

IDEAS Outbreak Investigations in 1995

The Infectious Disease Epidemiology and Surveillance Division (IDEAS) of the Texas Department of Health (TDH) investigated a variety of disease outbreaks in 1995. Physicians, laboratories, health departments inside and outside Texas, and the Centers for Disease Control and Prevention (CDC) reported outbreaks or cases of unusual illness to IDEAS. Most reports were of various forms of gastroenteritis. Hepatitis, respiratory illnesses, and zoonotic diseases were also reported.

Six investigations in 1995 focused on outbreaks of gastroenteritis. These outbreaks were associated with restaurants, hotels, schools, and a cruise ship. An investigation of possible botulism was initiated in February after an El Paso physician requested 4 doses of botulinum antitoxin from CDC. This would have been the second botulism outbreak in El Paso in a year. When the 4 patients were interviewed, they reported that they became ill after eating a take-out meal from a local restaurant. Patient stool samples and leftover food from the patients' home and the restaurant were sent to TDH. Laboratory test results indicated that the patients' symptoms were due to ECHO virus 31 infection. No botulinum toxin was found in any samples.

In March IDEAS responded to an outbreak of shigellosis on a cruise ship by interviewing 48 of 50 Texas residents who had been aboard; 33 had been ill. The data collected showed an association between disease and consumption of the ship's water. Recommendations to the cruise company included close monitoring of their water supply.

In October the TDH laboratory reported pulsed-field gel electrophoresis results indicating that 16 persons from 2 Texas cities (Austin and San Antonio) were infected with *Salmonella agona*, an unusual enteric bacterium. Further investigation found 2 cases in Houston.

Several patients reported having eaten at a particular restaurant in San Antonio. An inspection of this restaurant revealed that employees had prepared a cured beef dish known as machacado in an unsanitary manner. Large cuts of beef were dried on open-air racks and then shredded in a blender. This blender was not properly sanitized before it was used to prepare other foods. Contaminated "salsa fresca" prepared in the poorly washed blender was the suspected mode of disease transmission.

The number of meningococcal disease reports rose in 1995, with a large increase in incidence in East Texas. In September CDC, in cooperation with IDEAS, initiated a study of a Gregg County vaccination program that targeted residents aged 2 to 29 years. The study estimated vaccine coverage and identified risk factors for nonvaccination. The vaccination program was found effective in controlling the outbreak. Nonvaccination of residents in the target age group correlated with being older (18 to 29 years) and watching local news less than twice a week.

In February a man and his infant son traveled by commercial airline from Harlingen to Houston, en route to Galveston to have the boy treated for meningitis. His illness, caused by *Mycobacterium tuberculosis*, had not responded to treatment in Harlingen. Upon arrival at the hospital in Galveston, the father was examined as well because of his persistent cough. The father's condition was diagnosed

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as active tuberculosis. IDEAS subsequently began an investigation to determine if anyone who had shared the airline flight with the boy and his father had become infected with *M. tuberculosis*. Many of the passengers and staff who traveled on the airline flight were interviewed and tested for tuberculosis; none were determined to have contracted tuberculosis during the shared flight.

In April a reported outbreak of tuberculosis in school-age children residing in Amarillo was investigated. Eighteen percent of the children in an English-as-a-Second-Language class had positive skin tests, compared with a 2% positive rate for the rest of the county. No cases of active tuberculosis were found among the schoolchildren or their associates. Although school staff and people in the children's neighborhood were interviewed, the source case was not found.

Another investigation in Amarillo centered on a food processing plant employee with Hepatitis A. IDEAS contacted public health officials in Colorado, New Mexico, and Oklahoma to organize a recall of food prepared on the days that the infected individual worked.

IDEAS received 3 separate reports in 1995 of young children who, as a prank, poked their schoolmates with sharp objects. The incidents involved a sewing needle, a glucometer needle, and a small knife; all 3 incidents occurred in TDH Public Health Region (PHR) 7. Although none of these weapons were hollow and the chance of disease transmission slight, IDEAS recommended HIV testing and hepatitis B vaccine for the affected children. PHR 7 offices offered these services free of charge to families with financial need. No disease transmission was demonstrated in any of the 3 incidents.

In August IDEAS became aware of an outbreak of dengue fever in Reynosa, Mexico, 10 miles south of MacAllen.

Dengue fever is a mosquito-borne viral illness. In response to the threat of dengue to South Texas residents, a press release was issued to alert the public, and bilingual posters and pamphlets were distributed detailing information about mosquito control. In addition, 13,000 information packets were mailed to physicians statewide. Of 29 Texas cases that were subsequently reported, 7 were indigenous cases. The other 22 patients had recently traveled to Mexico, Central America, South America, or the Caribbean.

Five cases of primary amebic meningoencephalitis (PAM) were reported in 1995. All 5 children -- 4 boys and 1 girl, aged 4 to 11 years -- died of the disease. PAM, caused by ameba gaining entry into the central nervous system (CNS), can occur when people swim in lakes or other unchlorinated bodies of water where amebas grow. Deep diving may cause water to be forced into the nose under pressure. Ameba are thought to gain entry into the brain through the cribriform plate.

Many cases of zoonotic disease were reported, including a case of tick-borne relapsing fever (TBRF) in Bexar County in March. A woman whose symptoms included fever, headache, joint pain, nausea, vomiting, and jaundice, was exposed to infected ticks while crawling under her house to evict a skunk. *Ornithodoros turicata* ticks, the vectors of TBRF in Texas, were collected from under her house. They tested positive for *Borrelia turicatae*, the etiologic agent of TBRF in this state.

In April a dermatopathologist from National Health Laboratories in Dallas received a specimen from a neck lesion of an 8-year-old boy living in Shackelford County. The pathology of this specimen was consistent with *Leishmania* infection. Leishmaniasis is a protozoan infection transmitted by sand flies that feed on a variety of mammals, including the host of the protozoan: the wood rat. The

disease is usually found in tropical parts of the world. Texas is the only state in which endemic cases are diagnosed. This case was only the 26th reported in Texas since 1946. It was also the northernmost case. Rats and flies were collected from around the boy's home. None of the captured animals were infected with *Leishmania* species.

Two cases of hantavirus pulmonary syndrome (HPS) were reported in 1995. HPS is a viral disease transmitted during the inhalation of aerosolized excreta from infected rats. The first case was reported in May. The patient was a 15-year-old male from Deaf Smith County. After 5 days of illness and 1 day of hospitalization, he died. Test results indicated that the boy was infected with Sin nombre virus, which is carried by the deer mouse, *Peromyscus maniculatus*. The second case, reported in November, was in a 23-year-old man in Jefferson County. This man was infected with Bayou virus, which is carried by the marsh rice rat, *Oryzomys palustris*. He survived the disease after a 9-day hospitalization.

In August TDH was notified of a recurring rash illness among employees of a Smithville veterinary hospital. An IDEAS and Medical Entomology Laboratory investigation disclosed that the source of the employees' dermatitis was two species of mites: *Ornithonyssys bursa* and *Pyemotes ventricosus*. A detailed report of this outbreak is included in this issue of *DPN*.

Several large studies are continuing into 1996. One of these, initiated in June 1993 and continuing through 1998, targets neural tube defects (NTDs) in the 14 counties bordering Mexico. International attention was focused on NTDs in 1991 when 3 NTD-affected babies were born in Brownsville in a 36-hour period. NTDs are spinal cord and brain abnormalities caused by incorrect formation (complete closure) of the neural tube in a developing embryo. NTDs include spina bifida, anencephaly, and encephalocele.

Genetic abnormalities in folic acid metabolism and environmental agents are suspected to play a role in development of NTDs. In the NTD study, surveillance teams in El Paso, Laredo, and Harlingen identify and track mothers at-risk for an NTD-affected pregnancy. These mothers are enrolled in a folic acid prevention program. The 3 teams are also conducting a case-control study of normal and NTD-affected births to gain additional information regarding the etiology of this class of birth defects.

In July 1995 IDEAS initiated another long-term study: cat scratch disease (CSD) in Texas. CSD is caused by *Bartonella henselae*. The illness, usually in children, is associated with bites or scratches from young kittens. IDEAS worked with CDC to compile a list of Texas residents who received antibody tests for CSD. Their physicians were asked to complete and return a questionnaire pertaining to the illness. At this time, the data from the questionnaires are being analyzed.

Two ongoing studies involve tuberculosis surveillance. The first, begun in June, 1995, is an effort to determine the sensitivity of tuberculosis reporting in Texas. Hospital lists of patients discharged with ICD-9 codes indicating tuberculosis are being compared with cases reported to the TDH Tuberculosis Elimination Division. Cases in which a patient's name appears on only one of the lists are being evaluated to determine the cause of the reporting discrepancy.

The Border States Study of Tuberculosis Among Hispanics was conducted from September 1, 1995, through January 31, 1996. This study was a collaborative effort of health officials from Texas, New Mexico, Arizona, California, and CDC. To gather data about the clinical presentation, healthcare-seeking behavior, and migration patterns of Hispanic patients with tuberculosis who live along the Mexico/US border, these patients were interviewed and their medical records

Disease	Agent	Month
Gastroenteritis	Toronto virus	January
Shigellosis	<i>Shigella sonnei</i>	January
Gastroenteritis	Possible Norwalk virus	January
Meningococcal meningitis	<i>Neisseria meningitidis</i> group C	January
Gastroenteritis	Unknown	January
Gastroenteritis	<i>Clostridium perfringens</i>	January
Meningococcal meningitis	<i>Neisseria meningitidis</i> group C	January-October
Gastroenteritis	Snow Mountain-like virus	February
Pseudobotulism	Echovirus 31	February
Gastroenteritis	<i>Clostridium perfringens</i>	February
Respiratory disease	Unknown	March
Gastroenteritis	<i>Shigella sonnei</i>	March
Tick-borne relapsing fever	<i>Borrelia turicatae</i>	March
Brucellosis	<i>Brucella melitensis</i>	April
Gastroenteritis	Unknown	April
Gastroenteritis	Unknown	April
Gastroenteritis	Unknown	April
Tuberculosis	<i>Mycobacterium tuberculosis</i>	April
Leishmaniasis	<i>Leishmania</i> sp.	April
Hantavirus pulmonary syndrome	Sin Nombre virus	May
Gastroenteritis	<i>Salmonella schwarzengrund</i>	June
Gastroenteritis	Unknown	June
Aseptic meningitis	Unknown	June
Respiratory illness	Unknown	June
Shigellosis	<i>Shigella sonnei</i>	July
Shigellosis	<i>Shigella sonnei</i>	July
Shigellosis	<i>Shigella sonnei</i>	July
Shigellosis	<i>Shigella sonnei</i>	July
Shigellosis	<i>Shigella sonnei</i>	July
Primary amebic meningoencephalitis	<i>Naegleria fowleri</i>	July-September
Dengue fever	Dengue virus	August- December
Salmonellosis	<i>Salmonella agona</i>	October
Hantavirus pulmonary syndrome	Bayou virus	November
Salmonellosis	<i>Salmonella braenderup</i>	November
Shigellosis	<i>Shigella sonnei</i>	December
Hepatitis A	Hepatitis A virus	December
Gastroenteritis	Pesticide	December

County	Setting	Route	#Ill\#Exp.
Harris	Nursing home	Foodborne	4
Tom Green	School	Foodborne	100/426
Travis	Hotel	Foodborne	24/79
Coryell	School	Airborne	5/250
Brewster	School	Foodborne	100/464
Presidio	School	Foodborne	87/335
Gregg/Jasper/Nacogdoches	Community	Airborne	27
Harris	Mental health facility	Foodborne	103
El Paso	Restaurant	Foodborne	5/9
Dallas	Restaurant	Foodborne	20
Bexar	Hotel	Airborne	14/132
Nationwide	Cruise ship	Waterborne	33/50 Texas passengers
Bexar	Residence	Tick-borne	1
Galveston	Hospital	Congenital	1
Kerr	Restaurant	Foodborne	15/39
Travis	Hotel	Possible foodborne	15/230
Tarrant	Restaurant	Foodborne	15/33
Randall	School	Airborne	No active cases found
Shackelford	Community	Phlebotomine sandfly	1
Deaf Smith	Community	Aerosolized rodent excreta	1 death
El Paso	Community	Unknown	6
Palo Pinto	Boy scout camp	Possible foodborne	27/250
Travis	Day-care center	Person-to-person	6
Burnet	Community	Possible airborne	21/60
Harris	Residence	Unknown	6
Harris	Day-care center	Foodborne	17
Harris	Restaurant	Foodborne	8
Comal	Community	Person-to-person	34
Cameron	Restaurant	Foodborne	175-200/350
Statewide	Water	Waterborne	5 deaths
Statewide	Community	Mosquito-borne	29
Statewide	Restaurant	Foodborne	18
Jefferson	Community	Aerosolized rodent excreta	1
Victoria	Community	Foodborne	117/170
Hardeman	Community	Foodborne	39
Harris	Nursing home	Unknown	4
Ector	Residence	Foodborne	6

reviewed. The information gathered in this study will be used to determine what types of cooperative efforts are appropriate for tuberculosis control along the US/Mexico border.

In cooperation with other TDH programs, IDEAS made an effort to streamline disease reporting in Texas. A uniform report card for private health providers was developed and distributed, and a state-wide toll-free number (800/705-8868) for reporting notifiable conditions was implemented. The 800 number directs calls to the nearest health department or TDH Public Health Region.

Development and revision of public health educational materials were also top priorities for 1995. Three new pam-

phlets detailing information about the common cold, diagnosis of tick-borne diseases, and dengue fever were made available. New posters and pamphlets with recommendations for disease control in group care settings were also created. TDH literature on impetigo was revised. Revisions of educational materials on gastroenteritis, influenza, cryptosporidium infection, and hepatitis A, B, and C will be completed in 1996. Finally, IDEAS responded to numerous inquiries about infectious diseases with 6,193 phone consultations in 1995.



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Rash Illness in a Veterinary Hospital

On August 30, 1995, the Texas Department of Health (TDH) received a telephone call regarding a recurring rash illness in a 20-year-old Smithville resident. The woman, employed at a local veterinary hospital, had a rash on her torso between her waistline and neck. Other employees at the veterinary hospital developed rashes soon after.

Two of these employees frequently handled hay at the hospital, so the hay was replaced. Other interventions included changing laundry detergents, rewashing all linens, and fogging the clinic with insecticide. Since the reporting physician suspected the illnesses were due to mites or a toxic reaction, IDEAS and the Medical Entomology Laboratory conducted an on-site investigation.

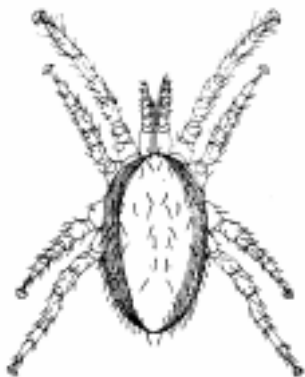


Figure 1. *Ornithonyssus bursa*: Dorsal View of Female

On September 7, 1995, the following specimens were collected: dust from the reception area; dust from the air condi-

tioning unit; dog food from an opened bag in the hall; cedar shavings and gravel from the hot water heater closet; dust and rodent droppings from the laundry closet; dried milk, cat litter, and cat food from plastic bins in the hall; rodent and bird nesting material from the attic; feed from metal bins in the attached barn; hay from an attached overhang; and wood shavings from a barn located behind the clinic. The laboratory analyzed these specimens and identified 4 species of arthropods. Psocids, or book lice, were found in the reception area, air conditioning unit, and laundry closet, and saw-toothed grain beetles were found in the feed bins in the attached barn. Because these arthropods cause no adverse reactions in humans, they were not responsible for the employees' rash. However, the 2 other species identified, straw itch mites and tropical bird mites, do cause dermatitis in humans.

Tropical fowl or bird mites, *Ornithonyssus bursa*, were detected in the bird nesting materials (Figure 1). These mites, com-

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monly found throughout Texas and the southern United States, are found on poultry, pigeons, and sparrows. Tropical fowl mites are very fastidious organisms that are rarely affected by humidity or temperature. However, they are viable for only 10 days away from the host. They generally cause only mild dermatitis characterized by urticarial wheals. Bites are more frequently found on areas of the body where there is tight clothing or a skin fold. In more severe cases of infestation, there may be hemorrhagic necrosis at the site of puncture. Camphor or cortisone ointment may help relieve itching and burning.

Straw or hay itch mites, *Pyemotes ventricosus*, were isolated from the hay and the bird nesting materials (Figure 2). These mites are parasites of insect larvae commonly found in hay, straw, grass, and other grains. Often confused with scabies, dermatitis associated with straw itch mites usually begins with severe itching lasting 2 to 3 days and small bright red spots on human skin. These spots may later exhibit petechial hemorrhage and erythema. Twelve to sixteen hours after exposure, the puncture wound becomes a pustule surrounded by a raised whitish area and is enclosed

by a rosy areole. Excessive scratching can lead to secondary infections. Most patients who are bitten by these mites suffer from only mild dermatitis. In severe cases, however, symptoms include fever, vomiting, malaise, anorexia, joint and back pain, regional lymphadenopathy, and albuminuria.

Dermatitis due to straw itch mites has been reported as far back as the 19th century. In Texas these mites have been responsible for at least 3 outbreaks since the early 1960s. In 1962 there were 32 cases of dermatitis linked to mite-infested puffed-wheat products. In 1979 *P. ventricosus*-infested oatmeal incorporated in homemade fish food was responsible for a dermatitis outbreak in schoolchildren. Another outbreak in 1981 was linked to imported mite-infested dried grains and decorative straw.

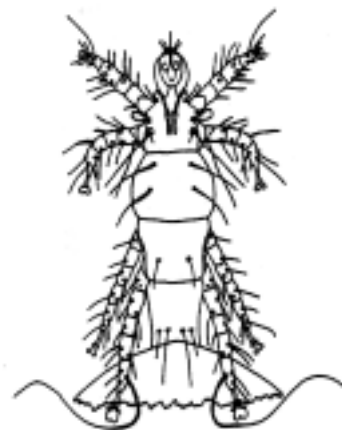


Figure 2. *Pyemotes ventricosus*: Dorsal View of Female

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Reminders

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Fourth HPS Fatality in Texas

Friday morning, August 16, the TDH IDEAS Division received a report from Public Health Region (PHR) 1 of a possible case of hantavirus pulmonary syndrome (HPS). The patient, a 26-year-old woman who resided in Gaines County (in PHR 9), had been ill with a flu-like illness for approximately 5 days and had been taking antibiotics. Her signs and symptoms included malaise, fever, vomiting, and nausea. On August 15 she fainted and was taken to a hospital emergency room in Terry County. Her illness was diagnosed as adult respiratory distress syndrome, and she was transferred to an intensive care unit in Lubbock County. She was intubated for pulmonary edema and received vasopressors for hypotension. She died Friday evening.

Specimens were sent overnight to the University of New Mexico School of Medicine, where the diagnosis of HPS was confirmed on Saturday. The causative organism was identified as Sin Nombre virus, one of several antigenically-distinguishable hantaviruses. The standard TDH epidemiologic investigation is still in progress to determine the source of infection. When the initial medical records review and interviews are completed, the TDH Zoonosis Control Division will trap rodents for hantavirus testing.

This is the second Texas case of HPS reported in 1996. It is the sixth confirmed case in Texas (and the third from West Texas) since the disease was first identified in 1993. Only 2 of the 6 Texas patients survived.

HPS typically causes rapid, devastating respiratory distress that is difficult to overcome, even with prompt and aggressive supportive treatment. The case-fatality rate nationwide is 50%. Although the outcome of this latest case was a fourth HPS fatality in Texas, some comfort may be gained in the fact that health professionals from 3 geographic jurisdictions and at least 5 different agencies quickly and effectively coordinated evaluation and treatment efforts for the patient.