
Colo.	7	-	5	-	4	7	20	-	28	2	39	48	-	-	1
N. Mex.	1	-	297	-	9	37	4	N	N	-	8	16	-	-	-
Ariz.	8	-	30	-	1	258	23	-	136	-	23	46	-	4	2
Utah	1	-	-	-	1	7	9	-	8	-	1	21	-	10	12
Nev.	2	-	2	-	1	1	4	-	3	-	-	3	-	-	3
PACIFIC	218	-	710	1	94	551	568	4	288	37	367	255	5	178	199
Wash.	16	-	34	1 §	5	151	69	-	41	10	62	78	-	1	11
Oreg.	5	-	2	-	73	8	25	N	N	7	49	10	-	2	1
Calif.	193	-	674	-	12	372	461	3	227	13	131	159	3	112	183
Alaska	3	-	-	-	-	-	4	-	6	-	6	2	-	2	-
Hawaii	1	-	-	-	4	20	9	1	14	7	119	6	2	61	4
Guam	-	-	2	-	-	5	4	-	5	-	-	-	-	1	3
P.R.	1	-	709	-	-	33	5	-	7	-	14	11	-	2	58
V.I.	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-
Pac. Trust Terr.	-	-	1	-	-	-	1	-	5	-	1	-	-	1	2
Amer. Samoa	-	-	-	-	-	2	-	-	3	-	-	-	-	-	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 August 15, 1987 and August 9, 1986 (32nd 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	21,244	15,915	9	12,602	13,202	117	178	397	2,973
NEW ENGLAND	347	297	1	395	411	-	20	4	5
Maine	1	15	1	18	30	-	1	-	2
N.H.	3	10	-	12	12	-	-	-	-
Vt.	1	6	-	9	13	-	1	-	-
Mass.	164	160	-	219	213	-	11	2	-
R.I.	8	16	-	30	27	-	3	-	1
Conn.	170	90	-	107	116	-	4	2	2
MID. ATLANTIC	4,013	2,297	3	2,176	2,695	-	20	10	244
Upstate N.Y.	134	113	-	324	394	-	7	7	39
N.Y. City	2,917	1,295	3	1,040	1,419	-	1	-	-
N.J.	423	422	-	384	471	-	12	1	10
Pa.	539	467	-	428	411	-	-	2	195
E.N. CENTRAL	560	638	-	1,496	1,556	2	21	41	105
Ohio	69	84	-	279	278	1	6	30	7
Ind.	41	76	-	143	168	-	4	-	12
Ill.	300	338	-	634	688	-	7	5	33
Mich.	108	111	-	375	347	-	2	4	17
Wis.	42	29	-	65	75	1	2	2	36
W.N. CENTRAL	104	141	-	390	387	41	9	47	675
Minn.	13	24	-	81	97	-	4	-	166
Iowa	18	6	-	25	31	3	2	-	185
Mo.	54	76	-	214	191	28	3	19	38
N. Dak.	-	4	-	5	5	1	-	-	86
S. Dak.	8	2	-	21	16	5	-	1	151
Nebr.	7	12	-	15	7	2	-	1	16
Kans.	4	17	-	29	40	2	-	26	33
S. ATLANTIC	7,232	4,790	1	2,726	2,520	4	16	142	799
Del.	47	31	-	29	27	1	-	1	-
Md.	373	271	-	246	185	-	3	34	261
D.C.	209	191	-	88	87	-	-	-	33
Va.	187	231	-	285	209	2	1	10	247
W. Va.	6	14	-	71	73	-	1	5	37
N.C.	405	323	-	287	334	1	2	44	6
S.C.	485	407	-	283	327	-	-	31	36
Ga.	978	927	-	416	390	-	-	16	124
Fla.	4,542	2,395	1	1,021	888	-	9	1	55
E.S. CENTRAL	1,175	1,050	1	1,031	1,138	4	2	50	218
Ky.	11	51	-	268	269	1	1	6	110
Tenn.	479	380	-	237	330	1	1	33	57
Ala.	294	337	1	337	356	-	-	9	51
Miss.	391	282	-	189	183	2	-	2	-
W.S. CENTRAL	2,614	3,226	1	1,500	1,696	44	9	89	423
Ark.	163	166	-	172	227	22	1	10	84
La.	463	544	-	180	279	3	-	-	11
Okla.	92	85	-	145	161	18	2	71	23
Tex.	1,896	2,431	1	1,003	1,029	1	6	8	305
MOUNTAIN	426	371	2	304	309	12	11	12	240
Mont.	8	6	-	9	14	1	-	10	113
Idaho	5	8	-	17	12	1	-	-	5
Wyo.	1	-	-	-	-	-	-	1	52
Colo.	74	93	-	29	30	3	-	-	6
N. Mex.	35	45	-	61	66	1	9	-	2
Ariz.	206	150	-	153	150	3	2	-	50
Utah	16	9	2	16	20	1	-	1	4
Nev.	81	60	-	19	17	2	-	-	8
PACIFIC	4,773	3,105	-	2,584	2,490	10	70	2	264
Wash.	73	102	-	164	120	4	5	-	-
Oreg.	163	70	-	64	86	3	1	-	-
Calif.	4,525	2,909	-	2,198	2,124	2	60	2	261
Alaska	3	-	-	34	37	1	-	-	3
Hawaii	9	24	-	124	123	-	4	-	-
Guam	2	1	-	25	33	-	-	-	-
P.R.	595	544	-	186	181	-	-	-	43
V.I.	3	-	-	2	1	-	-	-	-
Pac. Trust Terr.	122	166	-	113	38	-	16	-	-
Amer. Samoa	2	-	-	-	3	-	1	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending August 15, 1987 (32nd Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	645	457	122	47	15	4	37
Boston, Mass.	181	120	45	8	5	3	11
Bridgeport, Conn.	43	27	10	4	2	-	1
Cambridge, Mass.	24	18	2	4	-	-	5
Fall River, Mass.	25	18	4	3	-	-	-
Hartford, Conn.	83	49	21	8	5	-	3
Lowell, Mass.	26	21	3	2	-	-	2
Lynn, Mass.	16	13	3	-	-	-	1
New Bedford, Mass.	21	16	3	2	-	-	2
New Haven, Conn.§	60	46	9	4	1	-	1
Providence, R.I.	56	44	8	4	-	-	3
Somerville, Mass.	6	6	-	-	-	-	1
Springfield, Mass.	42	32	5	2	2	1	3
Waterbury, Conn.	23	18	4	1	-	-	2
Worcester, Mass.	39	29	5	5	-	-	2
MID. ATLANTIC	2,768	1,765	540	316	75	72	117
Albany, N.Y.	52	43	5	2	2	-	-
Allentown, Pa.	18	13	3	1	1	-	-
Buffalo, N.Y.	100	69	18	9	1	3	5
Camden, N.J.	37	25	7	2	2	1	1
Elizabeth, N.J.	26	19	4	2	-	1	2
Erie, Pa.†	35	26	7	1	1	-	1
Jersey City, N.J.	42	18	18	4	1	1	-
N.Y. City, N.Y.	1,340	825	257	194	34	30	53
Newark, N.J.	66	25	24	11	3	3	2
Paterson, N.J.	27	10	10	4	2	1	1
Philadelphia, Pa.	550	361	95	56	18	20	25
Pittsburgh, Pa.†	71	50	17	2	-	2	3
Reading, Pa.	27	24	2	-	1	-	3
Rochester, N.Y.	131	92	19	11	5	4	9
Schenectady, N.Y.	31	24	3	3	1	-	2
Scranton, Pa.†	26	23	3	-	-	-	-
Syracuse, N.Y.	114	72	31	7	-	4	8
Trenton, N.J.	27	14	7	4	1	1	-
Utica, N.Y.	22	17	4	1	-	-	-
Yonkers, N.Y.	26	15	6	2	2	1	2
E.N. CENTRAL	2,277	1,482	489	175	64	67	82
Akron, Ohio	56	39	7	7	3	-	-
Canton, Ohio	31	19	9	1	2	-	2
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	135	95	28	8	2	2	11
Cleveland, Ohio	167	99	41	19	3	5	3
Columbus, Ohio	126	74	29	12	8	3	-
Dayton, Ohio	111	73	23	9	4	2	7
Detroit, Mich.	252	151	51	27	14	9	9
Evansville, Ind.	30	22	8	-	-	-	4
Fort Wayne, Ind.	74	46	19	5	2	2	2
Gary, Ind.	11	6	3	2	-	-	-
Grand Rapids, Mich.	53	37	6	2	5	3	1
Indianapolis, Ind.	157	96	29	16	6	10	2
Madison, Wis.	34	23	5	3	1	2	2
Milwaukee, Wis.	161	113	37	6	2	3	4
Peoria, Ill.	37	23	11	1	-	2	3
Rockford, Ill.	43	31	8	3	-	1	1
South Bend, Ind.	36	27	8	1	-	-	4
Toledo, Ohio	107	74	23	7	2	1	8
Youngstown, Ohio	92	72	19	1	-	-	3
W.N. CENTRAL	874	588	174	55	22	34	43
Des Moines, Iowa	70	48	15	4	1	2	2
Duluth, Minn.	30	22	1	2	1	3	1
Kansas City, Kans.	41	24	7	4	6	-	-
Kansas City, Mo.	120	83	20	12	1	4	5
Lincoln, Nebr.	34	28	5	1	-	-	4
Minneapolis, Minn.	228	163	37	14	4	10	12
Omaha, Nebr.	71	40	21	3	3	4	2
St. Louis, Mo.	150	95	40	9	2	4	12
St. Paul, Minn.	66	42	16	3	-	5	1
Wichita, Kans.	64	43	12	3	4	2	4
S. ATLANTIC	1,235	743	270	116	53	51	41
Atlanta, Ga.	127	79	23	17	2	6	-
Baltimore, Md.	258	146	68	25	12	7	9
Charlotte, N.C.	84	47	21	8	5	3	4
Jacksonville, Fla.	112	72	21	8	6	5	4
Miami, Fla.	99	63	19	11	3	3	-
Norfolk, Va.	62	41	12	4	3	2	4
Richmond, Va.	76	38	26	6	3	3	4
Savannah, Ga.	43	24	9	5	4	1	2
St. Petersburg, Fla.	79	60	9	5	1	4	4
Tampa, Fla.	74	51	11	4	2	5	4
Washington, D.C.	198	108	45	22	11	11	6
Wilmington, Del.	23	14	6	1	1	1	-
E.S. CENTRAL	671	443	143	37	27	21	24
Birmingham, Ala.	106	78	19	2	4	3	1
Chattanooga, Tenn.	41	32	7	2	-	-	5
Knoxville, Tenn.	61	41	16	-	2	2	5
Louisville, Ky.	109	70	18	12	5	4	1
Memphis, Tenn.	154	98	34	14	8	-	8
Mobile, Ala.	63	42	6	3	4	8	1
Montgomery, Ala.	35	25	8	-	-	2	1
Nashville, Tenn.	102	57	35	4	4	2	2
W.S. CENTRAL	1,284	771	301	108	52	51	49
Austin, Tex.	59	38	12	5	4	-	5
Baton Rouge, La.	38	28	8	2	-	-	2
Corpus Christi, Tex.	51	35	14	1	-	1	3
Dallas, Tex.	207	118	55	16	15	3	5
El Paso, Tex.	64	37	20	4	1	2	3
Fort Worth, Tex	99	52	25	10	5	7	2
Houston, Tex.§	308	176	74	34	13	11	7
Little Rock, Ark.	53	32	17	2	1	-	4
New Orleans, La.	113	60	20	16	3	14	-
San Antonio, Tex.	159	110	23	12	6	8	8
Shreveport, La.	46	28	12	-	2	4	2
Tulsa, Okla.	87	57	21	6	2	1	8
MOUNTAIN	623	385	118	62	32	26	27
Albuquerque, N. Mex.	83	53	11	12	4	3	3
Colo. Springs, Colo.	41	28	6	2	3	2	7
Denver, Colo.	114	66	24	13	5	6	4
Las Vegas, Nev.	93	57	22	6	5	3	5
Ogden, Utah	26	22	2	-	1	1	1
Phoenix, Ariz.	120	64	27	17	7	5	2
Pueblo, Colo.	15	11	1	1	1	1	1
Salt Lake City, Utah	40	25	3	5	4	3	1
Tucson, Ariz.	91	59	22	6	2	2	3
PACIFIC	1,777	1,136	346	175	74	37	86
Berkeley, Calif.	7	5	1	1	-	-	1
Fresno, Calif.	92	64	16	8	4	-	8
Glendale, Calif.	20	15	3	1	-	1	1
Honolulu, Hawaii	52	36	10	3	2	1	9
Long Beach, Calif.	86	61	11	8	2	4	-
Los Angeles Calif.	447	271	90	48	27	7	12
Oakland, Calif.§	87	58	16	8	4	1	4
Pasadena, Calif.	27	21	3	1	-	2	1
Portland, Oreg.	123	81	24	9	6	3	2
Sacramento, Calif.	140	94	25	10	5	2	8
San Diego, Calif.	138	81	32	15	6	4	10
San Francisco, Calif.	157	82	48	20	2	5	2
San Jose, Calif.	156	101	27	18	6	3	13
Seattle, Wash.	141	93	21	18	7	2	6
Spokane, Wash.	52	38	9	3	1	1	6
Tacoma, Wash.	52	35	10	4	2	1	3
TOTAL	12,154††	7,770	2,503	1,091	414	363	506

*Mortality data in this table are voluntarily reported from 121 cities in the United states, most of which have populations of 100,000 o more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are no 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.

TABLE V. Estimated years of potential life lost before age 65 and cause-specific mortality, by cause of death — United States, 1985

Cause of mortality (ICD, 9th Revision)	YPLL for persons dying in 1985*	Cause-specific mortality, 1985† (rate/100,000)
ALL CAUSES (Total)	11,844,475	874.8
Unintentional injuries§ (E800-E949)	2,235,064	38.6
Malignant neoplasms (140-208)	1,813,245	191.7
Diseases of the heart (390-398,402,404-429)	1,600,265	325.0
Suicide, homicide (E950-E978)	1,241,688	20.1
Congenital anomalies (740-759)	694,715	5.5
Prematurity¶ (765, 769)	444,931	2.9
Sudden infant death syndrome (798)	313,386	2.0
Cerebrovascular disease (430-438)	253,044	64.0
Chronic liver diseases and cirrhosis (571)	235,629	11.2
Pneumonia and influenza (480-487)	168,949	27.9
Acquired immunodeficiency syndrome (AIDS)**	152,595	2.3
Chronic obstructive pulmonary diseases (490-496)	129,815	31.2
Diabetes mellitus (250)	128,229	16.2

*For details of calculation, see footnotes to Table V, *MMWR* 1987;36:56.
†Cause-specific mortality rates as reported in the National Center for Health Statistics' *Monthly Vital Statistics Report* are compiled from a 10% sample of all deaths.
§Equivalent to accidents and adverse effects.
¶Category derived from disorders relating to short gestation and respiratory distress syndrome.
**Reflects CDC surveillance data.

Gonorrhoeae – Continued

were culture-positive, and 14 (88%) of these had PPNG strains. The other 33 (67%) of the 49 contacts were culture-negative for *N. gonorrhoeae* and received treatment with either spectinomycin or ceftriaxone.

The minimum inhibitory concentrations (MICs) of penicillin, tetracycline, and spectinomycin were determined for 38 of 40 isolates by an agar dilution method. The geometric mean MICs for tetracycline and spectinomycin in the 1986 PPNG isolates were similar to those for isolates from systematically selected patients seen from 1981 through 1986. However, the 1986 PPNG isolates had lower geometric mean MICs for tetracycline than did isolates from patients with treatment failure from 1981 through 1986 (0.67 compared with 3.03μg/ml). All isolates tested were susceptible to spectinomycin (MIC <64μg/ml).

Auxotype/serovar and plasmid analysis of 36 of the 40 PPNG isolates from 1986 has been completed. Eight auxotype/serovar classes were involved in the outbreak. Four auxotype/serovar classes were represented by isolates from at least five individuals. Plasmid analysis indicates that all isolates contained either the 3.2 (44%) or 4.4 (56%) Mdal plasmid for β-lactamase production, but only those from one class (Proto/IB-3) contained the 24.5 Mdal conjugative plasmid.

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Editorial Note: Although the incidence of PPNG has been concentrated in New York, California, and Florida, outbreaks in other parts of the country are occurring frequently (*1*). The absence of PPNG strains among the systematically selected isolates screened in the previous 5 years at the DMHC suggests that the increase in cases reflected a new problem and was not due solely to screening. A high proportion of patients in the Denver outbreak gave histories suggesting that they may have become infected outside of Colorado and/or may have been involved in prostitution-related activities. These histories, along with the diversity of auxotype/serovar classes involved and the presence of both the 3.2 Mdal and 4.4 Mdal β-lactamase plasmids among the isolates, strongly suggest that this outbreak is in reality a series of "mini-outbreaks" caused by different strains of PPNG.

In contrast to previously reported experiences in the United States (*2-4*), the Denver PPNG isolates were relatively susceptible to tetracycline. This pattern reflects the high proportion of strains with the 3.2 Mdal plasmid, which is characteristically associated with increased tetracycline susceptibility. The DMHC's routine use of tetracycline in treating heterosexuals with gonorrhea probably delayed recognition of the onset of the outbreak, as evidenced by the increase in incidence of PPNG cases after the institution of routine screening of all pretreatment isolates for β-lactamase.

CDC currently recommends that all gonococcal isolates be tested for β-lactamase production. In areas where the proportion of gonococcal disease caused by PPNG strains is greater than 1%, all patients diagnosed with gonorrhea should be treated with a regimen effective for antimicrobial-resistant gonorrhea (e.g., ceftriaxone, 250 mg, intramuscularly). In addition, patients treated for gonorrhea should receive 1 week of tetracycline or erythromycin therapy for the cotreatment of chlamydial infection (*5*). Detailed guidelines for the diagnosis, therapy, and recommended public health interventions for antimicrobial-resistant gonococcal infections will be published as an *MMWR* supplement in September.

Gonorrhoeae — Continued

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Epidemiologic Notes and Reports

Carbon Monoxide Poisoning in a Garment-Manufacturing Plant — North Carolina

In September 1985, workers in the cutting room of a garment-manufacturing plant in North Carolina began complaining of headache, nausea, faintness, and dizziness. The Occupational Health Branch and the Environmental Epidemiology Branch of the North Carolina Division of Health Services were asked to investigate. The results of their investigation are presented below.

The cutting room is an enclosed 20,000-square-foot building separate from the sewing operation. It has heating and air conditioning systems using only recirculated air. The furnace, which is suspended over the center of the room, directs heated forced air toward the four walls of the building and collects air for reheating as it rebounds from the walls. A propane-powered forklift was being used to unload rolls of cloth from a truck that backs up to a usually sealed garage door at the end of the cutting room.

Because the workers' symptoms coincided with the indoor use of a forklift powered by an internal combustion engine, the investigators suspected carbon monoxide (CO) poisoning. On the day of the investigation (Monday), CO measurements were taken continuously for a 5-hour period with a calibrated Gastech* tester (model EC231). The heating furnace was functioning properly and did not contribute to CO exposure in the cutting room. The plant had been closed over the weekend, and there had been no known source of CO during that time. When the work shift began, the CO level was 35 parts per million (ppm) parts of air. The forklift was started 15 minutes later, and, within 30 minutes, the CO concentration in the air had risen to 250 ppm. Spot checks taken with a Bendix Gastech* detector-tube kit while the forklift was in operation showed a CO level of 300 ppm adjacent to the continuous monitor. The level of CO was 900 ppm inside the supply truck where the forklift unloaded rolls of cloth. The current standard of the Occupational Safety and Health Administration (OSHA) for exposure to CO is 50 ppm as an 8-hour, time-weighted average; the National Institute for Occupational Safety and Health recommends a permissible exposure limit of 35 ppm and a ceiling of 200 ppm (*1*).

Investigators interviewed all 12 workers in the cutting room while the forklift was in use. Ten of the workers (83%) reported symptoms of headache; seven (58%)

*Use of trade names is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services or the Public Health Service.

Carbon Monoxide Poisoning — Continued

reported nausea; seven (58%), faintness; five (42%), dizziness; five (42%), irritability; four (33%), weakness; three (25%), chest tightness; and one (8%), vomiting. Two workers (17%) felt ill enough to leave work. The workers experienced these symptoms on the day of the interviews and remembered having experienced them previously, usually on days when the forklift was operating. All symptomatic workers reported feeling better after arriving home from work (median, 3-4 hours after leaving the cutting room).

Venous blood samples from five workers and one investigator showed carboxyhemoglobin (COHb) levels greater than would be expected from their smoking histories (Table 1). The cloth cutter and the forklift operator, who had the highest COHb levels, both worked with potentially dangerous machinery. Workers with COHb values less than 20% had not worked a full shift in the cutting room.

The plant managers were advised to discontinue use of the propane-powered forklift immediately and to replace it with an electrical model. Workers were informed of the risks of CO exposure and were warned of the dangers of operating heavy machinery and cutting instruments while intoxicated with CO. After the propane-powered forklift was replaced with an electrical one, workers no longer experienced the symptoms.

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Editorial Note: Carbon monoxide is an odorless, colorless gas produced by incomplete combustion of carbon-containing materials. When there is an incorrect air/fuel mixture in an internal combustion engine, the amount of CO produced increases. In addition, CO concentration increases with insufficient ventilation of combustion gases and insufficient intake of fresh air. Inhaled CO causes hypoxia by binding tightly with circulating hemoglobin to form COHb and, thus, reduces the capacity of the blood to transport oxygen (*2*). Symptoms and signs of CO-induced hypoxia include headache, dizziness, nausea, vomiting, unconsciousness, and death (*2,3*). Persons exposed to CO may appear intoxicated as if with alcohol or other depressants of the central nervous system (*4*) and may not be fully aware of their degree of impairment.

TABLE 1. Levels of carboxyhemoglobin (COHb) among workers in a garment-manufacturing plant, by occupation and smoking history — North Carolina, 1985

Occupation*	COHb Level (%)	Cigarettes Smoked (Packs/Day)	COHb Level Expected† (%)
Cloth cutter	(22)	0	(0-2)
Forklift operator	(21)	1	(4-5)
Industrial hygienist	(20)	0	(0-2)
Laborer	(15)	0	(0-2)
Quality control inspector	(10)	1	(4-5)
Plant engineer	(5)	0	(0-2)

*All workers except the plant engineer reported one or more of the following symptoms: headache, dizziness, nausea, weakness, faintness, irritability, and disorientation.

†Based on the number of packs of cigarettes smoked per day (reference value for laboratory testing).

Carbon Monoxide Poisoning — Continued

Therefore, employees who work with or near potentially hazardous equipment should be alerted to the dangers of CO poisoning.

When internal combustion engines are operated indoors, they are likely to produce dangerously high concentrations of CO. According to the Industrial Truck Association and the U.S. Department of Commerce, 50% of the 97,000 forklifts sold in this country in 1985 were powered by internal combustion engines, and about 75% of all forklifts are operated indoors. Other sources of indoor CO exposure include home furnaces and water heaters (*5*), machines for resurfacing ice skating rinks (*6*), and kerosene heaters (*7*).

Since the forklift had been operated in this plant before September, it is not clear why the onset of symptoms occurred at that time. However, since the amount of CO produced by an internal combustion engine depends on the combustion efficiency of the engine, it is possible that the combustion efficiency of the forklift had gradually declined over time. No measurements were available to confirm this hypothesis. Because there was no known source of CO in the plant over the weekend, the investigators concluded that the 35 ppm of CO at the beginning of the workshift on Monday was left over from the forklift operation of the previous week.

Although CO exposure can be reduced by local exhaust ventilation and respiratory protective devices, OSHA recommends engineering controls whenever possible to eliminate the source of CO. Public health officials should be aware of the hazards of operating internal combustion engines indoors, and plant managers should be advised to purchase electrically powered machines for indoor use.

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Notices to Readers

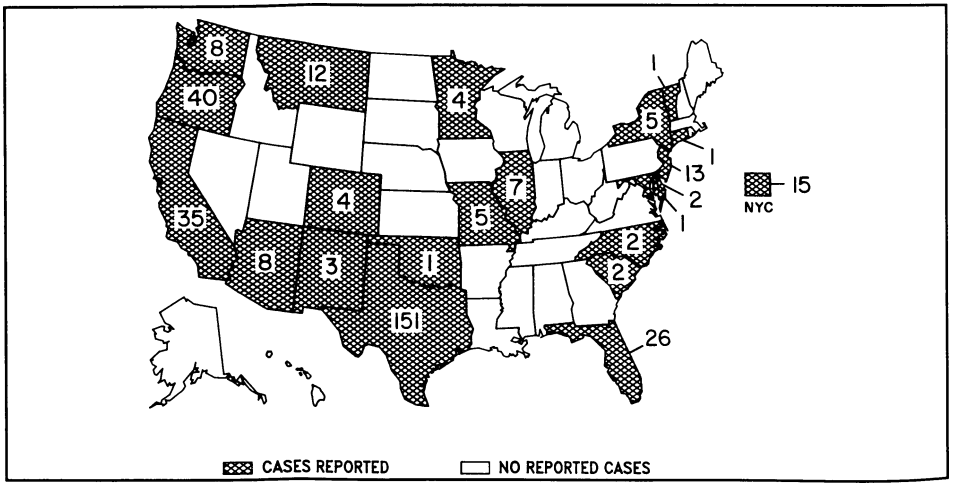
Publication of Recommendations for Prevention of HIV Transmission in Health-Care Settings

On August 21, 1987, CDC is releasing an *MMWR* supplement entitled "Recommendations for Prevention of HIV Transmission in Health-Care Settings". This document consolidates and updates previous recommendations. Copies of the supplement (*MMWR* Vol. 36, Supplement no. 2S) may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, telephone (202)783-3238, or from MMS Publications, C.S.P.O. Box 9120, Waltham, Massachusetts 02254, telephone (617)893-3800.

Call for Abstracts: XIII World Conference on Health Education, August 28-September 2, 1988, Houston, Texas

The deadline for submitting abstracts from the United States to be considered for presentation at the XIII World Conference on Health Education is September 30, 1987. The deadline for submissions from other countries is October 30, 1987. This conference is sponsored by the International Union for Health Education in cooperation with CDC and the U.S. Host Committee, which represents over 40 U.S. public health organizations, including the American Public Health Association, the American Medical Association, and the American Red Cross. Other cosponsoring organizations are the National Center for Health Education and the World Health Organization. The theme for this conference is "Participation for All in Health". A number of special topics—AIDS Health Education, Maternal and Infant Health, Helping a Billion Children Learn About Health, and Smoking and Health—will be emphasized. Inquiries related to the conference or to the submission of abstracts should be directed to: United States Host Committee, Inc., P.O. Box 20186, Suite W-902, RAS Building, Houston, Texas 77225.

FIGURE I. Reported measles cases – United States, weeks 28-31



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The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday. The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333.