CENTERS FOR DISEASE CONTROL

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*Epidemiologic Notes and Reports*

## Enteric Illness Associated with Raw Clam Consumption — New York

Since June 1, 1982, the New York State Health Department has received reports of at least 14 separate outbreaks of gastroenteritis associated with consumption of raw clams. Approximately 150 persons have been affected. Typical symptoms have included diarrhea and abdominal cramps beginning 12-72 hours after eating clams, with nausea, vomiting, and fever occurring less often. In three of these outbreaks, seven individuals subsequently developed hepatitis A 21-37 days after eating clams. Three other persons developed hepatitis A without initial gastrointestinal symptoms. Eight of the 10 cases were verified by the presence of IgM antibody to hepatitis A virus (HAV); results on the others are pending.

A summary of four of these outbreaks follows:

**Outbreak A**: On May 29, 24 individuals attended a private party in Albany County at which raw clams were served. Within 6-24 hours, 18 (90%) of 20 persons who had eaten clams developed diarrhea and abdominal cramps, which lasted 1-3 days. None of four persons who remained well had consumed clams. Stool specimens obtained shortly after onset of illness from seven persons with gastroenteritis were negative for *Salmonella*, *Shigella*, and *Campylobacter*. Two persons who ate clams and developed gastroenteritis contracted hepatitis A 21 and 27 days later. Clams from the same lot as those consumed at the party were evaluated at the New York State Health Department's laboratory. Although cultures of extracts from these clams did not grow enteric bacterial pathogens, both 27 nm and 40 nm virus-like particles were observed by electron microscopy.

**Outbreak B**: On May 30, fourteen people attended a private party in Rensselaer County at which clams were served. Five (83%) of six persons who ate raw clams developed diarrhea, nausea, vomiting, and abdominal cramps 36-72 hours later; symptoms persisted for 1-2 days. None of the eight persons who did not eat raw clams became ill. One of the five individuals with gastroenteritis, who worked as a food handler, developed hepatitis A (confirmed by the presence of HAV-specific IgM antibody) 34 days after eating clams, prompting county health officers to administer immunoglobulin (IG) as a preventive measure to 850 people exposed to foods he had prepared.

**Outbreak C**: On June 5, members of multiple bowling leagues attended a picnic in Albany County. Many of the approximately 200 attendees developed diarrhea, nausea, vomiting, and abdominal cramps 12-72 hours after the event. Forty-five of 126 persons interviewed reported gastroenteritis; 42 (89%) of these had eaten raw clams. Only raw clams were significantly associated with illness ($p < 0.001$). Four persons who consumed clams and were affected by gastroenteritis developed hepatitis A 29-37 days later. This outbreak was not recognized in time to obtain specimens from persons with acute gastrointestinal illness.

*Enteric Illness — Continued*

**Outbreak D**: On July 11, 11 persons attended a party in Schenectady County at which raw clams were served. All seven individuals who ate clams developed diarrhea and abdominal cramps 15-60 hours later; none had fever or vomiting. Diarrhea persisted for up to 1 week in several persons. None of four persons who did not eat clams became ill. Thus, clams were epidemiologically implicated as the vehicle of transmission. Stool samples from five ill individuals were negative for enteric bacterial pathogens (*Salmonella, Shigella, Vibrio, Campylobacter,* and *Yersinia*). Examination of stools for virus is pending.

Inadequate or absent tagging of the clams implicated in these outbreaks has made it difficult to accurately determine the clams' source. However, current information indicates clams responsible for the outbreaks originated in coastal waters from at least three states: Massachusetts, New York, and Rhode Island. The timing of these outbreaks may be related to contamination of harvesting beds by the heavy rains and subsequent runoff that occurred in the Northeast during May and early June. Preliminary data from New York and Rhode Island indicate an increase in coliform counts in clam-harvesting waters monitored during this time.

Since December 1981, the New York State Department of Health has been informed of 33 outbreaks of clam-related illness involving more than 250 cases of gastroenteritis and 20 cases of hepatitis A. One county where clams are harvested has noted a two-fold increase in reported cases of hepatitis A for the first 6 months of this year compared with the same period last year (60 in 1982 vs 31 in 1981); 45% of the 1982 patients had histories of clam consumption consistent with the incubation period of hepatitis A. An intensive evaluation of 1,559 food establishments, conducted between July 22 and July 29, revealed that 125 (14%) of 908 that stock shellfish sold clams that were untagged or improperly certified (to identify their waters of origin).

Because these outbreaks suggested a recent problem of clam contamination, New York State Health Department officials currently advise individuals to refrain from eating raw clams. In addition, they advise giving IG to persons involved in clam-associated outbreaks of gastroenteritis, provided it can be administered within 2 weeks of clam consumption.

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**Editorial Note**: Ingestion of shellfish has been known for over 50 years to cause outbreaks of bacterial and viral enteric diseases (*1*). Typhoid fever (*2*), hepatitis A (*3,4*), cholera (*5*), and *Vibrio parahaemolyticus* (*6*) have long been associated with ingestion of raw clams and oysters. More recently, raw shellfish contaminated with non-O1 *V. cholerae* (*7*) and Norwalk virus (*8,9*) have also been reported as causes of gastroenteritis outbreaks. Although gastroenteritis (due to bacterial pathogens) and hepatitis A have recently been reported among persons drinking contaminated water (*10*), this is the first report in several years of outbreaks of these illnesses occurring jointly after shellfish consumption (*11,12*). *Viral* gastroenteritis in association with hepatitis A is not known to have been reported following shellfish consumption. The clinical findings observed in several of the New York outbreaks are compatible with a viral etiology, such as the Norwalk virus: a short incubation period, abrupt onset of upper and/or lower gastrointestinal illness, and brief duration (1-2 days). The absence of bacterial pathogens and the visualization of virus-like particles in clams from one outbreak further support a viral etiology in several of these outbreaks.

*Enteric Illness — Continued*

The recent New York State outbreaks may be related to periods of heavy rain and flooding. Run-off at these times, especially when sewage systems overflow, characteristically increases coliform counts in monitored coastal waters. However, the numerous outbreaks in New York before the May-June flooding suggest an endemic degree of clam contamination, some of which may be attributable to harvesting from uncertified, sewage-contaminated waters. This practice is likely to continue, because taking clams from highly populated, polluted beds is economically profitable and difficult to prevent. These outbreaks emphasize that clams may contain multiple enteric pathogens, including viruses, and consumption of clams—especially raw or partially cooked—continues to pose substantial risk of transmitting disease. Although the most effective way of avoiding the problem is to prevent the distribution of illegally gathered, untagged clams, such measures are not always possible. Therefore, because steaming or other forms of cooking do not always kill the enteric viruses in clams (*13,14*), the most effective means of preventing clam-associated illness is to adequately depurate them.

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## Employee Illness from Underground Gas and Oil Contamination — Idaho

The National Institute for Occupational Safety and Health (NIOSH) recently completed an evaluation of an office building in Boise, Idaho, in which workers were experiencing symptoms of headache and nausea related to intermittent noxious odors (*1*). The cause of the problem was gasoline vapors entering the building from an underground aquifer contaminated with petroleum products leaking from a nearby oil storage tank.

The affected employees worked in the basement of a five-story medical office building and had been experiencing the symptoms—which in one case included vomiting—intermittently for 10 months. The symptoms were occasionally associated with a petroleum odor that the

*Gas and Oil Contamination — Continued*

NIOSH investigator found coming through cracks in the floor and the joints at which the floor met the foundation and the support pillars connected to the floor. Laboratory analysis confirmed the source of the odor as gasoline. The vapor concentrations at the cracks and inside one wall were above the lower explosive limit for gasoline of 14,000 ppm, and the vapor concentrations in the rooms ranged up to 280 ppm.

To determine the source of the contamination, six test holes were drilled around the building, A water sample from one of these holes had petroleum products floating on the surface. An evaluation has determined a large gas and oil tank farm, located two blocks from the building, is the source of the water table contaminants.

Based on recommendations by the NIOSH investigator, immediate steps were taken to correct the hazards. All accessible cracks and joints have been sealed, and the building ventilation system has been adjusted to pressurize the building relative to the outside air. Since these corrections were made, petroleum-product vapors are no longer detectable, and the employees' symptoms have ceased.

*Reported by the Hazard Evaluations and Technical Assistance Br, Div of Surveillance, Hazard Evaluations, and Field Studies, NIOSH Region X, CDC.*

**Editorial Note:** The employees' symptoms are consistent with the gasoline vapor concentrations found in the building and with the higher concentrations that probably existed intermittently in the past.

NIOSH has evaluated or is currently evaluating over 100 complaints of various symptoms among office employees. Although a large majority of these evaluations have found that the complaints derive from inadequate office ventilation, occasionally symptoms can be linked to substances measured in the environment, e.g., fibrous glass (*2*), fumes from spirit duplicators (*3*), and emissions from urea-formaldehyde foam insulation (*4*). In the Idaho situation, prompt correction was required to prevent a possible explosion of gasoline vapors. Although such situations are unusual, building occupants in areas near petroleum storage facilities (including gasoline service stations) should be alert to the possibility of environmental contamination—particularly of the water table by petroleum products.

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## *International Notes*

### Yellow Fever Surveillance — Africa

The epidemics of yellow fever (YF) in Africa in recent years have stimulated research on the survival mechanisms of the YF virus during interepidemic phases. Virologic surveillance in West and Central Africa has led to the isolation of numerous YF virus strains, particularly from *Aedes africanus, A. opok, A. furcifertaylori,* and *A. luteocephalus,* outside of any declared epidemic. Forest-savanna mosaics, undifferentiated savannas of relatively moist type, differentiated

*Yellow Fever — Continued*

savannas with abundant *Isoberlinia*, and equatorial moist forest belong to the "endemic area" in which the primary sylvatic circulation of YF virus can occur. In these transitional savannas, the circulation of YF virus fluctuates, giving way to intense epizootics that favor sporadic human infection. The term "emergence zone" has been suggested to designate this geographic belt of major epidemiologic importance. The "epidemic area," which generally seems to be inaccessible to primary sylvatic YF virus circulation, stretches beyond the limits of the emergence zone. Here, YF virus can occasionally be introduced by viremic humans and the threat of major epidemics is maximal. The emergence zone is probably the main source of initial contaminations. Certain outbreaks occurring on the southern border of the epidemic area (such as in Gambia in 1978) could be considered the outcome of occasional northward extensions of the emergence-zone borders in certain climatic situations.

Transovarial transmissions, recently demonstrated in *A. aegypti*, have apparently been corroborated in the field by the isolation of YF virus from male mosquitoes of the *A. furcifer* group. They also account for the survival of the virus during the dry season in emergence zone, as well as for the occurrence of pluriannual epizootic phases whose intensity and duration seems to be correlated to climatic factors and to the size of the monkey population. Yellow fever virus has also been isolated from the adults and eggs of *Amblyomma variegatum* ticks collected in the field. The notion of transovarial transmission supports the concept of "reservoir vector" formulated in previous studies. Nevertheless, the regular recurrence of the amplification process made possible by the mosquito-veterbrate cycle appears to be essential to survival of the YF virus.

*Reported by WHO Weekly Epidemiologic Record 1982;57:197-8.*

## *Epidemiologic Notes and Reports*

### Measles, United States — Weeks 27-30, 1982

In the 4-week period July 4-July 31, 1982 (reporting weeks 27-30), 155 cases of measles were reported to CDC—an average of 39 cases per week, for a total 11% below the 174 cases reported during the same period of 1981. Only 29 (0.9%) of the nation's 3,144 counties reported measles to CDC during this period.

Of the 155 measles cases, 10 were imported from eight countries—England, Federal Republic of Germany, France, Ireland, Mexico, Phillipines, Republic of Korea, and Trinidad. To date, none of these importations has resulted in secondary spread.

During week 30, ending July 31, the only state reporting measles to the *MMWR* was California (23 cases). This is the first time only one state has reported measles in any given week.

*Reported by Immunization Div, Center for Prevention Svcs, CDC.*

**Editorial Note:** Forty-nine states, the District of Columbia, and New York City reported no measles cases during the week ending July 31, 1982. Although limited transmission may persist in a few areas, it appears that most of the country is free of indigenous measles. Despite the usual seasonal decrease, the first week with only one state reporting measles indicates continued progress in the national effort to eliminate indigenous measles.

## Bacteriologic Conversion of Sputum among Tuberculosis Patients

By the end of 1981, 83 state and local health departments had submitted to CDC information on bacteriologic conversion for 11,242 patients with sputum-positive pulmonary tuberculosis (by smear or culture or both), who began chemotherapy during 1980. These patients represented about 60% of the sputum-positive pulmonary tuberculosis cases reported in the United States in 1980. Within 3 months of starting treatment, 55.3% had negative sputum. Of the 10,055 patients who had not relocated or died, 77.0% had sputum-negative results within 6 months of starting treatment (Table 1). Eight states (Alabama, Kansas, Kentucky, Nebraska, South Dakota, Utah, Vermont, and Virginia) reported that over 90% of their patients had negative sputum within 6 months; Connecticut and the District of Columbia reported fewer than half became sputum-negative within 6 months (Table 2). Overall, 6 months after starting treatment, 5.4% of the 10,055 patients had positive sputum, 2.6% were lost to supervision, and 14.9% were not known to have had a follow-up sputum examination (Table 2).

Since 1972, a varying number of state and local health departments have submitted similar data to CDC. The number of reporting areas has ranged from a low of 42 in 1972 to a high of 87 in 1979. Over the 9-year period, the percentage of patients known to have converted to negative sputum after 6 months of treatment has fallen from 87.5% to 77.0%. The percentage

*(Continued on page 459)*

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

| Disease | 33rd Week Ending | | | Cumulative, First 33 Weeks | | |
|---|---|---|---|---|---|---|
| | August 21, 1982 | August 22, 1981 | Median 1977-1981 | August 21, 1982 | August 22, 1981 | Median 1977-1981 |
| Aseptic meningitis | 324 | 427 | 311 | 3,895 | 4,345 | 3,207 |
| Brucellosis | 3 | 1 | 6 | 101 | 92 | 114 |
| Encephalitis: Primary (arthropod-borne & unspec.) | 34 | 65 | 50 | 604 | 679 | 512 |
| Post-infectious | 4 | - | 4 | 47 | 63 | 144 |
| Gonorrhea: Civilian | 17,192 | 20,972 | 21,139 | 573,990 | 630,424 | 616,951 |
| Military | 325 | 512 | 491 | 15,980 | 18,512 | 17,135 |
| Hepatitis: Type A | 445 | 450 | 582 | 13,750 | 16,129 | 18,072 |
| Type B | 426 | 380 | 354 | 13,129 | 12,920 | 10,461 |
| Non A, Non B | 45 | N | N | 1,347 | N | N |
| Unspecified | 214 | 187 | 187 | 5,758 | 6,904 | 6,366 |
| Legionellosis | 21 | N | N | 287 | N | N |
| Leprosy | 7 | 5 | 4 | 127 | 165 | 109 |
| Malaria | 21 | 40 | 19 | 617 | 924 | 468 |
| Measles (rubeola) | 14 | 27 | 123 | 1,171 | 2,542 | 12,722 |
| Meningococcal infections: Total | 36 | 44 | 32 | 2,014 | 2,463 | 1,869 |
| Civilian | 36 | 44 | 31 | 2,002 | 2,454 | 1,852 |
| Military | - | - | - | 12 | 9 | 14 |
| Mumps | 29 | 35 | 84 | 4,059 | 3,097 | 10,914 |
| Pertussis | 54 | 41 | 44 | 818 | 746 | 874 |
| Rubella (German measles) | 69 | 22 | 64 | 1,945 | 1,695 | 10,513 |
| Syphilis (Primary & Secondary): Civilian | 654 | 640 | 559 | 20,628 | 19,051 | 15,254 |
| Military | 9 | 6 | 4 | 266 | 238 | 190 |
| Tuberculosis | 486 | 478 | 553 | 16,137 | 16,834 | 17,630 |
| Tularemia | 8 | 7 | 6 | 142 | 148 | 128 |
| Typhoid fever | 12 | 18 | 14 | 241 | 326 | 297 |
| Typhus fever, tick-borne (RMSF) | 39 | 52 | 50 | 739 | 904 | 808 |
| Rabies, animal | 125 | 162 | 124 | 3,967 | 4,881 | 3,174 |

**TABLE II. Notifiable diseases of low frequency, United States**

| | Cum. 1982 | | Cum. 1982 |
|---|---|---|---|
| Anthrax | - | Poliomyelitis: Total | 3 |
| Botulism | 54 | Paralytic | 3 |
| Cholera | - | Psittacosis (Calif. 1) | 83 |
| Congenital rubella syndrome | 5 | Rabies, human | - |
| Diphtheria | 2 | Tetanus (Fla. 1, Tenn. 1, Ala. 1) | 51 |
| Leptospirosis | 34 | Trichinosis (Md. 1, Oreg. 2, Hawaii 1) | 65 |
| Plague | 10 | Typhus fever, flea-borne (endemic, murine) | 24 |

## TABLE III. Cases of specified notifiable diseases, United States, weeks ending August 21 1982 and August 22, 1981 (33rd week)

| Reporting Area | Aseptic Menin-gitis | Brucel-losis | Encephalitis | | Gonorrhea (Civilian) | | Hepatitis (Viral), by type | | | | Legionel-losis | Leprosy |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Primary | Post-in-fectious | | | A | B | NA,NB | Unspeci-fied | | |
| | 1982 | Cum. 1982 | Cum. 1982 | Cum. 1982 | Cum. 1982 | Cum. 1981 | 1982 | 1982 | 1982 | 1982 | 1982 | Cum. 1982 |
| UNITED STATES | 324 | 101 | 604 | 47 | 573,990 | 630,424 | 445 | 426 | 45 | 214 | 21 | 127 |
| NEW ENGLAND | 18 | 3 | 24 | 4 | 14,233 | 15,481 | 7 | 13 | 1 | 20 | 3 | 1 |
| Maine | - | - | - | - | 672 | 795 | 1 | - | - | - | - | - |
| N.H. | 5 | - | 1 | - | 412 | 565 | - | - | - | - | 1 | - |
| Vt. | - | - | - | - | 268 | 264 | - | - | - | - | - | - |
| Mass. | 12 | - | 9 | - | 6,585 | 6,461 | 3 | 3 | - | 19 | - | - |
| R.I. | - | - | - | - | 971 | 848 | - | - | - | - | - | - |
| Conn. | 1 | 3 | 14 | 4 | 5,325 | 6,548 | 3 | 10 | 1 | 1 | 2 | 1 |
| MID. ATLANTIC | 51 | 3 | 65 | 12 | 74,317 | 75,114 | 69 | 80 | 3 | 21 | 3 | 4 |
| Upstate N.Y. | 21 | 3 | 23 | 3 | 12,081 | 12,475 | 13 | 22 | - | 4 | - | 1 |
| N.Y. City | 12 | - | 12 | - | 31,152 | 31,010 | 22 | 17 | - | 6 | - | 1 |
| N.J. | 12 | - | 13 | - | 13,341 | 14,340 | 14 | 25 | 3 | 6 | - | 1 |
| Pa. | 6 | - | 17 | 9 | 17,743 | 17,289 | 20 | 16 | - | 5 | 3 | 1 |
| E.N. CENTRAL | 66 | 1 | 133 | 10 | 80,576 | 94,983 | 76 | 62 | 4 | 21 | 6 | 3 |
| Ohio | 18 | 1 | 47 | 4 | 23,808 | 31,492 | 30 | 21 | 1 | 11 | 3 | - |
| Ind. | 12 | - | 30 | 3 | 9,687 | 8,174 | 26 | 9 | 1 | 7 | - | - |
| Ill. | - | - | 9 | 1 | 19,063 | 26,742 | 4 | 10 | 2 | 1 | - | 3 |
| Mich. | 36 | - | 42 | - | 20,321 | 20,089 | 16 | 22 | - | 2 | 3 | - |
| Wis. | - | - | 5 | 2 | 7,697 | 8,486 | - | - | - | - | - | - |
| W.N. CENTRAL | 7 | 14 | 50 | 3 | 28,112 | 29,719 | 5 | 8 | 1 | 5 | 1 | 3 |
| Minn. | - | 1 | 20 | 1 | 4,161 | 4,628 | - | - | - | - | - | 1 |
| Iowa | 4 | 3 | 18 | 1 | 2,968 | 3,253 | 1 | 1 | 1 | 1 | 1 | - |
| Mo. | 1 | 4 | 6 | - | 13,201 | 13,729 | 2 | 3 | - | 4 | - | 1 |
| N. Dak. | - | - | - | - | 380 | 402 | - | - | - | - | - | - |
| S. Dak. | - | 1 | - | 1 | 768 | 817 | - | - | - | - | - | 1 |
| Nebr. | 1 | 2 | 3 | - | 1,707 | 2,322 | 2 | 3 | - | - | - | - |
| Kans. | 1 | 3 | 3 | - | 4,927 | 4,568 | - | 1 | - | - | - | - |
| S. ATLANTIC | 51 | 18 | 101 | 7 | 135,615 | 155,810 | 42 | 96 | 8 | 26 | 6 | 8 |
| Del. | - | - | - | - | 2,511 | 2,505 | - | - | - | - | - | - |
| Md. | 6 | - | 16 | - | 19,099 | 17,921 | 6 | 26 | 2 | 1 | - | 3 |
| D.C. | - | - | - | - | 8,858 | 9,225 | - | - | - | - | - | - |
| Va. | 4 | 7 | 20 | 1 | 12,713 | 14,252 | 1 | 11 | 2 | 1 | - | 1 |
| W. Va. | 1 | - | 6 | - | 1,753 | 2,354 | 1 | 3 | - | 1 | - | - |
| N.C. | 21 | - | 11 | 1 | 24,737 | 24,122 | 7 | 11 | - | 2 | - | - |
| S.C. | 3 | 2 | - | - | 15,189 | 15,207 | 5 | 15 | - | 3 | - | - |
| Ga. | 3 | 1 | 8 | - | 9,483 | 31,980 | 2 | 10 | - | 2 | 6 | - |
| Fla. | 13 | 8 | 40 | 5 | 41,272 | 38,244 | 20 | 20 | 4 | 16 | - | 4 |
| E.S. CENTRAL | 13 | 11 | 33 | 2 | 51,308 | 52,466 | 12 | 19 | 1 | 4 | - | - |
| Ky. | 2 | - | - | - | 6,937 | 6,535 | 2 | 1 | - | 1 | - | - |
| Tenn. | 5 | 6 | 16 | - | 20,180 | 19,858 | 3 | 10 | - | 2 | - | - |
| Ala. | 6 | 4 | 12 | 2 | 15,104 | 15,886 | 2 | 6 | 1 | 1 | - | - |
| Miss. | - | 1 | 5 | - | 9,087 | 10,187 | 5 | 2 | - | - | - | - |
| W.S. CENTRAL | 35 | 27 | 77 | 1 | 83,030 | 83,349 | 80 | 29 | 1 | 80 | 1 | 18 |
| Ark. | 1 | 5 | 4 | - | 6,760 | 6,158 | 2 | - | - | 14 | 1 | - |
| La. | 1 | 6 | 13 | - | 15,652 | 14,218 | 9 | 5 | 1 | 10 | - | - |
| Okla. | 4 | 4 | 18 | - | 9,086 | 8,950 | 9 | 6 | - | 8 | - | - |
| Tex. | 29 | 12 | 42 | 1 | 51,532 | 54,023 | 60 | 18 | - | 48 | - | 18 |
| MOUNTAIN | 16 | - | 19 | 3 | 20,402 | 24,504 | 29 | 9 | 2 | 6 | 1 | 2 |
| Mont. | - | - | - | - | 846 | 893 | - | - | - | 2 | - | - |
| Idaho | 1 | - | - | - | 935 | 1,098 | 1 | - | - | - | - | 1 |
| Wyo. | 2 | - | - | - | 595 | 564 | - | - | - | - | - | - |
| Colo. | 5 | - | 9 | 1 | 5,493 | 6,671 | 5 | 1 | - | 2 | - | - |
| N. Mex. | 2 | - | - | - | 2,650 | 2,642 | 13 | 2 | 1 | - | 1 | - |
| Ariz. | 3 | - | 6 | - | 5,450 | 7,346 | 1 | - | 1 | - | - | - |
| Utah | 3 | - | - | 2 | 975 | 1,152 | 5 | 3 | - | 1 | - | 1 |
| Nev. | - | - | 4 | - | 3,458 | 4,138 | 4 | 3 | - | 1 | - | - |
| PACIFIC | 67 | 24 | 102 | 5 | 86,397 | 98,998 | 125 | 110 | 24 | 31 | - | 88 |
| Wash. | 2 | 1 | 9 | - | 7,143 | 8,221 | 3 | 5 | 2 | 3 | - | 7 |
| Oreg. | 3 | - | 3 | - | 4,957 | 5,866 | 10 | 8 | - | 1 | - | 1 |
| Calif. | 54 | 22 | 86 | 5 | 70,593 | 80,463 | 109 | 95 | 22 | 27 | - | 58 |
| Alaska | 4 | 1 | 3 | - | 2,131 | 2,476 | 2 | 1 | - | - | - | 1 |
| Hawaii | 4 | - | 1 | - | 1,573 | 1,972 | 1 | 1 | - | - | - | 21 |
| Guam | U | - | - | - | 72 | 78 | U | U | U | U | U | - |
| P.R. | - | - | 1 | - | 1,722 | 2,055 | 6 | 16 | - | 3 | - | - |
| V.I. | U | - | - | - | 142 | 126 | U | U | U | U | U | - |
| Pac. Trust Terr. | U | - | - | - | 246 | 284 | U | U | U | U | U | 12 |

N: Not notifiable U: Unavailable

## TABLE III. (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending August 21, 1982 and August 22, 1981 (33rd week)

| Reporting Area | Malaria | | Measles (Rubeola) | | | Meningococcal Infections (Total) | | Mumps | | Pertussis | Rubella | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1982 | Cum. 1982 | 1982 | Cum. 1982 | Cum. 1981 | 1982 | Cum. 1982 | 1982 | Cum. 1982 | 1982 | 1982 | Cum. 1982 | Cum. 1981 |
| UNITED STATES | 21 | 617 | 14 | 1,171 | 2,542 | 36 | 2,014 | 29 | 4,059 | 54 | 69 | 1,945 | 1,695 |
| NEW ENGLAND | - | 32 | - | 10 | 75 | 2 | 106 | - | 164 | - | - | 18 | 111 |
| Maine | - | - | - | - | 5 | 1 | 8 | - | 36 | - | - | - | 33 |
| N.H. | - | 1 | - | 2 | 6 | 1 | 15 | - | 12 | - | - | 8 | 43 |
| Vt. | - | - | - | 2 | 2 | - | 6 | - | 7 | - | - | - | - |
| Mass. | - | 21 | - | 3 | 54 | - | 27 | - | 79 | - | - | 6 | 23 |
| R.I. | - | 2 | - | - | - | - | 11 | - | 14 | - | - | 1 | - |
| Conn. | - | 8 | - | 3 | 8 | - | 39 | - | 16 | - | - | 3 | 12 |
| MID. ATLANTIC | 6 | 91 | 1 | 157 | 808 | 8 | 364 | 3 | 255 | 10 | - | 91 | 200 |
| Upstate N.Y. | 1 | 21 | - | 110 | 206 | 3 | 129 | 1 | 56 | 1 | - | 44 | 94 |
| N.Y. City | 3 | 29 | 1 | 39 | 70 | 4 | 63 | 2 | 44 | 1 | - | 31 | 49 |
| N.J. | 1 | 24 | - | 4 | 54 | - | 74 | - | 36 | 3 | - | 16 | 46 |
| Pa. | 1 | 17 | - | 4 | 478 | 1 | 98 | - | 119 | 5 | - | - | 11 |
| E.N. CENTRAL | - | 39 | - | 71 | 79 | 2 | 236 | 7 | 2,145 | 9 | 2 | 159 | 353 |
| Ohio | - | 9 | - | 1 | 15 | - | 87 | 2 | 1,556 | 3 | - | - | 3 |
| Ind. | - | 1 | - | 2 | 8 | - | 22 | - | 37 | 3 | 1 | 27 | 123 |
| Ill. | - | 6 | - | 23 | 23 | - | 63 | - | 169 | 2 | 1 | 57 | 85 |
| Mich. | - | 21 | - | 45 | 30 | 2 | 52 | - | 294 | - | - | 48 | 34 |
| Wis. | - | 2 | - | - | 3 | - | 12 | 5 | 89 | 1 | - | 27 | 108 |
| W.N. CENTRAL | - | 17 | - | 49 | 10 | - | 87 | 1 | 542 | 1 | - | 55 | 76 |
| Minn. | - | 2 | - | - | 3 | - | 21 | - | 416 | - | - | 5 | 7 |
| Iowa | - | 5 | - | - | 1 | - | 5 | - | 30 | - | - | - | 4 |
| Mo. | - | 5 | - | 2 | 1 | - | 26 | 1 | 16 | - | - | 38 | 2 |
| N. Dak. | - | 1 | - | - | - | - | 6 | - | - | - | - | - | - |
| S. Dak. | - | - | - | - | - | - | 4 | - | 1 | - | - | 1 | - |
| Nebr. | - | 3 | - | 3 | 4 | - | 11 | - | - | - | - | - | 1 |
| Kans. | - | 1 | - | 44 | 1 | - | 14 | - | 79 | 1 | - | 11 | 62 |
| S. ATLANTIC | 5 | 98 | 1 | 37 | 355 | 9 | 406 | 3 | 233 | 13 | 2 | 70 | 129 |
| Del. | - | 4 | - | - | - | - | - | - | 10 | 1 | - | 1 | 1 |
| Md. | 1 | 15 | - | 2 | 4 | - | 25 | - | 24 | 6 | - | 33 | 1 |
| D.C. | 1 | 4 | - | 1 | 1 | - | 2 | - | - | - | - | - | - |
| Va. | 1 | 28 | - | 14 | 6 | 2 | 48 | - | 32 | - | - | 13 | 5 |
| W. Va. | - | 6 | 1 | 3 | 9 | - | 8 | 2 | 87 | 1 | - | 1 | 22 |
| N.C. | - | 3 | - | - | 3 | 2 | 79 | - | 11 | - | - | 1 | 5 |
| S.C. | - | 4 | - | - | 2 | - | 47 | - | 13 | 2 | - | 1 | 8 |
| Ga. | 1 | 13 | - | - | 108 | 1 | 83 | - | 11 | 1 | - | 6 | 35 |
| Fla. | 1 | 21 | - | 17 | 222 | 4 | 114 | 1 | 45 | 2 | 2 | 14 | 52 |
| E.S. CENTRAL | - | 7 | 1 | 9 | 5 | 5 | 134 | - | 39 | 6 | 1 | 44 | 28 |
| Ky. | - | 4 | 1 | 2 | 1 | 3 | 24 | - | 12 | 1 | 1 | 26 | 19 |
| Tenn. | - | - | - | 6 | 2 | 1 | 56 | - | 15 | 3 | - | 2 | 8 |
| Ala. | - | - | - | - | 2 | - | 45 | - | 6 | 2 | - | - | 1 |
| Miss. | - | 3 | - | 1 | - | 1 | 9 | - | 6 | - | - | 16 | - |
| W.S. CENTRAL | 1 | 46 | 4 | 38 | 832 | 8 | 242 | 4 | 165 | 2 | 2 | 102 | 141 |
| Ark. | - | 3 | - | - | 1 | - | 12 | - | 6 | - | - | 1 | 3 |
| La. | - | 3 | - | 2 | 2 | 7 | 49 | - | 5 | - | - | 1 | 9 |
| Okla. | - | 6 | 4 | 20 | 5 | - | 25 | - | - | - | - | 3 | - |
| Tex. | 1 | 34 | - | 16 | 824 | 1 | 156 | 4 | 154 | 2 | 2 | 97 | 129 |
| MOUNTAIN | - | 17 | - | 8 | 33 | - | 96 | 3 | 77 | 1 | - | 74 | 82 |
| Mont. | - | 1 | - | - | - | - | 4 | - | 3 | - | - | 5 | 3 |
| Idaho | - | 1 | - | - | 1 | - | 6 | - | 3 | - | - | 6 | 3 |
| Wyo. | - | - | - | - | - | - | 5 | - | 2 | - | - | 7 | 7 |
| Colo. | - | 8 | - | 6 | 9 | - | 41 | 1 | 15 | - | - | 6 | 30 |
| N. Mex. | - | 2 | - | - | 8 | - | 14 | - | - | 1 | - | 5 | 5 |
| Ariz. | - | 3 | - | 2 | 5 | - | 16 | - | 33 | - | - | 14 | 19 |
| Utah | - | 2 | - | - | - | - | 8 | 1 | 15 | - | - | 20 | 5 |
| Nev. | - | - | - | - | 10 | - | 2 | 1 | 6 | - | - | 11 | 10 |
| PACIFIC | 9 | 270 | 7 | 792 | 345 | 2 | 343 | 8 | 439 | 12 | 62 | 1,332 | 575 |
| Wash. | - | 14 | 2 | 34 | 3 | 1 | 37 | - | 61 | 1 | - | 37 | 88 |
| Oreg. | - | 9 | - | 15 | 4 | - | 67 | - | - | - | - | 6 | 50 |
| Calif. | 9 | 245 | 5 | 738 | 336 | 1 | 226 | 8 | 364 | 11 | 62 | 1,276 | 422 |
| Alaska | - | - | - | 1 | - | - | 10 | - | 6 | - | - | 5 | 1 |
| Hawaii | - | 2 | - | 4 | 2 | - | 3 | - | 8 | - | - | 8 | 14 |
| Guam | U | 1 | U | 6 | 6 | U | 2 | U | 3 | U | U | 2 | 1 |
| P.R. | - | 4 | 5 | 89 | 262 | - | 7 | - | 47 | 1 | - | 7 | 3 |
| V.I. | U | - | U | - | 24 | U | - | U | 1 | U | U | - | 1 |
| Pac. Trust Terr. | U | - | U | - | 1 | U | 2 | U | 4 | U | U | - | 1 |

U: Unavailable

## TABLE III. (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending August 21, 1982 and August 22, 1981 (33rd week)

| Reporting Area | Syphilis (Civilian) (Primary & Secondary) | | Tuberculosis | | Tularemia | Typhoid Fever | | Typhus Fever (Tick-borne) (RMSF) | | Rabies, Animal |
|---|---|---|---|---|---|---|---|---|---|---|
| | Cum. 1982 | Cum. 1981 | 1982 | Cum. 1982 | Cum. 1982 | 1982 | Cum. 1982 | 1982 | Cum. 1982 | Cum. 1982 |
| UNITED STATES | 20,628 | 19,051 | 486 | 16,137 | 142 | 12 | 241 | 39 | 739 | 3,967 |
| NEW ENGLAND | 349 | 382 | 14 | 426 | 4 | 2 | 16 | 1 | 8 | 30 |
| Maine | 1 | 2 | 2 | 36 | - | - | - | - | - | 21 |
| N.H. | 1 | 12 | - | 12 | - | - | - | - | 1 | - |
| Vt. | 1 | 13 | - | 9 | - | - | 2 | - | - | - |
| Mass. | 240 | 256 | 9 | 283 | 4 | 2 | 12 | 1 | 4 | 5 |
| R.I. | 18 | 21 | - | 17 | - | - | - | - | 2 | - |
| Conn. | 88 | 78 | 3 | 69 | - | - | 2 | - | 1 | 4 |
| MID. ATLANTIC | 2,867 | 2,843 | 57 | 2,685 | 7 | 2 | 37 | 1 | 28 | 113 |
| Upstate N.Y. | 282 | 248 | 20 | 478 | 7 | - | 6 | - | 9 | 57 |
| N.Y. City | 1,734 | 1,712 | 18 | 976 | - | 1 | 21 | - | 1 | - |
| N.J. | 394 | 391 | 7 | 536 | - | 1 | 6 | 1 | 12 | 8 |
| Pa. | 457 | 492 | 12 | 695 | - | - | 4 | - | 6 | 48 |
| E.N. CENTRAL | 1,081 | 1,328 | 80 | 2,480 | 1 | 1 | 20 | 8 | 73 | 433 |
| Ohio | 197 | 192 | 14 | 428 | - | 1 | 9 | 8 | 68 | 63 |
| Ind. | 125 | 131 | 7 | 317 | - | - | - | - | - | 65 |
| Ill. | 514 | 713 | 32 | 1,020 | - | - | 3 | - | 5 | 220 |
| Mich. | 182 | 229 | 23 | 580 | - | - | 7 | - | - | 4 |
| Wis. | 63 | 63 | 4 | 135 | 1 | - | 1 | - | - | 81 |
| W.N. CENTRAL | 357 | 397 | 12 | 467 | 20 | 1 | 9 | 3 | 23 | 881 |
| Minn. | 67 | 134 | 5 | 82 | - | - | 5 | - | - | 156 |
| Iowa | 18 | 16 | 2 | 52 | 1 | - | 1 | - | 4 | 280 |
| Mo. | 216 | 215 | 3 | 220 | 14 | - | 1 | 1 | 8 | 79 |
| N. Dak. | 7 | 7 | - | 9 | - | - | - | - | - | 77 |
| S. Dak. | 1 | 2 | - | 19 | - | - | - | 1 | 4 | 71 |
| Nebr. | 11 | 5 | - | 20 | 2 | 1 | 1 | - | 1 | 101 |
| Kans. | 37 | 18 | 2 | 65 | 3 | - | 1 | 1 | 6 | 117 |
| S. ATLANTIC | 5,609 | 5,035 | 96 | 3,321 | 10 | - | 33 | 19 | 414 | 699 |
| Del. | 9 | 8 | 7 | 33 | - | - | - | - | - | 2 |
| Md. | 302 | 377 | 13 | 391 | 1 | - | 9 | 1 | 41 | 33 |
| D.C. | 315 | 408 | 3 | 133 | - | - | - | - | - | - |
| Va. | 390 | 446 | 10 | 371 | 2 | - | 2 | 6 | 65 | 356 |
| W. Va. | 20 | 16 | 1 | 101 | - | - | 3 | - | 7 | 34 |
| N.C. | 418 | 385 | 17 | 530 | - | - | - | 4 | 176 | 49 |
| S.C. | 331 | 330 | 5 | 299 | 6 | - | 3 | 3 | 90 | 39 |
| Ga. | 1,151 | 1,295 | 15 | 498 | - | - | - | 5 | 33 | 139 |
| Fla. | 2,673 | 1,770 | 25 | 965 | 1 | - | 16 | - | 2 | 47 |
| E.S. CENTRAL | 1,439 | 1,273 | 37 | 1,500 | 6 | - | 14 | 5 | 59 | 472 |
| Ky. | 76 | 69 | 9 | 384 | - | - | - | 1 | 1 | 97 |
| Tenn. | 392 | 477 | 7 | 492 | 4 | - | 2 | 3 | 38 | 277 |
| Ala. | 528 | 356 | 4 | 420 | - | - | 9 | 1 | 8 | 96 |
| Miss. | 443 | 371 | 17 | 204 | 2 | - | 3 | - | 12 | 2 |
| W.S. CENTRAL | 5,380 | 4,575 | 74 | 1,956 | 70 | 1 | 25 | 2 | 121 | 763 |
| Ark. | 134 | 89 | 10 | 213 | 44 | 1 | 3 | - | 20 | 104 |
| La. | 1,226 | 1,062 | 9 | 305 | 3 | - | 3 | - | - | 26 |
| Okla. | 115 | 106 | 4 | 251 | 21 | - | 2 | 1 | 64 | 142 |
| Tex. | 3,905 | 3,318 | 51 | 1,187 | 2 | - | 17 | 1 | 37 | 491 |
| MOUNTAIN | 518 | 478 | 10 | 449 | 18 | 1 | 11 | - | 9 | 161 |
| Mont. | 3 | 11 | - | 27 | 2 | - | - | - | 2 | 58 |
| Idaho | 23 | 17 | - | 23 | 1 | - | - | - | 2 | 7 |
| Wyo. | 14 | 7 | - | 2 | 2 | - | - | - | 1 | 13 |
| Colo. | 144 | 149 | 3 | 49 | 3 | - | 3 | - | 1 | 29 |
| N. Mex. | 120 | 92 | 2 | 86 | 1 | - | - | - | 1 | 12 |
| Ariz. | 115 | 105 | 4 | 194 | - | - | 5 | - | - | 32 |
| Utah | 15 | 17 | - | 25 | 9 | 1 | 2 | - | - | 7 |
| Nev. | 84 | 80 | 1 | 43 | - | - | 1 | - | 2 | 3 |
| PACIFIC | 3,028 | 2,740 | 106 | 2,853 | 6 | 4 | 76 | - | 4 | 415 |
| Wash. | 100 | 103 | 6 | 180 | 1 | - | 3 | - | - | 3 |
| Oreg. | 71 | 61 | 2 | 118 | - | 1 | 3 | - | 1 | 1 |
| Calif. | 2,772 | 2,520 | 88 | 2,301 | 4 | 3 | 67 | - | 3 | 334 |
| Alaska | 8 | 10 | - | 57 | 1 | - | 1 | - | - | 77 |
| Hawaii | 77 | 46 | 10 | 197 | - | - | 2 | - | - | - |
| Guam | 1 | - | U | 8 | - | U | - | U | - | - |
| P.R. | 369 | 430 | - | 243 | - | - | 2 | - | - | 33 |
| V.I. | 17 | 13 | U | 1 | - | U | - | U | - | - |
| Pac. Trust Terr. | - | - | U | 85 | - | U | - | U | - | - |

U: Unavailable

## TABLE IV. Deaths in 121 U.S. cities,* week ending August 21, 1982 (33rd week)

| Reporting Area | All Causes, By Age (Years) | | | | | | P&I** Total |
|---|---|---|---|---|---|---|---|
| | All Ages | ≥65 | 45-64 | 25-44 | 1-24 | <1 | |
| NEW ENGLAND | 625 | 430 | 130 | 33 | 19 | 13 | 39 |
| Boston, Mass. | 176 | 119 | 35 | 7 | 7 | 8 | 17 |
| Bridgeport, Conn. | 37 | 26 | 8 | 1 | - | 2 | 5 |
| Cambridge, Mass. | 23 | 18 | 3 | 2 | - | - | 5 |
| Fall River, Mass. | 20 | 15 | 5 | - | - | - | 1 |
| Hartford, Conn. | 54 | 28 | 11 | 8 | 7 | - | - |
| Lowell, Mass. | 24 | 19 | 4 | - | 1 | - | - |
| Lynn, Mass. | 17 | 10 | 6 | 1 | - | - | - |
| New Bedford, Mass. | 19 | 14 | 4 | 1 | - | - | 1 |
| New Haven, Conn. | 48 | 31 | 12 | 3 | 2 | - | - |
| Providence, R.I. | 68 | 49 | 15 | 3 | - | 1 | 5 |
| Somerville, Mass. | 13 | 10 | 3 | - | - | - | 1 |
| Springfield, Mass. | 37 | 30 | 6 | 1 | - | - | 2 |
| Waterbury, Conn. | 29 | 17 | 7 | 5 | - | - | 2 |
| Worcester, Mass. | 60 | 44 | 11 | 1 | 2 | 2 | - |
| MID. ATLANTIC | 2,309 | 1,476 | 559 | 163 | 52 | 59 | 75 |
| Albany, N.Y. | 42 | 26 | 10 | 1 | 3 | 2 | 1 |
| Allentown, Pa. | 17 | 14 | 3 | - | - | - | 1 |
| Buffalo, N.Y. | 110 | 76 | 21 | 7 | 4 | 2 | - |
| Camden, N.J. | 34 | 19 | 7 | 3 | 2 | 3 | 2 |
| Elizabeth, N.J. | 24 | 19 | 4 | 1 | - | - | 2 |
| Erie, Pa.† | 36 | 25 | 7 | 2 | - | 2 | 1 |
| Jersey City, N.J. | 44 | 28 | 15 | 1 | - | - | 1 |
| N.Y. City, N.Y. | 1,234 | 770 | 290 | 111 | 27 | 36 | 36 |
| Newark, N.J. | 50 | 28 | 13 | 5 | 1 | 3 | 3 |
| Paterson, N.J. | 25 | 15 | 8 | - | 1 | 1 | 1 |
| Philadelphia, Pa.† | 288 | 181 | 82 | 15 | 6 | 4 | 12 |
| Pittsburgh, Pa.† | 60 | 35 | 20 | 3 | - | 2 | - |
| Reading, Pa. | 27 | 22 | 4 | 1 | - | - | 3 |
| Rochester, N.Y. | 110 | 65 | 35 | 3 | 5 | 2 | 6 |
| Schenectady, N.Y. | 30 | 21 | 6 | 2 | 1 | - | - |
| Scranton, Pa.† | 27 | 20 | 7 | - | - | - | 2 |
| Syracuse, N.Y. | 68 | 48 | 15 | 3 | 1 | 1 | 1 |
| Trenton, N.J. | 35 | 29 | 3 | 2 | 1 | - | - |
| Utica, N.Y. | 15 | 13 | 2 | - | - | - | - |
| Yonkers, N.Y. | 33 | 22 | 7 | 3 | - | 1 | 3 |
| E.N. CENTRAL | 2,170 | 1,311 | 544 | 151 | 82 | 81 | 58 |
| Akron, Ohio | 55 | 37 | 14 | 2 | - | 2 | - |
| Canton, Ohio | 39 | 28 | 10 | 1 | - | - | 3 |
| Chicago, Ill | 548 | 294 | 140 | 53 | 30 | 31 | 15 |
| Cincinnati, Ohio | 154 | 111 | 27 | 3 | 5 | 8 | 8 |
| Cleveland, Ohio | 151 | 85 | 49 | 7 | 5 | 5 | 3 |
| Columbus, Ohio | 91 | 48 | 27 | 9 | 3 | 4 | - |
| Dayton, Ohio | 110 | 62 | 35 | 8 | 3 | 2 | 5 |
| Detroit, Mich. | 245 | 145 | 57 | 24 | 11 | 8 | 4 |
| Evansville, Ind. | 50 | 33 | 14 | 2 | 1 | - | 3 |
| Fort Wayne, Ind. | 54 | 36 | 11 | 5 | 1 | 1 | 1 |
| Gary, Ind. | 9 | 3 | 3 | 1 | 2 | - | - |
| Grand Rapids, Mich. | 58 | 38 | 13 | 2 | 2 | 2 | 2 |
| Indianapolis, Ind. | 169 | 95 | 45 | 14 | 8 | 7 | 1 |
| Madison, Wis. | 26 | 15 | 8 | - | 2 | 1 | 4 |
| Milwaukee, Wis. | 130 | 92 | 29 | 7 | - | 2 | - |
| Peoria, Ill. | 43 | 30 | 8 | - | 2 | 3 | 3 |
| Rockford, Ill. | 41 | 29 | 9 | 2 | 1 | - | - |
| South Bend, Ind. | 52 | 34 | 11 | 1 | 3 | 3 | 5 |
| Toledo, Ohio | 88 | 57 | 21 | 6 | 2 | 2 | 1 |
| Youngstown, Ohio | 57 | 39 | 13 | 4 | 1 | - | - |
| W.N. CENTRAL | 660 | 452 | 131 | 34 | 24 | 18 | 19 |
| Des Moines, Iowa § | 53 | 51 | - | - | 1 | - | - |
| Duluth, Minn. | 24 | 17 | 5 | 1 | - | 1 | 1 |
| Kansas City, Kans. | 30 | 18 | 8 | 3 | 1 | - | - |
| Kansas City, Mo. | 117 | 68 | 33 | 6 | 5 | 5 | 3 |
| Lincoln, Nebr. | 24 | 21 | 3 | - | - | - | 3 |
| Minneapolis, Minn. | 79 | 51 | 11 | 7 | 4 | 6 | 1 |
| Omaha, Nebr. | 68 | 50 | 12 | 5 | - | 1 | 4 |
| St. Louis, Mo. | 142 | 94 | 31 | 10 | 6 | 1 | 3 |
| St. Paul, Minn. | 66 | 44 | 15 | 2 | 3 | 2 | 1 |
| Wichita, Kans. | 57 | 38 | 13 | - | 4 | 2 | 3 |

| Reporting Area | All Causes, By Age (Years) | | | | | | P&I** Total |
|---|---|---|---|---|---|---|---|
| | All Ages | ≥65 | 45-64 | 25-44 | 1-24 | <1 | |
| S. ATLANTIC | 1,017 | 659 | 204 | 59 | 38 | 52 | 39 |
| Atlanta, Ga. | 123 | 72 | 33 | 14 | 3 | 1 | 6 |
| Baltimore, Md. | 104 | 70 | 24 | 3 | 5 | 2 | 4 |
| Charlotte, N.C. | 62 | 31 | 15 | 4 | 4 | 7 | 2 |
| Jacksonville, Fla. | 103 | 63 | 24 | 8 | 4 | 4 | 2 |
| Miami, Fla. | 101 | 57 | 21 | 11 | 5 | 7 | - |
| Norfolk, Va. | 52 | 23 | 21 | 2 | 1 | 5 | 6 |
| Richmond, Va. | 49 | 28 | 14 | 2 | 3 | 2 | 6 |
| Savannah, Ga. | 44 | 30 | 11 | 1 | 2 | - | 5 |
| St. Petersburg, Fla. | 67 | 49 | 8 | 3 | 3 | 4 | 1 |
| Tampa, Fla. | 91 | 61 | 20 | 2 | 2 | 6 | 4 |
| Washington, D.C. § | 182 | 154 | 3 | 6 | 6 | 9 | 3 |
| Wilmington, Del. | 39 | 21 | 10 | 3 | - | 5 | - |
| E.S. CENTRAL | 721 | 429 | 183 | 52 | 37 | 20 | 29 |
| Birmingham, Ala. | 124 | 65 | 33 | 10 | 12 | 4 | 2 |
| Chattanooga, Tenn. | 50 | 36 | 11 | 3 | - | - | 7 |
| Knoxville, Tenn. | 38 | 22 | 8 | 6 | 1 | 1 | - |
| Louisville, Ky. | 92 | 51 | 29 | 5 | 5 | 2 | - |
| Memphis, Tenn. | 176 | 120 | 35 | 13 | 6 | 2 | 8 |
| Mobile, Ala. | 69 | 38 | 18 | 2 | 7 | 4 | 3 |
| Montgomery, Ala. | 63 | 35 | 15 | 7 | 2 | 4 | 5 |
| Nashville, Tenn. | 109 | 62 | 34 | 6 | 4 | 3 | 4 |
| W.S. CENTRAL | 1,456 | 789 | 367 | 160 | 89 | 49 | 34 |
| Austin, Tex. | 55 | 35 | 12 | 6 | 2 | - | 5 |
| Baton Rouge, La. | 42 | 22 | 14 | 4 | 2 | - | 3 |
| Corpus Christi, Tex. | 42 | 24 | 7 | 5 | 4 | 2 | - |
| Dallas, Tex. | 220 | 124 | 56 | 21 | 12 | 7 | 2 |
| El Paso, Tex. | 57 | 37 | 11 | 6 | - | 1 | 2 |
| Fort Worth, Tex. | 91 | 53 | 25 | 6 | 7 | - | 6 |
| Houston, Tex. | 465 | 211 | 128 | 71 | 41 | 14 | 3 |
| Little Rock, Ark. | 69 | 43 | 14 | 7 | 2 | 3 | 2 |
| New Orleans, La. | 97 | 50 | 24 | 11 | 8 | 4 | 1 |
| San Antonio, Tex. | 156 | 91 | 40 | 13 | 6 | 6 | 5 |
| Shreveport, La. | 86 | 53 | 21 | 3 | - | 9 | 2 |
| Tulsa, Okla. | 76 | 46 | 15 | 7 | 5 | 3 | 3 |
| MOUNTAIN | 592 | 333 | 158 | 43 | 26 | 32 | 14 |
| Albuquerque, N.Mex. | 87 | 54 | 20 | 7 | 4 | 2 | 2 |
| Colo. Springs, Colo. | 31 | 15 | 7 | 3 | 3 | 3 | 1 |
| Denver, Colo. | 124 | 60 | 46 | 7 | 2 | 9 | 3 |
| Las Vegas, Nev. | 65 | 37 | 13 | 11 | - | 4 | - |
| Ogden, Utah | 13 | 8 | 1 | 2 | - | 2 | 1 |
| Phoenix, Ariz. | 112 | 70 | 26 | 6 | 8 | 2 | - |
| Pueblo, Colo. | 19 | 8 | 8 | 1 | 1 | 1 | 1 |
| Salt Lake City, Utah | 64 | 33 | 16 | 2 | 6 | 7 | 1 |
| Tucson, Ariz. | 77 | 48 | 21 | 4 | 2 | 2 | 5 |
| PACIFIC | 1,665 | 1,046 | 386 | 113 | 45 | 75 | 81 |
| Berkeley, Calif. | 17 | 11 | 4 | 1 | 1 | - | 1 |
| Fresno, Calif. | 65 | 37 | 15 | 3 | 2 | 8 | 3 |
| Glendale, Calif. | 38 | 29 | 8 | 1 | - | - | 2 |
| Honolulu, Hawaii | 49 | 26 | 16 | 2 | 3 | 2 | 4 |
| Long Beach, Calif. | 67 | 40 | 16 | 7 | 1 | 3 | 3 |
| Los Angeles, Calif. | 493 | 315 | 103 | 44 | 14 | 17 | 17 |
| Oakland, Calif. | 71 | 47 | 14 | 3 | 3 | 4 | 3 |
| Pasadena, Calif. | 31 | 23 | 6 | - | 1 | 1 | - |
| Portland, Oreg. | 107 | 65 | 27 | 6 | 3 | 6 | 5 |
| Sacramento, Calif. | 66 | 37 | 16 | 4 | 1 | 8 | 5 |
| San Diego, Calif. | 154 | 96 | 35 | 9 | 5 | 9 | 15 |
| San Francisco, Calif. | 121 | 75 | 27 | 14 | 3 | 2 | 4 |
| San Jose, Calif. | 144 | 90 | 42 | 6 | 1 | 5 | 12 |
| Seattle, Wash. | 142 | 91 | 34 | 8 | 4 | 5 | 1 |
| Spokane, Wash. | 60 | 40 | 13 | 3 | 1 | 3 | 5 |
| Tacoma, Wash. | 40 | 24 | 10 | 2 | 2 | 2 | 1 |
| TOTAL | 11,215†† | 6,925 | 2,662 | 808 | 412 | 399 | 388 |

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

†† Total includes unknown ages.

§ Data not available. Figures are estimates based on average of past 4 weeks.

*Bacteriologic Conversion — Continued*

from whom no sputum result was available has risen from 6.1% to 14.9%. The percentage known to have positive sputum has remained about 5%; and the percentage lost to supervision has risen from 1.7% to 2.6% (Figure 1). The secular trends for 15 individual areas reporting data for each of the 9 years are similar to the trend for all the areas (Figure 2), suggesting that the observed changes are real and do not result from adding areas with different program characteristics to the data base.

*Reported by Tuberculosis Control Div, Center for Prevention Svcs, CDC.*

**Editorial Note:** Since 1972, the number of health departments using the bacteriologic conversion of sputum as an indicator of program effectiveness has doubled, suggesting many areas consider it a useful program-evaluation tool. Periodic bacteriologic examination of the sputum of patients with pulmonary tuberculosis is important for several reasons: 1) It provides objective evidence of the patient's response to therapy. Delayed or absent response may be due to patient noncompliance, drug-resistant organisms, prescription error, immunosuppression, or malabsorption of drugs. Failure to detect these problems early and to adjust the chemotherapy regimen accordingly will lead to treatment failure and potential transmission of tubercle bacilli. 2) Periodic bacteriologic examination of sputum also estimates the level of patient infectivity, which permits informed decisions to be made about hospital isolation procedures and the investigation and management of patient contacts (*1,2*). 3) Periodic bacteriologic examination aids in establishing an appropriate length of therapy. For patients on short-course chemotherapy, it is currently recommended that the patient receive isoniazid (INH) and rifampin (RIF) for at least 6 months after sputum conversion (the time of the first negative sputum test, after which there are no subsequent positive sputa), or a minimum of 9 months total therapy, whichever is *longer* (*3*). Therefore, the appropriate length of treatment can be calculated for those patients for whom the date of sputum conversion is known.

Among patients with uncomplicated pulmonary tuberculosis treated with INH and RIF, about 95% should become sputum-negative within 3 months if they comply with their treatment regimens (*4*). Because the data reported above include patients treated with regimens other than INH and RIF, noncompliant patients, and patients with drug-resistant organisms or immune-compromising conditions, a conversion rate of 95% within 3 months cannot realistically be expected. Nevertheless, the reported data indicate a need for improvement. The downward trend since 1972 in the percentage of patients known to have become sputum-negative is compensated for by the rise in the percentage of patients not known to have had a follow-up sputum examination (Figure 1). The number from whom no sputum result was available may include patients whom the attending physician presumed had converted but from whom no specimen was obtained to document sputum negativity. Some areas have indicated that the trend reflects the shift in patient care from health departments to private practitioners, who either do not examine sputum or do not report results to health departments.

**TABLE 1. Bacteriologic conversion of sputum-positive tuberculosis patients, 1980**

| 83 Health Areas | Patients with Positive Sputum | Sputum Converted in 3 months | Observation Discontinued (A) | Patients Observed for 6 months | Sputum Converted in 6 months (B) |
|---|---|---|---|---|---|
| Number | 11,242 | 6,221 | 1,187 | 10,055 | 7,747 |
| Percent | | 53.3 | 10.6 | 89.4 | 77.0 |

(A) Consists of 712 patients who died and 475 patients who moved.
(B) Percent of patients observed for 6 months.

*Bacteriologic Conversion — Continued*

**TABLE 2. Bacteriologic conversion of sputum from tuberculosis patients by state, 1980**

| State | Patients With Positive Sputum* | Converted in 6 Months | | Did Not Convert in 6 Months | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Still Positive | | No Sputum | | Lost | |
| | | No. | (%) | No. | (%) | No. | (%) | No. | (%) |
| Alabama† | 521 | 498 | (95.6) | 11 | ( 2.1) | 12 | ( 2.3) | 0 | ( 0.0) |
| Alaska | 35 | 26 | (74.3) | 1 | ( 2.9) | 8 | (22.9) | 0 | ( 0.0) |
| Arizona† | 184 | 163 | (88.6) | 1 | ( 0.5) | 14 | ( 7.6) | 6 | ( 3.3) |
| Arkansas†† | | | | | | | | | |
| California§ | 127 | 65 | (51.2) | 19 | (15.0) | 38 | (29.9) | 5 | ( 3.9) |
| Colorado†† | | | | | | | | | |
| Connecticut | 119 | 52 | (43.7) | 9 | ( 7.6) | 56 | (47.1) | 2 | ( 1.7) |
| Delaware†† | | | | | | | | | |
| District of Columbia | 189 | 94 | (49.7) | 2 | ( 1.1) | 87 | (46.0) | 6 | ( 3.2) |
| Florida† | 1,089 | 929 | (85.3) | 49 | ( 4.5) | 73 | ( 6.7) | 38 | ( 3.5) |
| Georgia† | 496 | 435 | (87.7) | 26 | ( 5.2) | 33 | ( 6.7) | 2 | ( 0.4) |
| Hawaii†† | | | | | | | | | |
| Idaho†† | | | | | | | | | |
| Illinois§ | 180 | 143 | (79.4) | 9 | ( 5.0) | 26 | (14.4) | 2 | ( 1.1) |
| Indiana†† | | | | | | | | | |
| Iowa | 53 | 33 | (62.3) | 5 | ( 9.4) | 12 | (22.6) | 3 | ( 5.7) |
| Kansas† | 81 | 79 | (97.5) | 1 | ( 1.2) | 1 | ( 1.2) | 0 | ( 0.0) |
| Kentucky† | 367 | 344 | (93.7) | 6 | ( 1.6) | 16 | ( 4.4) | 1 | ( 0.3) |
| Louisiana†† | | | | | | | | | |
| Maine | 27 | 20 | (74.1) | 2 | ( 7.4) | 5 | (18.5) | 0 | ( 0.0) |
| Maryland† | 280 | 228 | (81.4) | 9 | ( 3.2) | 39 | (13.9) | 4 | ( 1.4) |
| Massachusetts§ | 123 | 77 | (62.6) | 6 | ( 4.9) | 36 | (29.3) | 4 | ( 3.3) |
| Michigan†† | | | | | | | | | |
| Minnesota† | 90 | 73 | (81.1) | 4 | ( 4.4) | 11 | (12.2) | 2 | ( 2.2) |
| Mississippi†† | | | | | | | | | |
| Missouri† | 216 | 162 | (75.0) | 3 | ( 1.4) | 43 | (19.9) | 8 | ( 3.7) |
| Montana§ | 11 | 6 | (54.5) | 2 | (18.2) | 3 | (27.3) | 0 | ( 0.0) |
| Nebraska† | 31 | 30 | (96.8) | 0 | ( 0.0) | 0 | ( 0.0) | 1 | ( 3.2) |
| Nevada†† | | | | | | | | | |
| New Hampshire†† | | | | | | | | | |
| New Jersey†§ | 269 | 204 | (75.8) | 16 | ( 5.9) | 48 | (17.8) | 1 | ( 0.4) |
| New Mexico† | 76 | 62 | (81.6) | 5 | ( 6.6) | 8 | (10.5) | 1 | ( 1.3) |
| New York† | 1,165 | 568 | (48.8) | 122 | (10.5) | 330 | (28.3) | 145 | (12.4) |
| North Carolina†† | | | | | | | | | |
| North Dakota | 26 | 22 | (84.6) | 0 | ( 0.0) | 4 | (15.4) | 0 | ( 0.0) |
| Ohio† | 514 | 308 | (59.9) | 21 | ( 4.1) | 184 | (35.8) | 1 | ( 0.2) |
| Oklahoma†† | | | | | | | | | |
| Oregon†† | | | | | | | | | |
| Pennsylvania† | 567 | 424 | (74.8) | 23 | ( 4.1) | 112 | (19.8) | 8 | ( 1.4) |
| Rhode Island | 34 | 27 | (79.4) | 0 | ( 0.0) | 4 | (11.8) | 3 | ( 8.8) |
| South Carolina | 330 | 271 | (82.1) | 8 | ( 2.4) | 51 | (15.5) | 0 | ( 0.0) |
| South Dakota | 31 | 28 | (90.3) | 0 | ( 0.0) | 2 | ( 6.5) | 1 | ( 3.2) |
| Tennessee† | 521 | 442 | (84.8) | 35 | ( 6.7) | 42 | ( 8.1) | 2 | ( 0.4) |
| Texas† | 1,308 | 1,060 | (81.0) | 99 | ( 7.6) | 136 | (10.4) | 13 | ( 1.0) |
| Utah | 32 | 29 | (90.6) | 1 | ( 3.1) | 0 | ( 0.0) | 2 | ( 6.3) |
| Vermont | 13 | 12 | (92.3) | 0 | ( 0.0) | 1 | ( 7.7) | 0 | ( 0.0) |
| Virginia† | 668 | 634 | (94.9) | 34 | ( 5.1) | 0 | ( 0.0) | 0 | ( 0.0) |
| Washington† | 163 | 129 | (79.1) | 2 | ( 1.2) | 28 | (17.2) | 4 | ( 2.5) |
| West Virginia | 112 | 65 | (58.0) | 12 | (10.7) | 35 | (31.3) | 0 | ( 0.0) |
| Wisconsin†† | | | | | | | | | |
| Wyoming†† | | | | | | | | | |
| Guam†† | | | | | | | | | |
| Puerto Rico†† | | | | | | | | | |
| Virgin Islands | 7 | 5 | (71.4) | 0 | ( 0.0) | 2 | (28.6) | 0 | ( 0.0) |
| TOTAL ALL AREAS | 10,055 | 7,747 | (77.0) | 543 | ( 5.4) | 1,500 | (14.9) | 265 | ( 2.6) |

*Observed for 6 months.

†Represents data from more than 1 reporting area.

§Data for less than entire state or for less than entire year.

††No data available.

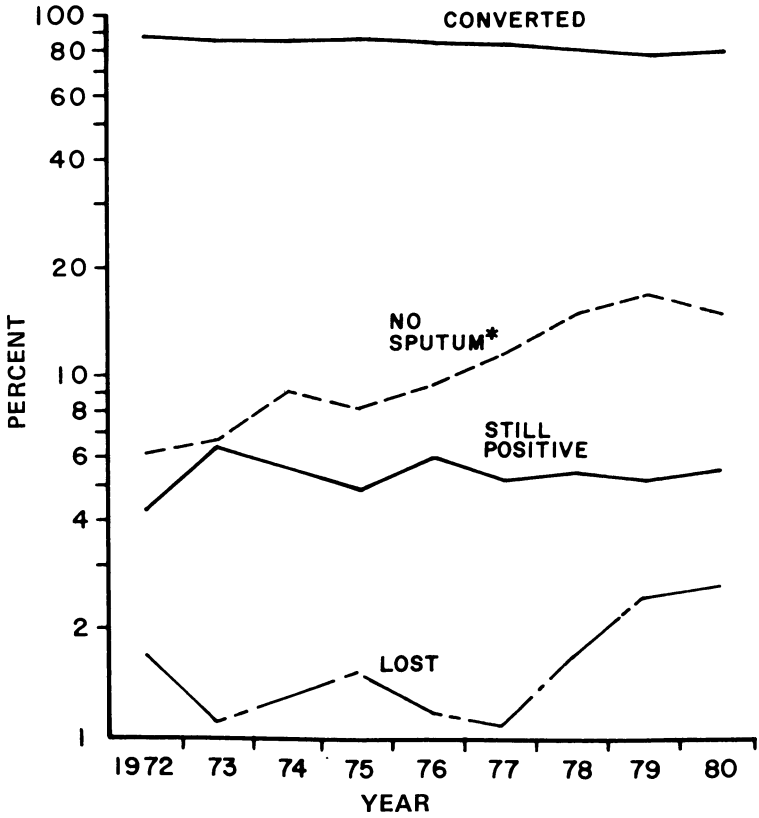
*Bacteriologic Conversion — Continued*

The repeated induction of sputa from asymptomatic patients is not recommended merely to supply data for a progress report. After sputum negativity has been established and symptoms have disappeared, no more specimens need be routinely collected unless signs or symptoms or both suggest relapse. Early in the course of treatment, however, sputum examination should be performed frequently, until sputum-negativity is documented. Without negative sputum results, neither the clinician nor the health department can know that a patient has become noninfectious.

*References*

1. CDC. Guidelines for prevention of TB transmission in hospitals. Atlanta U.S. Department of Health, Education, and Welfare Public Health Service, CDC, 1979:HEW Pub. No. CDC 79-8371.
2. American Thoracic Society. Guidelines for the investigation and management of tuberculosis contacts. Am Rev Respir Dis 1976;114:459-63.
3. CDC. Guidelines for short-course tuberculosis chemotherapy. MMWR 1980;29:97-100, 105.
4. Long MW, Snider DE Jr, Farer LS. U.S. Public Health Service Cooperative trial of three rifampin-isoniazid regimens in treatment of pulmonary tuberculosis. Am Rev Respir Dis 1979;119:879-94.

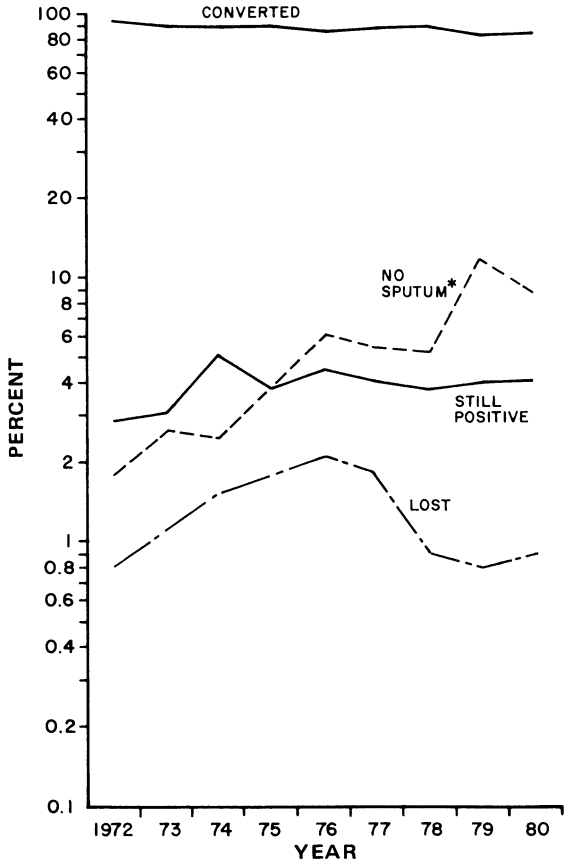
**FIGURE 1. Status of tuberculosis patients with initially positive sputum 6 months after starting treatment, varying programs reporting, 1972-1980**




*Sputum examination not done or not reported.

*Bacteriologic Conversion — Continued*

**FIGURE 2. Status of tuberculosis patients with initially positive sputum 6 months after starting treatment, 15 programs reporting, 1972-1980**




*Sputum examination not done or not reported.

## Errata, Vol. 31, No. 32

**p.433.** In the article "Arboviral Encephalitis — United States, 1982," the sentence naming the Georgia counties with California encephalitis should have read: "In May and June, five serologically confirmed cases occurred in children 3 months to 10 years of age residing in Bacon County (one case), Coffee County (one), Crisp County (one), and Jeff Davis County (two)."

**p.437.** In the article, "Cercarial Dermatitis among Bathers in California; Katayama Syndrome among Travelers to Ethiopia," the fifth paragraph should begin: "In the cercarial dermatitis outbreak, the demonstration of infected snails at the suspected site of exposure was convincing evidence for that diagnosis, as well as for incrimination of the river as the first source of that type documented in California."

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