

disease prevention news

## Outbreaks of Cyclospora Infections

*Cyclosporiasis is caused by a parasite named Cyclospora cayetanensis. After an incubation period of 5-12 days, infected persons experience watery diarrhea, nausea, weight loss, and fatigue. Very little is known concerning the host range, infective dose, and reservoir of this parasite. Before 1996 only three small outbreaks of infection acquired in the United States had been reported, and most cyclosporiasis cases in the United States occurred in overseas travelers. In contrast, in 1996 over 1,400 cyclosporiasis cases and over 50 outbreaks were reported in the United States. This report describes two outbreaks in Texas, cyclosporiasis activity nationwide, diagnostic tests, and treatment.*

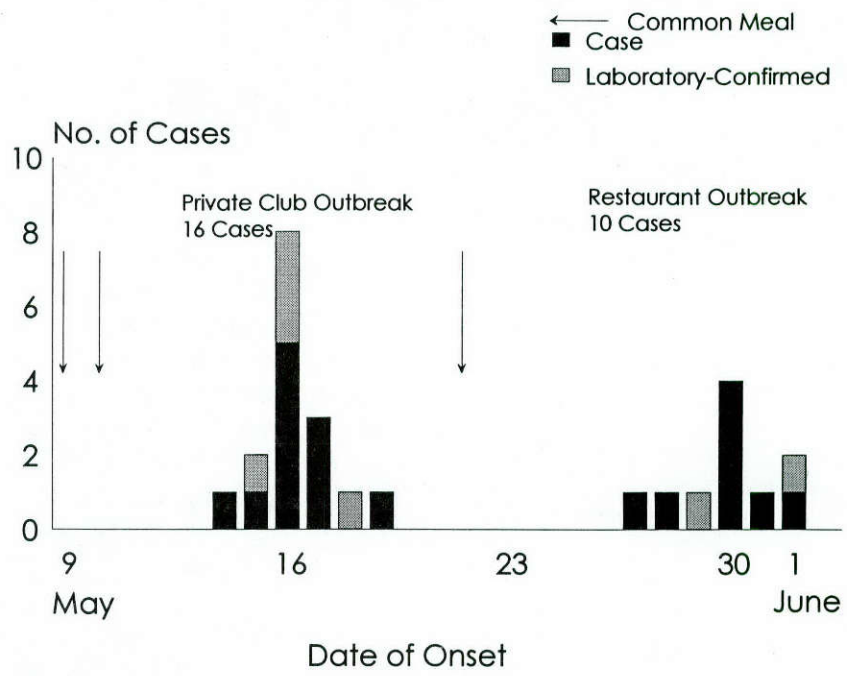
In late May 1996, the Texas Department of Health (TDH) was notified of *Cyclospora* infections in 3 Canadian businessmen. The businessmen had attended a May 9-10 meeting at a private club in Houston, Texas. Several other meeting attendees with a history of watery diarrhea were identified later. On June 4, 1996, TDH was notified of a second *Cyclospora* outbreak involving physicians who attended a dinner together May 22 at a Houston, Texas, restaurant. An investigation was initiated by TDH; the Houston Health & Human Services Department, Houston, Texas; and the Centers of Disease Control & Prevention, Atlanta, Georgia.

For these investigations a cyclosporiasis case-patient was defined as a person who ate at the private club on May 9 or May 10 or at the restaurant on May 22, and who became ill with diarrhea (3 or more watery stools in a 24-hour period) of at least 3 days duration.

### Private Club Outbreak

Of the 28 persons who attended the May 9-10 business meeting, 26 were interviewed to collect information about occurrence of illness, travel history, and food exposures. Also

Figure 1. Cyclosporiasis Outbreaks, Houston, 1996

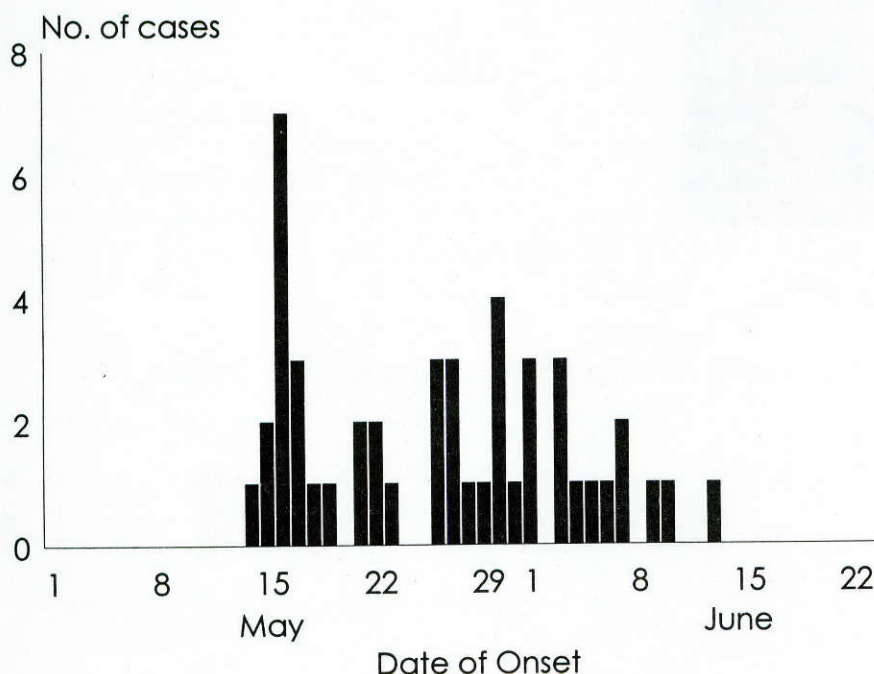


interviewed were an additional 5 persons who attended a business luncheon at the club on May 10. Of 16 identified case-patients

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**Figure 2. Outbreak-associated Cyclosporiasis Activity, May - June 1996**



whose onsets of illness occurred May 14 through May 19, 8 became ill on May 16 (Figure 1). All 16 patients experienced diarrhea and weight loss. They also experienced anorexia (87%), fatigue (87%), nausea (75%), and abdominal cramps (75%). Stool specimens from 7 patients were positive for *Cyclospora*.

The patients came from 3 states and 2 foreign countries. A definite history of eating a berry dessert was reported by 12 of 13 case-patients and 1 of 11 controls (relative risk=11.1, 95% confidence interval 1.68-72.8). No other food exposures were associated with illness. Case-patients recalled that the dessert contained strawberries, but restaurant staff reports were inconsistent concerning the types of berries in the dessert.

#### Restaurant Outbreak

Nineteen persons who had eaten food items prepared at the restaurant on May 22 were interviewed; 13 had eaten together. Of 10 persons with illness onset dates May 27- June 1, 4 had onset on

May 30 (Figure 1). Stool specimens from 2 patients were positive for *Cyclospora*. A history of eating a dessert was reported by all 10 case-patients and 1 of 9 controls. The case-patients reported eating 5 different types of desserts. Restaurant staff reported that they garnished all their desserts with either one fresh strawberry (for regular patrons) or with a strawberry, blackberry, and raspberry (for VIPs). A definite history of strawberry consumption was reported by 7 of 10 case-patients and none of the 8 controls (relative risk =undefined, Fisher exact test= 0.00015). Four persons (3 case-patients and 1 control) could not recall whether or not they ate the strawberry. No other food exposures were associated with illness. None of the case-patients reported a history of eating any berries other than strawberries. However, since some of the attendees were also served blackberries and raspberries on the dessert plates, it is possible that some case-patients ate these other berries but did not include this fact in their reports.

#### Summary of Cyclosporiasis Activity in 1996

From 1990 through 1995, only 0.04% of the 7,682 stool specimens examined at TDH were positive for *Cyclospora*. In May and June of 1996, however, 5 common-source *Cyclospora* outbreaks were reported in Texas: 4 in Houston and 1 in Dallas. A total of 49 cyclospora cases were associated with these 5 outbreaks. Outbreak-associated cases had onsets of illness from May 14 through June 13 (Figure 2). The attack rate ranged from 31% to 100%. The number of ill persons in each outbreak ranged from 5 to 17. At least one laboratory-confirmed case was identified in each outbreak (range=1-9).

Clinical illness in persons from the first two outbreaks included: diarrhea, 100%; fatigue, 96%; weight loss, 96%; anorexia, 91%; abdominal cramps, 78%; and nausea, 69%. Only 35% reported fever, and

13% reported vomiting. The diarrhea was described as watery by 87% of the case-patients. The median weight loss was 6 pounds (range=2-21).

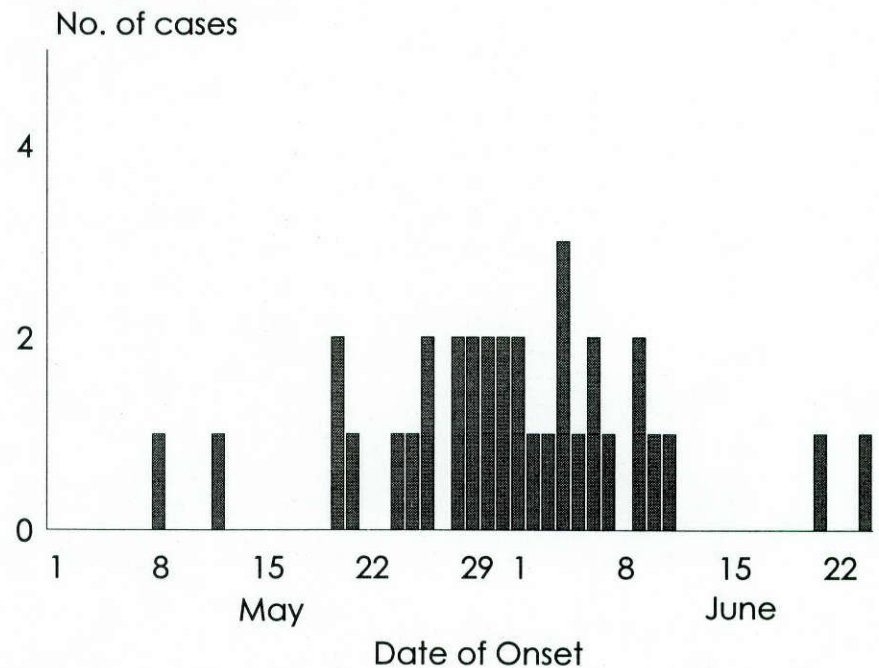
In addition to the 49 outbreak-associated cases, over 30 sporadic laboratory-confirmed cases were reported. Sporadic cases, primarily reported in Houston and Austin, had onset of illness dates May 8-June 24 (Figure 3). In four outbreaks, fresh berries were associated with illness. In the fifth outbreak, 5 persons who reported eating together at a restaurant became ill. All 5 reported eating either fresh raspberries or fresh strawberries.

In 1996 over 1,465 cyclosporiasis cases were reported from Canada and the United States. Almost half the cases were associated with 55 common-source outbreaks occurring from May 3 through June 14. Fresh raspberries were served at 50 events, could have been served at 4 more, and were not served at only 1 event. For 11 events, raspberries were the only type of berry served. An association between consumption of the berry item (raspberries with or without other berries) and cyclosporiasis was found in 27 outbreaks in which investigations were conducted. Overall, the occurrence of outbreaks in the United States in 1996 was linked to consumption of Guatemalan raspberries.

### Identification of Organism

Diagnosis is dependent upon finding the typical oocysts, described below, in normally passed fecal specimens. Examination must be performed by an experienced parasitologist. A series of 3 specimens collected over a period of 3-5 days is recommended. Since permanent stains are not useful in demonstrating this organism, a stool specimen preserved in 10% formalin is satisfactory for examination. (A lima-bean sized portion of a stool specimen mixed well in a 1:3 specimen to formalin proportion is adequate.) If, however, information on the presence

**Figure 3. Sporadic, Lab-confirmed Cyclosporiasis Activity, May - June 1996**



of organisms other than *Cyclospora cayetanensis* also is desired, a kit containing PVA-fixative as well as 10% formalin should be used. Specimens should be placed into Postal-Service approved mailing containers and sent to the Texas Department of Health Bureau of Laboratories, Medical Parasitology Section, 1100 West 49th Street, Austin, TX 78756.

*Cyclospora cayetanensis*, a coccidian parasite of humans, was formerly referred to as "cyanobacteria-like bodies" (CLBs). While similar in many ways to *Cryptosporidium parvum*, the oocysts of *Cyclospora cayetanensis* can be differentiated from those of the former on the basis of size. *Cyclospora cayetanensis* oocysts measure 8-10 microns, while those of *Cryptosporidium parvum* measure 4-6 microns. On wet smears, *Cyclospora* oocysts are nonrefractile spheres which resist staining with iodine and will autofluoresce green to blue with epifluorescence. They do not stain with trichrome, but appear instead as clear, round, often wrinkled structures. They present as "variably" acid-fast with the commonly used acid-fast staining procedures.

*Examination must be performed by an experienced parasitologist.*

Those exhibiting an acid-fast nature often stain dark red (or fluoresce brightly if Truant's procedure is used), with a cytoplasm having no apparent internal organization.

### Treatment

The antibiotic regimen of choice for cyclosporiasis in an **immunocompetent** adult is 160 mg/800 mg of trimethoprim/sulfamethoxazole, taken orally twice a day for 7 days. The treatment of choice for the **immunocompromised** adult with

cyclosporiasis is 160 mg/800 mg of trimethoprim/sulfamethoxazole, taken orally 4 times a day for 10 days, followed by 160mg/800mg of trimethoprim/sulfamethoxazole, taken orally 3 times per week for suppressive therapy.



Prepared by Jeffery Taylor, MPH, TDH Infectious Disease Epidemiology and Surveillance Division (IDEAS); Dale Dingley, MPH, Director, TDH Medical Parasitology Section; and Kate Hendricks, MD, MPH and TM, Director, IDEAS

## Available Soon: Instructional Videotape on *Cyclospora* Infection

An independent study module on videotape, *Cyclosporiasis in Texas*, will be available through the Texas Department of Health Audio Visual Library in early June. Intended for physicians and other health care professionals, the videotape features Herbert L. DuPont, MD, Chief of Internal Medicine, St. Luke's Hospital, Houston, Texas, a noted authority on enteric diseases including parasites. *Texas Department of Health Bulletin: Cyclospora cayetanensis* (produced in June 1996) is a 10-minute video also available for physicians and laboratorians. To check out these videotapes, contact the TDH Audio Visual Library at (512) 458-7260 or visit their Web site at <http://www.tdh.state.tx.us/avlib/AVHOME.PG.htm>.

## Encephalitis Alert

Last week the Texas Department of Health (TDH) received reports of 7 suspected encephalitis cases in East Texas. The cases have occurred primarily in children from Harris, Jefferson, Brazoria, and Liberty Counties. Four of six patients for whom the charts have been reviewed were intubated. Usually at this time of the year, only 4 encephalitis cases per month are reported for the whole state.

TDH seeks assistance in detecting additional encephalitis cases. The following alert was sent by fax to all regional and local health departments statewide and to the infection control practitioners of all hospitals in TDH Region 6. This alert is repeated in *Disease Prevention News* to assure the greatest possible response. Please report cases in patients hospital-

ized since March 1, 1997, whose illnesses were categorized according to the following ICD-9 codes: 047.9, unspecified viral meningitis; 049.9, unspecified nonarthropod-borne viral diseases of the central nervous system; 062.0-062.9, mosquito-borne viral encephalitis; and 323.9 unspecified cause of encephalitis. TDH is especially interested in patients with the following clinical picture: headache, fever, and nuchal rigidity, combined with altered mental status, focal neurological signs, and/or seizures. They also may have motor weakness, increased deep tendon reflexes, or extensor plantar reflexes. A lumbar puncture will reveal a pleocytosis with a predominance of mononuclear cells, increased protein levels, and normal or depressed glucose levels in the cerebral spinal fluid (CSF).

Continued 

Please report suspected encephalitis cases occurring in any age group to your local health department at (800) 705-8868 or to Dr. Beverlee Nix (TDH Region 6) at (713) 767-3300.

Viral isolation and serologic tests are available through the TDH Laboratory for most agents causing viral encephalitis. Appropriate specimens for viral

isolation include cerebrospinal fluid (CSF), blood drawn in a red top tube, throat swabs, and stool. CSF and acute and convalescent serum (red top tube) specimens may be used for the serologic diagnosis of several infections. All specimens should be shipped on ice or cold packs by overnight courier to the TDH Laboratory, 1100 West 49th Street, Austin, TX 78756.

## Upcoming Changes to School and Day Care Immunization Requirements

The Texas Board of Health recently approved changes to the *Immunization Requirements for Children and Students*. Except as noted, these changes take effect August 1, 1997. The new requirements reflect recent recommendations from the Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention (CDC).

Receipt of 2 doses of measles vaccine will be required of children who are 5 years old or older and born on or after September 2, 1991. Children entering kindergarten this fall will be affected immediately, as will pre-kindergarten students who turn 5 during school year 1997-1998. Children born before this date must continue to show proof of a second measles dose at 12 years of age.

The ACIP-recommended "sequential schedule" for polio vaccination increases to 12 months the age at which the third dose of polio vaccine is received. Consequently, the number of doses required of children 6 through 11 months old has been reduced from 3 to 2. Health care providers, in consultation with parents, may choose to follow the sequential schedule or to use an IPV-only or

OPV-only schedule. New language replaces all mentions of OPV and IPV with "polio vaccine" to clarify that any combination of vaccines is acceptable.

Licensure of DTaP for use as the primary series necessitated a similar change of language. References to DTP/DT/Td now include DTaP in all age groups.

Effective August 1, 1998, children who are 5 years old or older and born on or after September 2, 1992, must have received 3 doses of hepatitis B vaccine. Children entering kindergarten Fall 1998 will be affected, as will pre-kindergarten students as they turn 5 during school year 1998-1999.

A subsequent DPN will provide comprehensive information on all public health requirements for children and young people entering public school this fall. This issue will come out no later than August and will include the newly revised immunization requirements.

*For further information about these changes, contact Kristin Hamlett, TDH Immunization Compliance Coordinator, at (800) 252-9152, or (512) 458-7284.*

*Children entering kindergarten this fall will be affected immediately, as will pre-kindergarten students who turn 5 during school year 1997-1998.*

## Diseases in Nature Conference

As the next century approaches, the medical community is confronted with old diseases masquerading behind new faces, new diseases with obscure faces, and a resurgence of some of the oldest zoonoses. The 47th Annual Southwest Conference on Diseases in Nature Transmissible to Man will address these and other challenges facing public health practitioners. This year the Texas Department of Health (TDH) is co-sponsoring the Diseases in Nature Conference jointly with the Texas Tech University Health Science Center (TTUHSC). This conference will cover a wide spectrum of diseases including new forms of old nemeses (drug resistant tuberculosis), new viruses with uncertain origins (hanta and Ebola), new forms of old bacteria (*E. coli* O157:H7), and the resurgence and rapid spread of various strains of wildlife rabies across the United States.

The Conference on Diseases in Nature will be held June 4-5, 1997 at the Holiday Inn Civic Center in Lubbock, Texas. Presenters include TDH and TTUHSC staff, as well as infectious disease experts from throughout the Southwest United States and from Canada. Dr. David Smith, President of TTUHSC, will give the J.V. Irons Lecture, entitled *Of Mice, Men, and Mayhem - Emerging Infections*. Dr. Smith was the State Commissioner of Health from 1992-1996.

Study sessions will cover novel or emerging zoonoses; distinguishing characteristics of several zoonoses and their appropriate diagnostic tests and preventive interventions; the impact of international borders on the infectious agents described; research methods that can strengthen investigations of outbreaks; and the use of the Internet for further information. Among over 25 sessions, several will provide practical information regarding management and prevention of diseases through coopera-

tive efforts in research, data collection, and outbreak investigation and control. Numerous diseases will be addressed, including rabies, bovine spongiform encephalitis, hantavirus pulmonary syndrome, and neurologic conditions caused by red-tide.

Six poster presentations will describe such topics as arbovirus activity in Texas, food processing effects on the microbial load of pork products, and laboratory identification of certain zoonotic diseases.

Texas Tech University Health Sciences Center is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians.

Texas Tech University Health Sciences Center designates this activity for a maximum of 13 hours in Category 1 credit towards the AMA Physician's Recognition Award. Each physician should claim only those hours actually spent in the educational activity.

Type I Continuing Nurses Education contact hours have been requested.

The Texas Board of Veterinary Medical Examiners has approved the meeting for up to 13 hours of continuing education credit for veterinarians with Texas licenses.

The Texas Veterinary Medical Association and the Texas Animal Control Association have approved the meeting for up to 13 hours of continuing education credit for registered veterinary technicians and animal control officers.

Contact Dr. James L. Alexander at (915) 944-9545, E-mail: [jalexander@r09sa.tdh.state.tx.us](mailto:jalexander@r09sa.tdh.state.tx.us) right away for information on late and on-site registration.

# Bimonthly Statistical Summary of Selected Reportable Diseases

Mar/Apr 1997

Selected Diseases/Conditions	HHSC Region											Selected Texas Counties								This Period		Cumulative[1]	
	1	2	3	4	5	6	7	8	9	10	11	Bexar	Dallas	El Paso	Harris	Hidalgo	Nueces	Tarrant	Travis	1996	1997	1996	1997
<b>Sexually Transmitted Diseases[2]</b>																							
Syphilis, primary and secondary	*0	*1	*17	*13	*7	24	*1	*4	*3	*0	2	*2	*13	*0	20	2	0	*3	0	101	*72	280	*174
Congenital Syphilis	*0	*0	*0	*0	*0	21	*0	*1	*0	*1	2	*1	*0	*1	20	2	0	*0	0	25	*25	52	*40
Resistant Neisseria gonorrhoeae	*0	*1	*0	*1	*0	0	*0	*0	*0	*2	0	*0	*0	*2	0	0	0	*0	0	14	*4	25	*5
<b>Enteric Diseases</b>																							
Salmonellosis	21	5	3	0	1	3	19	11	3	4	15	7	3	4	1	0	8	0	13	275	85	538	244
Shigellosis	1	1	11	0	2	7	19	22	1	0	35	22	9	0	0	2	23	0	8	256	99	538	355
Hepatitis A	9	5	54	12	1	9	25	44	10	26	66	32	37	26	4	21	11	5	12	530	261	1024	985
Campylobacteriosis	7	1	7	1	2	1	22	12	0	2	5	7	1	2	1	0	3	3	17	134	60	239	150
<b>Bacterial Infections</b>																							
H. influenzae, invasive	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
Meningococcal, invasive	2	1	11	2	0	0	3	5	0	2	4	5	7	2	0	0	3	1	0	43	30	114	95
Lyme disease	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	25	1
Vibrio species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Other Conditions</b>																							
AIDS[4]	9	5	228	21	33	299	52	51	20	17	51	43	132	17	279	15	8	67	32	800	786	1440	1545
Hepatitis B	1	2	21	5	6	4	7	13	1	1	13	13	13	1	1	0	7	3	7	229	74	441	237
Adult elevated blood lead levels	0	0	30	0	0	2	0	23	0	0	1	23	22	0	2	0	1	1	0	70	56	106	131
Animal rabies - total	1	9	0	3	0	11	12	4	4	1	1	0	0	1	7	0	0	0	4	92	46	157	77
Animal rabies - dogs and cats	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	2	12	4
<b>Tuberculosis Disease[2]</b>																							
Children (0-14 years)	1	0	4	1	1	12	4	1	2	1	3	0	3	1	11	2	0	0	3	36	30	53	47
Adults (>14 years)	2	4	58	8	5	122	22	27	3	7	37	16	39	6	99	8	8	16	14	319	295	523	497
<b>Injuries[2]</b>																							
Spinal Cord Injuries	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	^	62	9	132	32

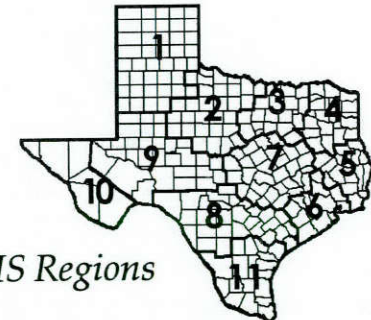
1. Cumulative to this month. 2. Data for the STD's, Tuberculosis, and spinal cord injuries are provided by date of report, rather than date of onset. 3. Voluntary reporting. 4. AIDS totals include reported cases from Texas Department of Corrections, which are not included in the regional and county totals. \*Data incomplete. ^Number breakdown unavailable.

Call 1-800-705-8868 to report

1996 POPULATION ESTIMATES

HHSC REGIONS							
1	760,526	4	947,431	7	1,902,211	10	722,076
2	532,854	5	683,583	8	1,983,995	11	1,574,446
3	4,968,610	6	4,325,854	9	548,963		
<b>STATEWIDE TOTAL 18,950,549</b>							

SELECTED TEXAS COUNTIES			
Bexar	1,308,092	Hidalgo	475,917
Dallas	2,053,859	Nueces	313,907
El Paso	694,878	Tarrant	1,390,298
Harris	3,099,066	Travis	620,718



DHHS Regions



The electronic versions of Disease Prevention News are available at the following locations:  
<http://www.tdh.state.tx.us/phpep/dpnhome.htm>  
 TDH Healthy Texans BBS: (800) 858-5833

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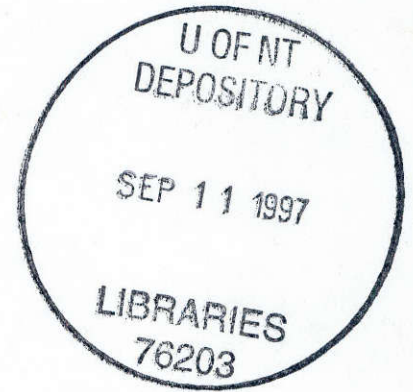
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### Vaccine-Preventable Disease Update Reported cases with onset from 3/1/97-4/30/97

Condition	County	Number of Cases	Date of Onset	Condition	County	Number of Cases	Date of Onset			
Measles	Harris	1	4/15	Pertussis	Jim Wells	1	3/26			
	Travis	1	4/15		Lubbock	1	3/20			
		1	4/29		Val Verde	1	4/8			
		1	4/30	Rubella	Dallas	1	4/7			
Mumps	Collin	1	4/7		Midland	1	4/28			
	Dallas	1	3/4		Montgomery	1	4/30			
		1	3/22	Tetanus	Bexar	1	4/8			
		1	3/24							
		1	3/25							
<b>YTD</b>	<b>Measles</b>	<b>4</b>	<b>Mumps</b>	<b>15</b>	<b>Pertussis</b>	<b>13</b>	<b>Rubella</b>	<b>3</b>	<b>Tetanus</b>	<b>2</b>