CENTERS FOR DISEASE CONTROL

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Epidemiologic Notes and Reports

Alternative Case-Finding Methods in a Crack-Related Syphilis Epidemic – Philadelphia

Use of crack cocaine and exchange of drugs for sex have been identified as substantial contributors to the syphilis epidemic in Philadelphia and other locations in the United States (*1–4*). In Philadelphia, from 1985 through 1989, the number of reported cases of early syphilis (primary, secondary, and early latent stages) increased 551%, from 696 to 4528 cases per year. Among 2473 persons with early syphilis interviewed by the Philadelphia Department of Public Health (PDPH) from January through July 1990, 48% reported they or a sex partner* used crack cocaine, and 31% reported exchanging drugs or money for sex (not all of those interviewed answered both questions).

Traditional approaches to the control of syphilis that emphasize partner notification have not been effective in halting this epidemic. The partner notification approach requires public health workers to identify sex partners of a person with a sexually transmissible disease (e.g., syphilis) and then to contact these sex partners to provide examination and curative or preventive treatment. However, because persons who are involved in the exchange of drugs and/or money for sex often cannot or will not provide sufficient information about sex partners to enable public health authorities to locate those partners (*2,4,5*), alternative case-finding methods are needed. This report describes efforts by the PDPH to identify persons infected with *Treponema pallidum* by using serologic screening at locations where crack cocaine is used.

The alternative intervention used by PDPH included two components: 1) augmenting the traditional partner notification interview and cluster investigation† techniques (*6,7*) to identify locations (characterized by crack-use–related activities) where persons at high risk for syphilis may be found; and 2) establishing a Screening Activity Team (SAT) that offers serologic screening for syphilis to persons at these locations.

*A person who had sexual contact with the index patient at a time when transmission between the two (in either direction) could have occurred.

†Cluster investigation techniques are designed to identify persons (other than sex partners) at high risk for syphilis.

Crack-Related Syphilis — Continued

The impact of this approach is illustrated by the relationships among 26 persons with early syphilis. The assessment of the effectiveness of the SAT component is based on the number of cases of untreated syphilis detected per person tested.

Relationships among 26 Persons with Early Syphilis

On June 25, 1990, an interview of the index patient, a bisexual female crack user with secondary syphilis, identified three sex partners, three high-risk associates[§], and the location of a crack house (i.e., a setting where crack cocaine is sold and/or used). Subsequent reinterviews of the index patient and visits during which she accompanied PDPH staff to different neighborhoods identified two additional sex partners, 11 additional high-risk associates, and a second crack house. Examinations and interviews of these sex partners and high-risk associates identified a chain of infection involving 14 cases of early syphilis (two primary, four secondary, and eight early latent).

In addition, a syphilis patient who was not initially known to be linked to the first chain of infection identified a third crack house. Serologic screening of 21 persons at that crack house detected eight new cases of early latent syphilis. Four of these persons were linked (as sex partners or high-risk associates) with the patient who had identified the crack house and/or with three other persons with previously detected cases of early syphilis. For the other four persons, the only identified link with this second chain of infection was crack use at a common location.

The two chains of infection were linked through a high-risk associate of the original index patient; the associate was lost to follow-up before PDPH determined her infection status. Investigation of these two chains of infection resulted in preventive treatment (for possible incubating syphilis) of 19 sexually exposed persons.

Screening Activity Team

In July 1990, the PDPH Sexually Transmitted Disease (STD) Control Program began to serologically screen persons at high-risk locations where crack is used or sold (including crack houses, drug-sale areas, brothels, prostitution strips, and shooting galleries [i.e., a setting where illegal drugs are injected]). Information about potential screening sites was provided by STD staff who elicited information about such sites during their field work and interviews with persons infected with syphilis.

From July 9 through October 9, 1990, the SAT worked an average of 3 hours each afternoon in the field. Blood was drawn from persons who voluntarily consented, and the serum samples were tested the following morning using the rapid plasma reagin (RPR) test. The SAT then returned to the field to offer examination and treatment (at the STD clinic) to persons with reactive serologic results and no history of treatment.

Of 372 persons screened, 100 (27%) tested reactive on the RPR card test (Figure 1). Of these, 44 were successfully treated for syphilis, 21 had been previously treated, and 33 were lost to follow-up; two had false-positive serologic results based on negative confirmatory testing using the microhemagglutination for *T. pallidum* test. Of the 44 newly treated persons, four (9%) had primary, six (14%) secondary, 32 (73%) early latent, and two (5%) late latent syphilis; one woman with secondary and one woman with early latent syphilis were brought to treatment in their eighth month of pregnancy.

[§]Persons (other than sex partners) identified by cluster investigation techniques as having high risk for syphilis.

Crack-Related Syphilis — Continued

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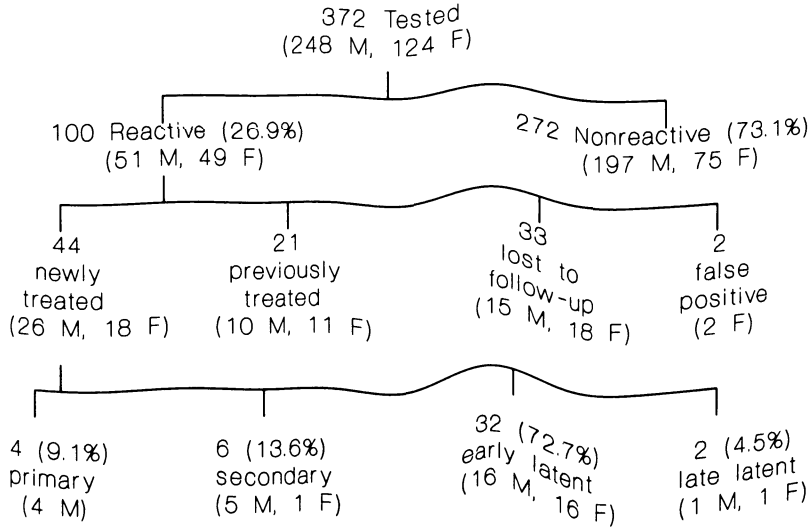
Editorial Note: Partner notification is an important part of efforts to control the spread of syphilis. However, in the current epidemic, many infected persons are users of illegal drugs who often cannot or will not provide sufficient information to allow STD staff to locate and offer examination and treatment to sex partners (*2,4,5*). The alternative case-finding method used by PDPH was based on serologic screening at locations identified during interviews of patients with early syphilis and was successful in identifying infected patients.

Partner notification permits preventive treatment of exposed persons before the onset of disease and, therefore, infectivity. In contrast, persons infected with syphilis who are identified through serologic screening usually have latent disease; many of these are already past the period of maximum infectivity. Nonetheless, the SAT identified a substantial number of persons with primary and secondary syphilis (3% of those tested), possibly because information obtained from patients with early-stage syphilis was used to target the locations for serologic screening. Detection and treatment of patients in these highly infectious stages are likely to be more effective in reducing disease transmission than detection and treatment of patients with latent syphilis.

The SAT was accepted at most high-risk locations except for some crack houses. When access was initially denied, occupants were invited outside, often with success. When efforts to contact crack house occupants failed, the SAT attempted to schedule a visit at a time more agreeable to the owner. This approach usually resulted in cooperation and access to occupants.

The SAT approach appeared to be more effective than other efforts to identify high-prevalence populations for targeted screening. For example, among men tested

FIGURE 1. Results of syphilis testing at high-risk locations — Philadelphia, July 9–October 9, 1990



Crack-Related Syphilis — Continued

in gay bathhouses in 1975–76 in Los Angeles and Denver, overall prevalences of RPR reactivity were 20% and 4%, and of untreated syphilis were 3% and 1% (all with latent syphilis), respectively (*8*).

PDPH staff successfully obtained the cooperation of persons who, because of the illegal nature of their activities, might be expected to resist these efforts. Outreach efforts such as this could also increase awareness of the epidemic in the affected community. Increased awareness of the epidemic could enhance control efforts by prompting early self-identification of infected persons and result in high-risk persons adopting safer sexual practices.

Despite the brief (24 hours) time required to obtain test results, a substantial proportion (33%) of seroreactive persons could not be located for examination/treatment. Thus, targeted screening might be more effective if immediate RPR testing is performed at the time of phlebotomy, allowing treatment and partner notification interviews at that time for those persons who are seroreactive and considered likely to have untreated syphilis.

The high rate of infection among persons who had been targeted because of their proximity to sites of crack cocaine use reinforces evidence from other studies that suggest that crack and sites of crack use and sale play an important role in the syphilis epidemic. Efforts such as those of PDPH to use information about the dynamics of the epidemic as a basis for implementing interventions should be evaluated in other geographic areas. Evaluations of alternative case-finding methods should ideally assess their effectiveness in reducing syphilis transmission and their cost-effectiveness in identifying case-patients for curative or preventive treatment.

References

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Current Trends

Rotavirus Surveillance — United States, 1989–1990

Rotavirus infection is the most common cause of dehydrating diarrhea in children in the United States (*1*). In January 1989, CDC established a National Rotavirus Surveillance System (NRSS) to monitor national patterns in the epidemiology of rotavirus. This report summarizes findings from the NRSS from January 1989 through November 1990.

Rotavirus – Continued

In January 1989, 99 laboratories began submitting monthly reports of positive detections, numbers of specimens tested, and laboratory methods used to detect rotavirus. Of those laboratories, 72 in 48 states also provided retrospective data for 1984–1988; these data indicate a temporal and geographic sequence of peaks in reported positive detections that begins in the southwest in November and ends in the northeast in March (*2*).

From January 1989 through November 1990, 56 laboratories submitted reports every month; they included 12 pediatric, 17 community, and 23 university hospital laboratories; two public health laboratories; and two commercial laboratories. To detect rotavirus, most (46 [82%]) of these laboratories used enzyme immunoassay techniques, four used a latex agglutination test, and six used electron microscopy.

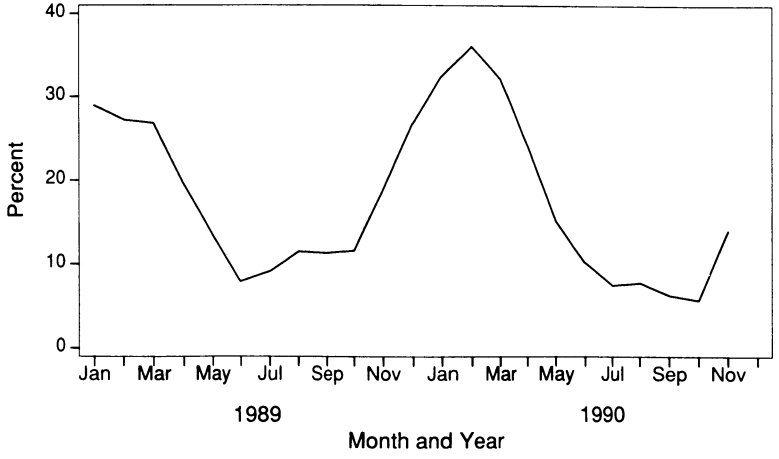
For the 23-month period, 48,035 specimens were tested for rotavirus; 9639 (20%) were positive. The total number of specimens tested each month varied from 1410 in September 1990 to 3275 in January 1990. For all centers combined, the percentage of positive specimens was highest in February 1990 (1056 [36%] of 2925) and lowest in October 1990 (103 [6%] of 1817) (Figure 1).

October 1989 through May 1990 was the first full rotavirus season for prospective surveillance in the United States. During that period, peaks in the positive detection rate varied by region, beginning in December in the West (36% positive detections), January–February in the South (32%–33%), February in the North Central (49%), and March in the Northeast (47%). By June, no region had more than 16% positive detections, and three of the four regions had <10% positive detections. For the 1990–91 rotavirus season, an increase in positive detections was reported in the West during November 1990 (positive rate of 21%) when compared with August–October (1%–4%).

Reported by: National Rotavirus Surveillance System laboratories. Viral Gastroenteritis Section, Respiratory and Enteric Virus Br, Div of Viral and Rickettsial Diseases, Center for Infectious Diseases, CDC.

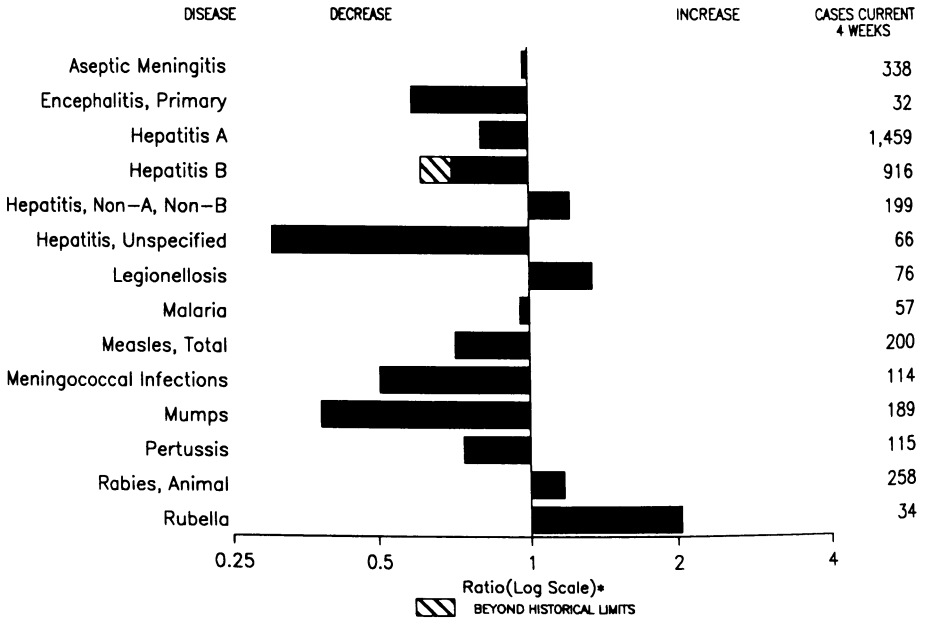
(Continued on page 87)

FIGURE 1. Percentage of laboratory tests positive for rotavirus* – United States, January 1989–November 1990



*Number of specimens tested each month ranged from 1410 (September 1990) to 3275 (January 1990).

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending February 2, 1991, with historical data — United States



*Ratio of current 4-week total to the mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — cases of selected notifiable diseases, United States, cumulative, week ending February 2, 1991 (5th Week)

	Cum. 1991		Cum. 1991
AIDS	3,366	Measles: imported	9
Anthrax	-	indigenous	222
Botulism: Foodborne	-	Plague	-
Infant	6	Poliomyelitis, Paralytic*	-
Other	-	Psittacosis	5
Brucellosis	5	Rabies, human	-
Cholera	-	Syphilis, primary & secondary	3,819
Congenital rubella syndrome	2	Syphilis, congenital, age < 1 year	-
Diphtheria	1	Tetanus	-
Encephalitis, post-infectious	1	Toxic shock syndrome	30
Gonorrhea	48,472	Trichinosis	-
H. influenzae (invasive disease)	115	Tuberculosis	1,431
Hansen disease	11	Tularemia	2
Leptospirosis	7	Typhoid fever	29
Lyme disease	23	Typhus fever, tickborne (RMSF)	9

*No cases of suspected poliomyelitis have been reported in 1991; none of the 6 suspected cases in 1990 have been confirmed to date. Five of 13 suspected cases in 1989 were confirmed and all were vaccine associated.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending February 2, 1991, and February 3, 1990 (5th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea		Hepatitis (Viral), by type				Legionellosis	Lyme Disease
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1991	Cum. 1991	Cum. 1991	Cum. 1991	Cum. 1991	Cum. 1990	Cum. 1991	Cum. 1991	Cum. 1991	Cum. 1991	Cum. 1991	Cum. 1991
UNITED STATES	3,366	416	39	1	48,472	64,599	1,797	1,085	255	96	85	23
NEW ENGLAND	176	18	6	-	1,937	1,772	58	79	8	4	7	5
Maine	15	-	2	-	7	20	3	1	1	-	-	-
N.H.	5	1	-	-	28	22	2	4	1	-	1	-
Vt.	3	-	-	-	9	9	3	1	-	-	-	-
Mass.	70	7	2	-	649	597	35	68	6	3	6	4
R.I.	9	10	-	-	100	97	7	5	-	1	-	1
Conn.	74	-	2	-	1,144	1,027	8	-	-	-	-	-
MID. ATLANTIC	907	41	2	-	4,386	7,037	115	68	7	-	15	-
Upstate N.Y.	110	17	1	-	928	1,171	85	37	4	-	3	-
N.Y. City	381	-	-	-	-	3,328	-	-	-	-	-	-
N.J.	283	-	-	-	1,067	1,528	10	4	1	-	-	-
Pa.	133	24	1	-	2,391	1,010	20	27	2	-	12	-
E.N. CENTRAL	365	63	2	1	5,959	12,406	139	107	49	6	15	6
Ohio	47	27	1	1	-	4,076	62	37	12	3	12	2
Ind.	24	4	-	-	1,118	1,070	21	10	-	-	-	-
Ill.	212	4	-	-	2,606	3,219	-	-	-	-	-	-
Mich.	54	27	1	-	1,999	3,188	31	47	7	3	3	4
Wis.	28	1	-	-	236	853	25	13	30	-	-	-
W.N. CENTRAL	137	30	6	-	2,860	3,883	258	23	21	1	9	1
Minn.	35	8	5	-	173	427	6	-	-	-	2	-
Iowa	14	9	-	-	198	308	9	1	1	-	-	1
Mo.	77	4	-	-	1,828	2,113	49	15	20	1	4	-
N. Dak.	-	-	-	-	-	29	1	-	-	-	-	-
S. Dak.	-	3	1	-	35	28	159	-	-	-	1	-
Nebr.	4	6	-	-	200	180	31	6	-	-	2	-
Kans.	7	-	-	-	426	798	3	1	-	-	-	-
S. ATLANTIC	779	109	6	-	16,992	19,314	135	281	38	12	11	3
Del.	5	3	-	-	171	225	4	9	1	-	-	1
Md.	77	16	2	-	1,726	2,127	39	36	12	1	3	-
D.C.	41	6	-	-	1,026	825	10	12	-	1	-	-
Va.	64	12	-	-	1,393	1,577	19	23	2	8	1	1
W. Va.	5	2	-	-	124	138	2	5	-	1	-	-
N.C.	41	42	2	-	3,457	3,800	28	75	20	-	4	1
S.C.	40	6	-	-	1,590	1,859	6	65	1	-	2	-
Ga.	102	-	1	-	4,197	4,441	16	40	-	-	1	-
Fla.	404	22	1	-	3,308	4,322	11	16	2	1	-	-
E.S. CENTRAL	98	42	2	-	4,475	5,177	22	110	39	2	9	3
Ky.	18	14	-	-	506	575	5	24	1	2	5	1
Tenn.	34	13	2	-	1,295	1,344	10	75	38	-	2	2
Ala.	29	14	-	-	1,630	2,123	7	11	-	-	2	-
Miss.	17	1	-	-	1,044	1,135	-	-	-	-	-	-
W.S. CENTRAL	334	31	5	-	5,632	6,100	138	68	4	8	3	-
Ark.	13	23	1	-	579	901	33	-	-	-	-	-
La.	32	2	-	-	1,025	1,172	12	29	1	-	1	-
Okla.	5	1	3	-	605	523	45	23	3	4	2	-
Tex.	284	5	1	-	3,423	3,504	48	16	-	4	-	-
MOUNTAIN	88	19	3	-	1,016	1,490	353	81	13	20	11	-
Mont.	3	1	-	-	5	12	16	11	-	2	-	-
Idaho	1	-	-	-	11	8	6	7	-	-	-	-
Wyo.	2	-	-	-	4	16	1	-	-	-	-	-
Colo.	45	3	-	-	252	483	11	12	4	4	1	-
N. Mex.	9	-	-	-	63	105	120	7	-	2	-	-
Ariz.	8	9	3	-	450	546	137	30	3	9	4	-
Utah	3	2	-	-	35	37	48	4	3	3	4	-
Nev.	17	4	-	-	196	283	14	10	3	-	2	-
PACIFIC	482	63	7	-	5,215	7,420	579	268	76	43	5	5
Wash.	33	-	-	-	388	743	62	42	9	1	-	-
Oreg.	16	-	-	-	200	283	36	21	9	1	-	-
Calif.	413	55	7	-	4,461	6,198	470	200	55	40	4	5
Alaska	2	2	-	-	94	137	8	4	3	1	-	-
Hawaii	18	6	-	-	72	59	3	1	-	-	1	-
Guam	-	-	-	-	-	29	-	-	-	-	-	-
P.R.	181	-	-	-	15	134	-	-	-	-	-	-
V.I.	-	-	-	-	40	47	-	1	-	-	-	-
Amer. Samoa	-	-	-	-	-	9	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	20	-	-	-	-	-	-

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of the Northern Mariana Islands

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending February 2, 1991, and February 3, 1990 (5th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1991	1991	Cum. 1991	1991	Cum. 1991	Cum. 1990	Cum. 1991	1991	Cum. 1991	1991	Cum. 1991	Cum. 1990	1991	Cum. 1991	Cum. 1990
UNITED STATES	66	55	222	2	9	1,029	136	65	224	42	145	223	-	36	33
NEW ENGLAND	7	-	-	-	-	10	17	-	1	-	8	41	-	-	1
Maine	-	-	-	-	-	1	-	-	-	-	1	1	-	-	-
N.H.	-	-	-	-	-	1	5	-	-	-	7	-	-	-	-
Vt.	1-	-	-	-	-	1	-	-	-	-	1	-	-	-	
Mass.	4	-	-	-	-	-	10	-	-	-	-	38	-	-	-
R.I.	2	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Conn.	-	-	-	-	-	8	1	-	-	-	-	1	-	-	-
MID. ATLANTIC	4	14	88	-	-	37	12	6	20	3	25	20	-	-	-
Upstate N.Y.	3	-	-	-	-	3	7	2	8	3	10	6	-	-	-
N.Y. City	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-
N.J.	-	-	3	-	-	9	1	-	-	-	1	8	-	-	-
Pa.	1	14	85	-	-	19	4	4	12	-	14	6	-	-	-
E.N. CENTRAL	3	-	1	-	1	709	14	10	28	17	27	81	-	-	3
Ohio	-	-	-	-	-	-	5	-	-	16	23	-	-	-	-
Ind.	1	-	-	-	-	3	1	1	1	-	-	26	-	-	-
Ill.	-	-	-	-	-	297	-	8	16	-	-	25	-	-	3
Mich.	2	-	1	-	-	127	7	1	10	1	3	8	-	-	-
Wis.	-	-	-	-	1	282	1	-	1	-	1	22	-	-	-
W.N. CENTRAL	1	-	-	-	-	39	1	3	7	1	14	7	-	1	-
Minn.	-	-	-	-	-	-	-	-	2	-	7	1	-	1	-
Iowa	-	-	-	-	-	19	-	1	3	-	3	-	-	-	-
Mo.	1	-	-	-	-	20	-	2	2	-	1	4	-	-	-
N. Dak.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
S. Dak.	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-
Nebr.	-	-	-	-	-	-	-	-	-	1	2	1	-	-	-
Kans.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S. ATLANTIC	17	-	1	-	-	37	30	27	90	2	8	32	-	4	1
Del.	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-
Md.	4	-	-	-	-	16	6	13	40	-	-	13	-	3	-
D.C.	-	-	-	-	-	-	-	-	3	-	-	1	-	-	-
Va.	3	-	-	-	-	5	3	1	6	1	2	1	-	-	-
W. Va.	1	-	-	-	-	-	1	1	2	-	-	5	-	-	-
N.C.	-	-	-	-	-	-	9	11	31	-	5	5	-	1	-
S.C.	4	-	-	-	-	-	3	-	4	-	-	-	-	-	-
Ga.	2	-	-	-	-	1	3	-	-	-	-	3	-	-	-
Fla.	3	-	1	-	-	14	5	1	4	1	1	2	-	-	1
E.S. CENTRAL	1	2	2	-	-	12	17	-	2	1	5	10	-	-	-
Ky.	-	2	2	-	-	-	5	-	-	-	-	-	-	-	-
Tenn.	-	-	-	-	-	9	4	-	-	1	3	1	-	-	-
Ala.	1	-	-	-	-	-	8	-	1	-	2	9	-	-	-
Miss.	-	-	-	-	-	3	-	-	1	-	-	-	-	-	-
W.S. CENTRAL	1	-	-	1	5	20	5	9	15	3	9	2	-	-	-
Ark.	-	-	-	1§	5	-	-	3	3	-	-	-	-	-	-
La.	1	-	-	-	-	-	5	2	4	-	6	1	-	-	-
Okla.	-	-	-	-	-	3	-	-	1	3	3	1	-	-	-
Tex.	-	-	-	-	-	17	-	4	7	-	-	-	-	-	-
MOUNTAIN	1	7	17	1	2	6	8	1	13	9	19	6	-	1	-
Mont.	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
Idaho	-	-	-	-	-	-	1	-	-	7	7	2	-	-	-
Wyo.	-U	-	U	-	-	-	U	-	U	-	-	U	-	-	
Colo.	-	-	-	-	-	-	2	-	2	-	3	-	-	-	-
N. Mex.	-	4	8	1†	2	-	-	N	N	1	3	-	-	-	-
Ariz.	1	1	2	-	-	6	3	1	11	1	6	3	-	-	-
Utah	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Nev.	-	2	7	-	-	-	-	-	-	-	-	-	-	1	-
PACIFIC	31	32	113	-	1	159	32	9	48	6	30	24	-	30	28
Wash.	4	-	-	-	-	9	2	-	3	3	3	2	-	-	-
Oreg.	1	-	-	-	-	1	5	N	N	-	4	5	-	-	-
Calif.	25	32	111	-	1	149	24	9	40	2	12	15	-	30	25
Alaska	-	-	-	-	-	-	1	-	3	-	2	-	-	-	-
Hawaii	1	-	2	-	-	-	-	-	2	1	9	2	-	-	3
Guam	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-
P.R.	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
V.I.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-
C.N.M.I.	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-

*For measles only, imported cases includes both out-of-state and international importations.
N: Not notifiable U: Unavailable †International §Out-of-state

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending February 2, 1991, and February 3, 1990 (5th Week)

Reporting Area	Syphilis (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1991	Cum. 1990	Cum. 1991	Cum. 1991	Cum. 1990	Cum. 1991	Cum. 1991	Cum. 1991	Cum. 1991
UNITED STATES	3,819	3,933	30	1,431	1,667	2	29	9	318
NEW ENGLAND	91	177	3	36	18	-	4	2	-
Maine	-	1	2	-	-	-	-	-	-
N.H.	1	23	-	-	1	-	-	-	-
Vt.	1	-	-	-	1	-	-	-	-
Mass.	49	47	1	11	1	-	4	2	-
R.I.	4	-	-	8	7	-	-	-	-
Conn.	36	106	-	17	8	-	-	-	-
MID. ATLANTIC	713	780	4	317	441	-	-	-	118
Upstate N.Y.	38	47	2	18	45	-	-	-	33
N.Y. City	291	550	-	236	320	-	-	-	-
N.J.	116	152	-	51	33	-	-	-	46
Pa.	268	31	2	12	43	-	-	-	39
E.N. CENTRAL	401	222	4	156	154	-	2	-	3
Ohio	39	51	3	51	13	-	-	-	-
Ind.	10	1	-	4	12	-	-	-	-
Ill.	207	60	-	89	97	-	-	-	-
Mich.	103	74	1	-	24	-	2	-	-
Wis.	42	36	-	12	8	-	-	-	3
W.N. CENTRAL	55	38	10	38	39	-	1	-	33
Minn.	7	11	6	1	11	-	1	-	21
Iowa	7	4	3	9	3	-	-	-	3
Mo.	41	17	1	19	14	-	-	-	-
N. Dak.	-	1	-	2	3	-	-	-	5
S. Dak.	-	-	-	1	2	-	-	-	-
Nebr.	-	2	-	1	6	-	-	-	2
Kans.	-	3	-	5	-	-	-	-	2
S. ATLANTIC	1,130	1,422	2	160	222	-	6	4	101
Del.	14	17	1	3	7	-	-	-	11
Md.	108	127	-	19	26	-	2	-	45
D.C.	68	42	-	17	2	-	-	-	-
Va.	68	70	-	13	13	-	1	-	16
W. Va.	3	2	-	7	4	-	1	-	6
N.C.	157	162	1	38	32	-	-	4	-
S.C.	163	98	-	20	37	-	-	-	5
Ga.	257	377	-	31	30	-	2	-	18
Fla.	292	527	-	12	71	-	-	-	-
E.S. CENTRAL	439	362	1	89	102	-	-	2	6
Ky.	7	9	-	22	36	-	-	1	1
Tenn.	231	135	-	-	28	-	-	-	-
Ala.	99	120	1	41	29	-	-	1	5
Miss.	102	98	-	26	9	-	-	-	-
W.S. CENTRAL	536	426	1	133	215	1	-	1	29
Ark.	19	28	-	13	25	1	-	-	3
La.	155	186	-	46	64	-	-	-	2
Okla.	20	25	1	2	8	-	-	1	11
Tex.	342	187	-	72	118	-	-	-	13
MOUNTAIN	69	73	-	44	26	1	1	-	3
Mont.	-	-	-	-	-	1	-	-	2
Idaho	2	1	-	-	-	-	-	-	-
Wyo.	1	-	-	-	1	-	-	-	-
Colo.	8	7	-	6	-	-	-	-	-
N. Mex.	3	7	-	-	8	-	-	-	-
Ariz.	48	46	-	27	6	-	1	-	1
Utah	-	1	-	10	-	-	-	-	-
Nev.	7	11	-	1	11	-	-	-	-
PACIFIC	385	433	5	458	450	-	15	-	25
Wash.	-	52	-	14	28	-	-	-	-
Oreg.	6	7	-	7	12	-	-	-	-
Calif.	378	365	5	416	382	-	14	-	25
Alaska	1	3	-	1	9	-	-	-	-
Hawaii	-	6	-	20	19	-	1	-	-
Guam	-	-	-	-	7	-	-	-	-
P.R.	16	51	-	4	6	-	-	-	3
V.I.	2	-	-	-	1	-	-	-	-
Amer. Samoa	-	-	-	-	1	-	-	-	-
C.N.M.I.	-	-	-	-	6	-	-	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending February 2, 1991 (5th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	622	441	117	43	8	13	46
Boston, Mass.	204	120	52	24	2	6	21
Bridgeport, Conn.	52	42	4	5	1	-	6
Cambridge, Mass.	19	15	3	1	-	-	2
Fall River, Mass.§	U	U	U	U	U	U	U
Hartford, Conn.	72	49	13	5	2	3	-
Lowell, Mass.	21	19	2	-	-	-	1
Lynn, Mass.	18	17	1	-	-	-	2
New Bedford, Mass.	36	33	3	-	-	-	3
New Haven, Conn.	43	25	9	4	3	2	3
Providence, R.I.§	U	U	U	U	U	U	U
Somerville, Mass.	6	4	2	-	-	-	-
Springfield, Mass.	51	41	9	1	-	-	1
Waterbury, Conn.	40	32	7	1	-	-	1
Worcester, Mass.	60	44	12	2	-	2	6
MID. ATLANTIC	2,819	1,842	538	307	67	64	196
Albany, N.Y.	56	42	9	1	2	2	5
Allentown, Pa.	18	14	3	-	1	-	1
Buffalo, N.Y.	100	66	22	5	4	3	8
Camden, N.J.	44	27	13	4	-	-	5
Elizabeth, N.J.	31	21	5	4	1	-	6
Erie, Pa.†	50	33	14	1	-	2	1
Jersey City, N.J.§	U	U	U	U	U	U	U
N.Y. City, N.Y.	1,542	967	291	211	41	32	88
Newark, N.J.	52	23	13	10	1	5	6
Paterson, N.J.	33	16	10	6	-	1	2
Philadelphia, Pa.	398	270	75	35	10	7	27
Pittsburgh, Pa.†	74	46	22	4	2	-	5
Reading, Pa.	35	27	5	3	-	-	5
Rochester, N.Y.	140	108	20	5	3	4	17
Schenectady, N.Y.	31	27	2	2	-	-	4
Scranton, Pa.†	35	27	5	3	-	-	1
Syracuse, N.Y.	92	60	16	7	2	7	6
Trenton, N.J.	36	25	6	4	-	1	6
Utica, N.Y.	30	25	4	1	-	-	-
Yonkers, N.Y.	22	18	3	1	-	-	3
E.N. CENTRAL	2,283	1,573	417	140	66	87	138
Akron, Ohio	87	60	19	4	1	3	-
Canton, Ohio	29	23	6	-	-	-	5
Chicago, Ill.	456	348	59	9	14	26	22
Cincinnati, Ohio	158	119	24	10	1	4	22
Cleveland, Ohio	159	93	36	16	6	8	4
Columbus, Ohio	166	114	28	9	11	4	3
Dayton, Ohio	137	97	28	7	3	2	7
Detroit, Mich.	225	134	46	20	12	13	5
Evansville, Ind.	55	42	8	3	2	-	1
Fort Wayne, Ind.	66	45	13	5	2	1	4
Gary, Ind.	16	9	3	3	-	1	2
Grand Rapids, Mich.	54	33	10	4	2	5	2
Indianapolis, Ind.	195	118	42	26	4	5	16
Madison, Wis.	36	29	2	2	1	2	5
Milwaukee, Wis.	121	92	19	8	1	1	14
Peoria, Ill.	64	39	15	2	1	7	2
Rockford, Ill.	50	30	15	2	2	1	6
South Bend, Ind.	41	29	10	1	1	-	2
Toledo, Ohio	102	75	16	6	1	4	13
Youngstown, Ohio	66	44	18	3	1	-	3
W.N. CENTRAL	807	589	143	40	15	20	53
Des Moines, Iowa	70	57	13	-	-	-	10
Duluth, Minn.	30	22	7	-	-	1	2
Kansas City, Kans.	25	18	2	1	1	3	2
Kansas City, Mo.	102	74	20	3	1	4	4
Lincoln, Nebr.	44	29	10	3	1	1	4
Minneapolis, Minn.	153	116	21	10	3	3	10
Omaha, Nebr.	92	68	17	4	2	1	7
St. Louis, Mo.	174	127	30	12	3	2	4
St. Paul, Minn.	71	44	16	4	3	4	5
Wichita, Kans.	46	34	7	3	1	1	5
S. ATLANTIC	1,146	740	233	101	35	37	73
Atlanta, Ga.	181	90	52	25	10	4	9
Baltimore, Md.	105	60	19	17	5	4	7
Charlotte, N.C.	105	67	22	12	1	3	2
Jacksonville, Fla.	137	83	28	9	7	10	12
Miami, Fla.	100	66	21	11	2	-	3
Norfolk, Va.	51	26	10	2	4	9	6
Richmond, Va.	104	61	27	11	3	2	3
Savannah, Ga.	53	42	10	-	-	1	7
St. Petersburg, Fla.	106	88	10	5	1	2	4
Tampa, Fla.	172	130	31	8	2	1	20
Washington, D.C.§	U	U	U	U	U	U	U
Wilmington, Del.	32	27	3	1	-	1	-
E.S. CENTRAL	803	530	160	64	23	26	58
Birmingham, Ala.	144	74	32	17	7	14	5
Chattanooga, Tenn.	81	60	13	6	1	1	7
Knoxville, Tenn.	93	69	16	5	2	1	9
Louisville, Ky.	144	85	40	12	2	5	14
Memphis, Tenn.	185	127	33	17	6	2	14
Mobile, Ala.	41	33	3	3	-	2	2
Montgomery, Ala.§	U	U	U	U	U	U	U
Nashville, Tenn.	115	82	23	4	5	1	7
W.S. CENTRAL	1,508	929	339	142	60	38	79
Austin, Tex.	68	37	15	10	3	3	4
Baton Rouge, La.	46	31	11	2	1	1	2
Corpus Christi, Tex.	51	36	8	6	-	1	3
Dallas, Tex.	218	128	51	18	12	9	8
El Paso, Tex.	65	42	13	3	4	3	4
Fort Worth, Tex.	92	62	13	10	5	2	5
Houston, Tex.	269	119	82	52	9	7	25
Little Rock, Ark.	73	46	20	2	4	1	3
New Orleans, La.	215	131	49	23	8	4	-
San Antonio, Tex.	211	150	39	10	6	6	9
Shreveport, La.	92	62	20	5	5	-	7
Tulsa, Okla.	108	85	18	1	3	1	9
MOUNTAIN	822	559	155	61	25	22	40
Albuquerque, N. Mex.	91	58	22	7	2	2	2
Colo. Springs, Colo.	57	41	8	7	-	1	2
Denver, Colo.	128	89	20	9	4	6	10
Las Vegas, Nev.	143	90	32	16	5	-	2
Ogden, Utah	23	18	4	-	-	1	2
Phoenix, Ariz.	170	113	31	11	8	7	9
Pueblo, Colo.	36	24	9	3	-	-	2
Salt Lake City, Utah	50	32	9	4	2	3	6
Tucson, Ariz.	124	94	20	4	4	2	5
PACIFIC	2,333	1,594	394	212	68	45	142
Berkeley, Calif.	27	15	9	1	1	1	-
Fresno, Calif.	95	63	17	8	2	5	10
Glendale, Calif.	42	27	7	4	1	2	5
Honolulu, Hawaii	109	79	17	8	1	4	5
Long Beach, Calif.	87	59	16	12	-	-	9
Los Angeles Calif.	768	519	115	78	29	9	31
Oakland, Calif.§	U	U	U	U	U	U	U
Pasadena, Calif.	37	26	5	3	1	2	1
Portland, Oreg.	127	90	19	10	6	2	10
Sacramento, Calif.	180	122	40	10	5	3	23
San Diego, Calif.	166	111	32	16	2	4	14
San Francisco, Calif.	203	112	49	31	8	3	7
San Jose, Calif.	181	131	26	13	6	5	18
Seattle, Wash.	160	122	21	11	4	2	-
Spokane, Wash.	59	48	3	6	1	1	5
Tacoma, Wash.	92	70	18	1	1	2	4
TOTAL	13,143††	8,797	2,496	1,110	367	352	825

*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.

§Report for this week is unavailable (U).

Rotavirus – Continued

Editorial Note: Rotavirus, the most important cause of pediatric gastroenteritis in the United States, is responsible for an estimated one third of all hospitalizations for diarrhea in children <5 years of age (*3*). These hospitalizations occur predominantly in the winter, and in one large children's hospital, rotavirus accounted for 3% of all hospital days (*4*). Rotavirus disease-associated hospitalization rates are highest for children <2 years of age (*3,4*).

From 1979 through 1985, an average of 500 children died annually from diarrheal disease in the United States (*5*); an estimated 20% of these deaths were caused by rotavirus infection (*3*). Death rates for diarrheal disease were highest in the South and among black children <6 months of age (*5*). Patterns of childhood mortality related to diarrheal disease reflect the winter seasonality of rotavirus (*3*).

Because national rotavirus surveillance data suggest an increase in the risk for rotavirus infections from October through May, health-care providers should consider rotavirus as a cause of diarrhea in groups at risk and be familiar with approaches for management of this disease. Many deaths and hospitalizations may be prevented by the aggressive use of oral rehydration therapy, which is underused (*6–8*). Vaccines for prevention or modification of rotavirus diarrhea are under development but are unlikely to be available for 3–5 years.

For most children hospitalized with rotavirus gastroenteritis, no laboratory diagnosis is made (*4*), and only a small number of deaths from rotavirus infection have been virologically confirmed (*9*). Because the ninth revision of the *International Classification of Diseases* (ICD) did not include a rubric for rotavirus enteritis, proxy codes (*3–5*) were used to reflect this cause of death; however, the 10th revision will introduce a specific rubric (National Center for Health Statistics, unpublished data). The wider use of rapid diagnostic tests for rotavirus, combined with the use of a specific ICD rubric, will permit improved surveillance of rotavirus hospitalizations and deaths.

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Reye Syndrome Surveillance — United States, 1989

Reye syndrome (RS) is an acute illness that occurs almost exclusively in children; it is characterized clinically by profuse vomiting and neurologic dysfunction, sometimes progressing to delirium, coma, and death.* Continuous national surveillance for RS was established in December 1976 (*1*). This report summarizes RS cases for the 1989 surveillance year (December 1, 1988–November 20, 1989).

For the 1989 surveillance year—a period characterized by widespread influenza B activity—25 cases of RS were reported by state health departments to CDC's National Reye Syndrome Surveillance System (NRSSS). This equals the lowest number of cases reported since continuous national surveillance began and is 25% of the lowest number previously reported during a year with extensive influenza B activity (Table 1).

*According to CDC's case definition, the following conditions must be met for consideration as a RS case: 1) acute, noninflammatory encephalopathy documented a) by alteration in the level of consciousness and, if available, a record of cerebrospinal fluid containing ≤8 leukocytes per mm^3 or b) by histologic specimen demonstrating cerebral edema without perivascular or meningeal inflammation; 2) hepatopathy documented either by a liver biopsy or autopsy considered to be diagnostic of RS or by a threefold or greater rise in the levels of either serum aspartate aminotransferase, serum alanine aminotransferase, or serum ammonia; and 3) no more reasonable explanation for the cerebral and hepatic abnormalities.

TABLE 1. Predominant influenza strains, reported cases of Reye syndrome (RS), and varicella-associated RS, RS incidence, and RS fatality rate — United States, 1974 and 1977–1989*

Year†	Predominant influenza strains Jan–May	RS			
		Total	Varicella-associated	Incidence§	Case-fatality rate (%)
1974	B	379	—	0.6	41
1977	B	454	73	0.7	42
1978	A(H3N2)	236	69	0.4	29
1979	A(H1N1)	389	113	0.6	32
1980	B	555	103	0.9	23
1981	A(H3N2)	297	77	0.5	30
1982	B	213	45	0.3	35
1983	A(H3N2)	198	28	0.3	31
1984	A(H1N1)+B	204	26	0.3	26
1985	A(H3N2)	93	15	0.2	31
1986	B	101	5	0.2	27
1987	A(H1N1)	36	7	0.1	29
1988	A(H3N2)	25	4	0.0	45
1989	A(H1N1)+B	25	3	0.0	42

*Continuous RS surveillance began in December 1976.
†RS reporting year begins December 1 of previous year.
§Per 100,000 U.S. population <18 years of age (U.S. Bureau of the Census data).

Reye Syndrome — Continued

Nineteen (76%) of the patients had a reported antecedent illness within 3 weeks before onset of vomiting or neurologic symptoms; 13 had respiratory illnesses; three had varicella, and three had diarrhea without respiratory symptoms. Eighteen (72%) cases occurred in January, February, and March—the peak months for respiratory viral infections, including influenza types B and A(H1N1).

Of the 25 reported RS patients, 14 (56%) were female; 23 (92%) were white, one was black, and for one, race was unknown. Nineteen patients were ≥5 years of age, and six were <5 years of age, representing declines of 72% and 82%, respectively, since 1986, the most recent prior year in which influenza B was the predominant influenza strain.

Approximately 70% of patients were admitted to hospitals in precomatose stages of RS (stages 0, 1, or 2). The largest number (seven) of patients were identified with stage 2 on admission, followed by stage 1 (six) and stages 0, 3, 4, and 5 (three each). The most severe phases of illness after hospitalization were stage 1 (two), stage 2 (seven), stage 3 (two), stage 4 (three), and stage 5 (six). One patient received treatment that precluded classification (i.e., she had received anesthetic or paralyzing agents in her treatment); the most severe stage was not reported for four.

Of the 24 patients for whom short-term outcomes were reported, 10 died (case-fatality rate: 42%).

Reported by: Local and state health departments. Epidemiology Activity, Div of Viral and Rickettsial Diseases, Center for Infectious Diseases, CDC.

Editorial Note: The annual number of cases reported to the NRSSS has decreased sharply since 1980 (Table 1), coinciding with increased public awareness of the association between the ingestion of aspirin during antecedent varicella or influenza-like illness and subsequent development of RS (*2–7*). In addition, the use of aspirin-containing medication to treat children with these viral illnesses has decreased (*1,8,9*).

The total number of reported RS cases in 1989 is lower than would be expected in a year with substantial influenza B activity. Before recognition of the association between aspirin use and risk for RS, periods of increased influenza B activity were characterized by substantial increases in the number of RS cases (*10*). In 1989, the number of reported cases was the same as in 1988; however, when compared with 1986, the last year with predominant influenza B activity, RS cases markedly decreased.

For 1985, 1986, and 1987, the percentage of patients <5 years of age were 53%, 38%, and 53%, respectively. These percentages were higher than in past years (1978–1984) and raised concerns that, as the overall number of reported cases decreased, a greater proportion would occur in the <5-year age group—a group for whom the diagnosis of RS may be complicated by metabolic disorders with manifestations similar to RS (*11,12*). For 1988 and 1989, the percentage of cases reported in this age group decreased to previous levels, suggesting that physicians may be more likely to rule out these metabolic disorders before diagnosing RS.

Preliminary results from 1990 surveillance indicate a continuing decline in the number of RS cases in the United States. As RS becomes increasingly rare, interest in reporting may also wane. Health-care personnel and public health agencies are urged to continue reporting to the NRSSS to assure adequate monitoring of the changing epidemiology of this illness.

Reye Syndrome — Continued

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Notices to Readers

Conference on Health Effects of Air Pollution

A conference on the Health Effects of Air Pollution—Impact of Clean Air Legislation will be held March 25–27, 1991, in Crystal City, Virginia. This conference is the annual meeting of the Society for Occupational and Environmental Health (SOEH) and is cosponsored by the American Lung Association, American Thoracic Society, American Petroleum Institute, Association of State and Territorial Health Officials, Environmental Defense Fund, Health Effects Institute, International Society of Environmental Epidemiology, National Institute for Environmental Health Sciences, U.S. Environmental Protection Agency, and CDC.

The conference will examine the relationship of scientific knowledge to the implementation of clean air legislation and will provide new information and a forum for discussion of government policy, public health strategies, and critical research on air pollution.

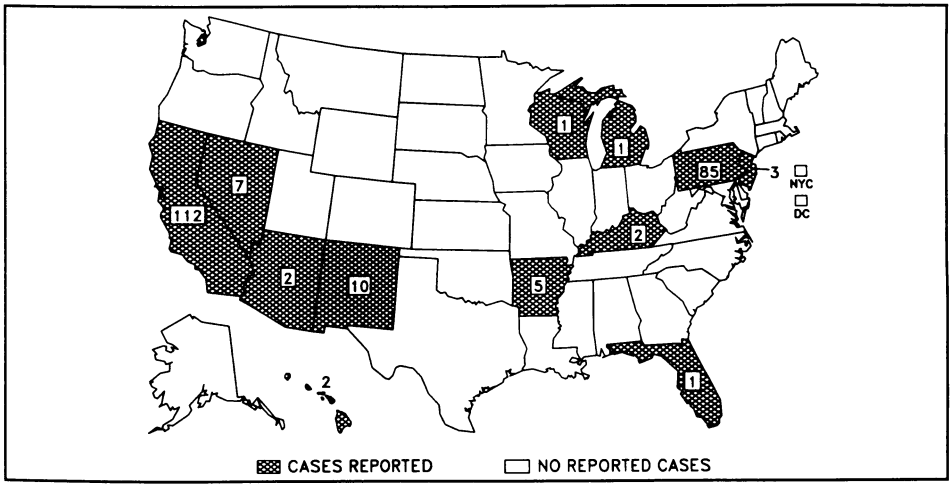
The deadline for preregistration is March 15, 1991. Registration forms are available from the SOEH National Office, 6728 Old McLean Village Drive, McLean, VA 22101; telephone (703) 556-9222. Additional information is available from the Division of Environmental Hazards and Health Effects, Center for Environmental Health and Injury Control, Mailstop F-28, CDC, Atlanta, GA 30333; telephone (404) 488-4682.

Changes to Tables I and II

Beginning with this issue, Tables I and II, Cases of selected notifiable diseases, United States, incorporate several changes that began with week 1 of 1991:

1. Lyme disease and *Haemophilus influenzae* have been added to the list of nationally notifiable diseases effective January 1991. Cases of Lyme disease are reported in Table I and on the first page of Table II, and cases of *H. influenzae*, in Table I.
2. Cases of gonorrhoea and syphilis (primary and secondary) are no longer tabulated in separate civilian and military categories; cases appear as a single total for each disease.
3. Leprosy has been moved from the first page of Table II to Table I and is now listed as Hansen disease.

Reported cases of measles, by state — United States, weeks 1–5, 1991



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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. Accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials, as well as matters pertaining to editorial or other textual considerations should be addressed to: Editor, *Morbidity and Mortality Weekly Report*, Mailstop C-08, Centers for Disease Control, Atlanta, Georgia 30333; telephone (404) 332-4555.

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