Louisiana

DEPARTMENT OF HEALTH AND HUMAN RESOURCES
OFFICE OF HEALTH SERVICES AND ENVIRONMENTAL QUALITY
BOX 60630 NEW ORLEANS, LOUISIANA 70160

MONTHLY MORBIDITY REPORT

REPORTED MORBIDITY
SEPTEMBER, 1983

PUBLIC HEALTH STATISTICS and
DIVISION OF DISEASE CONTROL

Trichinosis Surveillance, 1981 *

Peter M. Schantz, V.M.D., Ph.D.
Frank O. Richards, M.D.
Emily S. Chisholm, M.P.H.
Helminthic Diseases Branch
Division of Parasitic Diseases
Center for Infectious Diseases

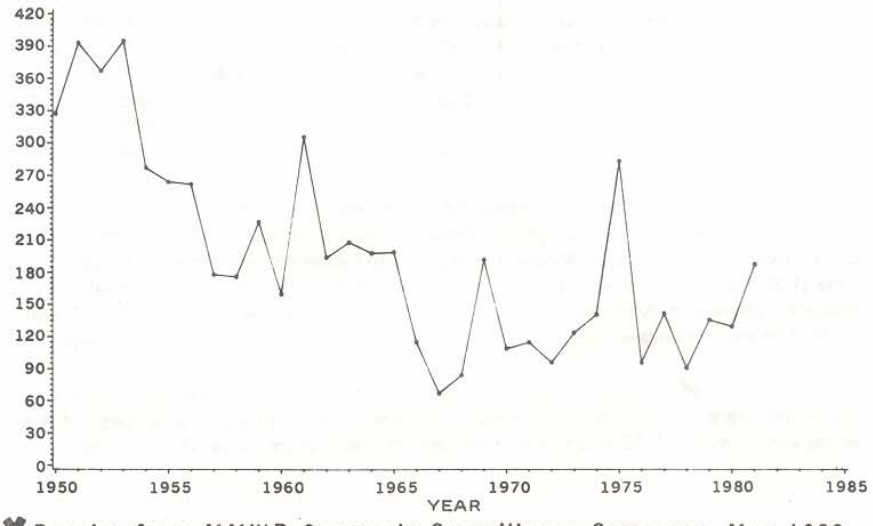
Introduction

Human trichinosis is a disease of varying severity caused by ingesting of meat containing encysted larvae of *Trichinella spiralis*. For the period 1947-1981, 7,532 cases of trichinosis were reported in the United States. In the same period, 132 deaths were reported, for a case-fatality ratio of 17.5/1,000 cases. Deaths attributed to trichinosis have declined both in terms of total numbers and as a proportion of total cases. For the period 1947-1961, the case-fatality ratio was 22.7/1,000, cases, and for the period 1962-1976, it was 10.4/1,000.

The number of cases reported each year continued to decline throughout the period 1950-1967, after which the number of cases reported appears to have plateaued (Figure 1). The rise in incidence in 1969 and again in 1975 was associated with the occurrence of an unusually large number of common-source outbreaks. During the last decade, an annual mean of <150 cases has been reported.

The general decline in the incidence of human trichinosis is also reflected in a declining prevalence of infection with *T. spiralis*. A comparison of the results of two surveys in which human diaphragm samples obtained at autopsy (*1*) were examined showed that in 1940 (*2,3*) an estimated 12% of the American population were infected with trichinae, as were

FIGURE 1. Reported trichinosis cases, United States, 1950-1981



* Reprint from MMWR Quarterly Surveillance Summary, May 1983, Vol. 32, No 2SS., pp 15–22.

only 2.2% in 1970 (*4,5*). Similarly obtained estimates of the prevalence of live *T. spiralis* indicated that 7.3% of Americans had these organisms in their diaphragms in 1940, as did only 0.7% in 1970.

The decline in the prevalence of human trichinosis paralleled a similar decrease in prevalence among swine. The prevalence of *T. spiralis* infection among farm-raised hogs, which currently comprise more than 95% of all hogs marketed, declined from 9.5 infected animals/1,000 in the 1930s (*6*) to 1.3/1,000 in the period 1966-1970 (*7*). The rate for garbage-fed swine similarly decreased from 110/1,000 in 1950 to 5.1/1,000 in 1966-1970.

Trichinosis became a reportable disease in some states in the late 19th century, and in 1947 the Public Health Service began collecting statistics on a national level. In 1965, trichinosis was included among the notifiable diseases that physicians report weekly to state health departments and to CDC through the National Morbidity Reporting System. A standardized surveillance form was developed to collect detailed information for each case; since 1967, the findings have been summarized in an annual report.

Materials and Methods

Detailed epidemiologic information obtained from state health departments was supplemented by records of the National Morbidity Reporting Service (as reported in the *MMWR*), results of serologic evaluation of specimens submitted to CDC for trichinosis testing, and epidemiologic investigations. Trichinosis cases are reported by state in which the infection was acquired (i.e., in which the implicated meat item was ingested); if the meat item was not identified, the case is listed by the patient's place of residence. Population estimates for 1981 were obtained from the Bureau of the Census.

Diagnosis of cases reported in 1981 was based on the following factors: a) patient history, symptoms, and signs; b) clinical pathology; c) muscle biopsy; and d) serologic test results. The bentonite flocculation (BF) test, the most frequently used serodiagnostic test, was performed on 124 patients. Criteria for inclusion as a trichinosis case included a) *Trichinella*-positive muscle biopsy, b) compatible clinical and serologic findings, or c) a patient with compatible symptoms and a history of ingesting meat known to contain *Trichinella* larvae.

Results

Epidemiology. In 1981, 188 cases of trichinosis were reported to CDC for the United States. One patient, a 55-year-old female from New York City, died. In 1981 there were 21 common-source outbreaks, which accounted for 124 (66%) of all cases reported. In the period 1977-1981, the case-fatality ratio was 5.8/1,000 cases. Fourteen states reported at least one case in 1981; however, 82% (153) of the cases were concentrated in six states (Alaska, Connecticut, New Jersey, New York, Pennsylvania, and Rhode Island) (Table 1). The incidence of reported cases was 0.8/1,000,000 population for the entire United States. The largest number of cases (45) was reported from Connecticut, but the states with the highest annual incidence were Rhode Island and Alaska, with 36.7 and 33.9 cases/1,000,000 population, respectively.

The mean annual trichinosis incidence for the 5-year period 1977-1981 was highest in Alaska (38.9 cases/1,000,000), Rhode Island (10.1), Connecticut (4.0), New Jersey (3.5), and Louisiana (2.4) (Figure 2). Moderately high mean incidence was observed in Massachusetts (1.3) and Pennsylvania (1.2). In 17 states (Arkansas, Delaware, Georgia, Idaho, Indiana, Kentucky, Minnesota, Montana, Nevada, North Carolina, North Dakota, Oklahoma, Oregon, South Dakota, Tennessee, Utah, and Wyoming), no cases were reported throughout the 5-year period.

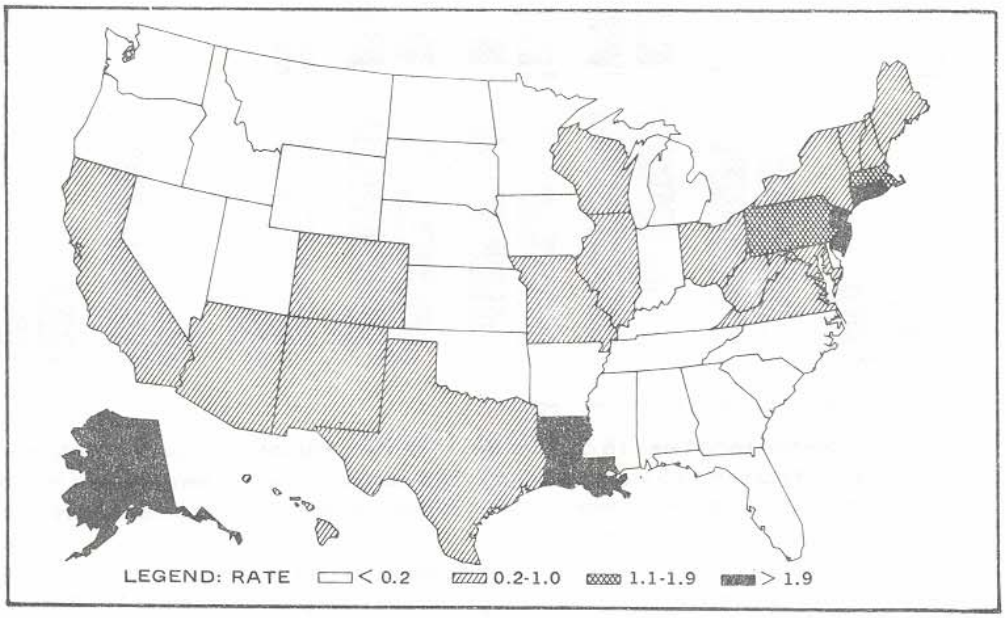
In 1981, 102 of the persons with trichinosis were female, and 86 were male. As in previous years, the age distribution was similar for both sexes (Figure 3), i.e., a range of 3-86 years, with a mean of 38 years. The mean age of male patients was 37 years and that of

TABLE 1. Trichinosis cases, by state, United States, 1981

State	Cases	Rate per million population*
Connecticut	45	14.4
Rhode Island	35	36.7
New Jersey	25	3.4
New York	19	1.1
Pennsylvania	15	1.3
Alaska	14	33.9
Massachusetts	13	2.3
Illinois	7	0.6
California	5	0.2
Maryland	3	0.7
Virginia	3	0.6
Vermont	2	3.9
New Hampshire	1	1.1
Washington	1	0.2
Total	188	0.8

*Estimates of state populations on July 1, 1981.

FIGURE 2. Trichinosis mean annual incidence rate/1,000,000 population, by state, United States, 1977-1981



female patients, 38 years. In 1981, the monthly incidence peaked in November-December (Figure 4), coincident with three common-source outbreaks in Rhode Island and New York comprising 42 cases.

The probable source of infection was identified for 181 patients; pork products were incriminated in 146 (82%) instances (Table 2). Of 137 instances in which the type of domestic pork product was specified, 93 (68%) involved sausage. Meat products other than pork were implicated in 35 (19%) patients. Ground beef was identified as the probable source of infection for 18 patients, infected bear meat was the source of infection for 10 patients in Alaska and California, and infected walrus meat was responsible for seven cases of trichinosis in Alaska.

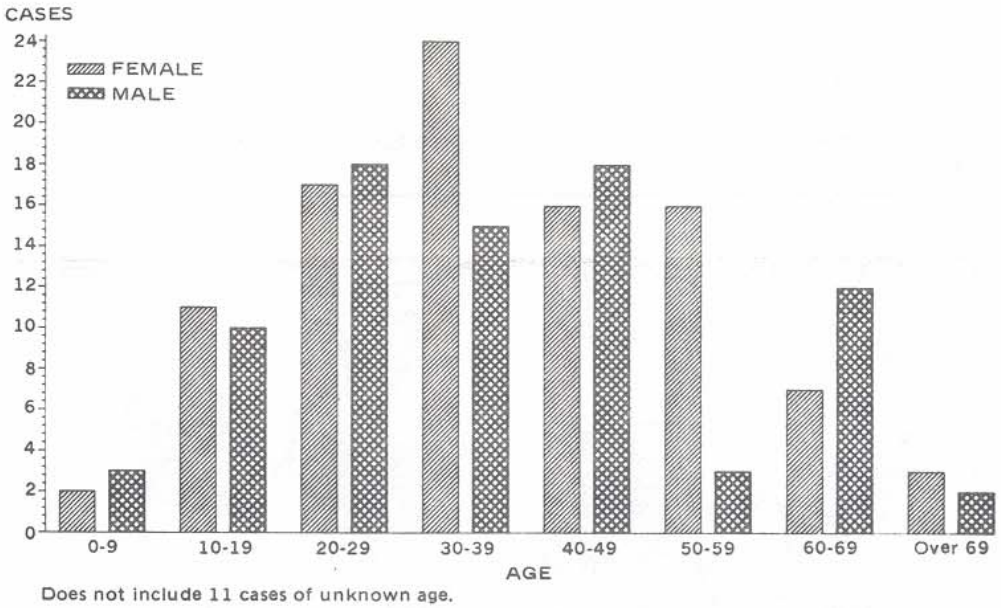
In 174 instances, the source of the incriminated meat was reported. The source for 101 cases (58%) was a supermarket, butcher shop, or other commercial outlet. Nine (5%) patients

had eaten the incriminated meat items at a restaurant or other public eating place. The walrus and bears that accounted for 17 cases were obtained by hunting. Forty-seven cases were caused by pork from swine obtained directly from farms. For 168 instances in which information on whether the incriminated meat product received further processing after it was obtained, 126 reports were negative. Processing methods for meat incriminated in the remaining cases included grinding (37), marinating (three), and smoking (two).

Of 170 instances in which "method of cooking" the incriminated meat was reported, 121 (71%) reports stated that the meat was not cooked. Reports on the 49 other cases indicated that the meat was inadequately cooked.

Clinical Characteristics. Clinical information reported for 145 patients included eosinophilia for 139 (96%), myalgia for 136 (94%), fever for 132 (91%), and periorbital edema for 119 (82%). For 103 patients whose reports indicated when the incriminated meat was eaten,

FIGURE 3. Trichinosis cases, by age and sex, United States, 1981

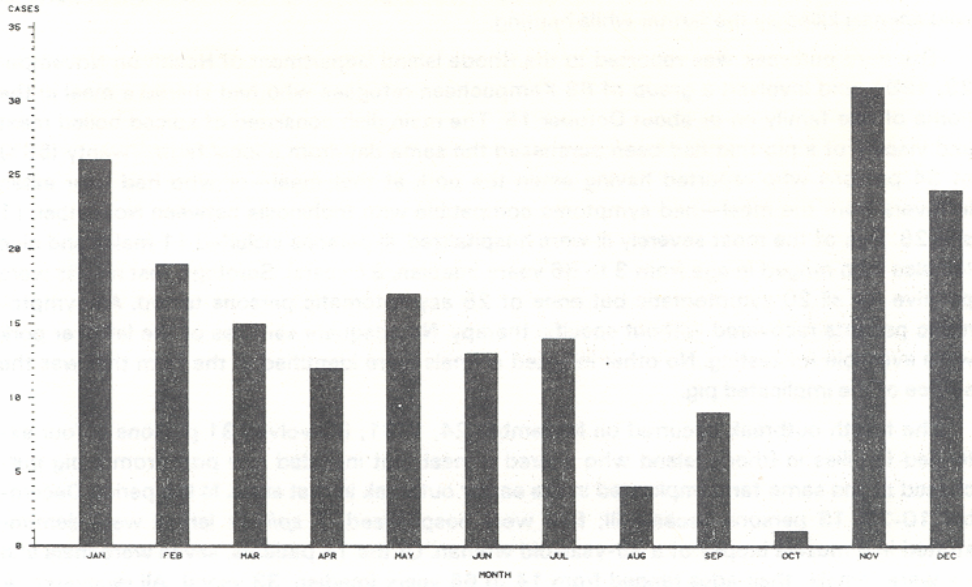


Does not include 11 cases of unknown age.

the mean incubation period was 18 days (range, 1-48 days). Muscle biopsies were performed on 38 patients; results for 35 were positive. Of 136 patients for whom serologic test results were reported, 125 (91%) were positive. Neither muscle biopsy nor serologic tests were done for 12 patients reported as having trichinosis.

Common-Source Outbreaks. Four common-source outbreaks were reported to CDC in 1981; three were associated with pork sausage and one with grizzly bear meat. The first outbreak involved eight cases of trichinosis in Barrow, Alaska. Five men and three women, ages 32-76 years, became ill 2-16 days after sharing a particular meal (mean 9 days). All eight reported having eaten "quaq" (raw frozen meat), while four persons who ate the dinner in question but denied having eaten quaq remained well (attack rate 100%). Thirty other family members who were not present at the dinner also remained well. A bear meat sample provided by one of the patients contained 70 *Trichinella* larvae/gram of meat. Acute- and early convalescent-phase serum specimens from four of the ill persons showed rising *Trichinella* antibody titers. The quaq was thought by the participants to be caribou but was later discovered to be grizzly bear. The persons involved in this outbreak knew the risk of acquiring trichinosis from eating bear or walrus meat, and they did not intentionally serve or eat uncooked bear meat. It was eaten after being dipped in seal oil, which may have disguised its usually distinctive taste.

FIGURE 4. Trichinosis cases, by month of onset, United States, 1981



Does not include 3 cases of unknown month of onset.

TABLE 2. Trichinosis cases, by source of infection, United States, 1981

Food		Cases
Pork products		
Domestic swine		
Sausage		93
Other products		44
Unspecified		9
	Subtotal	146
Meat products other than pork		
Hamburger		18
Bear meat		10
Other wild animals		7
	Subtotal	35
Unknown		7
	Subtotal	7
	Total	188

In the second outbreak, eight cases of trichinosis in three related families of Italian ancestry were reported to the New York City Department of Health on November 16, 1981. A ninth case was diagnosed in the course of the investigation. The index patient was a 55-year-old woman who had onset of symptoms on November 4, 10 days after eating some homemade, dried pork sausage. The patient died on the nineteenth day of hospitalization with bronchopneumonia, pulmonary edema, motor paralysis, chronic myocarditis, hepatomegaly, and renal vein thrombosis. The other eight patients had onset of symptoms 2-13 days after the first of two occasions on which they ate dried, uncooked, or slightly fried sausage. The seven of these eight patients tested all showed antibody titers compatible with recent infection ($\geq$10), and sera from three patients who were retested approximately 7 weeks after they became ill showed a fourfold or greater rise in antibody titer. The sausage was prepared from a pig that had been purchased and slaughtered at a farm. Samples of sausage as well as saus-

age prepared by the farmer from meat from two other pigs were positive for *Trichinella*. Although the pigs apparently were deliberately fed only grain, they might have eaten parts of wild animals killed by the farmer while hunting.

The third outbreak was reported to the Rhode Island Department of Health on November 23, 1981, and involved a group of 63 Kampuchean refugees who had shared a meal in the home of one family on or about October 15. The main dish consisted of spiced boiled meat and viscera of a pig that had been purchased the same day from a local farm. Twenty (59%) of 34 persons who reported having eaten the pork at that meal—or who had later eaten leftovers from the meal—had symptoms compatible with trichinosis between November 11 and 28. Five of the most severely ill were hospitalized. Ill persons included 11 males and nine females who ranged in age from 3 to 66 years (median, 31 years). Serologic test results were positive for all 20 symptomatic but none of 28 asymptomatic persons tested. All symptomatic patients recovered without specific therapy. No adequate samples of the leftover pork were available for testing. No other infected animals were identified at the farm that was the source of the implicated pig.

The fourth outbreak occurred on November 24, 1981; it involved 31 persons in four extended families in Rhode Island who shared a meal that included raw pork from a pig purchased at the same farm implicated in the earlier outbreak in that state. In the period December 10-29, 13 persons became ill; four were hospitalized. *T. spiralis* larvae were demonstrated in a muscle biopsy of a 33-year-old woman. Of the 13 patients, seven were male and six were female; their ages ranged from 14 to 66 years (median, 33 years). All recovered. A low concentration of *T. spiralis* larvae was noted in a sample of pork from the November 24 meal that was examined at CDC using an artificial digestion technique.

Discussion

Because severity of illness—up to and including death—closely correlates with numbers of larvae ingested, the most likely explanation for the decrease in mortality associated with trichinosis is that the concentration of larvae in infected meat has declined. The factors accounting for the decline in the prevalence of *T. spiralis* among swine and the number of humans who become infected are multiple, and most are unrelated to planned trichinosis control measures. For example, state laws prohibiting the feeding of raw garbage to hogs were enacted to prevent the spread of highly contagious and economically devastating swine viral diseases, but they concurrently reduced trichinosis among swine. Widespread commercial and home freezing of pork (a process that kills trichinae), as well as consumer awareness concerning the need to cook pork products adequately, has also contributed to the decline in human trichinosis.

Still, the problem of clinical trichinosis has not been eradicated despite the availability of appropriate technology. Although adequately cooking, freezing, or curing pork sausage destroys *Trichinella* larvae, small processors and householders who prepare their own sausage are not always aware of established standards for the proper curing and cooking of pork products. Furthermore, consumers are not aware that the stamp "U.S. Inspected and Passed" on a raw pork product does not guarantee that the product is free of infective *Trichinella* larvae, only that it was processed in accordance with U.S. Department of Agriculture (USDA) specifications, which do not require pork products to be inspected for *Trichinella* larvae. USDA specifications, however, do require that "ready-to-eat" pork products be heated to an internal temperature of at least 137°F (58.3°C), frozen, or otherwise processed in a manner certified as being sufficient to kill *Trichinella* larvae. The National Pork Producers Council recommends that pork roasts (loin, shoulder, and leg) be cooked to an internal temperature of 170°F (77°C) for maximum tenderness, juiciness, and flavor. Because cattle are herbivorous, they are not considered a natural reservoir of *T. spiralis*, although beef products may be adulterated with pork when both are processed in the same meat grinder or when beef and pork are intentionally mixed.

Freezing infected meat is also generally believed to kill *T. spiralis*. According to USDA regulations, *T. spiralis* in pork held at 5°F (-15°C) for 20 days is rendered nonviable. This appears to be generally true for strains of *T. spiralis* recovered from domestic swine; however,

there is increasing evidence that trichinae found in Arctic sylvatic animals are resistant to greater extremes of cold. For example, portions of infected Alaskan bear meat were held at 5°F (-15°C) for up to 35 days, and the larvae showed no loss of infectivity for laboratory animals compared with larvae in samples of the same bear meat refrigerated (at 10°C) for the same lengths of time (*8*). Persons who consume meat from wild animals should be aware that freezing the meat may not eliminate the potential of trichinosis transmission.

Americans, through long custom, generally tend to cook pork well done, thereby rendering it safe. Thus, trichinosis has occurred most frequently among ethnic groups whose culinary preferences include raw pork. For example, in a 1940 autopsy survey, deceased persons of German or Italian descent were infected at a rate of approximately 29%, compared with a 2% rate for Jews, whose religious laws proscribe eating pork (*3*). The higher risk of infection for certain ethnic groups still exists. Examination of the surnames of persons involved in recent outbreaks associated with consuming pork products reveals that the incidence of affected persons of German, Italian, Polish, or Portuguese ancestry is disproportionately higher than their overall representation in the U.S. population (*9*). It has also been observed that some of these outbreaks have occurred among recent immigrants who apparently have not been informed of the need to thoroughly cook, freeze, or otherwise treat pork in the United States to kill *Trichinella* larvae. As evidenced by the two outbreaks in Rhode Island reported in 1981, certain groups among the culturally diverse refugees from Southeast Asia must be included with those at high risk for trichinosis.

Most (approximately two-thirds) reported cases of pork-associated trichinosis are associated with a USDA-inspected pork product purchased at a local supermarket or butcher shop (*9,10*). The outbreaks reported in 1981 were unusual in that the pork was acquired directly from a farm. The most recent records of trichinosis prevalence among commercially slaughtered swine indicate that approximately 1/1,000 carcasses is infected (*7*). However, feeding raw garbage to swine—a practice that is prohibited by law in most states but difficult to enforce—and certain other swine management practices may result in higher infection rates. Therefore, the rate of infection among hogs purchased directly from farms may be considerably higher than among the 70-80 million hogs that pass through commercial channels each year.

References

1. Zimmermann WJ. The current status of trichinellosis in the United States. In: Kim CW, ed. Trichinosis. New York: Intest Educational Publishers, 1974:603-9.
2. Wright WH, Kerr DB, Jacobs L. Studies on trichinosis. XV. Summary of the findings of *Trichinella spiralis* in a random sampling and other sampling of the population of the United States. Public Health Rep 1943;58:1293-1313.
3. Wright WH, Jacobs L, Walton AC. Studies on trichinosis. XVI. Epidemiological considerations based on the examination for trichinae of 5,313 diaphragms from 189 hospitals in 37 states and District of Columbia. Public Health Rep 1944;59:669-81.
4. Zimmermann WJ, Steele JH, Kagan IG. The changing status of trichinosis in the U.S. population. Public Health Rep 1968;83:957-66.
5. Zimmermann WJ, Steele JH, Kagan IG. Trichinosis in the United States population 1966-1970—prevalence and epidemiologic factors. Health Services Rep 1973;88:606-23.
6. Schwartz B. Trichinosis in the United States. Presented at the First International Conference on Trichinosis, Warsaw, Poland, September 12-13, 1960.
7. Zimmermann WJ, Zinter DE. The prevalence of trichinosis in swine in the United States 1966-1970. HSMA Health Rep 1971;86:937-45.
8. Schantz PM, Woodard TL, Wahlquist S, Isenstein RS. Resistance to freezing of the arctic strain of *Trichinella spiralis*. Proceedings 24th Ann Mtg, Am Assoc Vet Parasitol, Seattle, July 1979.
9. Schantz PM, Juranek DD, Schultz MG. Trichinosis in the United States 1975. Increase in cases attributed to numerous common-source outbreaks. J Infect Dis 1977;136:712-5.
10. Schantz PM. Trichinosis in the United States, 1947-1981. J Food Tech March 1983:83-6.

Selected Bibliography

CDC. Trichinosis surveillance report—annual summary, 1981. Atlanta: CDC, October 1982.

EDITORS NOTE:

There were no cases of trichinosis reported in Louisiana in 1981. One case was reported in 1982 from Orleans parish and 2 have been reported to date in 1983 (one case each, LaSalle and Winn parishes). The majority of cases reported in the last five years have been associated with outbreaks; three have been investigated since 1979:

- Port Allen, February 1979, 19 cases.
- Acadia parish, February-March 1980, 9 cases.
- Evangeline and Jefferson Davis parishes, May 1980, 15 cases with one death.

In each of these outbreaks, the implicated meat was raw or poorly cooked pork sausage.

Physicians are encouraged to report suspect cases to the Disease Control Division, DHHR, at 504-568-5005. Bentonite floculation serology is available at the CDC through the state laboratory.

Acquired Immunodeficiency Syndrome (AIDS):* Precautions for Health-Care Workers and Allied Professionals

Acquired immunodeficiency syndrome (AIDS) was first recognized in 1981. The epidemiology of AIDS is consistent with the hypothesis that it is caused by a transmissible infectious agent (*1-3*). AIDS appears to be transmitted by intimate sexual contact or by percutaneous inoculation of blood or blood products. There has been no evidence of transmission by casual contact or airborne spread, nor have there been cases of AIDS in health-care or laboratory personnel that can be definitely ascribed to specific occupational exposures (*4*).

CDC has published recommended precautions for clinical and laboratory personnel who work with AIDS patients (*5*). Precautions for these and allied professionals are designed to minimize the risk of mucosal or parenteral exposure to potentially infective materials. Such exposure can occur during direct patient care or while working with clinical or laboratory specimens and from inadvertent or unknowing exposure to equipment, such as needles, contaminated with potentially infective materials. Caution should be exercised in handling secretions or excretions, particularly blood and body fluids, from the following: (1) patients who meet the existing surveillance definition of AIDS (*1*); (2) patients with chronic, generalized lymphadenopathy, unexplained weight loss, and/or prolonged unexplained fever when the patient's history suggests an epidemiologic risk for AIDS (*1,2*); and (3) all hospitalized patients with possible AIDS.

*Reprint from MMWR 32:34, Sept. 2, 1983, pp 450–452.

These principles for preventing AIDS transmission also need to be adopted by allied professionals not specifically addressed in the previous publications but whose work may bring them into contact with potentially infective material from patients with the illnesses described in the above three groups.

The following precautions are recommended for those who provide dental care, perform postmortem examinations, and perform work as morticians when working with persons with histories of illnesses described in the above three groups:

DENTAL-CARE PERSONNEL

1. Personnel should wear gloves, masks, and protective eyewear when performing dental or oral surgical procedures.
2. Instruments used in the mouths of patients should be sterilized after use (*5-9*).

PERSONS PERFORMING NECROPSIES OR PROVIDING MORTICIANS' SERVICES

1. As part of immediate postmortem care, deceased persons should be identified as belonging to one of the above three groups, and that identification should remain with the body.
2. The procedures followed before, during, and after the postmortem examination are similar to those for hepatitis B. All personnel involved in performing an autopsy should wear double gloves, masks, protective eyewear, gowns, waterproof aprons, and waterproof shoe coverings. Instruments and surfaces contaminated during the postmortem examination should be handled as potentially infective items (*5-7*).
3. Morticians should evaluate specific procedures used in providing mortuary care and take appropriate precautions to prevent the parenteral or mucous-membrane exposure of personnel to body fluids.

These and earlier recommendations outline good infection control and laboratory practices and are similar to the recommendations for prevention of hepatitis B. As new information becomes available on the cause and transmission of AIDS, these precautions will be revised as necessary.

Reported by AIDS Activity, Div of Host Factors, Div of Viral Diseases, Hospital Infections Program, Center for Infectious Diseases, Office of Biosafety, CDC

References

1. CDC. Update on acquired immune deficiency syndrome (AIDS)—United States. MMWR 1982;31:507-8, 513-4.
2. Jaffe HW, Choi K, Thomas PA, et al. National case-control study of Kaposi's sarcoma and *Pneumocystis carinii* pneumonia in homosexual men: Part 1, epidemiologic results. Ann Intern Med 1983;99:145-51.
3. Francis DP, Curran JW, Essex M. Epidemic acquired immune deficiency syndrome: Epidemiologic evidence for a transmissible agent. (guest editorial) JNCI 1983;71:1-4.
4. CDC. An evaluation of acquired immunodeficiency syndrome (AIDS) reported in health-care personnel—United States. MMWR 1983;32:358-60.
5. CDC. Acquired immune deficiency syndrome (AIDS): precautions for clinical and laboratory staffs. MMWR 1982;31:577-80.
6. Simmons BP, with Hooton TM, Mallison GF. Guidelines for hospital environmental control. Infect Control 1981; 2:131-46.
7. CDC guidelines on infection control. Guidelines for hospital environmental control (continued). Infect Control 1982;3:52-60.
8. Garner JS, Simmons BP. CDC guideline for isolation precautions in hospitals. Infect Control 1983;4:245-325.
9. Cooley RL, Lubow RM. AIDS: an occupational hazard? J Am Dent Assoc 1983;107:28-31.

SELECTED REPORTABLE DISEASES
(By Place of Residence)

STATE AND PARISH TOTALS REPORTED MORBIDITY SEPTEMBER, 1983	VACCINE PREVENTABLE DISEASES					ASEPTIC MENINGITIS	HEPATITIS A AND UNSPECIFIED **	HEPATITIS B	LEGIONNAIRES DISEASE	MALARIA ***	MENINGOCOCCAL INFECTIONS	SHIGELLOSIS	TUBERCULOSIS, PULMONARY	TYPHOID FEVER	OTHER SALMONELLOSIS	UNDERNUTRITION SEVERE	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY	RABIES IN ANIMALS (PARISH TOTALS CUMULATIVE, 1983)
	MEASLES	RUBELLA*	MUMPS	PERTUSSIS	TETANUS														
TOTAL TO DATE 19 82	2	1	6	18	6	101	713	225	0	4	55	74	290	2	135	5	18349	1458	30
TOTAL TO DATE 19 83	25	9	0	6	4	94	618	270	5	8	41	49	314	3	184	17	17671	1272	27
TOTAL THIS MONTH	0	0	0	1	0	13	65	39	1	3	0	7	41	0	16	0	1910	132	6
ACADIA							7	1									5	3	
ALLEN																	1		
ASCENSION																	3		
ASSUMPTION																	15		
AVOYELLES																	2	1	
BEAUREGARD																	6		2
BIENVILLE																	3	1	4
BOSSIER								1									14	3	
CADDO						3	1		1				4		1		143	12	4
CALCASIEU							14	1					1				102	9	
CALDWELL																			
CAMERON																	1		
CATAHOULA																			
CLAIBORNE																			
CONCORDIA								1									3		
DESOTO													1					1	
EAST BATON ROUGE						1		3				1	1				140	13	1
EAST CARROLL																		4	
EAST FELICIANA																	5		
EVANGELINE													1						
FRANKLIN																	4		
GRANT							1												1
IBERIA							7	1					2		1		17		
IBERVILLE																	6	2	
JACKSON																			
JEFFERSON						1	8	5				2	1				150	9	
JEFFERSON DAVIS							1	1									8		
LAFAYETTE						2	8	4				3	2				72	3	
LAFOURCHE																	30		
LASALLE																			
LINCOLN																	3		2
LIVINGSTON							1								1		3		
MADISON																	11		
MOREHOUSE																	25	1	
NATCHITOCHES															1		2	3	
ORLEANS								12		3			7		2		719	53	
OUACHITA							4	2					5				100	1	
PLAQUEMINES								1									2	1	
POINTE COUPEE																	3		
RAPIDES													3				89		
RED RIVER													1				3		1
RICHLAND													1				13		
SABINE																			2
ST. BERNARD							1	1									3		
ST. CHARLES													1				9	1	
ST. HELENA																	1		
ST. JAMES						1									1		11		
ST. JOHN															1		15	1	
ST. LANDRY							1										17	1	
ST. MARTIN						1	2						1				6	1	
ST. MARY						1	2						2				13		
ST. TAMMANY																	19		
TANGIPAHOA						1	1						1				18	3	
TENSAS																	4		
TERREBONNE				1		2	5	4					2		4		39	1	
UNION																	1		3
VERMILION							1	1					1				4	1	
VERNON													1				4	2	
WASHINGTON																	14		
WEBSTER															4		3		7
WEST BATON ROUGE													1				14	1	
WEST CARROLL																	2		
WEST FELICIANA																			
WINN													1						
OUT OF STATE												1					10		

* Includes Rubella, Congenital Syndrome.
** Includes 27 cases of Hepatitis Non A and Non B.
*** Acquired outside United States unless otherwise stated.
From January 1, 1983 - September 30, 1983, the following cases were also reported: 4-Amebiasis, 1-Cryptoccosis, 6-Leptospirosis, 2-Reye Syndrome, 2-Trichinosis, 3-Tularemia.

Department of Health and Human Resources
Office of Health Services and Environmental Quality
P.O. Box 60630, New Orleans, La. 70160

This public document was published at a total cost of $1780. 5900 copies of this public document were published in this first printing at a cost of $300. The total cost of all printings of this document, including reprints, is $300. This document was published for the Office of Health Services and Environmental Quality by the Office of Management and Finance, Printing Operations, Baton Rouge, Louisiana to inform physicians, hospitals, and the public of current Louisiana morbidity status under authority of R.S. 40:36. This material was printed in accordance with the standards for printing by state agencies established pursuant to R.S. 43:31.