CENTERS FOR DISEASE CONTROL

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Current Trends

Prevention and Control of Tuberculosis in Correctional Institutions: Recommendations of the Advisory Committee for the Elimination of Tuberculosis

These recommendations are designed to assist federal, state, and local correctional officials in controlling tuberculosis (TB) among inmates and staff of correctional facilities (e.g., prisons, jails, juvenile detention centers). This document addresses issues unique to correctional institutions; more general information about TB is available in the official American Thoracic Society (ATS)/CDC statements referenced in this document.

BACKGROUND

TB remains a problem in correctional institutions (*1–8*), where the environment is often conducive to airborne transmission of infection among inmates, staff, and visitors. In a survey of TB cases reported during 1984 and 1985 by 29 state health departments, the incidence of TB among inmates of correctional institutions was more than three times higher than that for nonincarcerated adults aged 15–64 years (CDC, unpublished data). Since 1985, 11 known TB outbreaks have been recognized in prisons in eight states (CDC, unpublished data). In addition, in some large correctional systems, the incidence of TB has increased dramatically. Among inmates of the New York State system, TB incidence increased from an annual average of 15.4 per 100,000 population during 1976–1978 to 105.5 per 100,000 in 1986 (*1*). In New Jersey during 1987, the incidence of TB among state inmates was 109.9 per 100,000—a rate 11 times that of the general population in New Jersey that year (New Jersey State Department of Health, unpublished data). In a survey of California Department of Corrections facilities, the TB incidence among inmates during 1987 was 80.3 per 100,000—a rate nearly six times that of California's general population for that year (California Department of Health Services, unpublished data).

Human immunodeficiency virus (HIV) infection among prisoners in a number of geographic areas heightens the need for TB control among inmates (*9,10*). According to a National Institute of Justice (NIJ) survey, as of October 1988, a cumulative total of 3136 confirmed acquired immunodeficiency syndrome (AIDS) cases had been reported among U.S. inmates since 1981—2047 cases by 44 of 51 state and federal systems and 1089 cases by 26 responding city and county jail systems. These

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reported AIDS cases represent a 60% increase since a similar survey was conducted in 1987. The incidence of AIDS among prisoners has been reported as markedly higher than that among the total U.S. population (*9*). During 1988, the incidence of AIDS in the U.S. population was 13.7 per 100,000 (*11*).* During the same year, the estimated aggregate incidence for state/federal correctional systems was 75 cases per 100,000.† Rates for individual systems ranged from 0 to 536. Although more than half the states have rates ≤25, eight state systems have rates ≥100. The aggregate rate for 26 responding city/county jail systems was 183 per 100,000. However, rates in city/county jails were described by NIJ as "extremely suspect" because of rapid turnover of population (*9*).

HIV infection in persons with latent tuberculous infection appears to create a very high risk for development of TB (*12–14*). One review of AIDS cases among inmates in selected New York correctional facilities found TB in 22 (6.9%) of 319 persons with AIDS (*3*).

Transmission of TB in correctional facilities presents a health problem for the institutions and may also be a problem for the community into which inmates are released. Each year, more than 8 million inmates are discharged from local jails (*15*) and more than 200,000 from state and federal prisons (*16*). Because the median age of inmates on release is relatively young—27 years (*17*)—the total lifetime risk for TB in persons infected during incarceration is considerable.

GENERAL GUIDELINES

Control of TB is essential in correctional health care. Each correctional institution should designate an appropriately trained official responsible for operating a TB prevention and control program in the institution. A multi-institutional system should have a qualified official and unit to oversee TB-control activities throughout the system. These responsibilities should be specified in the official's job performance plan. The basic activities to be followed are surveillance, containment, and assessment.

Surveillance refers to identification and reporting of all TB cases in the system or institution and identification of all inmates and staff who are infected with TB (i.e., those with positive skin tests). New cases and newly infected persons must be quickly identified, and appropriate therapy begun.

Containment refers to ensuring that transmission of tuberculous infection does not occur. Appropriate diagnostic, treatment, prevention, and laboratory services must be available. Environmental factors conducive to the spread of TB, such as poor ventilation, should be corrected. Prison officials must ensure that persons undergoing treatment or preventive therapy be carefully monitored for compliance and drug toxicity and complete an appropriate course of treatment.

Assessment refers to prison officials' responsibility for knowing whether the surveillance and containment activities are being carried out effectively.

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*The incidence for the population at large was calculated as follows: (total number of cases reported to CDC in 1988 ÷ total population) x 100,000.

†Incidence for correctional inmates was approximated from a point prevalence as follows: (AIDS patients in the system at the time of the survey ÷ current inmate population of the system) x 100,000. Data on number of cases by year reported are not available for most correctional systems. The method used may underestimate the actual annual incidence in a correctional system.

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SURVEILLANCE

Diagnosis

The intracutaneous Mantoux tuberculin test (not multiple puncture tests) should be used to identify persons infected with tubercle bacilli. Generally, for correctional institution staff and inmates, a tuberculin skin-test reaction ≥10 mm induration is considered positive. However, a reaction of ≥5 mm is considered positive in persons who have had close recent contact with an infectious person and in persons who have an abnormal chest radiograph consistent with TB (*18*). In addition, infected persons who are immunosuppressed for any reason may show little or no reaction to the tuberculin test (*19*). Therefore, a tuberculin skin-test reaction in a person known to be infected with HIV should be considered positive if induration is ≥5 mm (*20*).

Skin testing of inmates and staff should be carried out at entry or on employment, respectively (*21*). Each skin test should be administered and read by appropriately trained personnel and recorded in mm induration in the personal medical record. All inmates and staff should participate, except those providing documentation of a previous positive reaction to the tuberculin test.

*In jails with a rapid turnover of inmates, authorities may decide not to tuberculin test new detainees who are unlikely to remain in the system or in that facility for >7 days. However, provision must be made for appropriate diagnostic measures (e.g., sputum smear and culture and/or chest radiograph) for all persons who are symptomatic (*18,20*).* (See Containment, below.)

In most correctional institutions, skin-test–negative inmates and employees having contact with inmates should have repeat skin tests at least annually. If data from previous screening and TB casefinding are available, the frequency for repeat skin testing should be determined based on the need for timely surveillance information. Observed risk of new tuberculous infection is the most useful evaluation criterion to consider. In institutions with a historically low risk of tuberculous infection (e.g., <0.5% of persons with skin-test conversions annually), an increase in AIDS cases or TB cases should be viewed as indicating a need for more frequent skin testing and intensified TB casefinding activities.

Persons with positive skin-test reactions and all persons with symptoms suggesting TB (e.g., cough, anorexia, weight loss, fever) should receive a chest radiograph within 72 hours of skin-test reading or identification of symptoms. Correctional health-care personnel should be aware of the often atypical signs and symptoms of TB in persons with HIV infection (*20*). Inmates with abnormal chest radiographs and/or symptoms compatible with TB should also have sputum smear and culture examinations. Sputum should be submitted for smear and culture examination from persons with pneumonia or bronchitis symptoms that fail to abate promptly after initiation of antibiotic treatment. Three specimens should be collected, preferably once daily on 3 consecutive days. In the absence of spontaneous production of sputum, aerosol induction in a properly ventilated area should be used to obtain specimens.

Tuberculin skin-test anergy may be a relatively late development in the progression from HIV infection to AIDS (*22*); consequently, inmates with known or suspected HIV infection (including those with nonreactive tuberculin tests) should receive a chest radiograph as part of initial screening, regardless of tuberculin skin-test status.

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Case Reporting

Whenever TB is suspected or confirmed among inmates or staff, this information should be immediately entered into the TB-control records at the institution and at the headquarters level, if in a multi-institutional system. The local or state health department should also be notified, as required by state and local laws or regulations.

Contact Investigation

Because TB is transmitted by the airborne route, persons at highest risk for acquiring infection are "close contacts" (e.g., persons who sleep, live, work, or otherwise share air with an infectious person through a common ventilation system). When a person with suspected or confirmed TB appears to be infectious (e.g., has pulmonary involvement on chest radiograph and cough, and/or positive sputum smear), close contacts must be skin tested unless they have a documented history of a positive tuberculin test (*21*). Close contacts with a positive tuberculin reaction or a history of a previous positive test and symptomatic persons, regardless of skin-test results, should receive immediate chest radiographs to detect evidence of pulmonary TB.

Depending on the ventilation in an institution, close contacts could include all cellmates, all inmates and staff on a tier, or all inmates and staff in a building. Health department staff should be consulted to determine who should be tested. When tuberculin converters are found among the close contacts, other persons with less contact may need to be examined. Every effort should be made by medical *and* nonmedical staff to ensure the confidentiality of persons with TB.

Close contacts with positive tuberculin reactions but without TB should be given at least 6 months' preventive therapy (see Preventive Therapy, below) unless medically contraindicated (*21*). Close contacts who do not have a positive tuberculin reaction and who are asymptomatic should have a repeat tuberculin test 10–12 weeks after contact has ended.

Contacts with known or suspected HIV infection should be considered for a 12-month course of preventive therapy, regardless of skin-test results, if evidence indicates that the source patient was infectious.

A patient with clinical TB may have negative sputum smears or cultures, especially if recently infected. Close contacts of such persons should also be examined to detect a source case and other newly infected inmates or staff.

CONTAINMENT

Isolation

Persons with suspected or confirmed TB who have pulmonary involvement on chest radiograph, cough, and/or a positive sputum smear should be immediately placed in respiratory isolation (e.g., housed in an area with separate ventilation to the outside, negative air pressure in relation to adjacent areas, and at least four to six room air exchanges per hour) (*23*). It may be necessary to move a patient to another facility or hospital with a respiratory isolation facility.

Respiratory isolation should continue until patients are on appropriate therapy and at least three consecutive daily negative sputum smears indicate that respiratory precautions may be removed. No special precautions are needed for handling patients' dishes, books, laundry, bedding, or other personal items.

Inadequate or interrupted treatment for TB can lead to drug-resistant TB and transmission of infection. Therefore, after effective medications have begun, it is of

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utmost importance to keep the patient on medication until completion of therapy, unless signs or symptoms of an adverse reaction appear. Arrangements must be made with the health department for continued medication and follow-up before an inmate with TB is released. Similar arrangements should be made before the release of inmates on preventive therapy.

Because crowding and poor ventilation are conducive to transmission of TB, improvements in housing conditions can help prevent outbreaks. Installing ultraviolet lights may be helpful in prisons where transmission of tuberculous infection has been a problem (*24*). Although the effectiveness of ultraviolet lights in decreasing TB transmission in such settings has not been confirmed by epidemiologic studies, ultraviolet lights have been used to reduce transmission of TB in hospitals and shelters for the homeless (*23,25*). When ultraviolet lights are used, proper installation and maintenance is essential (*24*).

Treatment

ATS/CDC recommendations should be followed for treatment and management of persons with confirmed or suspected TB (*20,26*). Each dose of medication should be administered by a designated ancillary medical staff person who watches the inmate swallow the pills. The medication may be given twice weekly (with appropriate change in dosage) after 1–2 months of daily medication (*26*). To ensure continuing compliance, if a patient is to be discharged before completion of therapy, the health department should be notified before the inmate is released.

Persons with positive smears or cultures at the beginning of therapy should be monitored by repeat sputum examinations for treatment response until they become smear-negative. Treatment failure is usually due to patient noncompliance with therapy but may be due to the presence of drug-resistant organisms.

All patients must be monitored by trained personnel for signs and symptoms of adverse reactions during chemotherapy (*20,26*). Expert medical consultation regarding monitoring and/or treatment of patients with complications (e.g., AIDS, drug resistance, adverse reactions, pregnancy, nonpulmonary TB) should be sought when necessary. Special emphasis should be placed on close supervision and care of TB patients infected with drug-resistant organisms.

Inmates with TB should be routinely offered testing with appropriate counseling for HIV infection. The presence of HIV infection necessitates longer treatment for TB and continued close observation for adverse drug reactions, treatment failure, and relapse (*20*).

Preventive Therapy

All inmates and staff with positive tuberculin reactions who have not previously completed an adequate course of preventive therapy should be considered for preventive therapy unless there are medical contraindications (*20,26*). Eligible inmates include those who will be incarcerated long enough to complete at least 1 month of continuous therapy; provisions should be made before release for the health department to oversee completion of at least 6 months of appropriate therapy (unless HIV infected; see below).

HIV-antibody testing should be offered to all known tuberculin-positive inmates. Tuberculin-positive persons with concurrent HIV infection appear to be at very high risk for TB and have highest priority for preventive therapy, regardless of age. Efforts should be made to encourage persons with known or suspected HIV infection to complete 12 months of therapy.

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Each dose of preventive therapy should be administered by a designated ancillary medical staff person who watches the patient swallow the pills. Since daily supervised therapy is often not feasible, twice-weekly supervised therapy is a satisfactory alternative.

Most experts believe twice-weekly intermittent preventive therapy (using isoniazid [INH] 900 mg) is effective, although it has not been studied in controlled clinical trials. Medication should *not* be given to an inmate without direct observation of drug ingestion.

All persons on preventive therapy must be monitored by trained personnel for signs and symptoms of adverse reactions during the entire treatment period (*26*). Some prison inmates will have underlying liver disease related to previous alcohol or narcotic abuse (*27–29*). Although chronic liver disease is not a contraindication to INH preventive therapy, such patients should be carefully monitored (*26*).

Persons for whom TB preventive therapy is recommended but who refuse or are unable to complete a recommended course should be counselled to seek prompt medical attention if they develop signs or symptoms compatible with TB. Routine periodic chest radiographs are generally not useful for detecting disease in the absence of symptoms; chest radiographs should be reserved for persons with symptoms, especially a persistent cough.

ASSESSMENT

Inmates are transferred frequently. Thus, record systems for tracking and assessing the status of persons with TB and tuberculous infection in the prison facilities are essential. These systems must be maintained by using current information on the location, treatment status, and degree of infectiousness of these persons. Prompt action must be taken to assure reinstitution of drug therapy should treatment lapse for any reason.

The record systems should also provide data needed to assess the overall effectiveness of TB-control efforts, and the following information should be reviewed at least every 6 months:

1. Tuberculous infection prevalence and tuberculin conversion rates for inmates and staff within each institution;
2. Case numbers and case rates;
3. Percentage of TB patients recommended for therapy who complete the prescribed 6-month course of directly observed therapy in 6–9 months (goal is ≥95%);
4. Percentage of patients with culture-positive sputum that converts to culture negative within 3 months of starting treatment (goal is ≥90%);
5. Percentage of persons placed on INH preventive therapy who complete at least 6 months of directly observed therapy (goal is ≥90%).

In multi-institutional systems, these data should be compiled for individual institutions and for the system as a whole, with results provided to corrections and health department officials.

ROLE OF THE HEALTH DEPARTMENT

Health departments should assist correctional institutions in developing and updating policies, procedures, and record systems for TB control. The health department should also provide access to expert TB medical consultation. A specific health department contact person should be designated to provide epidemiologic

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and management assistance to correctional facilities, and this responsibility should be an element in the designated person's job performance plan. This responsibility may require considerable initial onsite consultation and subsequent semiannual evaluation for correctional institutions.

Health department staff should assist in developing programs to train correctional institution staff (e.g., to perform, read, and record tuberculin skin tests; identify signs and symptoms of TB; initiate and observe therapy; monitor for side effects; collect diagnostic specimens; educate inmates; maintain record systems). Health or corrections departments may wish to grant certification to correctional staff completing this training.

Health departments should also provide consultation for contact examinations within correctional institutions and assure appropriate examinations for nonincarcerated contacts of persons with TB who are identified in these institutions.

In addition, health departments should cooperate with correctional staff in arranging continuing treatment for inmates released while receiving TB treatment or preventive therapy.

Health departments have a responsibility to maintain TB registries with updated medical information on all current TB cases within their jurisdictions, including those in correctional institutions. Records should be assessed quarterly, and necessary revisions in policies or procedures should be recommended. In addition, health departments should periodically assess the impact of correctional institution-acquired TB and tuberculous infection on the community as a whole.

Because inmates may have both TB and HIV infection, health department officials should assist correctional institutions in developing and implementing HIV prevention programs. Such programs include strategies to identify persons practicing high-risk behaviors, to counsel those infected with HIV, and to reduce high-risk behaviors among all inmates.

As circumstances change, these recommendations will be periodically revised. They are not intended to discourage new and innovative approaches for dealing with TB prevention and control in prisoners. The recommendations should be used instead to enhance the quality of medical care for persons in correctional institutions.

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

Disease	18th Week Ending			Cumulative, 18th Week Ending		
	May 6, 1989	May 7, 1988	Median 1984-1988	May 6, 1989	May 7, 1988	Median 1984-1988
Acquired Immunodeficiency Syndrome (AIDS)	410	U*	201	11,780	10,548	4,329
Aseptic meningitis	72	80	80	1,362	1,392	1,392
Encephalitis: Primary (arthropod-borne & unspec)	8	17	20	204	236	288
Post-infectious	3	4	2	27	36	36
Gonorrhea: Civilian	11,448	11,510	14,060	220,217	229,668	277,476
Military	116	176	248	3,833	4,330	5,993
Hepatitis: Type A	625	461	402	11,559	8,533	7,656
Type B	423	397	456	7,147	7,359	8,475
Non A, Non B	33	58	61	798	909	1,180
Unspecified	82	42	88	890	752	1,649
Legionellosis	12	26	13	287	294	219
Leprosy	3	5	5	49	65	74
Malaria	25	14	17	354	231	246
Measles: Total†	264	145	145	3,626	911	1,129
Indigenous	239	133	133	3,407	801	1,004
Imported	25	12	12	219	110	125
Meningococcal infections	50	83	58	1,224	1,308	1,247
Mumps	157	134	91	1,986	1,978	1,445
Pertussis	82	30	33	623	761	724
Rubella (German measles)	10	2	12	110	74	153
Syphilis (Primary & Secondary): Civilian	584	609	544	13,908	12,939	9,819
Military	1	4	3	100	69	74
Toxic Shock syndrome	4	10	10	121	113	125
Tuberculosis	259	441	417	6,485	6,418	6,789
Tularemia	3	1	2	18	30	30
Typhoid Fever	9	17	11	140	126	101
Typhus fever, tick-borne (RMSF)	7	5	11	36	29	32
Rabies, animal	67	119	119	1,522	1,358	1,706

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1989		Cum. 1989
Anthrax	-	Leptospirosis (Oreg. 1, Hawaii 11)	50
Botulism: Foodborne	6	Plague	-
Infant	4	Poliomyelitis, Paralytic	-
Other	3	Psittacosis	30
Brucellosis (Tenn. 1)	13	Rabies, human	-
Cholera	-	Tetanus	15
Congenital rubella syndrome	1	Trichinosis	10
Congenital syphilis, ages <1 year	-		
Diphtheria	-		

*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.
†Twelve of the 247 reported cases for this week were 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 May 6, 1989 and May 7, 1988 (18th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	11,780	1,362	204	27	220,217	229,668	11,559	7,147	798	890	287	49
NEW ENGLAND	490	60	7	1	6,379	6,983	251	385	35	34	22	3
Maine	30	2	2	-	99	157	4	16	3	1	3	-
N.H.	11	2	-	-	64	104	27	22	7	3	-	-
Vt.	4	1	-	-	24	58	9	28	4	-	-	-
Mass.	262	27	3	1	2,443	2,510	84	234	13	24	13	3
R.I.	25	19	-	-	494	625	10	34	3	2	6	-
Conn.	158	9	2	-	3,255	3,529	117	51	5	4	-	-
MID. ATLANTIC	3,409	196	36	2	30,181	36,511	1,596	1,157	76	121	78	5
Upstate N.Y.	485	82	9	1	5,577	4,156	379	262	31	3	25	1
N.Y. City	1,690	29	2	1	12,637	17,125	130	402	13	102	8	2
N.J.	844	1	25	-	4,728	5,079	152	198	11	5	12	1
Pa.	390	84	-	-	7,239	10,151	935	295	21	11	33	1
E.N. CENTRAL	951	201	67	-	38,551	36,838	662	877	85	32	74	1
Ohio	156	49	15	-	10,228	8,971	145	199	12	4	44	-
Ind.	185	50	19	-	2,825	2,930	36	153	13	10	13	1
Ill.	425	31	9	-	12,017	10,439	308	197	21	11	-	-
Mich.	151	61	19	-	11,013	11,383	126	236	27	7	13	-
Wis.	34	10	5	-	2,468	3,115	47	92	12	-	4	-
W.N. CENTRAL	265	54	6	2	10,283	9,212	333	260	27	5	7	1
Minn.	56	5	-	1	1,070	1,245	34	40	5	2	2	-
Iowa	24	11	2	-	877	680	31	16	7	-	2	-
Mo.	133	16	-	-	5,974	5,185	186	177	9	3	1	-
N. Dak.	3	3	1	-	41	69	3	9	3	-	-	-
S. Dak.	3	4	1	-	96	188	2	3	3	-	-	-
Nebr.	11	4	1	-	606	537	50	10	-	-	2	1
Kans.	35	11	1	1	1,619	1,308	27	5	-	-	-	-
S. ATLANTIC	2,507	297	24	6	62,301	64,263	905	1,412	109	126	34	-
Del.	40	9	1	-	1,011	926	18	53	-	1	3	-
Md.	240	31	4	1	7,029	6,778	211	271	12	14	10	-
D.C.	206	5	-	-	3,828	4,491	2	8	1	-	-	-
Va.	222	57	12	-	5,156	4,522	66	92	19	76	1	-
W. Va.	17	2	3	-	471	527	8	30	2	2	-	-
N.C.	157	40	-	1	9,360	9,433	174	368	39	-	10	-
S.C.	117	9	-	-	5,788	4,718	14	153	3	4	2	-
Ga.	356	21	1	-	12,278	12,614	127	143	7	4	3	-
Fla.	1,152	123	3	4	17,380	20,254	285	294	26	25	5	-
E.S. CENTRAL	293	132	13	1	18,366	17,432	110	485	59	1	9	-
Ky.	45	33	4	1	1,719	1,481	47	138	21	-	2	-
Tenn.	100	19	-	-	5,833	5,861	29	259	16	-	4	-
Ala.	81	64	9	-	5,992	5,699	27	80	21	1	3	-
Miss.	67	16	-	-	4,822	4,391	7	8	1	-	-	-
W.S. CENTRAL	1,004	99	21	2	23,773	25,736	1,300	648	51	191	18	11
Ark.	26	3	-	-	2,335	2,351	70	27	2	2	1	-
La.	157	10	2	-	5,152	5,534	89	104	5	1	4	-
Okla.	59	14	6	-	2,089	2,359	146	64	9	8	10	-
Tex.	762	72	13	2	14,197	15,492	995	453	35	180	3	11
MOUNTAIN	367	46	7	1	4,405	4,765	1,729	453	86	71	18	1
Mont.	1	-	-	-	68	142	15	15	1	1	2	1
Idaho	10	-	-	-	78	140	75	31	5	2	-	-
Wyo.	7	-	-	-	45	73	14	1	-	-	-	-
Colo.	140	15	2	1	991	1,068	244	73	31	35	2	-
N. Mex.	23	5	-	-	485	470	205	75	19	1	-	-
Ariz.	95	21	2	-	1,513	1,665	924	162	15	28	8	-
Utah	22	4	1	-	156	227	106	29	9	3	3	-
Nev.	69	1	2	-	1,069	980	146	67	6	1	3	-
PACIFIC	2,494	277	23	12	25,978	27,928	4,673	1,470	270	309	27	27
Wash.	198	-	-	1	2,101	2,375	987	271	73	16	5	1
Oreg.	90	-	-	-	974	1,003	763	137	31	6	1	1
Calif.	2,177	259	20	11	22,416	23,900	2,494	1,041	161	283	19	21
Alaska	4	-	2	-	327	395	373	19	5	2	1	-
Hawaii	25	18	1	-	160	255	56	2	-	2	1	4
Guam	-	-	-	-	-	51	-	-	-	-	-	-
P.R.	543	35	1	-	335	512	39	75	5	7	-	7
V.I.	15	-	-	-	199	134	-	4	-	-	-	-
Amer. Samoa	-	-	-	-	-	20	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	19	-	-	-	-	-	-

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

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending May 6, 1989 and May 7, 1988 (18th Week)

Reporting Area	Malaria	Measles (Rubeola)					Meningococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	1989	Cum. 1989	Cum. 1988
UNITED STATES	354	239	3,407	25	219	911	1,224	157	1,986	82	623	761	10	110	74
NEW ENGLAND	21	-	31	1	11	45	92	1	19	42	57	77	-	-	1
Maine	-	-	-	-	-	-	12	-	-	-	4	11	-	-	-
N.H.	1	-	1	-	-	43	10	1	10	-	5	22	-	-	-
Vt.	-	-	1	-	-	-	6	-	-	3	5	1	-	-	-
Mass.	13	-	9	1†	9	1	41	-	8	39	39	33	-	-	-
R.I.	4	-	18	-	2	-	1	-	-	-	2	1	-	-	1
Conn.	3	-	2	-	-	1	22	-	1	-	2	9	-	-	-
MID. ATLANTIC	58	25	171	12	99	234	163	23	95	2	45	24	-	3	7
Upstate N.Y.	13	1	14	3§	76	4	47	21	43	2	25	10	-	1	1
N.Y. City	17	-	23	-	13	23	23	-	8	-	2	1	-	2	4
N.J.	12	-	83	-	-	14	38	-	11	-	14	3	-	-	1
Pa.	16	24	51	9§	10	193	55	2	33	-	4	10	-	-	1
E.N. CENTRAL	18	20	565	-	38	55	149	39	200	1	35	92	3	15	20
Ohio	6	-	329	-	35	3	64	-	8	-	1	19	-	2	-
Ind.	3	17	17	-	-	-	16	-	18	-	8	38	-	-	-
Ill.	4	3	219	-	-	39	39	37	94	-	-	5	3	12	16
Mich.	3	-	-	-	1	13	23	2	67	1	19	16	-	-	4
Wis.	2	-	-	-	2	-	7	-	13	-	7	14	-	1	-
W.N. CENTRAL	8	-	248	-	2	-	34	10	258	-	17	35	-	2	-
Minn.	5	-	-	-	-	-	10	-	-	-	-	5	-	-	-
Iowa	-	-	-	-	1	-	-	1	12	-	6	14	-	-	-
Mo.	2	-	205	-	-	-	7	-	37	-	9	5	-	1	-
N. Dak.	1	-	-	-	-	-	-	-	-	-	-	6	-	-	-
S. Dak.	-	-	-	-	-	-	4	-	-	-	1	2	-	-	-
Nebr.	-	-	-	-	-	-	10	-	2	-	-	-	-	-	-
Kans.	-	-	43	-	1	-	3	9	207	-	1	3	-	1	-
S. ATLANTIC	63	22	209	-	14	191	195	17	309	4	57	72	2	4	3
Del.	1	-	-	-	-	-	2	-	-	-	-	3	-	-	-
Md.	14	1	6	-	6	4	31	-	151	-	5	16	1	2	-
D.C.	3	-	5	-	3	-	9	4	54	-	-	-	-	-	-
Va.	8	-	-	-	2	88	21	-	53	-	4	9	-	-	-
W. Va.	1	-	-	-	-	6	8	-	8	-	9	-	-	-	-
N.C.	10	14	157	-	-	1	28	3	10	2	15	24	1	1	-
S.C.	1	-	-	-	-	-	14	8	15	-	-	-	-	-	-
Ga.	4	-	-	-	-	-	35	1	3	1	6	14	-	-	-
Fla.	21	7	41	-	3	92	47	1	15	1	18	6	-	1	3
E.S. CENTRAL	3	13	17	-	-	32	31	3	75	1	29	12	-	1	-
Ky.	-	-	2	-	-	23	19	-	9	-	1	-	-	-	-
Tenn.	-	-	1	-	-	-	2	1	22	-	8	8	-	1	-
Ala.	2	13	14	-	-	-	8	-	6	1	20	2	-	-	-
Miss.	1	-	-	-	-	9	2	N	N	-	-	2	-	-	-
W.S. CENTRAL	15	136	1,782	2	23	9	97	50	765	1	22	34	-	11	3
Ark.	-	-	-	-	-	-	3	3	74	1	10	5	-	-	2
La.	1	-	6	-	-	-	20	26	263	-	4	5	-	5	-
Okla.	1	-	23	-	-	8	7	5	145	-	8	24	-	1	1
Tex.	13	136	1,753	2†	23	1	67	16	283	-	-	-	-	5	-
MOUNTAIN	14	17	53	1	16	109	34	9	85	27	275	281	-	2	2
Mont.	-	-	12	-	1	-	1	-	2	-	-	1	-	1	-
Idaho	2	-	-	-	1	-	-	-	6	1	31	229	-	-	-
Wyo.	1	-	-	-	-	-	-	2	6	-	-	1	-	-	-
Colo.	1	5	21	-	1	109	13	1	6	-	17	7	-	-	1
N. Mex.	1	3	10	1§	13	-	1	N	N	-	4	2	-	-	-
Ariz.	6	9	10	-	-	-	17	6	58	26	216	19	-	-	-
Utah	-	-	-	-	-	-	2	-	3	-	6	21	-	-	-
Nev.	3	-	-	-	-	-	-	-	4	-	1	1	-	1	1
PACIFIC	154	6	331	9	16	236	429	5	180	4	86	134	5	72	38
Wash.	7	6	6	9†	10	-	38	-	15	3	22	28	-	-	-
Oreg.	8	-	-	-	-	2	31	N	N	-	4	4	1	1	-
Calif.	137	-	322	-	3	232	356	5	158	1	58	79	4	57	32
Alaska	2	-	-	-	-	-	3	-	-	-	-	3	-	-	-
Hawaii	-	-	3	-	3	2	1	-	7	-	2	20	-	14	6
Guam	-	U	-	U	-	1	-	U	-	U	-	-	U	-	1
P.R.	-	-	272	-	-	158	3	-	1	-	2	5	-	4	-
V.I.	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-
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 III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending May 6, 1989 and May 7, 1988 (18th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	13,908	12,939	121	6,485	6,418	18	140	36	1,522
NEW ENGLAND	561	344	4	147	122	-	10	-	1
Maine	3	5	2	3	3	-	-	-	-
N.H.	2	3	-	10	-	-	-	-	-
Vt.	-	-	-	2	-	-	-	-	-
Mass.	165	147	-	78	79	-	5	-	-
R.I.	14	12	-	18	9	-	4	-	-
Conn.	377	177	2	36	31	-	1	-	1
MID. ATLANTIC	2,813	2,639	22	1,267	1,181	1	38	4	201
Upstate N.Y.	262	174	3	96	198	-	4	2	4
N.Y. City	1,440	1,729	2	729	548	-	25	-	-
N.J.	477	297	5	206	210	-	6	-	-
Pa.	634	439	12	236	225	1	3	2	197
E.N. CENTRAL	546	413	16	718	733	1	18	7	27
Ohio	38	44	8	136	135	-	7	6	-
Ind.	22	21	3	62	78	-	1	1	2
Ill.	249	212	-	303	301	-	6	-	4
Mich.	217	123	5	181	175	-	3	-	4
Wis.	20	13	-	36	44	1	1	-	17
W.N. CENTRAL	117	81	22	181	175	3	4	1	209
Minn.	8	8	6	43	30	-	1	-	44
Iowa	14	10	4	27	14	-	2	1	63
Mo.	59	43	3	65	88	3	1	-	17
N. Dak.	1	1	-	6	4	-	-	-	10
S. Dak.	-	-	3	12	15	-	-	-	40
Nebr.	15	13	5	6	4	-	-	-	15
Kans.	20	6	1	22	20	-	-	-	20
S. ATLANTIC	5,105	4,572	10	1,372	1,451	1	9	15	455
Del.	54	52	-	14	17	-	2	-	12
Md.	268	257	-	118	149	-	1	1	114
D.C.	300	201	-	57	68	-	2	-	2
Va.	186	148	1	130	150	1	1	-	91
W. Va.	4	2	-	30	32	-	-	-	25
N.C.	314	269	4	135	109	-	2	12	-
S.C.	265	213	2	142	149	-	-	2	74
Ga.	1,077	748	2	192	221	-	-	-	82
Fla.	2,637	2,682	1	554	556	-	1	-	55
E.S. CENTRAL	897	714	1	550	536	1	1	5	134
Ky.	19	22	-	142	147	1	1	4	67
Tenn.	381	306	-	129	145	-	-	-	32
Ala.	304	200	1	165	159	-	-	1	35
Miss.	193	186	-	114	85	-	-	-	-
W.S. CENTRAL	1,827	1,361	8	740	785	7	6	2	261
Ark.	110	67	1	83	82	3	-	1	37
La.	424	256	-	95	122	-	1	-	4
Okla.	28	52	5	60	72	4	-	1	34
Tex.	1,265	986	2	502	509	-	5	-	186
MOUNTAIN	259	243	11	156	142	2	1	1	69
Mont.	-	2	-	5	-	-	-	-	31
Idaho	-	-	1	6	-	-	-	-	-
Wyo.	1	1	-	-	1	-	-	-	19
Colo.	43	30	-	2	20	1	-	1	-
N. Mex.	11	19	1	27	35	-	-	-	11
Ariz.	67	68	8	77	58	-	1	-	7
Utah	9	9	-	19	10	1	-	-	-
Nev.	128	114	1	20	18	-	-	-	1
PACIFIC	1,783	2,572	27	1,354	1,293	2	53	1	165
Wash.	91	79	1	69	78	-	1	-	-
Oreg.	100	102	-	48	45	-	4	1	-
Calif.	1,584	2,372	25	1,165	1,104	2	46	-	112
Alaska	3	6	-	17	12	-	-	-	53
Hawaii	5	13	1	55	54	-	2	-	-
Guam	-	-	-	-	7	-	-	-	-
P.R.	182	227	-	91	74	-	-	-	18
V.I.	1	1	-	3	3	-	-	-	-
Amer. Samoa	-	-	-	-	3	-	-	-	-
C.N.M.I.	-	1	-	-	8	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending May 6, 1989 (18th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	626	420	104	58	19	24	64
Boston, Mass.	167	106	27	20	7	6	25
Bridgeport, Conn.	61	42	8	5	1	5	6
Cambridge, Mass.	24	20	2	2	-	-	5
Fall River, Mass.	20	16	3	1	-	-	-
Hartford, Conn.	57	35	11	6	2	3	3
Lowell, Mass.	20	16	3	1	-	-	-
Lynn, Mass.	19	18	1	-	-	-	-
New Bedford, Mass.	22	18	1	2	1	-	1
New Haven, Conn.	56	36	9	5	1	5	5
Providence, R.I.	33	21	6	4	2	-	3
Somerville, Mass.	10	8	1	1	-	-	2
Springfield, Mass.	42	25	8	3	4	2	4
Waterbury, Conn.	36	25	8	2	-	1	5
Worcester, Mass.	59	34	16	6	1	2	5
MID. ATLANTIC	2,687	1,716	560	266	70	75	167
Albany, N.Y.	51	34	11	3	3	-	2
Allentown, Pa.	19	19	-	-	-	-	1
Buffalo, N.Y.	108	71	24	5	7	1	14
Camden, N.J.	34	28	4	1	-	1	-
Elizabeth, N.J.	29	16	6	5	2	-	4
Erie, Pa.†	39	28	9	1	1	-	9
Jersey City, N.J.	51	31	7	9	2	2	-
N.Y. City, N.Y.	1,402	854	311	166	32	39	66
Newark, N.J.	55	23	17	7	-	8	4
Paterson, N.J.	31	17	7	4	2	1	7
Philadelphia, Pa.	495	316	106	44	13	16	32
Pittsburgh, Pa.†	36	26	4	4	-	2	2
Reading, Pa.	29	20	6	-	3	-	4
Rochester, N.Y.	106	82	14	7	1	2	12
Schenectady, N.Y.	18	14	1	2	1	-	1
Scranton, Pa.†	32	25	4	3	-	-	2
Syracuse, N.Y.	88	67	15	2	2	2	3
Trenton, N.J.	32	20	9	2	-	1	3
Utica, N.Y.	12	11	-	-	1	-	-
Yonkers, N.Y.	20	14	5	1	-	-	1
E.N. CENTRAL	2,197	1,432	479	150	55	80	92
Akron, Ohio	66	44	13	4	2	3	-
Canton, Ohio	43	33	4	3	-	3	4
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	72	45	15	7	3	2	9
Cleveland, Ohio	136	81	42	9	3	1	3
Columbus, Ohio	125	65	37	14	2	6	1
Dayton, Ohio	119	83	22	8	4	2	4
Detroit, Mich.	270	157	64	22	14	13	9
Evansville, Ind.	47	39	6	-	-	2	2
Fort Wayne, Ind.	59	38	12	5	1	3	3
Gary, Ind.	13	8	4	1	-	-	1
Grand Rapids, Mich.	47	33	10	2	1	1	3
Indianapolis, Ind.	175	110	42	9	6	8	4
Madison, Wis.§	41	31	6	2	1	1	3
Milwaukee, Wis.	150	103	32	11	-	4	5
Peoria, Ill.	49	38	6	2	2	1	6
Rockford, Ill.	39	28	7	2	1	1	3
South Bend, Ind.	39	26	7	3	2	1	3
Toledo, Ohio	81	61	15	1	2	2	8
Youngstown, Ohio	62	47	10	-	1	4	5
W.N. CENTRAL	806	580	142	35	22	27	58
Des Moines, Iowa	62	40	16	4	-	2	8
Duluth, Minn.	29	20	7	1	-	1	5
Kansas City, Kans.	32	22	4	1	4	1	-
Kansas City, Mo.	117	81	21	6	3	6	11
Lincoln, Nebr.	36	28	7	-	-	1	3
Minneapolis, Minn.	170	121	31	11	3	4	19
Omaha, Nebr.	112	83	17	2	2	8	6
St. Louis, Mo.	148	106	22	10	6	4	5
St. Paul, Minn.	56	45	9	-	2	-	1
Wichita, Kans.	44	34	8	-	2	-	-
S. ATLANTIC	1,269	711	256	219	46	36	71
Atlanta, Ga.	141	94	29	12	2	4	4
Baltimore, Md.	152	98	26	15	9	4	12
Charlotte, N.C.	78	40	21	9	5	3	10
Jacksonville, Fla.	99	54	25	8	6	6	6
Miami, Fla.	100	54	26	17	2	1	1
Norfolk, Va.	62	31	16	5	4	6	5
Richmond, Va.	77	55	12	7	2	1	8
Savannah, Ga.	56	40	8	8	-	-	4
St. Petersburg, Fla.	72	56	8	3	3	2	2
Tampa, Fla.	75	50	14	8	1	1	10
Washington, D.C.	328	114	68	126	12	8	9
Wilmington, Del.	29	25	3	1	-	-	-
E.S. CENTRAL	815	528	185	52	25	25	65
Birmingham, Ala.	128	82	30	4	8	4	4
Chattanooga, Tenn.	61	40	18	1	1	1	5
Knoxville, Tenn.	75	48	22	3	2	-	14
Louisville, Ky.	104	67	24	7	1	5	1
Memphis, Tenn.	209	132	46	17	9	5	21
Mobile, Ala.	70	49	10	7	-	4	4
Montgomery, Ala.	47	32	9	1	-	5	3
Nashville, Tenn.	121	78	26	12	4	1	13
W.S. CENTRAL	1,800	1,123	369	178	72	58	65
Austin, Tex.	55	32	10	9	3	1	4
Baton Rouge, La.	39	23	8	2	4	2	2
Corpus Christi, Tex.	45	32	8	2	-	3	1
Dallas, Tex.	195	99	49	26	13	8	4
El Paso, Tex.	61	47	6	2	4	2	4
Fort Worth, Tex	107	67	20	10	4	6	5
Houston, Tex.§	734	436	169	89	24	16	18
Little Rock, Ark.	79	53	14	5	3	4	1
New Orleans, La.	94	55	21	8	4	6	-
San Antonio, Tex.	193	131	37	17	7	1	11
Shreveport, La.	98	80	9	2	1	6	8
Tulsa, Okla.	100	68	18	6	5	3	7
MOUNTAIN	690	430	129	61	50	19	35
Albuquerque, N. Mex.	88	40	17	9	18	4	2
Colo. Springs, Colo.	37	21	8	4	4	-	7
Denver, Colo.	103	64	17	11	6	5	5
Las Vegas, Nev.	95	53	28	12	1	-	9
Ogden, Utah	21	16	2	3	-	-	2
Phoenix, Ariz.	167	103	32	13	13	6	6
Pueblo, Colo.	21	16	2	1	2	-	1
Salt Lake City, Utah	42	28	7	1	5	1	-
Tucson, Ariz.	116	89	16	7	1	3	3
PACIFIC	1,921	1,281	350	191	55	40	126
Berkeley, Calif.	16	15	-	1	-	-	1
Fresno, Calif.	87	58	23	3	1	2	8
Glendale, Calif.	41	31	5	2	1	2	4
Honolulu, Hawaii	77	60	11	3	1	2	12
Long Beach, Calif.	81	51	19	8	2	1	9
Los Angeles Calif.	510	320	90	70	20	8	24
Oakland, Calif.§	93	62	18	9	2	2	5
Pasadena, Calif.	42	32	5	3	1	1	2
Portland, Oreg.	115	88	11	8	3	5	5
Sacramento, Calif.	139	87	29	11	5	5	9
San Diego, Calif.	149	92	32	16	7	2	16
San Francisco, Calif.	161	93	37	24	2	5	7
San Jose, Calif.	157	111	25	17	4	-	14
Seattle, Wash.	169	116	33	13	4	3	-
Spokane, Wash.	53	42	8	2	-	1	7
Tacoma, Wash.	31	23	4	1	2	1	3
TOTAL	12,811††	8,221	2,574	1,210	414	384	743

*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 available 4 weeks.

TB — Continued

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Current Trends

Reye Syndrome Surveillance — United States, 1987 and 1988

For the 1987 and 1988 surveillance years, 36 and 20 cases,* respectively, of Reye syndrome (RS)† were reported to the National Reye Syndrome Surveillance System. These years have the lowest number of cases reported since continuous national surveillance was established in December 1976 (Table 1). For both years, approximately 80% of reported patients had an antecedent illness within 3 weeks before onset of vomiting or neurologic symptoms. Eighteen RS patients in 1987 and nine in 1988 had respiratory illnesses; seven and four had varicella; three and two had diarrhea without respiratory symptoms. In both years, approximately 50% of cases occurred in January, February, and March—the peak months for respiratory viral infections, including varicella and influenza (type A[H1N1] in 1987 and type A[H3N2] in 1988).

In 1987, 17 (47%) of the 36 reported RS patients and, in 1988, 16 (80%) of the 20 patients were female; 33 (92%) and 19 (95%), respectively, were white, two (6%) and one (5%) were black, and one patient (3%) in 1987 was Asian. Seventeen patients each

*Reporting year begins December 1 of previous year. Data for 1988 are provisional.
†According to CDC's case definition, the following conditions must be met to be considered an RS case: 1) acute, noninflammatory encephalopathy documented by alteration in the level of consciousness and either a) a record (if available) of cerebrospinal fluid containing ≤8 leukocytes per mm^3 or b) histologic sections of the brain demonstrating cerebral edema without perivascular or meningeal inflammation; 2) hepatopathy documented either by 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 or hepatic abnormalities.

Reye Syndrome — Continued

year were ≥5 years old, representing a 75% decline in the number of cases in this age group from 1986. Nineteen reported patients in 1987 and three in 1988 were <5 years old, representing a 42% and a 91% decline, respectively, in this age group from 1986.

Approximately 75% of patients in both 1987 and 1988 were admitted to hospitals in precomatose stages of RS—stages 0, 1, or 2.[§] In each year, stage 2 was the classification for the largest number of patients upon admission (47% and 55%, respectively), followed by stage 1 for 1987 (31%) and stages 0, 1, and 3 (10% each) for 1988. In 1987, the most severe phases of illness after hospitalization were stage 1 (25%), stage 2 (8%), stage 3 (8%), stage 4 (11%), and stage 5 (30%). Eleven percent of patients received treatment that precluded classification (i.e., they had received anesthetic or paralyzing agents in their treatment); the most severe stage was not reported for 7%. In 1988, 25% reached stage 1 only; 5% reached stage 2, 20% reached stage 3, 20% reached stage 5, and 30% received treatment that precluded classification.

The case-fatality rates for these 2 years were 29% and 30%, respectively, based on patients for whom short-term outcome was reported (35 [97%] of the 36 patients in 1987 and 17 [85%] of the 20 patients in 1988).

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[§]Clinical staging of encephalopathy in RS is based on the level of consciousness and corresponding physical signs. Stages 0–2 are precomatose, with the level of consciousness deteriorating progressively from stage 0 to stage 2. Stages 3–5 are characterized by coma, progressing from early (stage 3) to deep coma (stage 5).

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 1977–1988*

Year[†]	Predominant influenza strains Jan–May	RS cases		Incidence of RS[§]	Case-fatality rate (%)
		Total	Varicella-associated		
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)	20	4	0.0	30

*Continuous RS surveillance began in December 1976. Data for 1988 are provisional.
[†]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

Editorial Note: The annual number of RS cases reported to CDC has decreased steadily since 1980. Major studies on RS and medications (*1–3*) have confirmed prior reports (*4–6*) of an association between ingestion of aspirin during antecedent viral illness and subsequent development of RS. The decline in the number of RS cases since late 1980 coincides with the increased publicity about this association and with the decrease in the frequency and/or dose of aspirin-containing medication used in treating children with influenza-like illness or varicella (*7,8*). In addition, since 1986, labels of all aspirin-containing medications have been required to provide a warning about the risk of RS in association with aspirin use in children with influenza-like illness and varicella.

Before diagnosing RS, physicians should rule out any of the approximately 20 metabolic disorders that may mimic RS, particularly in infants and small children (*2,9–11*). Because 40%–65% of reported RS patients since 1985 have been ≥10 years of age, health-care providers and public health agencies also should advise older children and their parents about warnings concerning aspirin use.

Interest in reporting RS may wane as the number of cases decreases in the United States. Health-care providers and public health agencies are urged to continue reporting to the National Reye Syndrome Surveillance System to assure adequate epidemiologic monitoring of this illness.

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International Notes

Acute Hemorrhagic Conjunctivitis — Mexico

In September 1987, an outbreak of conjunctivitis occurred among residents of several towns in the Yucatan Peninsula of Mexico (Figure 1). Illness was characterized by conjunctival injection, palpebral edema, lacrimation, and foreign-body sensation. Subconjunctival hemorrhages were observed less frequently than expected, occur-

Hemorrhagic Conjunctivitis — Continued

ring in 13% of patients. The Mexico Field Epidemiology Training Program surveyed a 10-block area of Cozumel, a resort island reporting many cases, and found an overall attack rate of 25% among local residents. The secondary attack rate among family members of affected households was 37%. Cultures of conjunctival swabs obtained from eight of 13 patients were positive for coxsackie virus A24 variant (CA24v).

In July 1988, a second outbreak of conjunctivitis occurred in Delicias in the state of Oaxaca in south central Mexico. CA24v was isolated from eight of 16 affected persons. In October 1988, a third outbreak was reported in Tampico, a town in northern Mexico along the gulf coast and about 250 miles south of Brownsville, Texas. Three of nine specimens from this outbreak sent to CDC for virus isolation were positive for CA24v. In all three outbreaks, attack rates appeared to be highest among school-aged children (i.e., 5–14 years of age).

The outbreak in Mexico subsided during the winter. The Texas Department of Health was notified of the outbreak and increased its surveillance for conjunctivitis in the Brownsville area. No cases in Texas have been reported.

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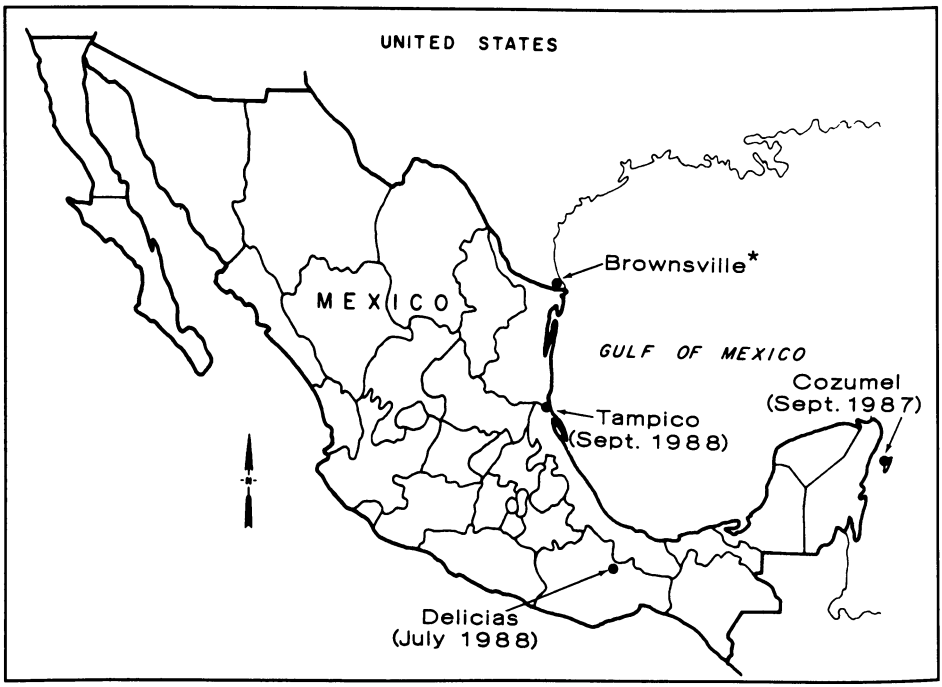
Editorial Note: Acute hemorrhagic conjunctivitis (AHC) is a clinical entity characterized by the rapid onset of conjunctival injection, lacrimation, foreign-body sensation, and in many cases, subconjunctival hemorrhages. The illness is caused by enterovi-

FIGURE 1. Outbreaks of acute hemorrhagic conjunctivitis — Mexico, 1987–1988



*No reported cases.

Hemorrhagic Conjunctivitis — Continued

rus 70, CA24v, or adenovirus 11. Epidemiologically, AHC is characterized by its high communicability; the incubation period is short (24–48 hours), secondary attack rates in households are high, and transmission is enhanced by crowding and poor sanitation. Illness is self-limited, lasting 3–7 days, and serious sequelae are rare. The proportion of patients with subconjunctival hemorrhage in the Mexico outbreak was lower than previously observed; this might be explained by the simultaneous presence in the community of other, unidentified bacterial or viral agents that cause conjunctivitis. Based on the epidemiologic observations and laboratory data, the outbreak in Mexico is consistent with AHC caused by CA24v.

In 1981, an epidemic of AHC occurred in south Florida after enterovirus 70 was introduced from the Bahamas. In the Florida epidemic, illness was spread throughout the community largely by schoolchildren. Closing affected schools helped to control the epidemic (*1,2*).

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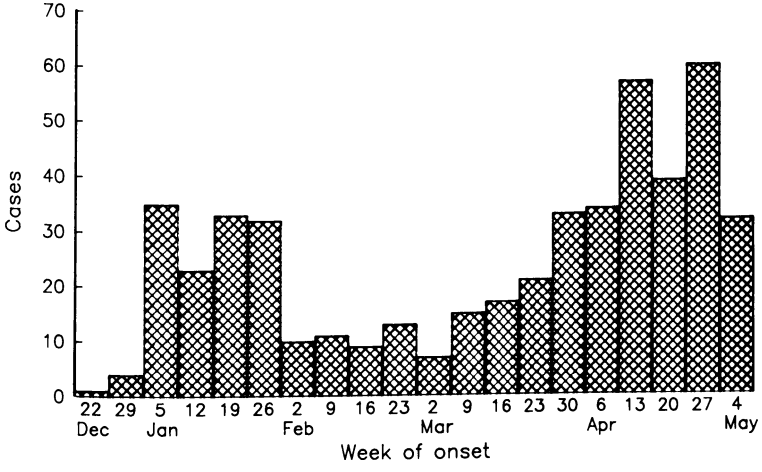
Measles — Quebec

Since late December 1988, more than 1600 cases of measles have been reported in the province of Quebec, Canada. Five hundred of the cases have occurred in metropolitan Montreal. In 199 (40%) of these cases, the onset of rash occurred in April (Figure 1). Detailed information is available for 486 (97%) of the 500 Montreal cases. Of these, 104 (21%) occurred in preschoolers aged 0–4 years, 328 (67%) in school-aged persons 5–19 years of age, and 54 (11%) in adults ≥20 years of age. Of the adults, 42 (78%) were aged 20–29 years. Of school-aged patients, 191 (58%) had

FIGURE 1. Reported measles cases, by week of rash onset — Montreal, 1988–1989



Measles — Continued

histories of previous vaccinations. From January through March, "Operation Mise à jour" (Operation Update) was conducted in Montreal to ensure that all primary and secondary school students were adequately vaccinated against measles. Before this campaign, approximately 50,000 of the 285,000 Montreal primary and secondary school students lacked documentation of vaccination. During the campaign, approximately 30,000 (60%) of these students were vaccinated.

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Editorial Note: Quebec does not require measles vaccination for school attendance. Because of increased emphasis on childhood immunizations since the early 1980s, measles vaccine coverage among children 1–4 years of age is estimated to be >95%. Vaccine coverage in schools is lower. In the Montreal area before the outbreak, approximately 90% of primary school students and 70% of secondary school students had proof of measles immunity. School immunization requirements in the United States have been shown to be an effective means of increasing vaccine coverage among school-aged children and of decreasing the incidence of measles (*1*).

The U.S. Immunization Practices Advisory Committee (ACIP) recommends that all persons born after 1956 who are ≥15 months of age have evidence of measles immunity (i.e., documentation of receipt of live measles vaccine on or after the first birthday, physician-diagnosed measles, or laboratory evidence of measles immunity). In addition, the ACIP recommends that persons born after 1956 who travel abroad receive a one-time dose of measles vaccine, regardless of their previous vaccination status, unless there is a contraindication to receipt of vaccine (*2*). Persons born before 1957 are not considered susceptible. All persons planning to travel to Quebec or to other areas with ongoing measles activity, including those within the United States, should ensure that their measles vaccination status is adequate.

References

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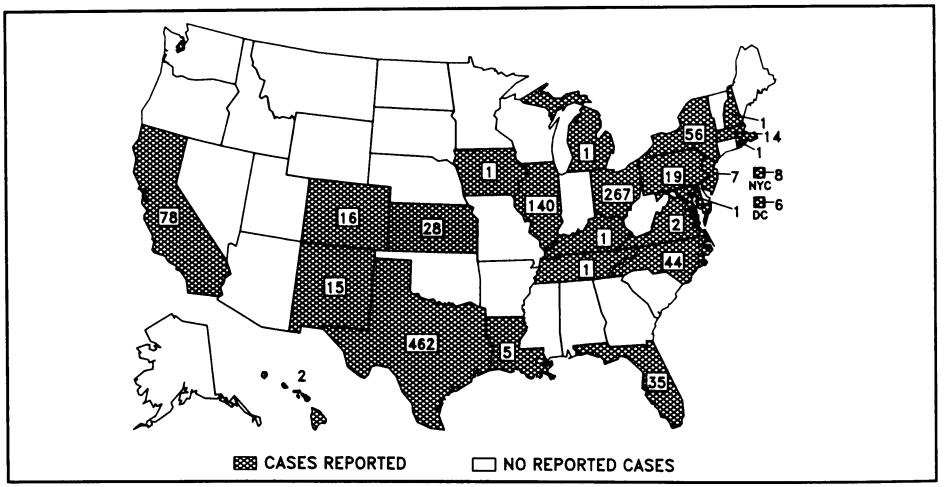
FIGURE I. Reported measles cases – United States, weeks 14–17, 1989



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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; telephone (404) 332-4555.

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