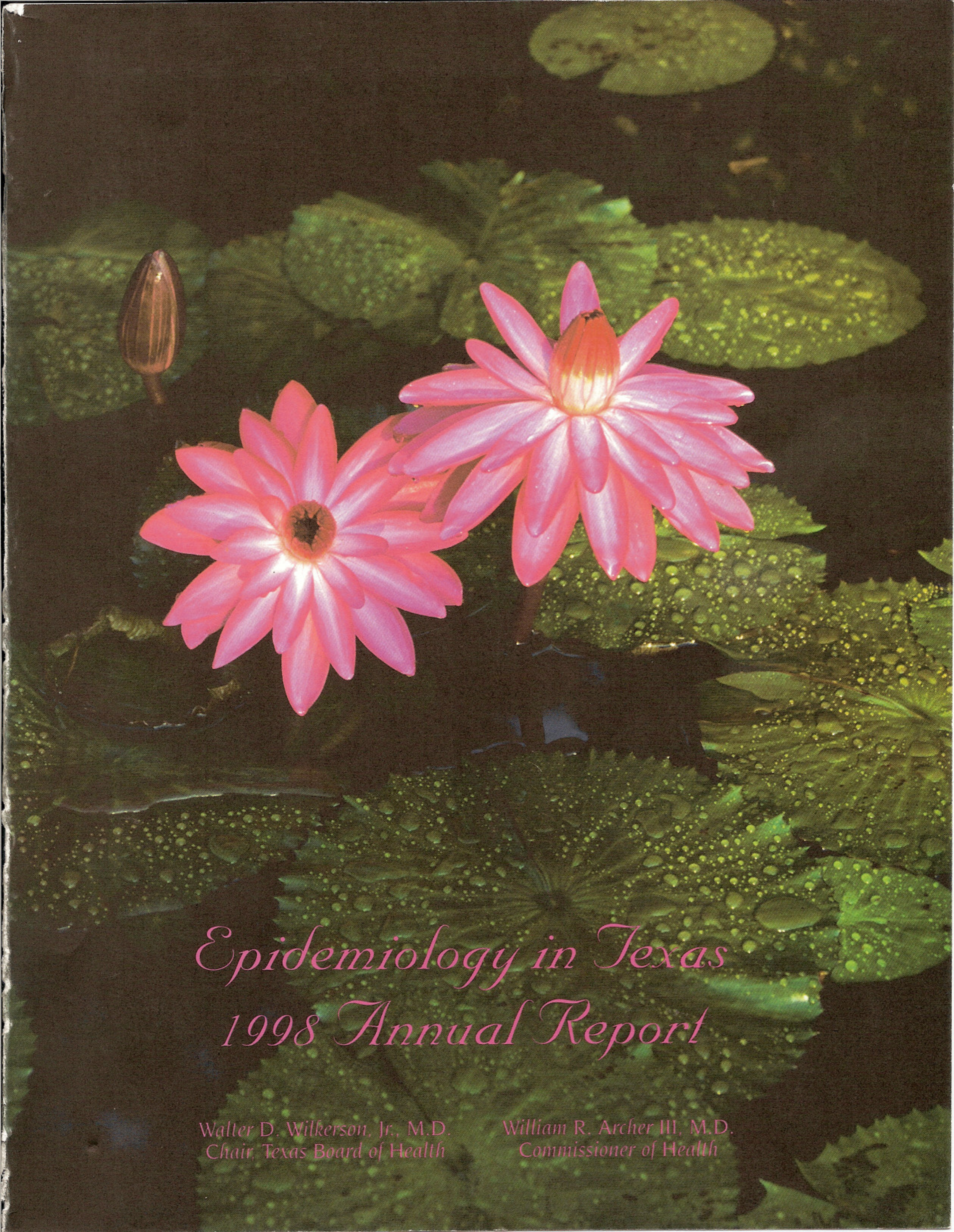

Epidemiology in Texas 1998 Annual Report

Walter D. Wilkerson, Jr., M.D.
Chair, Texas Board of Health

William R. Archer III, M.D.
Commissioner of Health

Front *cover*: Water Lillies, *Zilker* Park Gardens, Austin, Texas.
Back cover: Golden Eye P*hlox,* Hays County.

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Epidemiology in Texas
1998 Annual Report

TDH
TEXAS DEPARTMENT OF HEALTH

Associateship for Disease Control and Prevention
Texas Department of Health
1100 West 49th Street
Austin, Texas 78756
epireport@tdh.state.tx.us
http://www.tdh.state.tx.us/epidemiology

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TDH
TEXAS DEPARTMENT OF HEALTH

William R. Archer III, MD
Commissioner of Health

Patti J. Patterson, MD, MPH
Executive Deputy Commissioner

Debra C. Stabeno
Deputy Commissioner

Sharilyn Stanley, MD, Acting
Associate Commissioner for Disease Control and Prevention

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Walter D. Wilkerson, Jr., MD
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Mary E. Ceverha, MPA
Vice-Chair

J.C. Chambers

Beverly H. Robinson, PhD, RN, C

Mario R. Anzaldua, MD

Margo S. Scholin, JD

Foreword

The 1988 Institute of Medicine Report, "The Future of Public Health" describes the substance of public health as "organized community efforts aimed at the prevention of disease and promotion of health." It goes on to say that "it links many disciplines and rests upon the scientific core of epidemiology." Ten years after that report, we still believe that to be true.

Some of the most compelling work of TDH epidemiologists during 1998 is described in this report. In addition to the standard surveillance and outbreak reports on infectious diseases, numerous reports of noncommunicable diseases, injuries, hazards, and conditions are included. Reports on injuries, pesticide poisonings, birth defects, animal bites, and a look at child mortality reflect the continuing expansion of epidemiology to all areas of public health. The description of a major outbreak of invasive group A streptococcal disease reminds us that infectious diseases still cause significant morbidity and mortality in Texas.

The work of public health epidemiologists is done in cooperation with local health agencies, hospital infection control practitioners, nurses, physicians, schools, environmental agencies, safety organizations, and other state and federal partners. The contributions of timely health information, accurate analysis, and scientifically solid insight are essential to effective public health interventions. On behalf of all the epidemiologists at the Texas Department of Health, I am proud to present this Epidemiology in Texas 1998 Annual Summary for your information and use.

Dennis M. Perrotta, PhD, CIC
Acting State Epidemiologist
Chief, Bureau of Epidemiology

Contributors

Associateship for Disease Control and Prevention
Sharilyn Stanley, MD, Acting Associate Commissioner
Shelly Kolavic, DDS
Rich Ann Roche, MSCRP
Lucina Suarez, PhD

Immunization Division
Robert D. Crider, Jr., MS, MPA, Division Director
Jan Pelosi, MPH
Laura Tabony, MPH

Bureau of Communicable Disease Control
Peter Pendergrass, MD, MPH
Eric Svenkerud, MD, MPH

Infectious Disease Epidemiology and Surveillance Division
Kate Hendricks, MD, MPH&TM, Division Director
David Bergmire-Sweat, MPH
Jean Brender, RN, PhD
Russ Larsen, PhD, MPH
Lisa Marengo, MS
Julie Rawlings, MPH
Beverly Ray, RN
Jennifer A. Richardson, RN
Griselda Carrillo Stevenson, MD, MPH
Mardi VanEgdom

Tuberculosis Elimination Division
Charles Wallace, PhD, MPH, Division Director
Gail Shevick, MA
Jeffery P. Taylor, MPH
Patricia Thickstun, PhD

Zoonosis Control Division
Jane C. Mahlow, DVM, MS, Division Director
Jim Schuermann, BS
Pamela J. Wilson, RVT, MEd, CHES

Bureau of Epidemiology
Dennis M. Perrotta, PhD, CIC, Bureau Chief
John Hellsten, PhD
Christy Kremer, RN, MSN, C

Cancer Registry Division
Nancy Weiss, PhD
Sue Carozza, PhD
Barry Wilson

Environmental Epidemiology and Toxicology Division
Judy Henry, MS, Co-Division Director
John Villanacci, PhD, Co-Division Director
Julie Borders, MS
Richard Harris
Keith Hutchinson, MA
Susan L. Prosperie, MS, RS
Rachel Rosales, MSHP
Diana Salzman
Melissa Samples-Ruiz
Jackilen Shannon, PhD
Keller A. Thormahlen, MS
Lisa R. Williams, MA
Teresa Willis

Injury Epidemiology and Surveillance Program
David Zane, MS, Program Director
Andy Blum
Dale Cherry
Jennifer Hunteman
Tammy Sajak, MPH

Texas Birth Defects Monitoring Division
Mark A. Canfield, PhD, Division Director
Mary Ethen, MPH
Matthias Forrester
Peter Langlois, PhD
Dawna Wright, MPH

Bureau of HIV and STD Prevention
Rose Brownridge, MD, Acting Bureau Chief

HIV and STD Epidemiology Division
Sharon Melville, MD, MPH, Division Director
Marcia Becker, MPH, M(ASCP)SH
Barry Mitchell, MPH, M(ASCP)
Ed Weckerly, MS

Bureau of Laboratories
David Maserang, PhD, Bureau Chief
Mary Ann Patterson, M(ASCP)

Acknowledgments

Under the direction of a guidance team consisting of program and division directors, bureau chiefs, and the Associate Commissioner for Disease Control and Prevention, the *Epidemiology* in *Texas 1998 Annual Report* was produced by a project team of representatives from each contributing program. The guidance team and authors would like to recognize the following project team members for their excellent work.

Marcia Becker, MPH, M(ASCP)SH
HIV and STD Epidemiology Division

Debbie Hack (Team Leader)
Bureau of Epidemiology

Susan Hammack, MEd (Editor)
Public Health Professional Education

Keith Hutchinson, MA
Environmental Epidemiology and Toxicology

Joyce Illar
Immunization Division

Janice Jackson, MPH
Immunization Division

Jeanne Lain
Zoonosis Control

Christine Leos
Bureau of Laboratories

Lisa Marengo, MS
Infectious Diseases Epidemiology and Surveillance Division

Mary Ann Patterson, M(ASCP)
Bureau of Laboratories

Ann Tyree, MS
Tuberculosis Elimination Division

Maria Velasquez
Injury Epidemiology and Surveillance

Mardi VanEgdom
Infectious Disease Epidemiology and Surveillance Division

Ed Weckerly, MS
HIV and STD Epidemiology Division

In addition to the project team members and authors, the following people also contributed their time and expertise:

Karen McDonald, MS   Betty Newmann   Sandy Wicker

Nineteen ninety-eight marks the twenty-first year of publication for the TDH Epidemiology in Texas Annual Report. As the report enters its third decade, the Project Team would like to recognize Jan Pelosi from the Immunizations Division. From its inception in 1977 until 1992, Jan wrote and produced the Report by herself, a job now performed by a production staff including dozens of writers and several editors. The Project Team thanks Jan for her service in developing the Report in its formative years.

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Preface

Disease Surveillance

Public health surveillance involves systematic collection, analysis, and dissemination of data regarding adverse health conditions. This information typically includes the incidence, prevalence, and geographical location of the condition;-age, sex; and race/ethnicity of the people affected; means by which the disease is transmitted; arid historic trends. For many diseases, data regarding animal reservoirs and vectors also are essential. Surveillance involves investigating individual cases as well as epidemics.

During 1998 many Texas Department of Health (TDH) programs were responsible for coordinating surveillance of adverse health conditions in Texas. These programs included the following: Infectious Disease Epidemiology and Surveillance Division, Zoonosis Control Division, Environmental Epidemiology and Toxicology Division, Injury Epidemiology and Surveillance Program, Tuberculosis Elimination Division, Immunization Division, Bureau of HIV and STD Prevention, Bureau of Laboratories, and Bureau of Chronic Disease Prevention and Control.

The value of epidemiologic surveillance cannot be overestimated. In public health, surveillance data are used to monitor disease trends; detect, respond to, and study new disease threats, outbreaks, or epidemics; identify risk factors; and plan, implement; and assess intervention and prevention services. Prompt feedback of current, accurate, and complete data is essential so that health professionals can provide the highest quality of medical care and policy makers can plan, manage, fund, and justify disease control activities and research.

Reporting

The *Reportable Conditions in Texas* form (TDH Stock No. 6-101a) lists all reportable conditions in Texas, guidelines for reporting, and telephone numbers for reporting or ordering forms (Appendix). This version of form 6-101a reflects reporting guidelines for calendar year 1998, the year for which the data in this *Report* were compiled. The most current version of form 6-101a may be obtained by calling the TDH Infectious Disease Epidemiology and Surveillance Division at (800) 252-8239 (press 1) or (512) 458-7218.

Most case reports must include the patient's name, date of birth, sex, racelethnicity, city of residence, date of onset, physician's name, and method of diagnosis. The exceptions are as follows. Chickenpox is reported by number of cases and, beginning in 1998, by age group. Chickenpox-related deaths became reportable by name beginning in 1999. HIV infections are reported by name for children under 13 years and beginning in 1999, HIV is reportable by name for adults and adolescents. HIV reports for all ages must also include the patient's age and date of birth; sex; race/ethnicity; city, county, and zip code of residence; date of test; and physician's name, clinic address, and telephone number.

Surveillance data also are obtained from laboratory reports, case investigation forms, and TDH Bureau of Vital Statistics death certificates. Social and demographic information is collected to determine patterns of disease in the population, identify case contacts, and target control measures.

Explanatory Notes

Reportable conditions diagnosed in residents of other states in the US, while they are visiting Texas, are reported to the health authorities of the individual's home state. These cases are not included in this report. Reports regarding Texas residents who became ill while visiting other states are included in this report. Mortality data were obtained from the TDH Bureau of Vital Statistics or from individual program records.

The information in this report is subject to limitations which affect many data collection systems. Underreporting is an ubiquitous problem, but its extent differs among diseases. Reported rates of disease are affected by the estimation inherent in population projections. Care should be used in interpreting 'rates of annual disease incidence for small areas or for infrequently occurring diseases. Unless other information is available about area health conditions or temporal patterns of disease, such rates should not be used as indicators of the usual incidence of a disease.

The population data used in this report represent projections for 1998 from the Texas State Data Center, Texas A&M University.

TDH uses the following race/ethnicity designations.* For reporting purposes, when an individual is of mixed racial or ethnic origin, the category that most closely reflects his or her recognition in the community is used. In TDH reports, the term used to obtain the data is the one used to describe those data.

American Indian or Alaskan Native: Persons having origins in any of the original peoples of North America and who maintain cultural identification through tribal affiliation or community recognition.

Asian or Pacific Islander: Persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands (including China, Japan, India, Korea, the Philippines, and Samoa).

Black/African American: Persons having origins in any of the black racial groups of Africa. (The standard term used in epidemiologic reports is "Black." "African American" is often used in political or cultural contexts.)

Hispanic: Persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

White: Persons having origins in any of the original people of Europe, North Africa, or the Middle East.

* Based on US Department of Commerce designations published in the CDC Manual of Procedures for National Morbidity and Public Health Activities

Reports

Animal Bites and Attacks

A total of 704 reports of severe animal bites and attacks[1] were voluntarily submitted by local health departments, animal control agencies, and emergency health care providers to the Zoonosis Control Division of the Texas Department of Health in 1998. Reports were submitted from across the state, continuing a 10-year increase in the number of counties from which voluntary reports were received. A review of death certificates for the entire state for 1998 revealed no deaths associated with animal attacks.

Victim Characteristics

Bites by canines represent a significant source of morbidity in all age groups, but the pediatric age group represents the highest likelihood of severe injury. Children under the age of 11 were almost 2.5 times more likely to sustain a severe bite than were adolescents and adults and 6.5 times more likely to sustain a head injury from a serious attack (Figure 1). While children under the age of 11 accounted for only 42% of the bite victims, they sustained 75% of all head injuries. Injuries to the head and neck are extremely serious because they can result in disfiguring wounds as well as life-threatening injuries involving hemorrhage and cranial trauma.

Figure 1. Victim's Age in Severe Animal Attacks

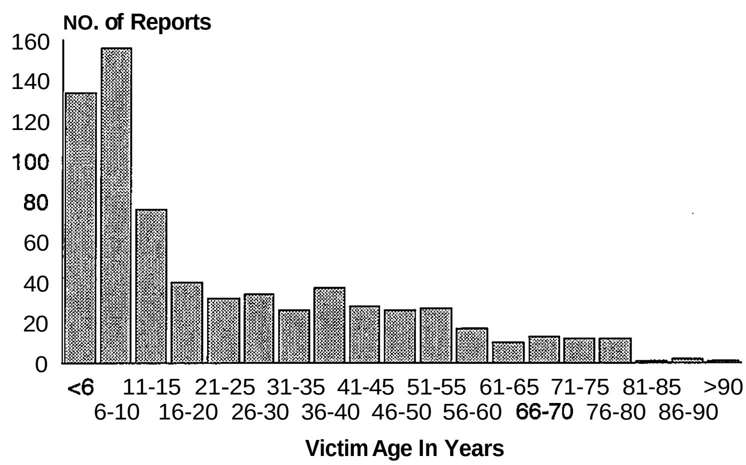


Table 1. Frequency of Dog Breeds Involved in Severe Attacks or Bites on Humans

Breed	No.	%
Chow	49	8.3
Rottweiler	48	8.2
Pit Bull	42	7.2
German Shepherd	36	6.1
Chow Cross	33	5.6
Labrador Retriever	29	4.9
German Shepherd Cross	23	3.9
Mixed Breed	22	3.7

Animal Characteristics

Dogs were involved in 625 of the incidents. Other species included bat (2), cat (55), gorilla (1), hamster (2), horse (2), raccoon (3), rat (1), squirrel (4), wolf (1), and wolf-dog hybrid (5). Slightly over one-third (37%) of biting dogs and cats were vaccinated against rabies. The tendency of a dog to bite is a product of many factors, including genetic predisposition to aggressiveness, maltreatment, late or inadequate socialization to people, quality of care, and behavior of the victim. Eight breeds constituted almost half (48%) of the dogs involved in severe attacks (Table 1). However, since breed prevalence figures are not available, it is unknown whether these figures represent breed predisposition to aggressiveness or simply the popularity of these breeds. Cats and small breeds of dogs were infrequently reported since they are less likely to inflict severe wounds.

Over one-third **(38%)** of the attacks involved circumstances which provoked the dog to attack. Provocation should be thought of in terms of an animal's innate response to human actions, such as teasing, startling, or abusing the animal; handling its puppies or kittens; playing roughly with the animal; or interfering with the animal while it is eating, guarding its territory, fighting with another dog or pursuing a female in estrus.

Zoonosis Control Division (512) 458-7255

[1]**Severe attack** is defined as one in which the animal repeatedly bites or vigorously shakes its victim, and the victim or a person intervening has extreme difficulty terminating the attack. **Severe bite** is defined as a puncture or laceration made by an animal's teeth which breaks the skin, resulting in a degree of trauma which would cause most prudent and reasonable people to seek medical care for treatment of the wound, without considerations of rabies prevention alone. For purposes of this report, the terms "severe bite" and "severe attack" are used interchangeably.

Birth Defect Cluster Investigations

Introduction

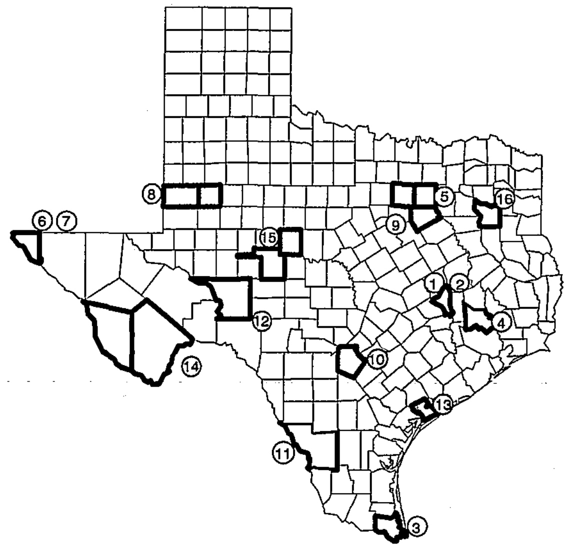
In 1998, the Texas Department of Health (TDH) conducted 16 investigations of birth defect clusters (Figure 1). The following summaries describe the 16 investigations in progress during 1998. *To obtain a glossary defining the birth defects mentioned in this report, call (512) 458-7232.*

Of 9 investigations initiated in previous years, 3 were concluded in 1998 (see items 4, 5, and 9 below). Six of the 7 investigations begun in 1998 were still ongoing at the end of the year (see items 2, 3, 13, 14, 15, and 16 below). Nearly one-third of the reports investigated (items 1, 3, 4, 5 and 11 below) concerned neural tube defects (NTDs) (Figure 2). Approximately 19% of all reports (3 reports) investigated in 1998 concerned oral clefts (item 8, 12, and 14 below).

Health care professionals, concerned parents, and others in the community report apparently unusual concentrations of birth defects to the Texas Birth Defects Monitoring Division (TBDMD). Birth defect investigations are then initiated to determine if these reported birth defects represent a rate that is higher than expected for a given area. Figure 3 shows the sources of reports investigated in 1998.

It is important to remember that when small populations are studied over a short period, a very small number of cases will tend to produce a very high rate, even when the condition or conditions are normally quite rare. This holds true in the study of many birth defects and can be seen in some of the following TBDMD investigations, which considered specific birth defects occurring in single counties over a short period of time.

Figure 1. Birth Defect Clusters Investigated



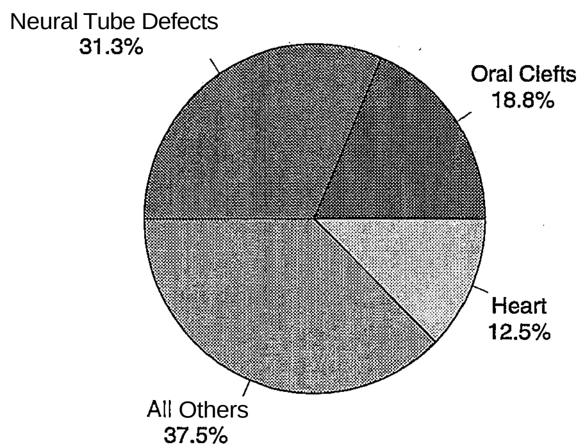
1. Bryan and College Station (Brazos County)
Condition of Concern:
Anencephaly
Time Period of Concern:
1981 - 1996
Duration of Investigation:
March 1997 - December 1998
Background:
A resident of College Station contacted TDH with concerns about anencephaly. He stated that there had been 20 pregnancies affected by anencephaly in his neighborhood. No specific time period of concern was mentioned.
Response:
Vital records (birth, fetal death, and death certificates) of residents of Brazos County from 1981 to 1996 were searched to identify all pregnancies affected by anencephaly. Six affected pregnancies were identified. Five residents of Bryan and 1 resident of rural Brazos County had delivered infants or fetuses with anencephaly. Observed to expected (O:E) ratios, unadjusted as well as adjusted for maternal age and for maternal race/ethnicity, were calculated. The 95%

confidence intervals for all O:E ratios included the value of 1.00, indicating that no statistically significant excess of anencephaly was observed in Brazos County, the city of Bryan, or the city of College Station from 1981 through 1996. After TDH reported these findings, the investigation was reopened when a concerned parent provided the names of an additional 5 families believed to have had a pregnancy affected by anencephaly. Birth, death, or fetal death certificates were found for 4 of these 5 children. Two of the 4 cases had not been detected in the initial investigation: 1 child's death certificate listed the cause of death as encephalocele, rather than anencephaly; and the other child was listed as a resident of Travis County. Two of the 4 cases had been detected in the initial investigation: for both children, anencephaly was listed as the cause of death and the women who delivered them were listed as residents of Bryan. The investigation is ongoing.

2. Brazos County
Condition of Concern:
Hypoplastic left heart syndrome
Time Period of Concern:
July 1997 - December 1997
Duration of Investigation:
May 1998 - December 1998
Background:
In May 1998, a Brazos County resident contacted TDH about a perceived high number of infant deaths due to hypoplastic left heart syndrome in the county. Three such deaths were reported. Based on California Birth Defects Monitoring Program (CBDMP)[1] rates, this was 11.9 times the number expected and was statistically significant.
Response:
TDH is investigating to (a) confirm these reports and (b) ascertain and confirm any additional occurrences of hypoplastic left heart syndrome in the county. The investigation is ongoing.

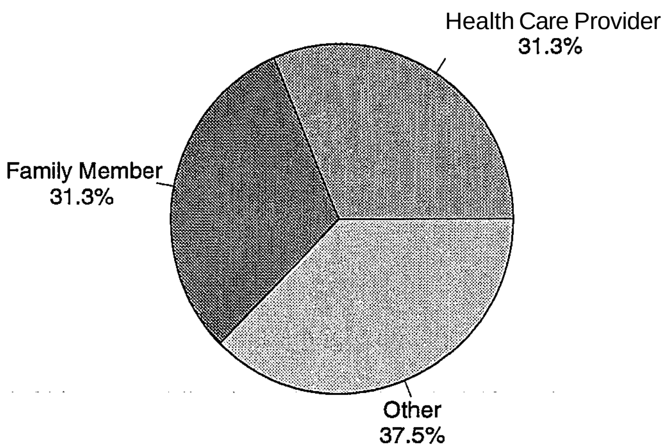
3. Cameron County
Condition of Concern:
Neural tube defects
Time Period of Concern:
February 1998 - October 1998
Duration of investigation:
July 1998 - December 1998
Background:
A staff member from a local newspaper contacted TDH about a possible increase in infants born with neural tube defects (NTDs) in Brownsville and elsewhere in Cameron County in 1998. He reported that 9 affected pregnancies had been identified from February through July.
Response:
Case finding and verification were undertaken using data from the Texas Neural Tube Defect Surveillance and Intervention Project. The 9 reported affected pregnancies were verified. As of December, 13 affected infants or fetuses were confirmed as having been delivered in February through October. The large number of infants or fetuses with neural tube defects delivered to mothers residing in Cameron County ended a downward trend observed there since 1994. However, the excess occurrence from February to

Figure 2. Report of Birth Defects Investigated



October of 1998 was not a statistically significant increase over expected rates. The investigation is ongoing.

Figure 3. Reports of Birth Defect Clusters by Source



4. Conroe (Montgomery County)
Condition of Concern:
Anencephaly
Time Period of Concern:
Not applicable
Duration of Investigation:
January 1997 - April 1998
Background:
The grandparent of a child with anencephaly was concerned that the birth defect might have been related to pollution from a nearby creosoting plant.
Response:
Because the plant was a known pollution source, and because of previous community concerns regarding creosoting facilities, the well water concerned was tested for contaminants related to creosoting. Community air samples were also analyzed. For all compounds that were evaluated (various organic and inorganic compounds, including selected metals), adverse health effects would not be expected with exposure to the concentrations reported. No further action is required at this time.

5. Dallas (Dallas County)
Condition of Concern:
Neural tube defects
Time Period of Concern:
1990 - 1994
Duration of Investigation:
August 1997 - January 1998
Background:
A parent contacted TDH about his child's neural tube defect (encephalocele listed at birth in 1992, anencephaly listed on the death certificate). He was concerned that this might have been related to his and his wife's prior lead exposure from a lead smelter in the area.
Response:
TDH staff reviewed medical records provided by the parent, searched vital records for all cases of neural tube defects in the areas closest to the lead smelter from 1990 to 1994, reviewed the medical and scientific literature for evidence of an association between human lead exposure and occurrence of neural tube defects, and examined the data on human and environmental lead levels in the area surrounding the smelter. No excess occurrence of neural tube defects was found. Little evidence was found that prior parental exposure to lead would cause the health problems of concern. No further action is required at this time.

6. El Paso (El Paso County)
Condition of Concern:
Biliary atresia
Time Period of Concern:
1992 - 1997
Duration of Investigation:
September 1997 - December 1998
Background:
A parent reported that 6 babies with biliary atresia had been born in El Paso from 1992 to 1997. He was concerned that this was excessive. Based on rates from CBDMP, this was within the limits of what would have been expected. However, the parent felt that there may have been more affected children than those he had reported.
Response:
Further case finding and case verification are underway.

7. El Paso (El Paso County)
Condition of Concern:
Multiple defects
Time Period of Concern:
1994 - 1997
Duration of Investigation:
May 1997 - December 1998
Background:
A physician contacted TDH, concerned that he was seeing an abnormally high number of children with hypoplastic left heart syndrome, various intestinal interruptions, and cancer.
Response:
Further information is being gathered.

8. Gaines and Dawson Counties
Condition of Concern:
Cleft lip and cleft palate
Time Period of Concern:
1991 - 1996
Duration of Investigation:
March 1995 - December 1998
Background:
In March of 1995, a parent contacted TDH about what seemed to be an unusually high number of infants with cleft lip and/or cleft palate. Three affected infants were reported as having been born to Gaines County residents in 1994 and 1995. Based on CBDMP rates, this was 16.0 times the number expected and was statistically significant. Similar reports of possibly excessive numbers of babies born with cleft lip and/or palate in neighboring Dawson County resulted in expanding the investigation to include it as well.
Response:
TDH identified a total of 11 infants with cleft lip and cleft palate delivered to residents of either Gaines or Dawson Counties from 1991 to 1996. Based on CBDMP rates, this was more than twice the number expected and was statistically significant. Most of this appeared to be due to a significant excess of children born with cleft lip, with or without cleft palate, in Gaines County. The investigation is ongoing.

9. Grand Prairie (Dallas, Ellis, Tarrant Counties)
Condition of Concern:
Multiple defects
Time Period of Concern:
1994 - 1996
Duration of Investigation:
August 1996 - January 1998
Background:
A concerned parent contacted TDH regarding a perceived excess of miscarriages and birth defects in a subdivision of Grand Prairie. The reported birth defects included 1 child born with Klinefelter syndrome and 2 with Down syndrome. Making meaningful conclusions from the 1 occurrence of Klinefelter syndrome is difficult. The 2 occurrences of Down syndrome were fewer than the 2.7 that would have been expected in Grand Prairie as a whole, based on CBDMP rates.
Response:
TDH compared all birth defects found on birth certificates, fetal death certificates, and death certificates for Grand Prairie from 1994 to 1996 with the number expected from the State of Texas. No statistically significant excess was found. No further action is required regarding the reported birth defects or birth defects in this area in general.

10. Kelly Air Force Base (Bexar County)
Condition of Concern:
Multiple defects
Time Period of Concern:
1990 - 1995
Duration of Investigation:
October 1997 - December 1998
Background:
The Agency for Toxic Substances and Disease Registry (an agency of the US Department of Health and Human Services) asked TDH to conduct a public health assessment in a 3-zip-code area around Kelly Air Force Base. Several adverse reproductive outcomes were of interest, including birth defects, low birth weight, and miscarriages.
Response:
Since the Texas Birth Defects Registry only began coverage of San Antonio in 1997, TDH staff examined vital records from 1990 to 1995 for the 3-zip-code area. These rates were then compared with those derived from the same types of vital records for the entire State of Texas. The investigation is ongoing.

11. Laredo (Webb County)
Condition of Concern:
Neural tube defects
Time Period of concern:
January 1997 - December 1997
Duration of Investigation:
January 1998
Background:
TDH birth defects surveillance personnel noticed that residents of Laredo seemed to be experiencing high rates of neural tube defects among deliveries in 1997.
Response:
Since the pregnancies affected by neural tube defects were identified in an active surveillance system, all were confirmed. There was a statistically significant excess of anencephaly (2.7 times what would have been expected) and NTDs as a whole (2.1 times expected) among deliveries to Laredo residents in 1997. These rates were similar to those recorded there in 1993. This region is included in the ongoing Neural Tube Defect Project, which investigates possible causes of NTDs, including environmental substances, diet, and genetic factors. Also, a folic acid education program was undertaken. No further action is required at this time.

12. Ozona (Crockett County)
Condition of Concern:
Cleft lip and cleft palate
Time Period of Concern:
August 1994 - November 1994
Duration of Investigation:
September 1997 - December 1998
Background:
A health care provider notified TDH that she had seen 3 infants with cleft lip and palate born in Ozona during 1994. Further information gathering revealed that 2 of the mothers actually resided in Ozona. Since the town has a low birth rate and both babies were born within a 4-month period, this rate was roughly 158 times what we would have expected based on rates from the CBDMP. This observation was statistically significant.
Response:
To confirm the report and identify any additional cases, Texas Birth Defects Monitoring Division staff reviewed hospital medical records for all 44 deliveries to residents of Crockett County during 1994. The 2 cases initially reported among Ozona residents were confirmed. No additional cases were detected among residents of Ozona or Crockett County. The investigation is ongoing.

13. Port Lavaca (Calhoun County)
Condition of Concern:
Gastroschisis
Time Period of Concern:
1995 - 1998
Duration of Investigation:
February 1998 - December 1998
Background:
In February of 1998, a nurse contacted TDH about a higher than expected number of occurrences of gastroschisis in Port Lavaca. Three affected pregnancies were reported. Based on CBDMP rates, this was 14.2 times the number expected and was statistically significant.
Response:
TDH has confirmed the report and is investigating to ascertain any additional cases in the county. The investigation is ongoing.

14. Presidio and Alpine (Presidio and Brewster Counties)
Condition of Concern:
Cleft lip and cleft palate
Time Period of Concern:
October 1997 - February 1998
Duration of Investigation:
May 1998 - December 1998
Background:
A concerned physician reported 3 cases of cleft lip and palate in infants born from October 1997 through February 1998: 2 were residents of the city of Presidio, 1 was a resident of Alpine. The physician expressed concern over river water as a possible cause of these birth defects. Based on CBDMP rates, this number was roughly 55 times the expected total for the city of Presidio, 35 times that for Presidio County, and 26 times that for Presidio and Brewster Counties combined. These observations were statistically significant. Observed totals for Alpine and for Brewster County alone were not statistically significant.

Response:

Since the geographic area and time period of concern are covered by the Texas Birth Defects Registry, registry data will be used to verify these reports and identify any additional cases in Presidio and Brewster Counties. Collection of registry data for 1997 and 1998 is still underway. Therefore, the investigation is ongoing.

15. San Angelo and Ballinger (Tom Green and Runnels Counties)

Condition of Concern:

Hypoplastic left heart syndrome, tetralogy of Fallot, and transposition of the great arteries

Time Period of Concern:

June 1997 - December 1997

Duration of Investigation:

June 1998 - December 1998

Background:

A nurse from a hospital nursery department reported her concern over the number of babies born with birth defects. She provided information on 5 infants born with various heart defects, 1 infant with an abdominal tumor, and 1 infant with a collodion baby appearance. (The child with an abdominal tumor also had a heart defect). All infants were born to residents of San Angelo or Ballinger. No calculations were performed on the occurrence of collodion baby nor the abdominal tumor. The heart defects reported included 2 cases of hypoplastic left heart syndrome, 1 case of tetralogy of Fallot, and 1 case of transposition of the great arteries. Tetralogy of Fallot and transposition of the great arteries were categorized together as conotruncal heart defects. Based on CBDMP and MACDP rates, the 2 cases of conotruncal heart defects in different geographic areas were approximately 2 to 3 times what would be expected, but the finding was not statistically significant. The births of 2 children with hypoplastic left heart syndrome were approximately 3 to 144 times what would be expected, and the findings were statistically significant for the city of Ballinger, Runnels County alone, and Tom Green and Runnels Counties combined.

Response:

Since the geographic area and time period of concern are covered by the Texas Birth Defects Registry, registry data will be used to confirm reports and ascertain any additional cases occurring in Tom Green and Runnels Counties. Collection of registry data for 1997 is still underway. Therefore, the investigation is ongoing.

16. Smith County

Condition of Concern:

Down syndrome

Time Period of Concern:

June 1998 - May 1999 (includes prenatally diagnosed Down syndrome)

Duration of Investigation:

September 1998 - December 1998

Background:

In September of 1998, a social worker contacted TDH about a perceived excess occurrence of Down syndrome in Smith County. Nine affected pregnancies were reported, 2 of which were prenatally diagnosed. Based on CBDMP rates, this was 2.7 times the number expected and was statistically significant.

Response:

TDH is investigating to (a) confirm reports and (b) ascertain and confirm any additional cases in the county, using data from the Texas Birth Defects Registry. The investigation is ongoing.

Note:

1. Because Texas did not yet have a statewide Birth Defects Registry until 1998, expected rates were calculated using data from the California Birth Defects Monitoring Program (CBDMP) and/or the Metropolitan Atlanta Congenital Defects Program (MACDP).

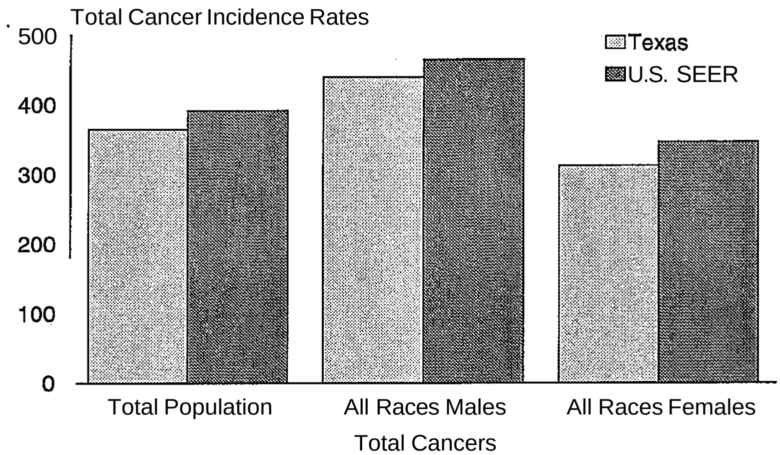
Texas Birth Defects Monitoring Division
(512) 458-7232

Cancer, An Overview of 1995

Introduction

Cancer remains a serious health problem in Texas. In 1999, it is estimated that 77,400 Texans will be diagnosed with cancer and that 35,700 will die from the disease. Past trends suggest that these numbers will continue to increase.

Figure 1. Total Cancer Incidence Rates* in Texas, vs. SEER Program, 1995



*Rates have been age-adjusted to the 1970 US standard population.
SEER: Surveillance, Epidemiology, and End Results

The direct health care costs for patients with cancer are in the hundreds of millions of dollars annually. The medical, emotional, and economic costs of cancer are staggering. With the continued growth in population, the aging of the population, the increase in medical treatment expenses, and given current trends in cultural and lifestyle behavioral risk factors conducive to cancer, these costs are expected to escalate.

The first step in decreasing the burden of cancer in Texas is to define the patterns of cancer incidence and mortality among Texas residents. The Cancer Registry Division (CRD) of the Texas Department of Health (TDH) collects reports of primary malignant neoplasms occurring among state residents. The principle source of case reporting for incidence data is Texas hospitals, with reports also received from radiation and surgical centers.

The Cancer Registry Division routinely publishes information on cancer incidence and mortality among Texas residents. This report highlights cancer incidence data for 1995, the most recent year for which statewide cancer reporting is considered complete.

Overall Findings

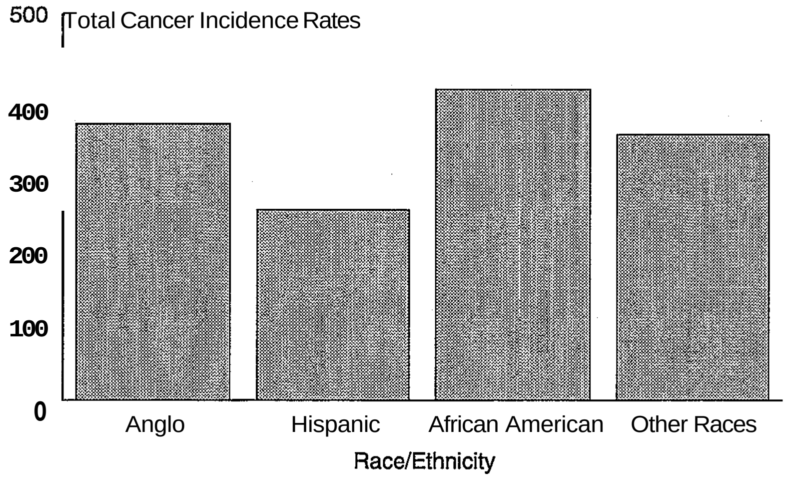
A total of 67,346 newly diagnosed primary malignant cancers were reported to the CRD in 1995. Males accounted for 52.0% (35,027) and females for 48.0% (32,319) of the primary malignant cancer cases.

In 1995, the average annual age-adjusted incidence rate for all cancers was 439.9 cases per 100,000 population for males, which is 41% higher than the overall rate for females (312.31100,000) (Figure 1). Cancer incidence rates vary widely by race/ethnicity (Figure 2). Incidence rates for total cancers were highest among African Americans (430.8/100,000), followed by Anglos (382.8) and Other Races (368.0). Hispanics had the lowest overall cancer rate, 263.3 cases per 100,000 population. Although cancer rates for most anatomic sites were generally lower among Hispanics, there were some notable exceptions. Hispanic women in Texas had the highest rate of cervical cancer (15.9/100,000), almost twice that for Anglo women (8.8/100,000). Rates of liver cancer also were particularly high among Hispanic males (11.7/100,000), almost 3 times higher than that for Anglo males (4.1/100,000). Only males in the Other Races category had a higher liver cancer rate (12.5/100,000).

Total cancer incidence increased with age for both males and females. Although the increase began at a slightly younger age in Texas females, it was much more rapid and rose to much higher rates in Texas males. This increase is partly due to the very high rate of prostate cancer in older men.

Overall, Texas cancer incidence rates were lower than the national rate. This may be due in part to the large Hispanic population in Texas which generally has lower cancer rates than other race/ethnicity groups.

Figure 2. Cancer Incidence Rates* 1995, by Race/Ethnicity



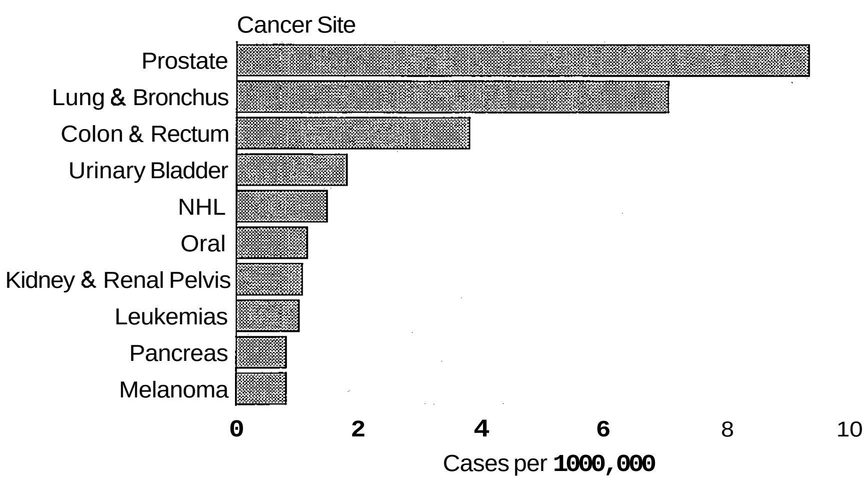
*Rates have been age-adjusted to the 1970 US standard population.

Cancer Incidence By Sex

In Texas, as in most of the world, males experience higher overall rates of cancer than do females. For example, lung and bronchus cancer was the second leading cause of cancer incidence in both males and females, but the incidence rate for males (90.1/100,000) was more than twice that of females (43.5/100,000). This pattern of higher rates in males was seen for almost all of the cancer sites that were not gender specific.

In addition to lung cancer, which accounted for 20.1% of all cancers in males, other leading types of cancer among Texas males were prostate (26.7%), colon and rectum (10.9%), bladder (5.2%), and non-Hodgkin's lymphoma (NHL) (4.2%). Among females, breast cancer was the most common type of cancer, accounting for 29.8% of all cancer in females. Other leading types of cancer in females included colon and rectum (11.1%), corpus and uterus NOS (Not Otherwise Specified) (5.1%), and ovary (3.9%). The 5 most common types of cancer accounted for 67% and 63% of all cancers in males and females, respectively (Figures 3 and 4).

Figure 3. Ten Leading Cancer Sites Among Males, All Races, 1995

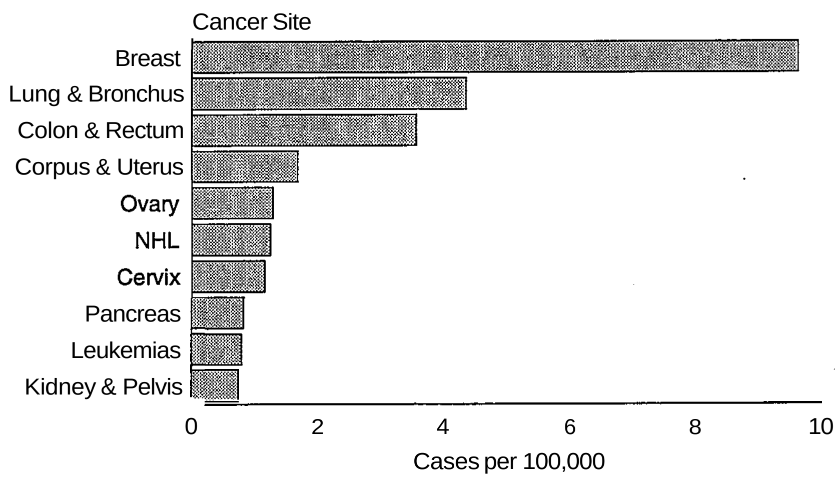


Cancer Incidence By Sex and Race/Ethnicity

The 5 most commonly diagnosed cancers among men and women by race/ethnicity (Anglo, Hispanic, African American, and Other Races) are presented in Table 1. Prostate and breast cancer were the most commonly diagnosed cancers in men and women, regardless of racelethnicity. Similarly, lung and bronchus cancer and colon and rectum cancers were the second and third leading types of cancers in all Texas men. Non-Hodgkin's lymphoma and oral cavity and pharynx cancers also were leading cancers among men. Patterns differed slightly among Anglos and Hispanics, with urinary bladder cancers having a more predominant role in Anglo men and kidney and renal pelvis cancers being more common among Hispanic men.

Among Anglo, African American, and Other Races for women, lung and bronchus and colon and rectum cancers were either the second or third leading cancers diagnosed. In contrast, cervical cancer accounted for more total cancers in Hispanic women (7.8%) than did lung and bronchus cancers (6.6%). Cervical cancers also were predominant among women in the African American and Other Races categories (4.6% and 5.4% respectively). Another notable difference by racelethnicity among women was the ranking of thyroid cancers as the fourth leading type of cancer among women in the Other Races category. Thyroid cancer was less common among Anglo, Hispanic, and African American women.

Figure 4. Ten Leading Cancer Sites Among Females, All Races, 1995



Cancer Incidence By Sex and Age at Diagnosis

The 5 most common cancer sites by sex and age at diagnosis are listed in Table 2. Slightly more than 75% of the cancers diagnosed among Texans in 1995 occurred in residents ages 55 years and older. The pattern of cancers diagnosed among younger residents differed from that in older Texans. Among adolescent and young adult men ages 15 to 34 years, testicular cancer was the leading cancer diagnosed. Melanoma accounted for 6.3% of cancers reported among men ages 35 to 44 years, making it the fifth most commonly diagnosed cancer in that age group. Prostate cancer became the leading type of cancer diagnosed among Texas men beginning with the 55 to 64 year age group. With the exception of the oldest age group (≥85 years), breast cancer was the most commonly diagnosed cancer for women 15 years of age or older. Thyroid and cervical cancers were more predominant in women in the younger age groups (15 to 44 years). Among women 85 years of age and older, colon and rectum cancers surpassed both breast and lung and bronchus cancers to be the leading type of cancer diagnosed in that age group.

Summary

This report highlights 1995 cancer incidence data received by the Cancer Registry Division and illustrates that the cancer experience for Texas residents varied by sex and racelethnicity. Overall, incidence rates were higher among males than females. The top 3 types of cancers were generally the same among each sex, regardless of racelethnicity; however, the magnitude of the incidence rates varied considerably. For most cancer sites, incidence rates were considerably lower among Hispanic male and females. A notable exception to this was cervical cancer, which was the third leading type of cancer diagnosed among

Table 1. Five Most Common Cancer Sites and Percent of Total Cancers Diagnosed by Race/Ethnicity and Sex, 1995

Male				Female			
Rank	Cancer Site	No.	%	Rank	Cancer Site	No.	%
Anglo				**Anglo**			
1	Prostate	6,999	26.7	1	Breast	7,297	30.3
2	Lung & Bronchus	5,467	20.8	2	Lung & Bronchus	3,587	14.9
3	Colon & Rectum	2,852	10.9	3	Colon & Rectum	2,724	11.3
4	Urinary Bladder	1,578	6.0	4	Corpus & Uterus NOS	1,233	5.1
5	Non-Hodgkin's Lymphoma	1,091	4.2	5	Non-Hodgkin's Lymphoma	964	4.1
Total Cancers		**26,248**		**Total Cancers**		**24,054**	
Hispanic				**Hispanic**			
1	Prostate	1,019	23.3	1	Breast	1,190	27.2
2	Lung & Bronchus	590	13.5	2	Colon & Rectum	357	8.2
3	Colon & Rectum	471	10.8	3	Cervix	340	7.8
4	Non-Hodgkin's Lymphoma	224	5.1	4	Lung & Bronchus	287	6.6
5	Kidney & Renal Pelvis	218	5.0	5	Corpus & Uterus NOS	254	5.8
Total Cancers		**4,379**		**Total Cancers**		**4,373**	
African American				**African American**			
1	Prostate	1,170	30.1	1	Breast	990	29.2
2	Lung & Bronchus	903	23.2	2	Colon & Rectum	455	13.4
3	Colon & Rectum	433	11.1	3	Lung & Bronchus	436	12.9
4	Oral Cavity & Pharynx	137	3.5	4	Corpus & Uterus NOS	155	4.6
5	Non-Hodgkin's Lymphoma	137	3.5	5	Cervix	154	4.5
Total Cancers		**3,884**		**Total Cancers**		**3,388**	
Other Races				**Other Races**			
1	Prostate	150	29.1	1	Breast	146	29.0
2	Lung & Bronchus	73	14.1	2	Lung & Bronchus	52	10.3
3	Colon & Rectum	48	9.3	3	Colon & Rectum	37	7.3
4	Oral Cavity & Pharynx	30	5.8	4	Thyroid	33	6.5
5	Non-Hodgkin's Lymphoma	22	4.3	5	Cervix	27	5.4
Total Cancers		**516**		**Total Cancers**		**504**	

NOS-Not Otherwise Specified

Table 2. Five Most Common Cancer Sites and Percent of Total Cancers Diagnosed by Age at Diagnosis and Sex, 1995*

Male

Rank	Cancer Site	No.	%
15 to **34** Years Old			
1	Testis	254	22.3
2	Non-Hodgkin's Lymphoma	142	12.5
3	Hodgkin's Disease	103	9.1
4	Leukemia	89	7.8
5	Brain & CNS	73	6.4
Total Cancers		**1,138**	
35 to **44** Years Old			
1	Non-Hodgkin's Lymphoma	189	11.7
2	Lung & Bronchus	177	10.9
3	Colon & Rectum	160	9.9
4	Testis	105	6.5
5	Melanoma	102	6.3
Total Cancers		**1,622**	
45 to **54** Years Old			
1	Lung & Bronchus	669	19.0
2	Prostate	513	14.5
3	Colon & Rectum	411	11.7
4	Oral Cavity & Pharynx	249	7.1
5	Non-Hodgkin's Lymphoma	222	6.3
Total Cancers		**3,526**	
55 to **64** Years Old			
1	Prostate	2,143	29.2
2	Lung & Bronchus	1,574	21.4
3	Colon & Rectum	784	10.7
4	Urinary Bladder	352	4.8
5	Oral Cavity & Pharynx	299	4.1
Total Cancers		**7,343**	
65 to **84** Years Old			
1	Prostate	6,115	32.0
2	Lung & Bronchus	4,271	22.3
3	Colon & Rectum	2,102	11.0
4	Urinary Bladder	1,103	5.8
5	Non-Hodgkin's Lymphoma	591	3.1
Total Cancers		**19,125**	
85+ Years Old			
1	Prostate	537	28.4
2	Colon & Rectum	308	16.3
3	Lung & Bronchus	304	16.1
4	Urinary Bladder	132	7.0
5	Leukemia	71	3.8
Total Cancers		**1,889**	

Female

Rank	Cancer Site	No.	%
15 to **34** Years **Old**			
1	Breast	267	19.7
2	Thyroid	211	15.6
3	Cervix	203	15.0
4	Ovary	100	7.4
5	Hodgkin's Disease	81	6.0
Total Cancers		**1,353**	
35 to **44** Years Old			
1	Breast	1,208	42.3
2	Cervix	317	11.1
3	Thyroid	161	5.6
4	Colon & Rectum	133	4.7
5	Ovary	131	4.6
Total Cancers		**2,858**	
45 to **54** Years Old			
1	Breast	2,026	44.0
2	Lung & Bronchus	412	9.0
3	Colon & Rectum	313	6.8
4	Corpus & Uterus NOS	241	5.2
5	Ovary	235	5.1
Total Cancers		**4,601**	
55 to **64** Years Old			
1	Breast	1,856	33.3
2	Lung & Bronchus	910	16.3
3	Colon & Rectum	492	8.8
4	Corpus & Uterus NOS	384	6.9
5	Ovary	194	3.5
Total Cancers		**5,572**	
65 to **84** Years Old			
1	Breast	3,781	25.2
2	Lung & Bronchus	2,659	17.7
3	Colon & Rectum	2,075	13.8
4	Corpus & Uterus NOS	795	5.3
5	Non-Hodgkin's Lymphoma	627	4.2
Total Cancers		**15,012**	
85+ Years Old			
1	Colon & Rectum	526	20.0
2	Breast	485	18.5
3	Lung & Bronchus	262	10.0
4	Non-Hodgkin's Lymphoma	123	4.7
5	Ovary/Urinary Bladder**	84	3.2
Total Cancers		**2,628**	

*This table presents cancers grouped according to the SEER (Surveillance, Epidemiology, and End Results) recoding scheme, which is based largely on cancer topography codes. Childhood cancers (ages 0-14) are grouped according to a different classification scheme and therefore are not included in this table.
**Both sites had equal number of cases reported.
NOS-Not Otherwise Specified

Hispanic females, accounting for more newly diagnosed cancers than lung and bronchus cancers in this population. More detailed cancer incidence data is presented in the Cancer Registry Division's complete report, *Cancer in Texas,* 1995. To obtain a copy of this report, contact the Cancer Registry Division at the Texas Department of Health, 1100 W. 49" Street, Austin, Texas 78756 or call (512) 467-2239 or toll-free at (800) 252-8059. The *Cancer in Texas,* 1995 report also can be accessed through our website at www.tdh.state.tx.us/tcr.

Cancer Registry Division (512) 467-2239

Chemical and Safety Hazards to Youths at Industrial Sites

Inactive industrial sites containing toxic chemicals or safety hazards pose risks to young people who may be attracted to them, but are unaware of the dangers present. At 2 such industrial sites in Texarkana and Houston, a coordinated response by several agencies helped to minimize risks to youths and others in the community.

Mercury From Abandoned Neon Sign Plant in Texarkana

In November of 1997, 2 teenagers entered an abandoned neon sign plant in downtown Texarkana, Arkansas by climbing through a collapsed wall. The facility has been inactive and the building has been vacant since 1964. The teenagers found jars of elemental mercury (also known as "quicksilver") in the plant that had been used to make neon signs. They removed the mercury from the building, divided it up into smaller containers, and gave some of these containers to their friends. The 2 youths also took the mercury into their homes and played with it by dipping their arms in it, putting it on their clothes, pouring it on the sidewalk, and smoking cigarettes that had been dipped in it.

On December 18, 1997, one of the teenagers visited his physician complaining of persistent cough, headaches, insomnia, cold feet, aches, pains, and nausea. His mother had been treating him for influenza with over-the-counter medications for 10 days prior to his visit. The physician asked the youth if he had been doing anything unusual recently and the youth revealed that he had been playing with mercury. Acute exposure to mercury vapors can cause nausea, vomiting, diarrhea, skin rashes, nervousness, irritability, loss of appetite, and sleep disturbances. The teenager's physician ordered a blood mercury test which revealed a level of 10.4 μg/dL whole blood mercury. A level of 0.5–2.0 μg/dL is considered normal for persons not exposed to mercury.[1] Realizing that other youths and their families may have been affected, the physician notified City officials. The City of Texarkana Fire Marshall and Emergency Management Coordinator went to the home of the youth and confiscated 21 pounds of mercury that had been kept in an aquarium. City officials also notified state and environmental agencies of the potential health threat that existed in the Texarkana area.

On January 2, 1998, the US Environmental Protection Agency (EPA) and the Arkansas Department of Health (ADH) began an investigation into the extent of mercury contamination in Texarkana. From January to March, the Texas Department of Health (TDH), the Bowie County (Texas) and Miller County (Arkansas) Health Departments, the federal Agency for Toxic Substances and Disease Registry (ATSDR), the University of Texas Health Science Center at Tyler, and the Poison Control Center at the University of Arkansas also were involved in the investigation of the mercury problem, the mercury cleanup, and the medical evaluation of exposed individuals. From January to March 1998, 10 homes, a sandwich shop, an optical shop, and 2 schools in the Texarkana area were found to have been contaminated with mercury. The cleanup, demolition, and removal of contaminated debris by EPA and its contractors cost more than $400,000. Although the 2 youths who took the mercury from the neon plant admitted to possessing no more than the 21 pounds that was confiscated by the city, based on descriptions of the 4 jars that were taken from the plant, the EPA estimated that the total amount taken from the plant was more likely to have been between 50 and 100 pounds.

[1]Since the half-life of mercury in blood is 4 to 6 hours, a blood mercury test can be an accurate measure of exposure in acute cases if it is taken shortly after exposure. A urine mercury test is preferred in monitoring elemental mercury exposure in chronic exposure scenarios or when exposure has stopped. It should be noted, however, that urine mercury is not an accurate method for assessing exposure to methylmercury, which is the type of mercury found in fish. For methylmercury hair or blood mercury levels can be used depending on the time since last exposure.

Health authorities checked blood mercury levels for more than 275 people who had some exposure to the mercury. Of those checked, 7 were found to have blood mercury levels above 3 $\mu g/dL$. Three people, including the 2 youths that originally took the mercury, were hospitalized with acute mercury poisoning symptoms.

Individuals with the highest blood mercury levels were those who had been in enclosed rooms where mercury in open containers or on the floor had vaporized into the air. Elemental mercury volatilizes into the air at normal room temperature where it can readily be absorbed into the lungs and then the bloodstream. Mercury is poorly absorbed through the skin, so dermal contact is not a significant route of exposure.

To educate teenagers about the dangers of mercury and to stop the spread of mercury contamination, representatives from EPA, ADH, and TDH gave presentations in several local schools in January and February of 1998. On the Texas side, EPA and TDH did presentations at 1 junior high and 2 high schools about the dangers of mercury. More than 2,600 pamphlets titled "Mercury Can Make You Sick!" were distributed.

Lead and Other Hazards at TESCOIMDI site in Houston

The Texas Electric Steel Casting Company (TESCO) in Houston made steel casted products from 1926 until the company went bankrupt and abandoned the 35-acre site in 1992. The TESCO site also was known as the San Jacinto Foundry, which was a subsidiary of Many Diversified Interests, Inc. (MDI). The TESCOIMDI site is in the middle of a residential neighborhood northeast of downtown in the Fifth Ward of Houston. Bruce Elementary School is across the street from the site.

There are many chemical and safety hazards at the site:

- Two-thousand to 4,000 drums of oils, flammable solids, and caustic materials were left on the site by a chemical recycling company that leased part of the site in the 1980s. Many of these drums are corroded and leaking.
- Soil at the site is contaminated with high levels of lead, copper, nickel, and arsenic.
- Numerous waste piles of foundry slag and demolition debris (including wood, concrete, brick, and scrap metal) are scattered throughout the site.
- Two large water-filled pits on the site contain oils and other contaminants.
- Two 2,000-gallon underground storage tanks may contain diesel fuel or some type of oil.

These chemical and safety hazards at the TESCO/ MDI site could cause injury or sickness to children who trespass on the site. Although the site is enclosed by a chain-link fence topped with barbed wire, there is ample evidence that children have gotten onto the site in the past.

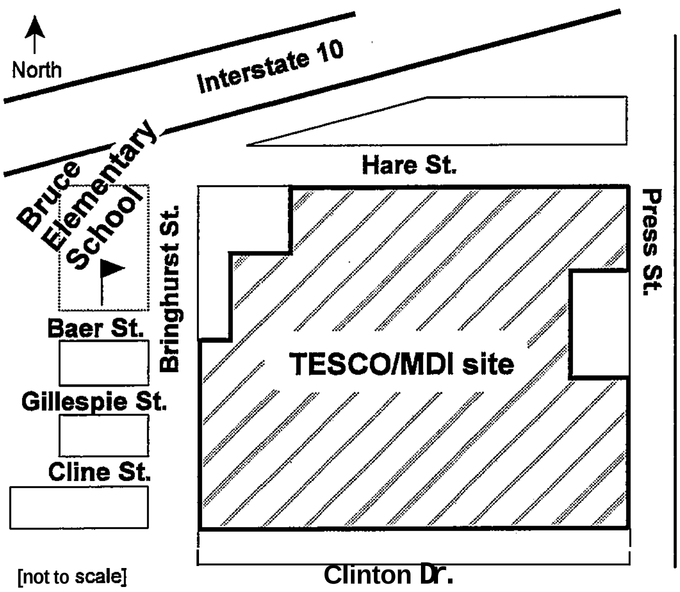
In addition to hazards on the TESCOIMDI site itself, site contaminants may have migrated off the site in 2 different ways. One way is through contaminated surface water. Drainage of surface water from the site is to the north and west. The main entrance to Bruce Elementary School is on Bringhurst Street, which runs along the west side of the TESCOIMDI site (Figure 1). According to the Bruce Elementary School Principal, Bringhurst Street floods with water 1 foot to 2 feet in depth after heavy rains.

A second pathway for migration of contaminants off the site in the past was through air deposition of lead and other contaminants from smokestacks at the facility onto soil in the surrounding residential neighborhood. The Texas Natural Resource Conservation Commission (TNRCC) tested soil in residential yards near the site and discovered lead levels above 500 ppm (the EPA action level for lead) in 86 yards. TNRCC began removing contaminated soil from residential yards near the site and will complete this part of the cleanup in 1999. It is not known if the lead in the residential yards came from the TESCOIMDI site; the lead in the soil may have come from several sources.

Lead from old house paint could be a source of soil lead in the area since the homes were built prior to the 1970s. Prior to the 1970s most house paint contained lead; chipped exterior paint often contributes to elevated soil lead levels around older homes. In addition, Interstate 10 runs just north of the TESCOIMDI site and the surrounding neighborhood. Deposition of lead from auto exhaust fumes prior to the introduction of unleaded gas in the 1970s also could be a factor in area soil lead levels.

The City of Houston Health and Human Services Department has conducted clinics at Bruce Elementary School to test residents near the site for lead in their blood. For 36 children from the area (age range: 1.1–11.0 years) that were tested from 1993 to 1996, the average blood lead level was 9.0 μg/dL (range: nondetect – 25 μg/dL). Twenty-two percent of the children tested in the area had blood lead levels greater than or equal to 10 μg/dL. In Texas as a whole in 1998, approximately 4% of children tested have blood lead levels greater than or equal to 10 μg/dL. While blood lead levels in children who live in the area appear to be higher than the state average, it is difficult to determine the extent to which the elevated soil lead levels may be a cause. The fact that blood lead screenings in

Figure 1. Location of TESCOIMDI Site, Houston



the area of the site have targeted children identified as high risk for lead exposure should also be considered.

The Texas Department of Health Environmental Epidemiology and Toxicology Division was able to match blood lead levels to soil lead levels in 10 children ($\leq$7 years of age) from the area. In addition, using EPA's Integrated Exposure Uptake Biokinetic (IEUBK) model, blood lead values were predicted based on soil lead values. Nine of the 10 children had blood lead levels within the 95" percentile limits predicted by the IEUBK model.

Based on the available information, soil lead levels in the area could result in lead exposures in small children. In light of this, a TDH toxicologist talked to all of the children at Bruce Elementary School on May 19, 1998. The toxicologist discussed the dangers of lead, how it can affect the body, and how to prevent exposure. Each student was given a pamphlet entitled, "Prevention: How to Protect Children Against Lead Poisoning."

In accordance with a cooperative agreement between TDH and ATSDR and in compliance with. the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the TDH Environmental Epidemiology and Toxicology Division will be completing a Public Health Assessment of the site that considers any potential exposure to contaminants or hazards associated with the site. CERCLA requires a Public Health Assessment to be completed for all sites on EPA's National Priorities List (NPL) of hazardous waste sites, better known as "Superfund" sites. The TESCOIMDI site was placed on the NPL in 1998.

TNRCC and EPA continue efforts to clean up the site and are keeping children off the site through warning signs, education, and site security. The City of Houston continues blood lead testing and lead prevention education for children in the area. TDH will complete a Public Health Assessment for the site in 1999 and continue education for residents and children about preventing exposure to lead and staying off the TESCOIMDI site.

This article was supported in part through funds from the Comprehensive Environmental Response, Compensation, and Liability Act Trust Fund under a cooperative agreement with the Agency for Toxic Substances and Disease Registry, Public Health Service, US Department of Health and Human Services.

Environmental Epidemiology and Toxicology Division (512) 458-7269

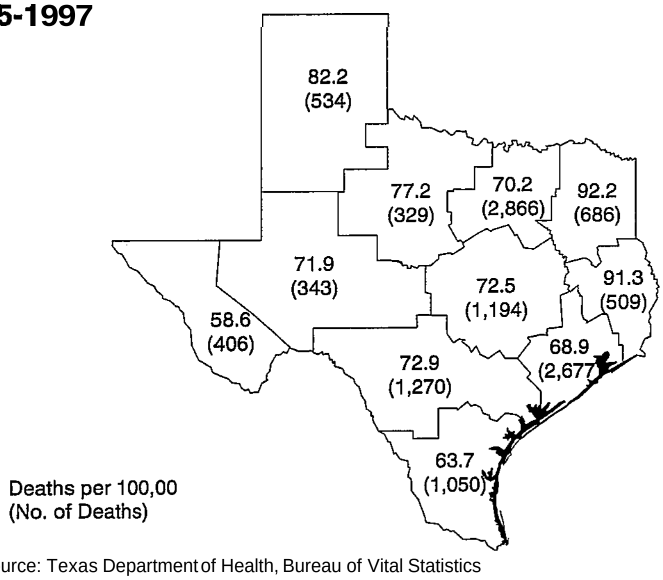
Child Mortality

There were 3,866 deaths to Texas children under the age of 18 during 1997, representing a mortality rate of 70.5 cases per 100,000 children in the population. This slight decrease from the 1996 rate continues the steady decline in child mortality rates during the last 2 decades. A similar decline is evidenced among each of the major causes of child death with the exception of suicide. The incidence, rates, and trends for specific causes of death and ages of children have been detailed in previous editions of this report. Further information about the causes and circumstances of child deaths can also be found in the "Texas Child Fatality Review Team 1996-1997 Biennial Report," available at www.tdh.state.tx.us/epidemiology/cfrt.htm. The present article describes recent geographical patterns in Texas child deaths.

Figure 1 depicts the incidence of child death and mortality rates for each of the public health regions (PHRs) in Texas from 1995 through 1997 and the average mortality rate for these 3 years. Data from 3 years are used to provide a more accurate "snapshot" of the scope of child deaths in each region and to avoid potentially misleading assumptions based on an uncharacteristically high or low number of deaths for a single year.

In Texas from 1995 through 1997 there were 11,864 deaths to children. On average, this is nearly 72 deaths annually for every 100,000 children under the age of 18 in the population. Many of the regions fall near or below this average rate, most noticeably Regions 10 and 11 with child mortality rates 18% and 11% lower, respectively, than the state rate. Conversely, Region 4 (92.2 deaths/100,000) and Region 5 (91.3 deaths1 100,000) have average annual mortality rates more than 25% higher than the overall rate.

Figure 1. Child Mortality by Public Health Region, 1995-1997



Source: Texas Department of Health, Bureau of Vital Statistics

Manner of Death

Most child deaths are due to natural causes, ie those resulting from diseases, anomalies, perinatal conditions, or certain ill-defined conditions (Table 1). Although regions 1, 5, and 9 have the fewest number of natural deaths during the 3 years than almost any other region, they also have the highest rates of child mortality due to natural causes. Each of these regions has a rate more than 10% higher than the state rate of 49.9 deaths per 100,000 population. Given that most natural deaths occur to infants, it is not surprising that each of these 3 regions also has an infant mortality rate higher than the state average.

External causes of death are more generally known as injuries. These causes of death can usually point to one specific external event that initiated the chain of morbid conditions that resulted in death, such as automobile crash, shooting, drowning, etc. Generally, natural deaths outnumber injury deaths by at least 2:1. In Region 5, however, this ratio is 1.7:1, and in Region 4 the number of injury deaths begins to approximate the number of natural deaths. Not coincidentally, these 2

Table 1. Manner of Death by Public Health Region, 1995-1997

	Natural		External	
	Rate	No.	Rate	No.
PHR 1	58.3	379	23.9	155
PHR 2	53.5	228	23.7	101
PHR 3	48.8	1,992	21.4	874
PHR 4	51.2	381	41.0	305
PHR 5	57.2	319	34.1	190
PHR 6	49.5	1,925	19.4	752
PHR 7	48.1	792	24.4	402
PHR 8	51.8	903	21.1	367
PHR 9	55.5	265	16.3	78
PHR 10	45.0	312	13.6	94
PHR 11	46.4	765	17.3	285
Texas	**49.9**	**8,261**	**21.8**	**3,603**

Source: Texas Department of Health, Bureau of Vital Statistics

regions have the highest rates of injury death in the state. The injury death rate in Region 5 is 40% higher than the next highest injury death rate (Region 7) and the rate in Region 4 is nearly 70% higher. While these 2 regions exceed the state average in many causes of injury deaths, the most prominent is among motor vehicle fatalities. There were 1,564 Texas children killed in motor vehicle crashes from 1995 through 1997, a mortality rate of 9.4 deaths per 100,000 population. Nearly 20% of these victims were residents of Regions 4 or 5. The motor vehicle fatality rates in Region 5 (16.5 deaths/100,000) and Region 4 (24.1 deaths/100,000) are nearly 2 to 3 times higher than the state rate.

Prevention

The preventable nature of many child deaths makes them all the more tragic. While this report has specified those regions with higher than average child mortality rates in an effort to denote those areas in need of attention, perhaps closer examination of the regions with lower than average mortality rates can provide some clues as to how more deaths might be prevented. Most noticeably, Regions 9, 10, and 11 have lower than average rates for all major causes of child death. The policies, interventions, and social conditions of these regions which contribute to the lower mortality rates might be incorporated by other regions and communities. Such efforts across regions could be useful in helping to protect the children of Texas.

Bureau of Epidemiology (512) 458-7268

Cryptosporidiosis at Brushy Creek

Background

Cryptosporidiunz parvum is a single-celled parasite that can live in the intestines of humans, farm animals, wild animals, and household pets. The *C. parvum* oocysts are shed in the feces of infected animals and people, and can be transmitted to the next host when fecally contaminated food or water is ingested. Intestinal cryptosporidiosis causes a self-limiting watery diarrhea that lasts from a few days to a few weeks. Patients also frequently experience abdominal cramps, headaches, nausea, and occasionally vomiting. There is no treatment for cryptosporidiosis. A variety of exposures have been associated with cryptosporidiosis outbreaks, including attendance at daycare centers; consumption of contaminated fruits, vegetables, or drinking water; and exposure to sick animals. The largest outbreak occurred in 1993 in Milwaukee, Wisconsin, where more than 400,000 people became ill after drinking contaminated water.[1] Prior to 1998, the last major waterborne cryptosporidiosis outbreak in Texas occurred in Braun Station, near San Antonio, in 1983.[2]

On July 24, 1998, the Drinking Water Utilities section of the Texas Natural Resources Conservation Commission (TNRCC) called Texas Department of Health (TDH) to request assistance from the Infectious Disease Epidemiology and Surveillance Division (IDEAS) with a possible waterborne illness outbreak in Williamson County, Texas. A lightning strike during a thunderstorm had shorted the controls of a sewage lift station on July 13, 1998, near the Brushy Creek Municipal Utility District (MUD). Brushy Creek MUD serves a number of neighborhoods in the Brushy Creek-Cat Hollow area adjacent to Round Rock near the Williamson County-Travis County line. Following the lightning strike, a raw sewage spill of approximately 167,000 gallons flowed into Brushy Creek, a spring-fed creek that flows west-east through southern Williamson County. On July 17, 1998, TNRCC instructed the Brushy Creek MUD to draw raw water samples from its 5 wells to test for fecal coliforms. Treated water from the wells tested prior to distribution had been negative for fecal coliforms, but due to the possibility of parasitic contamination, TNRCC asked the MUD to test raw water samples as well.

On July 21, 1998, results from the raw water samples tested by TNRCC were reported as positive for Escherichia coli. Because of the positive contamination results from 4 of 5 MUD wells tested, TNRCC ordered the 5 wells taken off line and instructed the MUD to buy its drinking water from the city of Round Rock. On July 24, IDEAS and the Williamson County and Cities Health District began to get calls from Brushy Creek residents complaining of nausea, diarrhea, and abdominal cramps.

IDEAS and the local health department agreed to distribute specimen containers to Brushy Creek residents to obtain samples for bacterial cultures, electron-microscopic examination for small round-structured viruses, and ova & parasite (O&P) examinations. TDH gave the specimen containers to public health nurses for the Williamson County and Cities Health District to distribute to Brushy Creek residents. Twelve samples were returned for testing on July 27, 1998. All stool samples were negative for bacterial and viral pathogens. Six of the initial 12 O&P samples tested were positive for *Cryptosporidium parvum* oocysts.

Methods

A case-control study was performed on a random sample of Brushy Creek MUD customers to identify exposures and risk factors associated with illness. The Brushy Creek MUD provided IDEAS with a line listing of all of their customers, from which 500 households were randomly sampled. A questionnaire was developed to elicit information about patient demographics, symptoms, and exposures relevant to cryptosporidiosis. Questions were asked regarding exposures to unfiltered tap water, filtered tap water, bottled water, swimming or other recreational water, and consumption of raw or fresh produce. Respondents were also asked about exposures to diapered children, pets, livestock, and recent travel history. Interviews were conducted from July 28 through July 30, 1998, via telephone. IDEAS recruited and trained volunteer staff from other divisions within TDH to assist with the data collection.

All residents of the Brushy Creek area in either Williamson or Travis County who were ill with watery diarrhea (defined as 3 or more loose stools in a 24-hour period) from July 14 through August 15, 1998, were considered case-patients (see Figure 1). Patients who had an O&P examination positive for *Cryptosporidium pawum* were considered to have confirmed cases of cryptosporidiosis. Brushy Creek residents who experienced watery diarrhea but who had no laboratory testing performed were considered to have probable cases. A suspect case was defined as any person who visited the Brushy Creek area who subsequently developed watery diarrhea during the outbreak period.

Results

Of the 189 households interviewed, 90 (47%) reported that 1 or more family members became ill, and 99 (52%) reported no ill family members. Diarrhea, defined as 3 or more loose stools within a 24-hour period, was the most commonly reported symptom (99% of ill respondents had diarrhea). The mean duration of illness was 7 days (range: 1-45 days). The mean number of stools on the worst day of illness was 9 stools (range: 2-25 stools).

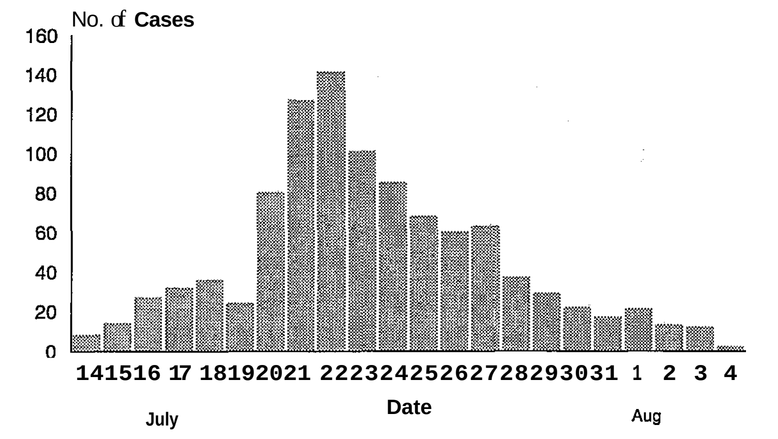
The Centers for Disease Control and Prevention suggested that TDH examine stool incontinence as an important indicator for the severity of disease. When asked the question "Was your diarrhea explosive, such that you could not control it or could not make it to the bathroom in time?" 57% of ill survey respondents answered affirmatively.

TDH received laboratory reports confirming cryptosporidiosis in 89 Brushy Creek residents. Bacterial cultures were negative and so were electron microscopic examinations for viruses. One patient's illness was identified as giardiasis, and this case was judged to be part of the background rate of gastroenteritis in the community.

The only exposure that was significantly associated with illness was consumption of drinking water from the contaminated MUD wells. Customers whose drinking water came from the contaminated wells were nearly 5 times more likely to be ill than MUD customers whose drinking water source was treated surface water from Round Rock (OR= 4.85, CI 1.86-13.14, p=0.0001). Customers whose drinking water came from the contaminated wells were almost 3 times more likely to be ill than customers whose drinking water was supplied by the city of Round Rock (RR=2.81, CI 1.4-5.5, p=0.0001).

Among MUD well water drinkers, customers who drank unfiltered tap water were more likely to be ill than customers who drank filtered or bottled water

Figure 1. Epidemic Curve--Brushy Creek Cryptosporidiosis Outbreak, Williamson County, July - August 1998



(OR=4.68, CI 2.1-10.3, p=0.00001). Drinking bottled water was protective, although not significantly (OR=.50, CI .23-1.08, p=0.05). If IDEAS had identified and interviewed more bottled water drinkers, the protective effect probably would have achieved statistical significance.

The mean number of household members for the 189 households interviewed was 3.4 (range: 1-7). Approximately 10,000 people live in Brushy Creek, with approximately 6,000 people exposed to drinking water from the contaminated wells from July 14 through July 21, 1998. The attack rate for illness among exposed residents was 24%. TDH estimates that 1,440 residents became ill during the outbreak. The number of subsequent cases caused by person-to-person spread in central Texas following this outbreak cannot be determined because the outbreak increased physician awareness of the illness and likely altered testing practices. Prior to the outbreak, only 2 case of cryptosporidiosis had been reported in Public Health Region 7 in 1998. Eighty-five confirmed cases of cryptosporidiosis were officially reported during the outbreak, and 45 additional cases were reported in PHR 7 from September 1 through December 31, 1998. How many of those cases would have occurred without the outbreak cannot be established because there are no reliable data on the normal background rate of cryptosporidiosis in central Texas.

Discussion

The Brushy Creek outbreak is significant because it occurred under unusual circumstances. Central Texas experienced extreme drought conditions in July 1998, with near record temperatures and virtually no rainfall for months. From May through October 1998 there were more than 20 days when the temperature exceeded 100°F. These conditions created a scenario where demands on the local water systems to provide drinking water, recreational water, and water for lawns and gardens were much greater than even the normally high demands placed on water systems during summer months.

The wells that became contaminated were more than 1/4 mile from Brushy Creek proper. The wells were also more than 100 feet deep and encased in cement. These types of wells traditionally have been assumed to be immune from the influence of surface waters. This outbreak illustrates that wells can still be influenced by surface waters under certain conditions, even if they are not directly proximate to the surface water body. TNRCC believes that under the prevailing drought conditions in July 1998, the springs that normally feed Brushy Creek instead drew the spilled sewage down into the aquifer and through a geologic fissure underground into the wells. This also illustrates the impact of the hydrogeologic properties of the Edwards Aquifer and the limestone formations beneath the Texas Hill Country. If the water table had not been drawn down so low due to high water demand and weeks without rainfall to recharge the aquifer, the outbreak might not have occurred, even in the face of a large-scale sewage spill.

References:

1. MacKenzie WR, Hoxie MS, Proctor ME, et al. A massive outbreak in Milwaukee of Cryptosporidium transmitted through the public water supply. N Engl J Med 1994;331:161-7.
2. D'Antonio RG, Winn RE, Taylor JP, et al. A waterborne outbreak of Cryptosporidiosis in normal hosts. Ann Intern Med 1985;103:886-8.

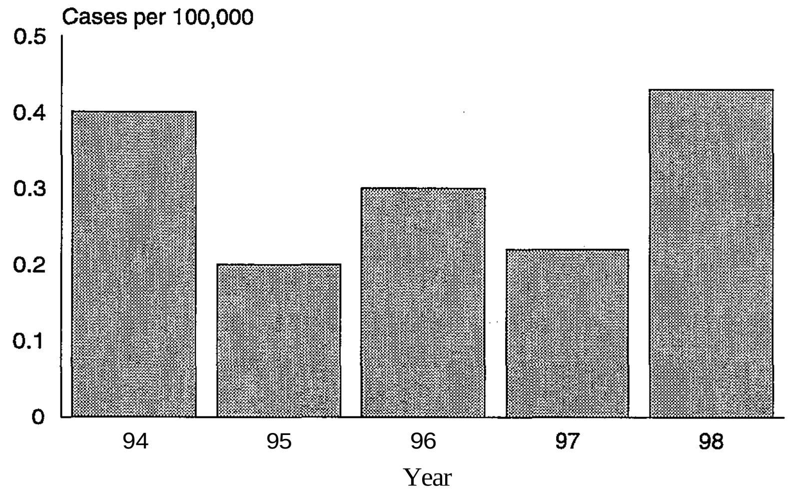
Infectious Diseases Epidemiology and Surveillance Division (512) 458-7676

Escherichia coli O157:H7

First identified as a pathogen in 1982, Escherichia coli (E. *coli*) O157:H7 became a reportable disease in Texas in February 1994. Although hundreds of E. coli strains are harmless human and animal intestinal commensals, E. coli O157:H7 secretes a shiga-like (Vero) toxin similar to that of Shigella dysenteriae.[1] Infection may follow ingestion of as few as 10 organisms. Symptoms include watery diarrhea with abdominal cramps that may progress to severe bloody diarrhea, vomiting, and little or no fever. Illness usually resolves within 5 to 10 days without sequelae, but rare complications like hemolytic uremic syndrome (HUS) may lead to death.' Severe complications most commonly occur in children under 5 years of age and in the elderly.

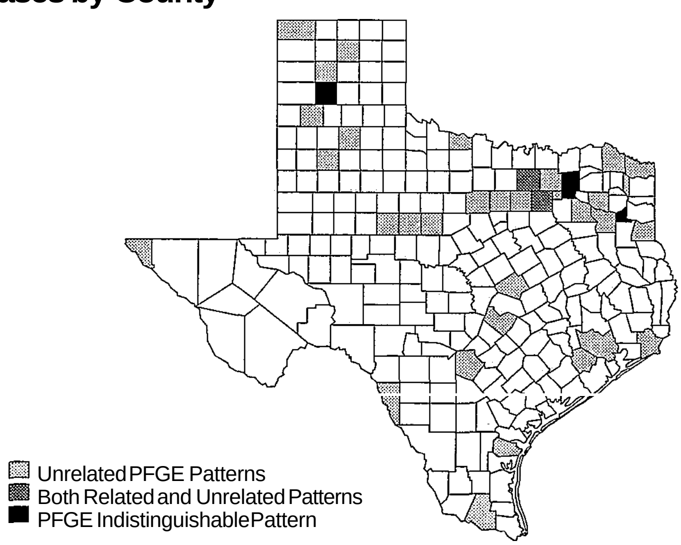
Figure 1 demonstrates incidence rates of reported E. coli O157:H7 cases over the past 5 years in Texas. The 1998 incidence rate for E. coli O157:H7 was 0.43 cases per 100,000 population (85 cases). Although this is the second highest rate since 1994, E. coli O157:H7 infection is still far less common than infection with other foodborne pathogens such as Shigella spp. (20.301100,000), *Salmonella* spp. (17.30/100,000), or Hepatitis **A** (17.70/100,000).

Figure 1. E. *coli* O157:H7 Incidence Rates, 1994-1998



Of interest in 1998 was the emergence of an indistinguishable pattern of DNA pulse field gel electrophoresis (PFGE) E. coli O157:H7 cases that appeared to be closely related to that of a nationally publicized water park outbreak in Georgia. The 17 patients with this pattern were from North Texas; most (82.4%) were children under 6 years of age. Of the patients in this cluster, 1 child died and 4 others developed HUS. Even though these patterns were indistinguishable by PFGE, an exhaustive epidemiological investigation was unable to link any of these cases to a particular food source. Regional distribution of these cases within Texas is shown in Figure 2. During this investigation, hamburger, contaminated with other strains of E.

Figure 2. PFGE Pattern Distribution of *E. coli* O157:H7 Cases by County



coli O157:H7, was identified in Texas and recalled.

Although the most common mode of E. *coli* O157:H7 transmission is ingestion of undercooked contaminated ground beef, ingestion of other fecally contaminated food products (ie, alfalfa sprouts, cattle manure fertilized produce, and unpasteurized milk or fruit juices) can cause disease.[1,2]

Additionally, E. *coli* O157:H7 can be transmitted by contact with an infected person or by swallowing contaminated water while swimming.' The spread of this organism can be prevented by pasteurizing fruit juices and dairy products, thoroughly cooking all ground beef until the juices run clear, separating all contact between raw meat from cooked or ready to eat foods, washing organically grown fruits and vegetables, and chlorinating water.[1]

References:

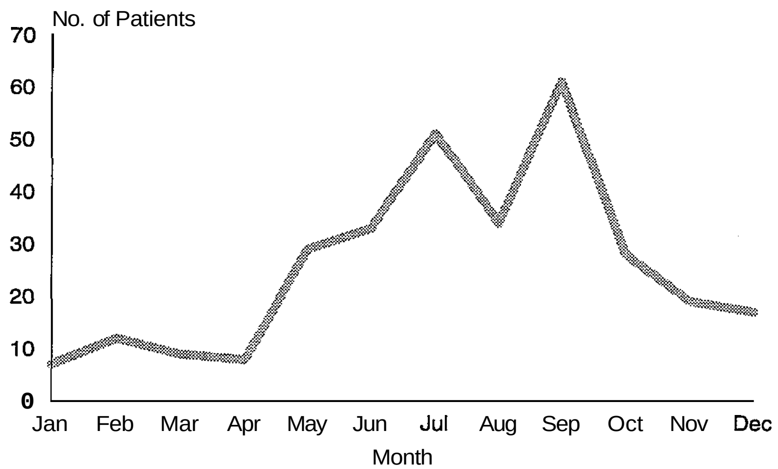
1. Benenson Abram, editor. *Control of Commzinicable Diseases in Man.* 15th ed. Washington, DC: American Public Health Association, 1990:381-383.
2. Cieslak PR, Barrett TJ, Gensheimer KF, et al. *Escherichia coli O157:H7 Infection from a Manured Garden.* Lancet 1993 Aug 7; 342 (8867):367.

Infectious Diseases Epidenziology and Surveillance Division (512) 458-7676

Enteroviruses, nonpolio

The enteroviruses are a group of at least 67 recognized virus serotypes including polioviruses, coxsackie A and B viruses, echoviruses, and the numbered enteroviruses. Wild-type polioviruses are no longer a major threat in the United States; however, vaccine strains are frequently isolated from young children. As a result, polioviruses isolated in 1998 have limited epidemiological significance and will not be included in this report. Infections caused by nonpolio enteroviruses (NPEVs) are associated with a variety of symptoms but, contrary to what the name suggests, are infrequently associated with enteric disease. Although NPEV infections are usually mild or asymptomatic, patients may present with fever and a rash, herpangina, conjunctivitis, and central nervous system symptoms that range from aseptic meningitis and encephalitis to paralysis. The disease presentation of NPEV infection is unpredictable because a single enterovirus can cause no symptoms or many different symptoms. Individuals with immune deficiencies such as agarnmaglobulinemia may develop a chronic meningitis or meningoencephalitis.

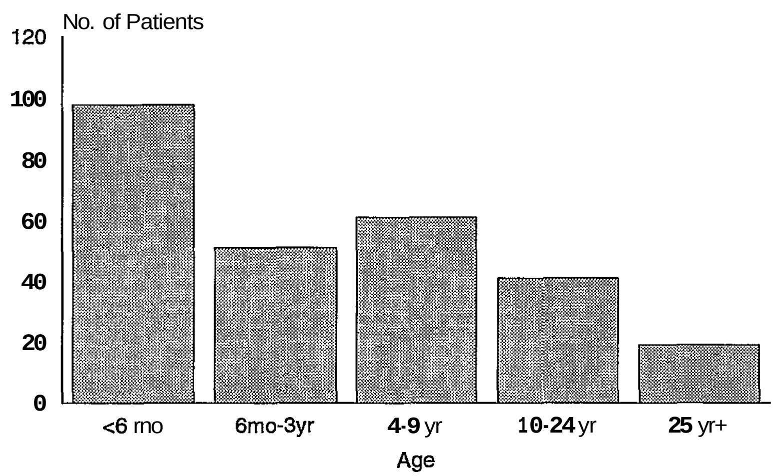
Figure 1. Patients with NPEVs by Month of Specimen Collection



NPEVs are found worldwide, and in Texas's temperate climate NPEVs are isolated primarily in summer and fall. The mode of transmission is mainly by the fecal-oral route. NPEV can be isolated from feces, pharyngeal specimens, spinal fluids, blood, urine, vesicle fluid, and conjunctiva. Virus can be recovered from the pharynx only during the first week of illness but can be recovered from fecal specimens for a period of at least 3 to 5 weeks. Therefore, a patient can serve as a source of infection long after his/her symptoms have resolved. The incubation period for NPEV infections is usually 1 to 2 weeks, but varies from 2 to 35 days.

Viruses are obligate intracellular parasites that require a living host system to grow and replicate. The

Figure 2. Age Distribution of Patients with NPEV



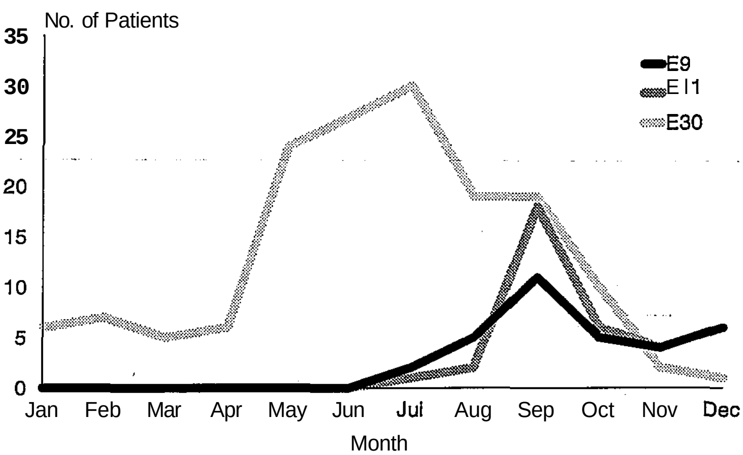
Viral Isolation Laboratory uses a combination of cell cultures to isolate viruses. The isolates can be identified by serum neutralization or irnrnunofluorescence. Irnrnunofluorescence is used to identify 14 of the NPEVs, including coxsackie virus types A9 and A24; coxsackie virus types B1 through B6; echovirus types 6, 9, 11, and 30; and enterovirus types 70 and 71. For these viruses, the time necessary for serotype identification is generally 2 to 4 days from receipt of the specimen and is primarily dependent upon the speed with which the isolate grows in cell culture. For the NPEV that must be identified by serum neutralization test, the time necessary for serotype identification is generally several weeks, again dependent on the isolate's growth pattern.

The laboratory recovered a total of 328 NPEVs from 308 patients whose specimens were collected during 1998. Eighteen patients had the same NPEV recovered from multiple specimens. The specimens were submitted from the following Texas counties: Bell, Bexar, Bowie, Dallas, El Paso, Galveston, Harris, Jefferson, Lubbock, Nueces, Potter, Presidio, Somervell, Taylor, Travis, and Walker.

Dates of specimen collection were available for 305 of the 308 patients whose specimens yielded NPEV. NPEVs were recovered from specimens collected during every month of 1998 (Figure 1). Of the 308 patients whose specimens yielded an NPEV, 236 (76.6%) had specimens collected in the 6 month period from May though October 1998. Ages were available for 270 of the 308 patients. Figure 2 shows the age profile of patients whose specimens yielded an NPEV. More than half of the patients (1491270) were 3 years of age or younger. Sex was indicated for 277 patients: 161 (58.1%) were male, and 116 (41.9%) were female.

Seventeen different NPEVs were isolated from patients whose specimens were collected in 1998. Coxsackie viruses were isolated from 49 patients. The following coxsackie virus types (number of patients) were identified: A2 (1), A9 (6), B1 (13), B2 (14), B3 (8), and B4 (7). Echoviruses were isolated from 255 patients. The following echovirus types (number of patients) were identified: 5 (3), 6 (16), 7 (1), 9 (33), 11 (37), 13 (1), 16 (1), 18 (3), 22 (1), 25 (3), and 30 (156). Enterovirus type 71 was isolated from 4 patients. Echovirus types 9, 11, and 30 were isolated most frequently. Echovirus type 9 (E9) was recovered from 36 specimens collected from 33 patients, echovirus type 11 (E11) was recovered from 37 patients, and echovirus type 30 (E30) was recovered from 162 specimens collected from 156 patients.

Figure 3. Patients with E9, E11, and E30 by Month of Specimen Collection



Enteroviral isolates formed 2 peaks of activity (Figure 1), 1 in July and 1 in September. E30 was recovered from specimens collected during every month in 1998 (Figure 3). During the July peak, E30 was recovered from 30 of the 51 patients whose specimens yielded an NPEV. During the September peak, E9 and E11 were recovered from 29 of the 61 patients whose specimens yielded a NPEV. Neither E9 nor E11 was recovered from specimens collected prior to July 1, 1998.

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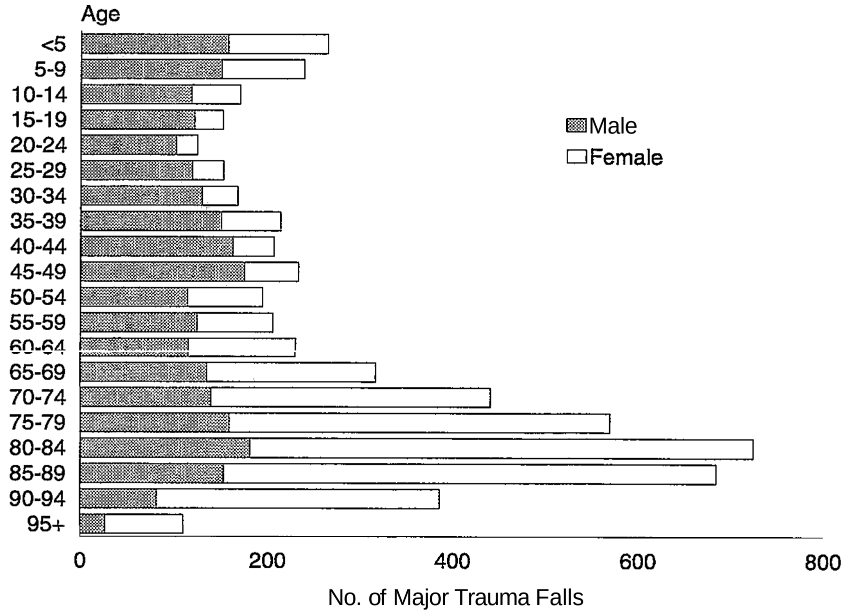
Falls

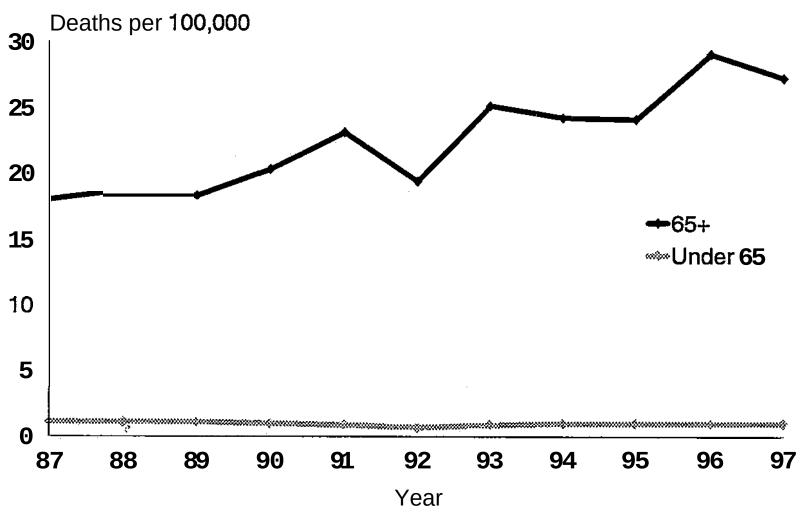
Falls are the second leading cause of unintentional injury deaths in Texas. In 1997, 707 Texas residents died from falls.[1] Overall, the crude death rate for falls has increased 29% from 1987 to 1997 (from 2.8 to 3.6 deaths per 100,000 population). Older persons (aged 65 years and older) are especially at risk for dying from falls. The fall death rate for older persons is 27 times greater than the fall death rate for persons less than 65 years of age. Crude rates for persons under age 65 have been stable over recent years, but rates for persons aged 65 years and older have increased slightly (Figure 1).

Figure 2. Major Trauma Falls by Age, 1997



Injury mortality data have been readily available whereas injury morbidity data have only recently begun being collected on a statewide level. A trauma reporting mandate went into effect August 1996 which requires all hospitals in Texas to electronically report data about major trauma patients[2] to the state Trauma Registry (TR). The reporting of nonfatal injuries is vital to assessing the scope and magnitude of the injury problem. For 1997, the TR received 55,154 trauma records from 268 hospitals. Of the 16,813 major trauma records received for unintentional injuries, 5,850 (35%) were fall related and will be the focus of the remainder of this summary. Thus, an average of 16 people were admitted to trauma facilities for falls daily.

Figure 1. Fall-Related Mortality Rates, 1987-1997



Based on the data, falls were the second leading cause of major trauma for all ages combined and the leading cause of major trauma for older persons. Males comprised 68% of the fall patients younger than 65 years but only 27% for those aged 65 and older (Figure 2). Whites accounted for 66% of the falls followed by Hispanics, (23%), Blacks, (7%), and Other, (4%).

Table 1 shows the number and percent of different types of falls according to the International Classification of Diseases (ICD) external cause

Table 1. Major Trauma by Type of Fall, 1997

Type of Fall (E880-E886, E888)	No.	%
Fall on or from stairs or steps (E880)	**319**	**5.5**
Escalator (E880.0)	13	
Fall on or from sidewalk curb(E880.1)	28	
Other stairs or steps (E880.9)	278	
Fall on or from ladder or scaffolding (E881)	**326**	**5.6**
Fall from ladder (E881.0)	262	
Fall from scaffolding (E881.1)	64	
Fall from or out of building (E882)	**246**	**4.2**
Fall into hole or other opening in surface (E883)	**55**	**0.9**
Accident from diving or jumping into water (E883.0)	23	
Accidental fall into well (E883.1)	3	
Accidental fall into storm drain or manhole (E883.2)	4	
Fall into other hole or opening in surface (E883.9)	25	
Other fall from one level to another (E884)	**1,248**	**21.3**
Fall from playground equipment (E884.0)	104	
Fall from cliff (E884.1)	16	
Fall from chair (E884.2)	257	
Fall from wheelchair (E884.3)	45	
Fall from bed (E884.4)	103	
Fall from other furniture (E884.5)	31	
Fall from commode (E884.6)	16	
Other fall from one level to another (E884.9)	676	
Fall on same level from slipping, tripping, or stumbling (E885)	**2,369**	**40.5**
Fall on same level from collision, pushing, or shoving, by or with other person (E886)	**109**	**1.9**
In sports (E886.0)	72	
Other and Unspecified (E886.9)	37	
Other and unspecified fall (E888)	**1,178**	**20.1**
Total	**5,850**	

categories. The falls can be further classified into 3 broad areas:

- Falls from one level to another (Ecodes - 880, 881, 882, 884) 2,139, 36.6%.
- Falls on the same level (Ecodes - 885, 886.0) 2,441, 41.7%.
- Other and unspecified falls (Ecodes - 883, 886.9, 888) 1,270, 21.7%.

By far, the most frequent type of fall was a fall on the same level from slipping, tripping, or stumbling (E885, 40.5%). It is about 20% higher than other commonly used fall Ecodes: other fall from one level to another (E884, 21.3%), and other and unspecified fall (E888, 20.1%).

About half (52%) of the reported falls occurred at home, followed by 14% in unspecified places and 10% in residential institutions. Eighty percent of the falls occurred at home or at residential institutions for older persons, compared with 40% for patients younger than 65 years of age.

Five injury diagnoses can be reported for a single patient. The 5,850 fall patients had a total of 9,290 injuries (Table 2), of which lower limb fractures (3,464) were the most common injury. About three quarters of the lower limb fractures (2,567) were hip fractures (ICD injury code 820). The second most common injury was upper limb fractures (1,231), followed by intracranial injuries (excluding skull fractures, 1,035).

Table 2. Injuries from Major Trauma Falls, 1997

Injury	No.	%
Lower Limb Fractures	3,464	37.3
Upper Limb Fractures	1,231	13.3
Intracranial Injury (excluding skull fractures)	1,035	11.1
Neck and Trunk Fractures	852	9.2
Skull Fractures	640	6.9
Contusions	465	5.0
Open Wound of Head, Neck, and Trunk	418	4.5
Internal Injury of Thorax, Abdomen, and Pelvis	384	4.1
Superficial Injury	271	2.9
Dislocations	148	1.6
All Other	382	4.1
Total	**9,290**	

Condition on discharge was reported for 4,684 (80%) of the fall patients. Of those, 2,775 (59%) had an outcome less desirable than "good, returned to previous level of function," and there were 227 (5%) falls that resulted in death. For those patients that died, 121 (53%) had an intracranial injury or skull fracture.

Cost information was reported for only 3,683 (65%) of the fall patients, possibly because of the lag time in obtaining cost information and the requirement to send data to the state on a quarterly basis. For the cases that included the cost information, the average mean cost for a fall patient was $15,200. (The highest bill was more than $400,000, and the sum for all cases was $56 million.) This represents the cost associated with the initial visit to a hospital or transfer hospital for trauma services and does not include follow up visits or costs associated with the recovery or rehabilitation of the patient. Deaths and injuries from falls occur in every age group but are especially a problem with older persons and often cause hip fractures. Most fall injuries happen in the home, and falls are very deadly when a traumatic brain injury is sustained. In summary, fall-related mortality and morbidity represent an important public health problem in Texas.

Note:
1. International Classification of Diseases (ICD) external cause categories used for injuries and deaths in this summary: Unintentional Falls E880-E886, E888
2. A major trauma patient is defined as a patient with one or more International Classification of Diseases (ICD-9-CM) diagnosis codes in the 800 - 959.9 range, who has sustained injuries severe enough to benefit from treatment at a trauma facility, whose revised trauma score (RTS) is less than 11, and/or whose injury severity score (ISS) is 9 or above.

Injury Epidemiology and Surveillance Program
(512) 458-7266

Foodborne Illness Outbreaks

Public health departments throughout the United States frequently receive complaints of possible foodborne illness outbreaks. The public expects local, state, and federal agencies to ensure the safety of the food supply and to quickly identify foodborne illness outbreaks to prevent further cases of illness. In 1998 there were numerous outbreaks of foodborne illness identified nationally, and many products were recalled due to contamination with bacteria such as *Escherichin coli* O157:H7 and *Listeria monocytogenes.* In 1998 the Texas Department of Health (TDH) investigated outbreaks caused by bacteria and viruses that contaminated food and beverages. Outbreaks can occur for a variety of reasons. This summary describes 3 outbreaks with different causes: poor hygiene practices of a food handler, sanitation problems in a restaurant following a local water main break, and the environment where the food was harvested.

Viral Gastroenteritis on a College Campus

On March 10, 1998, TDH was notified of a cluster of ill college students in an east Texas county. The local hospital infection control practitioner and a restaurant inspector for the county identified 60 students who presented either to the local college infirmary or the hospital emergency room with nausea, vomiting, and diarrhea from March 9 through 11, 1998. Staff from TDH Central Office, PHR 6/5 South and the Centers for Disease Control and Prevention (CDC) were sent to investigate the outbreak.

A case-patient was defined as a university student with vomiting or diarrhea (23 loose bowel movements' during a 24-hour period) with onset on or after March 5, 1998. On March 13 emergency departments at 7 hospitals around the university were contacted by telephone and asked to report any recent patients with gastroenteritis. The outbreak received media coverage on television and in local newspapers. Two case-control studies were conducted looking for exposures associated with illness, and patient stool and blood specimens were sent to both the TDH lab in Austin and to the CDC lab in Atlanta, Georgia. Food samples were sent to the Division of Molecular Virology at Baylor College of Medicine in Houston for viral studies and to TDH lab in Austin for bacterial cultures.

All identified cases occurred among students who lived on campus and ate most of their meals at the university's main cafeteria. Of the 2,054 university students participating in the university meal plan, 61 presented to student health services with symptoms of acute gastroenteritis and 64 others presented to a local emergency room. Of these 125 students who sought treatment, 65 (52%) were interviewed for the case-control- studies. The dates of illness onset for the students were March 9-14, 1998. The median age of patients was 19 years (range: 18-22 years); 45 (69%) were freshman, and 40 (62%) were female. The median duration of illness was 2 days (range: 1-10 days), and ill students missed a median number of 2 class days (range: 0-3 days). Twenty-three students were hospitalized for severe dehydration, but no deaths were reported.

Case-control studies found that illness was associated with eating at the main cafeteria deli bar during lunch on March 9 (OR=11.0, 95% CI=1.6-473) or March 10 (OR=8.0, 95% CI=1.1-354). Of the 65 ill students in the studies, 38 (58%) reported eating at the deli bar within 24 hours, 48 (74%) within 48 hours, and 49 (75%) within 72 hours before becoming ill.

Cultures of 62 stool specimens did not yield *Salmonella, Shigella, Campylobacter, Vibrio* spp., *Listerin, Yersinia* spp., *Escherichia coli* O157:H7, *Bacillus cereus*, or *Staphylococcus aureus*. Of 18 fresh, whole stool specimens from ill students sent to CDC, 9 (50%) had evidence of Norwalk-like Virus (NLV) by reverse transcriptase-PCR (RT-PCR). Of the foods examined, only the ham sample left over from March 9 was positive by RT-PCR for the presence of NLV RNA.

The food handler who prepared foods for the deli bar on March 9 denied having any symptoms of gastroenteritis but reported caring for an infant with a diarrheal illness that began on March 7, 3 days before the outbreak, and continued through March 24. A stool specimen collected from her ill infant on March 24 was positive for NLV. The sequence of amplified NLV product obtained from the infant was indistinguishable from that obtained from ill students and the deli ham. These findings, indicate that the worker was shedding NLV on March 9, either symptomatically or asymptomatically, and that she inadvertently contaminated the deli items at that time.

Salmonella Contamination in a Restaurant

On March 16, 1998, the Texas Department of Health offered to assist the San Antonio Metropolitan Health District (SAMHD) in an investigation of gastrointestinal illness among patrons of a downtown San Antonio restaurant. The restaurant had been associated with 2 gastroenteritis outbreaks among patrons who ate there on February 28 and again on March 8, 1998. Restaurant inspections, food sampling, employee interviews and rectal swab collections were conducted by SAMHD. To determine what foods were epidemiologically linked to the illness, the Texas Department of Health assisted SAMHD with a case-control study of restaurant patrons.

A case-patient was defined as any patron who experienced nausea, vomiting, diarrhea (≥ 3 loose stools in a 24 hour period), and abdominal cramps after eating in the restaurant from February 28 through March 14, 1998. Investigators identified 83 ill patrons and interviewed 171 total patrons who ate in the establishment on 1 of the 2 weekends associated with illness outbreaks. Most patrons resided in Texas (84%); others were from Missouri (6%), Mississippi (2%), California (1%), Iowa (1%), and Illinois (1%).

Ill patrons reported experiencing diarrhea (92%), abdominal cramps (87%), nausea (83%), fever (81%), vomiting (59%), and bloody stools (24%). The median incubation period for onset of diarrhea was 24 hours. Sixty-one percent of ill patrons sought medical care from a health professional; of these, 28% visited an emergency room, and 5% were hospitalized. Eight patrons had positive stool cultures for *Salmonella typhinzurium.*

Several food items consumed on February 28 were associated with illness: any salad (OR=5.2, 95% CI 1.9-15.5), chicken strips (OR=16.4 95% CI 1.8-377), bread (OR=5.8 95% CI 1.6-21), catsup (OR=8 95% CI 1.3-60.9), and ice cream (OR=4.5 95% CI 1.07-20.1). Only 26% of ill persons ate chicken strips; 52% ate any salad. Nine ill persons did not eat chicken strips or salad. Attempts to identify 1 particular food item as the vehicle were unsuccessful. Drinking water or tea was not associated with illness on this date. Drinking an alcoholic beverage (OR=0.28, $p < .05$) was protective.

Eighty-nine surveys were completed for patrons who ate on March 8, 1998. Drinking iced tea was significantly associated with an increased risk of illness among persons eating at the restaurant on March 8 (OR=32, 95% CI 7.6-180, $p < 0.001$). A statistical analysis that controlled for iced tea consumption revealed that no other foods or beverages consumed were associated with illness on March 8. Analysis of food samples collected by SAMHD on March 16th indicated that iced-tea was positive for *Salmonella typhimurium.* In addition, two food handlers who worked on (and ate a meal at the restaurant on) February 28 and/or March 8, 1998, were culture positive for *Salmonella typhimurium.*

This outbreak was attributed to different food items on different weekends. Several food items served on February 28 were probably contaminated with *Salmonella typhimurium*. Consumption of tea was not associated with illness on this date. Only 24% of ill persons who ate on February 28 drank tea. However, iced tea was the only food item statistically associated with illness among patrons on March 8, and iced tea accounted for 91% of ill persons on this date. *Salmonella typhimurium* was isolated from iced tea samples collected on March 16, supporting tea as a vehicle for Salmonella. The iced tea may have been contaminated during preparation by an ill food handler, or the restaurant's water supply may have been contaminated by sewage as a result of construction and repairs on the distribution system at the time of the initial outbreak.

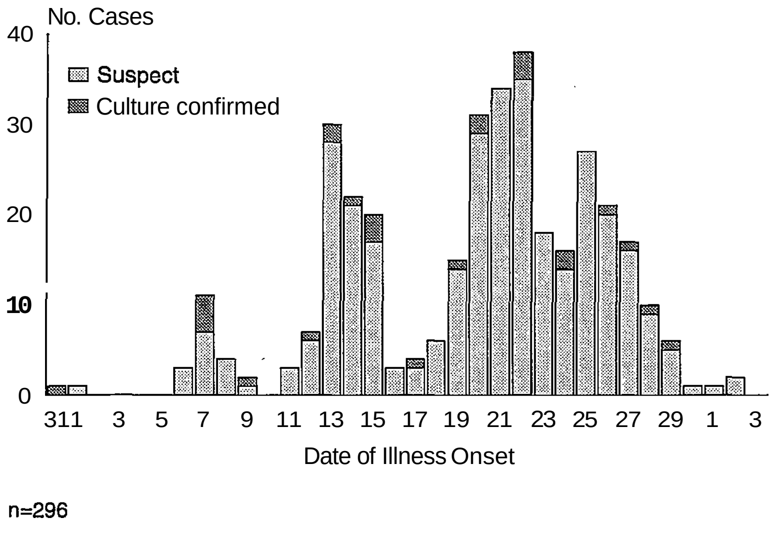
Vibrio parahaemolyticus from *Raw* Oysters

Vibrio parahaemolyticus is a leading cause of foodborne illness in the world. In the summer of 1971, the first reported outbreak of V. *parahaemo-*lyticus occurred in the United States. Most sporadic and outbreak-associated human infections follow consumption of raw or under-cooked shellfish. The 1998 Texas outbreak of V. *para-*haenzolyticus infections was associated with consumption of raw oysters harvested from Galveston Bay. A total of 407 V. parahaemo-lyticus infections were reported throughout the United States during this outbreak; 98 of the 407 were culture-confirmed. Over the past 10 years of surveillance in Texas, 4 culture-confirmed cases of V. *para-*haenzolyticus infections have been reported per year. Vibrio bacteria species occur naturally in warm, salty water and increase in number throughout the Gulf Coast during summer months.

In June 1998 the Galveston County Health Department reported an outbreak of acute gastroenteritis among customers of 2 seafood restaurants in Galveston, Texas. Interviews of both well and ill restaurant patrons revealed that the gastrointestinal illness was associated with consumption of raw oysters. Two stool cultures from ill patrons were positive for Vibrio *para-*haemolyticus. Concurrently a hospital in Amarillo submitted Vibrio isolates from 2 different patients to the TDH Bureau of Laboratories for speciation. Both of these isolates were V. parahaenzolyticus and both of the individuals had eaten raw oysters within 24 hours of onset of their illness. On June 25, TDH issued a press statement publicizing the outbreak and advising people to thoroughly cook all oysters from Galveston Bay.

Two hundred ninety-seven persons in Texas reported oyster-related gastrointestinal illness during this outbreak. Dates of illness onset were reported from June 1 through July 2, 1998 (Figure 1). On June 27, oyster harvesters in Galveston Bay voluntarily halted shipments, recalled shell stock oysters, and ceased the harvesting of oysters. No additional illnesses were reported after commercial dealers ceased harvesting and all recalled stock was recovered. The median age of ill persons was 43 years (range: 14-83), and 158 (59%) were male. Twenty-six V. parahaemo-lyticus culture-confirmed infections were reported form Austin, Amarillo, Abilene, Houston, Dallas, Garland, Kerrville, San Antonio, Plano, Richmond, and Round Rock. All 20 of the oyster-associated V. parahaemolyticus isolates sent to

Figure 1. Vibrio Parahaemolyticus Infections Reported, by Date of Illness Onset, May - July 1998



CDC for serotyping were identified as serotype O3:K6.

The symptoms reported by ill individuals included watery diarrhea (100%), abdominal cramps (95%), nausea (70%), headache (56%), fever (49%), vomiting (43%), and bloody diarrhea (7%). The median duration of illness was 5 days (range: 1-21 days). Eight (3%) were hospitalized. There were 82 (30%) persons who reported seeking care for their gastrointestinal illness; and 23 (28%) reported having a stool culture done. Ninety-nine percent of ill persons reported eating oysters from either a restaurant or an oyster bar in the 24 hours before their illness began.

These 3 foodborne illness outbreaks caused more than 800 vomiting and diarrheal illnesses among people throughout Texas and the United States. Outbreaks will continue to occur whenever food handlers practice poor hygiene by working while ill or failing to adequately wash their hands before and during their work shifts after caring for ill family members in their homes. Even when food handlers follow all precautions appropriately, raw and undercooked food items may still contain viruses and bacteria that can cause gastroenteritis.

Infectious Diseases Epidemiology and Surveillance Division (512) 458-7676

Hazardous Substances Emergency Events Surveillance

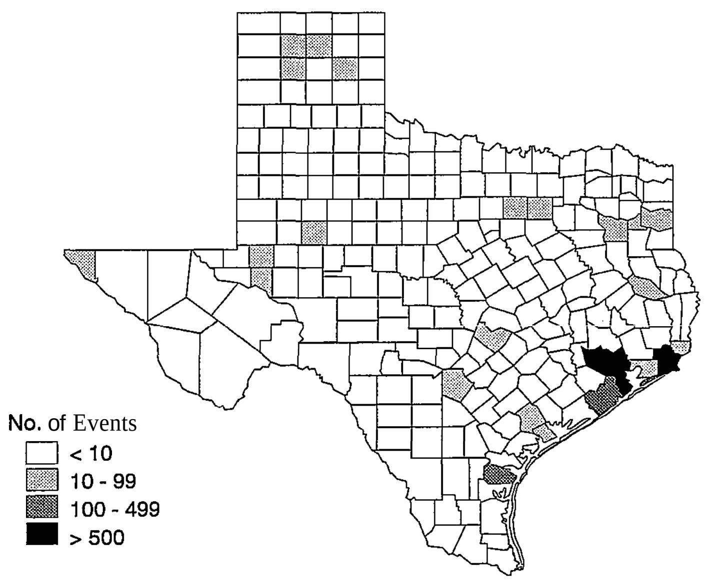
Under a cooperative agreement with the Agency for Toxic Substances and Disease Registry, the Texas Department of Health conducts surveillance of emergency spills and air releases involving hazardous chemicals. These chemical events are considered emergencies because they are uncontrolled, illegal, and in the case of spills, require immediate cleanup. Sources for information about these events include state environmental agencies, local fire department hazardous materials units, hospitals, federal agencies, industry, and other primary responsible parties. Data are collected on emergency events that meet the case definition of an uncontrolled, illegal, or threatened release of hazardous substances or the hazardous by-products of substances. Information obtained about these releases is recorded on standardized data collection forms. Some of the items collected include date, time and location of event, substance released, individuals injured, types of injuries, evacuations, and emergency decontaminations.

Table 1. Most Frequently Spilled or Released Chemicals

Rank	Chemical	No.	% of Cases
1	Sulfur dioxide	445	15.56
2	Butadiene	131	4.58
3	Benzene	108	3.78
4	Ethylene	71	2.48
5	Ammonia	61	2.13
6	Carbon monoxide	58	2.03
7	Sodium hydroxide	52	1.82
8	Nitric oxide	50	1.75
9	Hydrogen sulfide	43	1.50
10	Sulfuric acid	37	1.29
Total		**1,056**	**36.92**

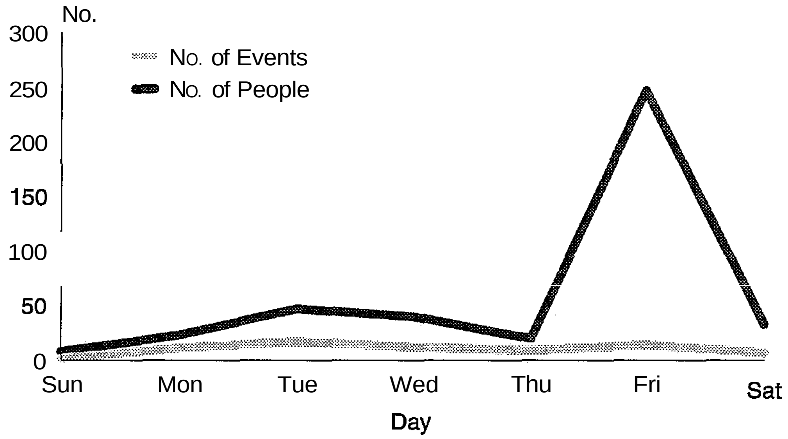
In 1993, the first year of data collection, the staff investigated 1,260 releases that met the case definition. In 1998, 2,859 reported hazardous substances emergency events met the case definition. The increase in the number of spill events from 1993 to present can be attributed to more reporting sources and increased efficiency in data collection. Of the 2,859 events reported in 1998, 2,619 (91.6%) occurred in fixed facilities, and 240 (8.4%) were transportation-related events. Figure 1 shows the distribution of these events by county. As in previous years, the majority of releases occurred along the Texas Gulf Coast.

Figure 1. Hazardous Substances Emergency Events by County



There were 2,925 individual chemicals, multiple chemicals, or chemical mixtures released in 2,859 events. Almost 99% of releases from both fixed facility and transportation events involved only 1 chemical or a single mixture of multiple chemicals. Table 1 presents the 10 most frequently spilled or released chemicals that were not part of mixtures or multiple chemical events; these chemicals were involved in approximately 37% of single chemical

Figure 2. Hazardous Substances Emergency Events InvolvingInjury



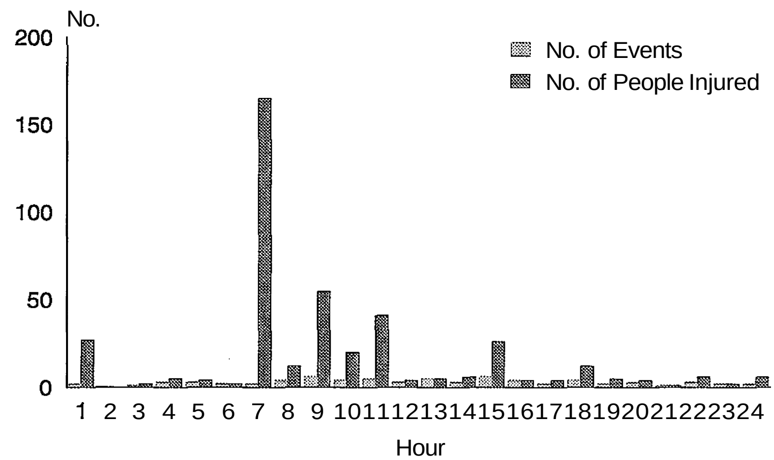
n=72 events involving 418 people

events. Sulfur dioxide releases accounted for 15.6% of single chemical events from fixed facilities.

The frequency of hazardous substances releases varied by time of day, day of week, and time of year. Of the 2,859 events, approximately 65% occurred between 6:00 AM and 6:00 PM. Emergency events were less frequent on the weekends. The number of events was lowest October through December (514) and highest January through March (804.) Figure 2 shows events involving injuries by day of week; there were 72 such events involving 418 people. The largest number of events (17) occurred on Tuesday; however, Friday had the largest number of injured people (247). Figure 3 shows injury-related events by hour.

A total of 418 persons were injured during emergency events in 1998. Injuries occurred in 16% of the transportation-related events and 14% of the fixed facility events. The 1998 data show that 82% of the injuries were associated with employees, 12.7% were associated with the general public, and 3.6% were associated with emergency responders. Over 3 quarters (87.3%) of those injured were males. The median age of those injured was 39, with a range of 14 to 72 years. Among the 418 persons injured, 35 (8.4%) were admitted to the hospital; 6 died. Approximately 6.9% of those injured in fixed facility events and 21.9% of those injured in transportation-related events were admitted to hospitals. Twenty-seven people categorized as "employees" and 8 people categorized as "general public" were hospitalized. No persons categorized as "responders" were listed as hospitalized in the 1998 data set. Table 2 shows the types of injuries sustained in fixed facility and transportation events. Overall, respiratory irritation was the most common injury reported. Other common injuries or symptoms frequently reported included eye irritation, skin irritation, and trauma. One hundred and sixty-four (39%) of those injured sustained their injuries during a single event involving the release of a mix of hydrochloric acid and trimethyl acetyl chloride, a strong skin and respiratory irritant. Events involving 25 or more injuries included exposure to a mix of sulfurous acid and sulfur dioxide (25), carbon monoxide (26), and a mix of carbon

Figure 3. Hazardous Substances Emergency Events Involving injury



n=72 events involving 418 people

Table 2. Distribution of Injuries by Type of Event

	Type of Event					
	Fixed Facility		Transportation		All Events	
Type of Injuries	No. of Injuries	%	No. of Injuries	%	No. of Injuries	%
Chemical burns	11	1.39	4	6.89	15	1.77
Dizziness or other CNS*	26	3.29	4	6.89	30	3.54
Eye irritation	192	24.33	4	6.89	196	23.14
Headache	32	4.05	7	12.06	39	4.60
Heat Stress	2	0.25	0	0.00	2	0.23
Nausea/Vomiting	51	6.46	4	6.89	55	6.49
Respiratory irritation	246	31.17	6	10.34	252	29.75
Skin irritation	156	19.77	2	3.44	158	18.65
Thermal burns	8	1.01	4	6.89	12	1.41
Trauma	36	4.56	22	37.93	58	6.84
Other	29	3.67	1	1.72	30	3.54
Total	**789**		**58**		**847**	

The number of injuries is greater than the number of victims, since a victim can have more than 1 injury.
*Central nervous system symptoms or signs

monoxide, ethylene dichloride, and hydrochloric acid (50.) The rest of the injuries were associated with exposure to a wide of variety of chemicals.

Officials ordered evacuations in 77 (2.7%) of the 2,859 reported events. There were more evacuations ordered for fixed facility events (66) than for transportation events (11). The estimated number of persons who left their homes, schools, or places of business ranged from 1 to 1,640 with a total of 8,732 persons evacuated. Ammonia releases accounted for approximately 20.7% of events with ordered evacuations, the highest proportion for any chemical release. An estimated 1,660 people were evacuated as a result of releases of ammonia.

In Texas, emergency chemical events are most likely to occur in the Gulf Coast counties and at fixed facilities. Although sulfur dioxide is the most frequently reported chemical released, the most acute injuries occurred during a single release of a mix of hydrochloric acid and trimethyl acetyl chloride.

The information obtained from the hazardous substances emergency events surveillance system can help identify risk factors related to these events and the associated morbidity and mortality. When risk factors are identified, interventions can be instituted to reduce future injuries or deaths. This information can be useful in developing education programs for manufacturers and transporters of hazardous substances as well as for local emergency planning committees, first responders, firefighters, hazardous materials units, and medical personnel.

Environmental Epidemiology and Toxicology Division (512) 458-7269

Heat Related Mortality

Every summer the hazard of heat-related illness becomes a significant public health issue throughout much of the United States. Previous research shows excess mortality associated with sustained hot weather. During the summer of 1998, Texas experienced record heat. To determine the initial public health impact of this heat wave, the Injury Epidemiology and Surveillance Program established active surveillance among the medical examiner's offices throughout the state. Medical examiner's offices were contacted on an approximate biweekly basis to collect timely information on deaths that were reported as heat related.

The following information was collected on the 92 heat-related deaths of Texas residents that occurred May 1 through September 30, 1998. Fifty-nine (64%) of the decedents were male. Ages of the 92 ranged from 17 to 90 years: 58 (63%) were 60 years of age or older; 51 (74%) of the 69 who died in a residence were aged 60 years or older.

County of residence was known for 88 (96%) of the 92 deaths. The following counties had reported cases: Bell (2), Bexar (2), Brooks (1), Chambers (1), Cooke (1), Dallas (31), Denton (2), El Paso (3), Falls (1), Galveston (1), Harris (19), Houston (1), Kaufman (1), McLennan (3), Nueces (1), Smith (2), Tarrant (3), Taylor (1), Travis (5), Upshur (1), Van Zandt (2), Walker (1), and Wichita (3). Cities that had more than 3 deaths reported were Austin (4), Dallas (24), and Houston (18).

The decedent's residence was the location at the time of death for 69 (75%) of the 92 heat-related deaths. Another 23 (25%) occurred outside (eg, beside the road, at a job site, in a park).

Information on the presence or use of air conditioning was available for 60 (87%) of the 69 deaths occurring in a residence. None of the decedents used air conditioning at the time of death. (In 1 instance, there was an air conditioner in the residence, but use was undetermined.) In 3 cases an air conditioner was present but was broken; in 1 instance a new air conditioner was present but was not turned on for financial reasons.

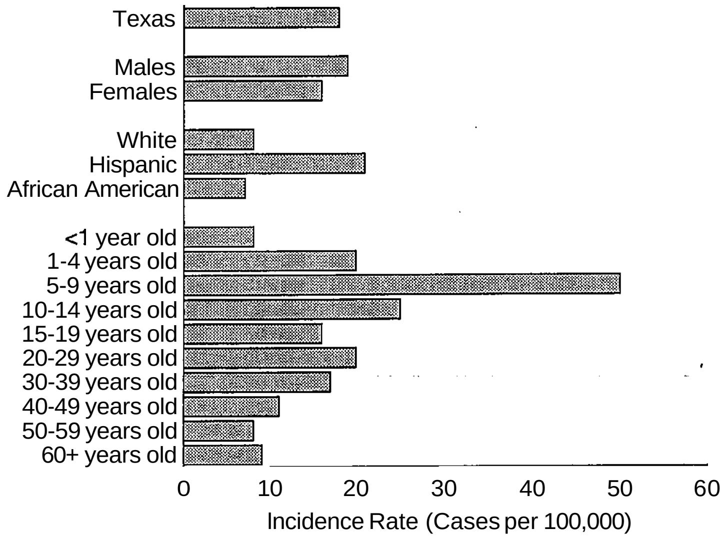
Five (5%) of the 92 deaths were work related. Two decedents worked in concrete/cement, 2 were in construction, and the other worked in landscaping. All but 1 were younger than 48 years.

Injury Epidemiology and Surveillance Program
(512) 458-7266

Hepatitis A

Hepatitis A is one of the most commonly reported infectious diseases in Texas. The virus is transmitted by the fecal-oral route, through close, personal contact, or by ingestion of contaminated food or water. Cases of hepatitis A decreased by 22% in 1998 (3,538) when compared with the number for 1997 (4,511). Vaccination initiatives during 1998 in the Texas-Mexico border area of the state may have reduced the number of cases among certain populations. Cases were reported from 158 counties, and the annual incidence rate was 18 per 100,000 population. Males continued to have a higher incidence rate (211100,000) than did females (16/100,000). Six case-patients died, for a case-fatality rate of 0.2%. Table 1 compares the demographics of the 1998 cases with that of the 1997 cases.

Figure 1. Reported Cases of Hepatitis A by Sex, Race/Ethnicity, and Age



This year, only 34% of cases were in ethnic Hispanics, compared with more than 50% in 1997. Incidence rates among Hispanics fell dramatically from 42 per 100,000 in 1997 to 21 per 100,000 in 1998, a 50% decrease. This drop may have been due to vaccine initiatives in Hidalgo County and in the cities of Laredo and Del Rio. The number of hepatitis **A** cases in Public Health Region 11, which includes many of the Texas-Mexico border counties, fell from 1,284 (79/100,000) in 1997 to just 718 (44/100,000) in 1998. Incidence rates among Whites and African Americans remained the same at 8 per 100,000 and 7 per 100,000 respectively.

Table 1. Incidence and Demographics of Hepatitis A, 1997 and 1998

	1997	1998
Counties Reporting	158	158
Incidence Rate* Statewide	23	18
Incidence Rate* by Race/Ethnicity		
White	8	8
Hispanic	42	34
African American	7	7
Male/Female Ratio	1.2:1	1.2:1
Deaths	7	6
Case Fatality Rate	0.2%	0.2%
Case Total	4,511	3,538

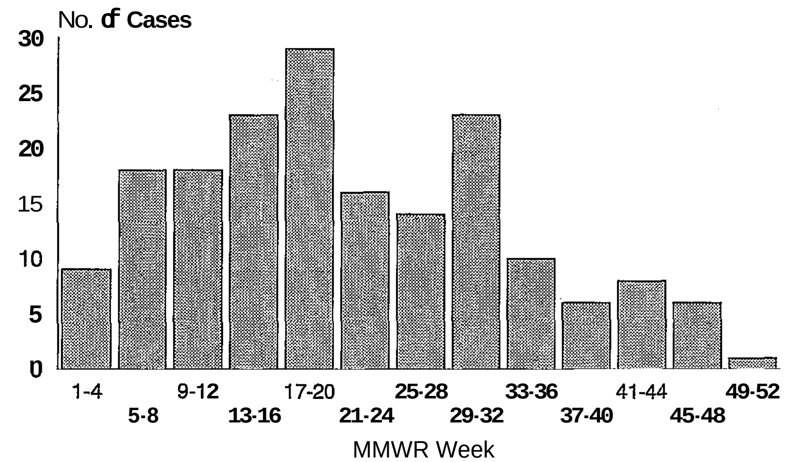
*Cases per 100,000

While children continue to play a significant role in hepatitis **A** transmission, 1998 also saw dramatic decreases in cases among 1- to 4-year-olds and among 5- to 9-year-olds. The incidence rate for 1- to 4-year-olds fell from 37 per 100,000 in 1997 to 20 per 100,000 in 1998, a decrease of 46%. Among 5-to 9-year-olds, the incidence rate fell from 871100,000 in 1997 to 50/100,000 in 1998, a decrease of 43% (Figure 1). This decrease may also be due to vaccination efforts which targeted school-aged children.

Two unusual hepatitis A outbreaks occurred in 1998. They were unusual because the case-patients in both outbreaks were primarily young adults and because illegal drug use was suspected as the vehicle of transmission.

The first of these outbreaks began in Amarillo in September of 1997 and lasted through November 1998. The city of Amarillo straddles Potter and Randall Counties. The average number of cases per year reported by these counties from 1992 to 1996 was 25. During the 1998 outbreak, 206 cases were reported to the City of Amarillo Department of Public Health. Figure 2 describes the epidemic curve of the outbreak. The average age of case-patients was 28 years; more than 50% of reported cases occurred in persons aged 20 to 39. Of 135 case-patients interviewed, 66 (49%) reported recent illegal drug use. Methamphetamine (45%), cocaine (32%), and marijuana (19%) were the most frequently used. The City of Amarillo Department of Public Health administered 796 doses of immune globulin (IG) or tetanus immune globulin (TIG) to eligible household or sexual contacts. A vaccination program was initiated which targeted persons who had within the previous 3 months injected illicit drugs, used methamphetamines, or been households or sexual contacts of persons who had used illicit drugs. By November 1998, hepatitis A rates in Amarillo had returned to baseline levels.

Figure 2. Number of Hepatitis A Cases by MMWR Week* of Onset, Amarillo



*The method with which the CDC's Morbidity and Mortality Weekly Report divides up the year for statistical purposes.

In May of 1998, the city of Breckenridge, in Stephens County, began experiencing a hepatitis A outbreak. Seventy-one cases were reported to the Public Health Region 2/3 office in Arlington, of which 53 were laboratory-confirmed. Based on the population in Stephens county and state rates of hepatitis A, only 2 cases per year would be expected among Stephens County residents. Most early cases occurred among young adults; some later cases occurred in children. Two cases occurred in restaurant workers, resulting in the IG prophylaxis of coworkers. Fourteen (26%) of the serologically confirmed hepatitis A cases were coinfected with hepatitis C. While some case-patients reported current or past IV-drug use, not all cases were found to be drug-related. In November of 1998 the age range of new cases shifted from young adults to children. Hepatitis A in a pre-K child required the prophylaxis of a classroom; however, no cases were linked with daycare centers. As of the end of 1998, this outbreak was still ongoing.

In the United States most hepatitis A occurs through person-to-person transmission during community-wide outbreaks; in such outbreaks, the highest rates occur among children, adolescents, and young adults. Groups at increased risk for hepatitis A include travelers to developing countries, men who have sex with men, injecting-drug users, and persons who work with nonhuman primates. The spread of hepatitis A can be prevented through good personal hygiene such as thorough handwashing after using the restroom or diapering and before eating or preparing food. Secondary spread of hepatitis A can be prevented by the timely administration (within 14 days of first exposure to the virus) of immune globulin to appropriate contacts.

Infectious Diseases Epidemiology and Surveillance Division (512) 458-7676

Hepatitis A Outbreak in Lavaca County

An investigation was initiated on March 19, 1998, in response to 2 reports of suspected hepatitis A cases. The first telephone call was from a local physician from Lavaca County who reported that he had diagnosed hepatitis A in 2 employees of a local restaurant. The second report was from an emergency medicine physician from a hospital in Hallettsville who had diagnosed 3 suspected cases of hepatitis A over the previous 2 days. In addition, the Texas Department of Health Public Health Region 8 (PHR 8) office in Hallettsville received several calls from local residents with hepatitis A symptoms: 2 persons from Yoakum, 1 from Weimar, and 3 from Flatonia.

The preliminary investigation revealed that the symptomatic persons ate at a local restaurant in Moulton, a town in Lavaca County, within the previous month. During a March 21 inspection, PHR 8 staff gathered menus and information on employee schedules and hygiene.

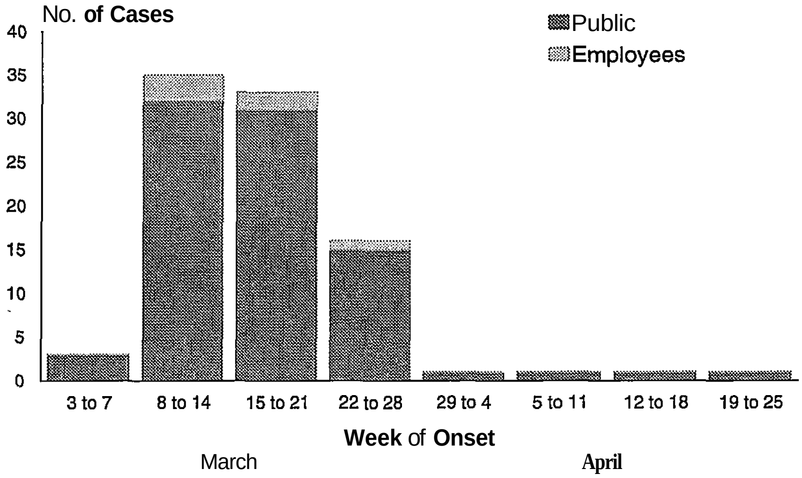
PHR 8 staff recommended immune globulin (IG) for the 32 food handlers and for the household contacts of employees diagnosed with hepatitis A. The region also recommended that all staff employed at the restaurant during the previous month see their personal physicians for a physical examination and diagnostic tests. In addition, TDH traced several produce distributors who sold their products in the area over the previous month. However, the department received no reports of hepatitis A outbreaks linked with this produce anywhere in the state. TDH issued a press release advising people who ate in the Moulton area about the suspected cases and the period of time during which they may have been exposed to hepatitis **A.** The press release also explained the symptoms, mechanisms of prevention and control of hepatitis A, and procedure for reporting suspected cases. Through April 30, 1998, 94 cases of hepatitis A were confirmed, 6 among restaurant employees. Of the 94 cases, 92 were confirmed by serology and 2 by food history and symptoms. Among these confirmed cases, 1 person with preexisting medical conditions died.

TDH administered 176 doses of IG to close contacts of the affected people to prevent spread of the disease. Also, TDH provided IG to private physicians for prophylactic use. The 94 case-patients were from the following counties: Bastrop (2); Bexar (2); Fayette (9); Gonzales (11); Harris (9); Jefferson (2); Lavaca (57); and Victoria (2). Except for a 10 month old baby, their ages ranged from 12 to 84 years. Fifty percent of them were 52 to 84 years of age. Fifty-seven (61%) were female, and 37 (39%) were male. Onset dates of illness ranged from March 1 to April 24, 1998. Figure 1 shows the epidemic curve for this outbreak.

Case-Control Study in Moulton

Of the 94 cases reported to PHR 8 staff through April 30, 92 case-patients reported eating at a local restaurant in Moulton (restaurant "B") in February 1998. Several case-patients also reported eating at other Moulton restaurants during February. To

Figure 1. Number of Cases of Hepatitis A by Week of Onset,* Lavaca County Outbreak



"Onset dates for 3 cases were unavailable determine if eating at specific restaurants in Moulton was significantly associated with contracting hepatitis A in March among residents in the Moulton area, the Infectious Disease Epidemiology and Surveillance Division (IDEAS) staff designed a case-control study. The objectives of the study were to determine if eating at any other restaurant in Moulton in February was a risk factor for developing hepatitis A in March and to determine if any specific days, meals, or foods at restaurant B were associated with risk for hepatitis A.

Case-patients associated with this outbreak were residents from a variety of cities in Texas. The majority lived in Lavaca county (57), with 31 of these residents living in the Moulton area. The case-control study was restricted to Moulton area residents to assure that both case-patients and controls would have equal opportunity to eat at Moulton area restaurants.

A case-patient was defined as a person who lived in the Moulton area and who was diagnosed with hepatitis A in March 1998 by serologic confirmation of a positive test for IgM antibodies to hepatitis A virus (HAV). Controls were selected from 2 sources: family members of case-patients who did not become ill with hepatitis A and community controls. Community controls were chosen by selecting every 12th or 24th name that were not businesses from the Moulton area telephone book. Both case-patients and potential controls were contacted several times on a variety of days and times. For controls, after at least 3 to 4 unsuccessful attempts, the interviewer selected the next name in the telephone book.

Case-patients and controls were administered a telephone interview that included questions about demographic information, information on symptoms, and information on potential exposures such as eating raw shellfish and eating at various restaurants in Moulton during February 1998. Because all Moulton case-patients reported eating at restaurant B during February, information was also obtained about specific foods eaten in February at this restaurant to determine if there was a particular food item associated with hepatitis A.

Odds ratios (OR) and 95% exact confidence intervals (CI) were calculated for potential risk factors for hepatitis A. In the situation in which the denominator of the odds ratio equaled zero, 0.5 was added to each cell in the 2 x 2 table so an actual odds ratio could be reported. Among the Moulton residents diagnosed with hepatitis A, 1 person died before the interviews. Twenty-six (87%) of the 30 case-patients were interviewed. Interviews were conducted among 51 controls, including 44 community controls and 7 family controls. Onset dates of illness for case-patients ranged from March 9 through March 24, with 76% of the onsets from March 12 to 19.

Case-patients and controls were similar with respect to sex and ethnicity/race, but case-patients tended to be younger than controls. The average age of case-patients was 47 years compared with 57 years for controls. Case-patients were more likely to have reported eating in restaurants in Moulton, particularly restaurant B (Table 1).

All Moulton case-patients (100%) reported eating at restaurant B, compared with 29% of the controls (OR=124.8, $p<0.000001$). No significant association was found between eating at the other Moulton restaurants in February and developing hepatitis A in March. Six persons who worked at restaurant B were also found to be IgM positive for hepatitis A in March.

Because case-patients and controls differed in their age distribution, the groups were stratified into 2 age groups: persons less than 60 years of age and persons 60 years and older. Table 2 shows this stratification by age for case-patients and controls by patronage of restaurant B. Age modified the risk between eating at restaurant B in February and developing hepatitis A in March. The odds ratio associated with eating at restaurant B in February was much higher for persons younger than 60 years than for persons 60 years and older. The odds ratios for both groups excluded 1.00 and therefore were statistically significant.

Among case-patients and controls who ate at restaurant B in February, the dates of meals, types

Table 1. Reported Patronage of Moulton Restaurants in February 1998 Among Persons Ill with Hepatitis A and Comparison Residents

	Persons Ill with Hepatitis A		Comparison Residents			
Restaurant	No.	%	No.	%	Odds Ratio	95% CI*
A	14	54	19	37	2.1	0.7-6.4
B	26	100	15	29	124.8**	12.9-∞
C	0	0	2	4	0.0	0.0-10.5
D	2	8	2	4	2.0	0.1-29.5
E	10	38	14	27	1.8	0.6-5.4

*Confidence Interval
**0.5 added to each cell in 2 by 2 table

of compared to 43% of the controls reported eating dinner only (OR=0.12, 95% CI=0.01, 0.87). The majority (81%) of case-patients reported eating lunch at restaurant B either on February 15th or 18th. Another 12% of the case-patients reported eating within the week of these *2* dates, including 1 person each on February 13, 20, and 21. Two case-patients could not remember specific dates that they had eaten at the restaurant other than they ate there in February. Among controls who reported eating at restaurant B, 1 (7%) recalled eating on either February 15th or 18th; 8 denied eating there either of those days; and 6 could not recall the dates in February that they ate at the restaurant. Among case-patients and controls who recalled the dates of eating at restaurant B, the odds ratio associated with eating at restaurant B on either February 15th or 18th and hepatitis A was 56.0 (95% CI=4.1-2594.9).

Foods reported eaten by the case-patients on the 15th and 18th were reviewed to determine if there were any common food items that everyone had eaten. On February 15, all the case-patients reported eating the potatoes, a cooked dish. However, the 1 control who ate at the restaurant that day also reported eating the potatoes. No foods eaten on February 18 were common among all the case-patients. The pea salad was eaten by the majority of cases on February 15 and 18th, but 3 case-patients who ate those days denied eating the pea salad. The 1 control who reported eating at restaurant B on February 15 also reported eating the pea salad. Two other controls also reported eating the pea salad in February, although they did not recall the exact dates they ate at the restaurant. This case-control investigation had several limitations. First, there were few controls who reported eating at restaurant B in February. Therefore, it was not possible to determine the risk of eating any particular food items at the restaurant B and developing hepatitis A in March. No particular food was reported as eaten by 100% of the case-patients however. Furthermore, the significant risk associated with eating at a particular

Table 2. Reported Patronage at Restaurant B by Persons Ill with Hepatitis A and Comparison Residents by Age Group

	Persons Ill With Hepatitis A		Comparison Residents			
Age Group	No.	%	No.	%	Odds Ratio	95% CI
Less than 60 years	19	100	4	17	177.7*	13.9 - ∞
60 years and older	7	100	11	41	21.5*	1.6 - ∞

* 0.5 added to each cell. Summary odds ratio and 95% confidence interval equaled ∞ (17.0 - ∞).

restaurant in Moulton was confined to eating at restaurant B. It would be expected that eating at other Moulton restaurants would have also been significantly associated with hepatitis A if a food product was contaminated before reaching the food establishments. TDH did not receive any other reports of hepatitis A outbreaks associated with other restaurants in the PHR 8 area during March.

A second limitation of this investigation was the length of time between the exposure and the interviews (2 months). The incubation period for hepatitis A is about 30 days, and it took additional time to establish a common link between the cases. Some of the case-patients and controls had difficulties in recalling the dates and food items that they had eaten at restaurant B.

Another limitation of this investigation was the potential recall bias introduced by a restaurant employee contacting several of the case-patients prior to the TDH interviews and asking the case-patients if they ate 1 specific food item on February 15th or 18th. During the subsequent TDH interview, several of these case-patients recalled eating only this particular food item. Also, some controls may have been immune to hepatitis due to prior illness. Thus, they could have eaten contaminated food but not become ill. This might also explain the age difference of odds ratios associated with eating at the restaurant.

Based on the initial interviews with persons who developed hepatitis A in March and the results of this case-control study, the most likely common exposure associated with this outbreak of hepatitis A was eating at restaurant B in February. Most of the Moulton case-patients ate lunch there on either February 15th or 18th, although 3 case-patients ate on other days including February 13, 20, and 21. Odds ratios for hepatitis A associated with eating at restaurant B in February and eating there on February 15 or 18 were significantly elevated.

Among the Moulton case-patients, no 1 food item was reported eaten by all ill persons. Six employees, several of whom were involved in food preparation, were found to have positive IgM HAV tests in March. Most of these employees were reported as having symptoms consistent with an onset of illness in March. The IgM test for hepatitis A, which indicates an acute infection with this virus, remains detectable for 4 to 6 months after onset of illness.

According to the Centers for Disease Control and Prevention, foodborne hepatitis A outbreaks are relatively uncommon in the United States. These types of outbreaks are most commonly associated with contamination of food during preparation by an HAV-infected food handler. Food that has been contaminated before reaching the food-service establishment has been implicated, however, in several outbreaks associated with contaminated raw oysters, lettuce, and frozen strawberries. These outbreaks have involved multiple food establishments, and in several instances, the hepatitis A virus has been isolated from available food samples. No specific produce or food appeared to be associated with the hepatitis A outbreak in Moulton other than eating at restaurant B in February, particularly on February 15th or 18th. These findings are most consistent with a food handler being infected with hepatitis A during this period of time.

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Hepatitis C

Hepatitis C is the most common chronic bloodborne infection in the United States. In 1998, 462 acute cases of hepatitis C were reported to the Texas Department of Health, compared with 376 in 1997. As with other types of viral hepatitis, only acute infections of hepatitis C are reportable in Texas; chronic infections with this virus are not. The following criteria are used to distinguish acute from chronic hepatitis C virus (HCV) infections and are used to determine which cases to report:

- patients who are positive for anti-HCV antibodies and who have a discrete onset date of symptoms suggesting a clinical diagnosis of acute hepatitis C
- patients who are positive for anti-HCV and have liver function tests that are elevated 2.5 or more times the upper limits of normal
- patients who are positive for anti-HCV and have laboratory documentation of converting from a negative to positive test for anti-HCV within a 12-month period

Table 1 compares the incidence of acute hepatitis C in 1997 and 1998 by race/ethnicity, sex, and age. The statewide rate for acute hepatitis C rose slightly in 1998 compared with 1997 with 2.4 cases per 100,000. As in 1997, males had a higher rate of hepatitis C (2.9 per 100,000) than did females (1.7 per 100,000). Among ethnic/racial groups, Hispanics, and African Americans had 2.0 cases per 100,000 compared with 1.2 per 100,000 for Whites.

The highest rates among age groups were found for persons 30 to 49 years of age. This pattern reflects groups of persons at highest risk of contracting hepatitis C, such as persons who have ever injected street drugs (even once). Other at-risk groups for hepatitis C include persons who have received blood or organ transplants from an infected donor, persons on long-term kidney dialysis treatment, and persons with accidental injuries from percutaneous exposures to needles or other sharp instruments that have come in contact with the blood of an infected person. HCV is transmitted mainly through exposure to blood from an infected person. It can also be transmitted through sexual contact and from infected women to their offspring during childbirth; risks for sexual or perinatal transmission of HCV are lower than those for hepatitis B or HIV.

Among geographic areas, TDH Public Health Region (PHR) 3 had the highest number of reported cases (n= 114) with most of these cases (n= 71) reported from Dallas County. Incidence rates by PHR ranged from 1 case per 100,000 for PHR 7 to 9.2 cases per 100,000 for PHR 2.

The reporting of acute HCV infections presents a significant challenge to local health departments and other reporting entities. Laboratory tests for hepatitis C do not distinguish among; acute, chronic, or past infections. Furthermore, as many as 60% to 70% of persons who initially contract the virus have no distinct symptoms and may go undiagnosed for many years.

Each month, TDH receives 1,000 or more laboratory reports of positive results for hepatitis C; these reports are not considered to represent acute cases of hepatitis C unless indicated as such by the reporting entity. To better understand the population that these reports represented, staff examined all positive test results reported to TDH for October 1998. Data on person (age, race, sex), place (city, county, PHR, whether or not the report came from a correctional facility), type of diagnostic test, and whether or not the laboratory result qualified as an acute case of hepatitis C were abstracted and entered into a database.

Only 26 (2.3%) of the 1,153 records with a positive laboratory test in October were from persons classified as having acute hepatitis C. The other 1,127 persons were considered as having chronic hepatitis C.

The average age of all reported cases was 43 years. More than one-third (36.9%) of persons were ages 40 to 49 years and another 27.2% were 30 to 39 years of age. Men represented 61.8% of the total number of reports and 57.7% of the acute cases in October. Race was listed for less than 5% of the nonacute cases.

Over 50% of the reports of nonacute cases came from 3 PHRs: 3, 4, and 7. About 11% (128) of the reports came from correctional facilities; none of these persons were identified as having acute hepatitis C.

The majority (88%) of diagnostic tests performed were the routine enzyme immunoassay (EIA) test for antibodies to HCV.

Supplemental tests reported by the laboratories included 49 (4.2%) recombinant immunoblot assay (RIBA) tests, 85 (7.4%) reverse transcriptase polymerase chain reaction (RT-PCR) qualitative tests, and 3 (0.3%) RT-PCR quantitative tests. Some of the persons had multiple tests for confirmation of positive tests.

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Table 1. Incidence and Demographics of Hepatitis C, 1997 and 1998

	1997	1998
Counties Reporting	64	89
Incidence Rate* Statewide	1.9	2.4
Incidence Rate* by Race/Ethnicity		
White	1.2	1.2
Hispanic	2.2	2.0
African American	1.8	2.0
Incidence Rate* by Sex		
Male	2.5	2.9
Female	1.4	1.7
Incidence Rate* by Age Group (years)		
<20	0.3	0.3
20-29	1.7	2.1
30-39	3.8	4.4
40-49	4.5	5.3
50-59	1.8	2.1
60+	1.2	1.4
Case Total	376	462

*Cases per 100,000

HIV/AIDS

The Human Immunodeficiency Virus (HIV) is a human retrovirus which infects and slowly depletes a subgroup of white blood cells called helper T-lymphocytes or CD4+ T lymphocytes. These white blood cells are critical to maintaining an effective immune response. Worldwide, the prevalence of HIV is estimated to be higher than ever before, with over 42 million children and adults infected, primarily in sub-Saharan Africa and in developing countries. The World Health Organization and the Joint United Nations Programme on HIV/AIDS (UNAIDS) estimate that 16,000 more children and adults are infected each day. No complete count of new HIV infections is available for the United States, but it is estimated that 35,000 to 40,000 new infections occur each year. Half are among individuals under the age of 25.

HIV Transmission

HIV can be transmitted by blood or bodily fluids. Some groups are at higher risk of contracting HIV: youths from 13 through 24 years of age, minorities, men who have sex with men (MSM), injecting drug users (IDU) and their partners, and heterosexuals who have multiple partners. HIV risk is elevated if either sexual partner has a history of sexually transmitted diseases (STDs). Transmission of HIV can be prevented, in part, by abstaining from high-risk sex (including unprotected oral sex'). Safer sex can be practiced by participating in a monogamous relationship. Latex condom use (with water-based lubricant only) increases the safety of sexual intercourse, and prevents transmission of HIV and most STDs, but still allows for the transmission of certain sexually transmitted diseases (ie, genital warts, herpes, scabies). Studies have demonstrated a higher rate of transmission of HIV with MSM practicing unprotected anal intercourse when compared to heterosexual vaginal intercourse. Officials with the Centers for Disease Control and Prevention (CDC) emphasized that a much higher prevalence of HIV coinfection exists among persons with any STD than among those without STDs or a history of STDs. HIV transmission is enhanced when other sexually transmitted diseases, (ie, syphilis, gonorrhea, herpes, chlamydia), are present.

Additionally, transmission of HIV can be prevented by avoiding injection of street (illicit) drugs. Intravenous drug-using populations (IDUs) often share needles, cookers, and cotton filters which are contaminated with blood, thus allowing easy transmission of viruses. The sexual partners of IDUs and bisexual men are also at increased risk of infection with HIV.

Alcohol or drug use (such as crack cocaine), often is associated with riskier sexual practices. Former Surgeon General Antonia Novello stated in a news conference that, "For teens, alcohol use is the best predictor for early sexual activity and failure to use contraception. Alcohol use, more than any other single factor, is responsible for more pregnancies, sexually transmitted diseases, and more HIV infections".[2]

Monitoring the Course of HIV

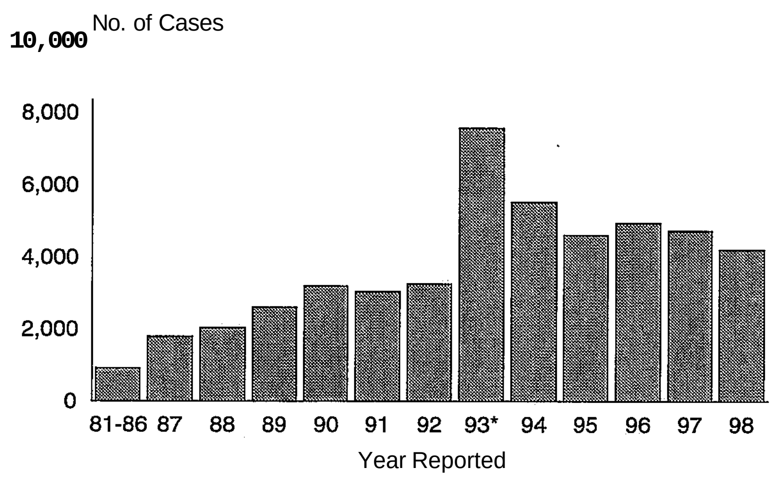
In recent years, medical researchers have developed tests that quantify the level of HIV virus circulating in the bloodstream. These tests are referred to as viral load or plasma HIV (RNA or DNA) tests. Viral load tests are a sensitive measure of the HIV nucleic acid in the peripheral blood and other body systems. The level of viral nucleic acid has clinical significance: patients with greater than 100,000 HIV RNA copies/mL (plasma level) within 6 months of seroconversion are 10 times more likely to progress to AIDS during the next 5 years than those who have less than 100,000 copies/mL in the first 6 months. The viral load testing is generally performed to evaluate newly diagnosed disease, to monitor disease status, to establish a baseline value prior to antiretroviral treatment, and to monitor health status during treatment.[3] Viral load testing is also necessary to diagnose early (acute) HIV infection prior to antibody production.[4]

HIV Reporting

The Acquired Immunodeficiency Syndrome (AIDS) is the late-stage sequelae of HIV infection and reflects infections occurring years earlier (generally greater than 10 years). For health professionals to follow the current trend of a disease and develop prevention strategies, prompt identification and reporting of infection is essential. For this reason, the Texas Board of Health approved revising the AIDS reporting rules to require reporting of HIV infections by name. The named HIV reporting system was implemented in January 1999. AIDS has been reported by name since 1983. Anonymous testing for HIV is still available. At least 27 states currently have integrated HIV and AIDS surveillance systems. Surveillance reports from 26 states obtained January 1994 through June 1997 indicate that the incidence of HIV appears to be fairly stable despite a decrease of AIDS cases (see below). These surveillance reports accentuate the need for preventive outreach for minorities and youths aged 13 to 24 in whom a large portion of the new HIV cases are occurring. More current information is needed to ascertain areas and populations of increased incidence within Texas. Accurate, prompt HIV reporting will additionally enable preventive and treatment efforts to be directed more effectively.

The CD4+ T lymphocyte count became an important part of the AIDS surveillance case definition that the CDC revised in 1993. The current AIDS case definition includes all HIV-infected persons with CD4+ T lymphocyte counts fewer than 200/uL of blood or less than 14% of total lymphocytes. Before this change, the case definition relied on a confirmed positive HIV antibody test and the identification of one of several indicator diseases that commonly occur among immunocompromised HIV-infected patients. This resulted in a larger number of AIDS cases being reported in 1993 that had not met the earlier case definition (Figure 1).

Figure 1. AIDS Cases by Year of Report, 1981-1998



*Expanded AIDS surveillance definition implemented
48,907 Cumulative Cases Reported through 12/31/98
AIDS database as of 01/22/99

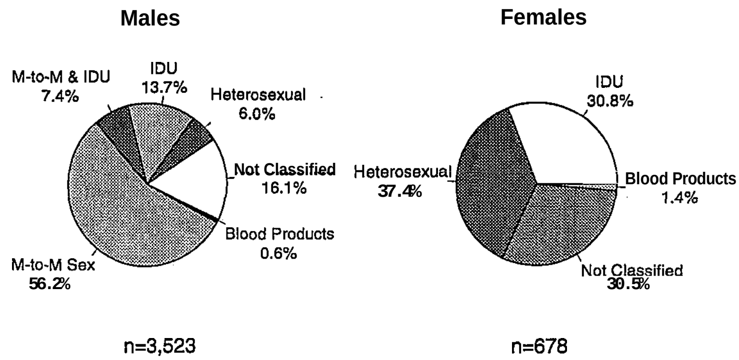
AIDS

AIDS is a specific group of diseases or conditions that result from severe immunosuppression caused by infection with HIV. The late-stage presentation of HIV disease, AIDS, reflects the prolonged, severe destruction of vital cells that would normally generate an immune response and provide protection in the body. The decline in the number of CD4+ T lymphocyte cells is an indicator of HIV disease progression.

1998 Texas AIDS Statistics

According to CDC, more than 641,086 persons with AIDS (PWA) have been reported in the United States through the end of 1997. At least 385,000 of these PWAs have died. By the end of December 1998, Texas had 48,907 PWAs reported since the start of the epidemic in the early 1980s. At least 27,337 of these PWAs are deceased. Texas ranked fourth highest in the US, with 4,201 AIDS cases reported in 1998. The overall rate for Texas in 1998 was 21.4 AIDS cases per 100,000 population. In 1997 AIDS dropped from the second to the fourth leading cause of death for Texas men aged 25 to 44 years old. By 1998 AIDS ranking had fallen to the fifth leading cause of death among Texas males aged 35 to 44, while it remained the fourth leading cause of death among the 25 to 34 age group for males. AIDS no longer ranked among the top 10 causes of death (overall, male of female) in Texas. For Texas males, the 1998 AIDS rate, (36.3/100,000), remained much higher than the female AIDS rate (6.8/100,000).

Figure 2. Adult-Adolescent* AIDS Cases Reported in 1998 Mode of Exposure by Gender



*Age 13 or older at time of AIDS diagnosis
AIDS database 01/22/99

The rate of reported AIDS cases in 1998 among Texas' African Americans (68.51100,000) was more than 4 times higher than the rates for Whites (15.6/100,000) or Hispanics (15.8/100,000). Although the Texas case rate for females was 6.8 AIDS cases per 100,000, the African American female rate was significantly higher: 34.5 cases per 100,000. The Hispanic and the White female rates were lower: 3.9 cases per 100,000 and 2.8 cases per 100,000, respectively. The Texas African American male population had the highest rate, 105.2 cases per 100,000, followed by White males at 28.9 cases per 100,000 and Hispanic males at 27.4 AIDS cases per 100,000 population (Table 1).

Although lower than in previous years, the MSM exposure category constituted over half (56%) of AIDS cases among Texas men. Additionally, injecting drug use was the most likely route of transmission for 14% of men reported with AIDS. The heterosexual route of transmission was reported for 6% of men with AIDS. Among women, the exposure category "heterosexual contact" was determined for 37% and the use of injecting drugs was designated as the mode of exposure for 31%. A higher percentage of cases among women (30%) than men (16%) were initially unclassified as to mode of exposure (Figure **2).** For both sexes, the percentage of cases that remain unclassified will decrease as the investigations of risk are completed.

Table 1. AIDS Cases Reported in 1998 by Sex and Race*

Sex/Race	Cases	%	Cases per 100,000
Males			36.3
White	1,553	44	28.9
African American	1,137	32	105.2
Hispanic	815	23	27.4
All Others	18	<1	---
Females			6.8
White	159	23	2.8
African American	403	59	34.5
Hispanic	113	17	3.9
All Others	3	<1	---
Total Cases	4,201		21.4

*The category *All Others* includes any racial/ethnic group not listed as well as those cases not specifying race. Therefore, a rate is not calculated.

Most AIDS cases in Texas continue to be reported from metropolitan areas. The largest number of cases reported in 1998 were from Houston/Harris County (1,605) followed by Dallas

(617), Austin/Travis (265), San Antonio/Bexar (228), Fort Worth/Tarrant (210), and El Paso (126) cities/counties. Ranking these counties by rate changes the order somewhat. Harris County demonstrated the highest rate, (49.91100,000), followed by Travis (41.4), Dallas (28.9), and El Paso (17.1) counties. The rates for Bexar and Tarrant Counties were 17.0 and 14.3 cases per 100,000 population, respectively. In 1998, 142 counties, (out of the 254 in Texas), reported at least one AIDS case. Only 29 counties in Texas have never reported an AIDS case. Travis County AIDS rates increased in 1998 to outpace Dallas County. Additionally, El Paso County AIDS rates have increased slightly to outrank Bexar County rates for 1998. The Texas Department of Criminal Justice reported 5.6% of all 1998 AIDS cases (234). Although still centered mainly in the metropolitan areas of the state, the HIV epidemic continues to spread to more rural areas, requiring all counties face the challenges of providing prevention education, health care, and services.

1998: Where is the AIDS Epidemic Going From Here?

In 1997 the United States experienced a new trend in the epidemiology of AIDS: AIDS cases decreased by approximately 12% and AIDS deaths decreased by 44%. The decrease in cases and deaths was generally attributed to the use of highly active antiretroviral therapy (HAART).

In 1998 US AIDS cases were still declining. Officials, however, warned that the antiretroviral agents may not be able to continue suppression of HIV for extended periods of time. Studies have shown that patients must rigorously adhere to HAART regimens (95% of the time) to maintain positive results. Reports of resistance to at least 1 or 2 of the HAART drugs have increased among newly seroconverted patients. Other concerns have arisen as well: as the news of the success of the antiretroviral medications spread, a loss of concern over contracting and transmitting the virus to others seemed to pervade certain risk groups. Officials warned that many people are still not accessing the new medications, and risky behaviors appear to be resuming, particularly among young gay men.[5]

Texas has experienced a decline in AIDS cases also, in both 1997 and 1998; however, this article discusses Texas AIDS in terms of the year the case was reported to TDH, not the year the person was diagnosed with AIDS. From 1996 to 1997, the number of AIDS reports decreased only about 10%.[6] Preliminary reports for 1998 indicate approximately 11% fewer AIDS cases were reported than in 1997. The drug combination therapies halt, at least temporarily, the decline of CD4+ T lymphocyte counts in people with HIV, so fewer are likely to be counted as AIDS patients in the near future. Other preventive measures have also contributed to a decline in AIDS morbidity: improved preventive education (abstinence, risk assessment, and sexually transmitted disease training) and a shift in treatment guidelines from treatment of symptomatic patients to early treatment of asymptomatic HIV-positive individuals. These advances have increased the importance of motivating persons at risk to seek HIV testing and access appropriate treatment in a timely fashion.

In Texas AIDS deaths declined 45% during the first 6 months of 1997 compared with the first 6 months of 1996. This decline was similar to the findings announced in 1997 by CDC. The decline in AIDS deaths was demonstrable across all races. A decrease in deaths was seen in 1998 as well. Texas AIDS deaths declined 20% during the first 6 months of 1998 compared with the first 6 months of 1997 (Table 2). Although the 1998 decline in deaths occurred across all races for men, an increase in AIDS-related deaths was seen for African American and Hispanic women in Texas. It should be noted, however, that the numbers for African American and Hispanic women were small and likely not indicative of a trend.

Public health efforts to prevent disease hinge on adequate funding and relevant, complete, and timely data to distribute available funds appropriately for prevention and control programs.

Table 2. Texas AIDS Deaths Comparison by Race and Sex*

	January through June 1997 - Deaths	January through June 1998 - Deaths	% Difference in Deaths
Males			
White	282	206	-27
African American	155	145	-7
Hispanic	130	96	-26
All Others	5	1	-80
Females			
White	33	17	-49
African American	45	49	+8
Hispanic	8	15	+47
All Others	0	0	0
Totals	**658**	**529**	**-20**

*1997 deaths based on AIDS database **01/29/98** and **1998** deaths based on AIDS database **01/22/99.**

Especially now, while AIDS is decreasing and HIV has not demonstrated a decrease, the early treatment of HIV-infected individuals and the outreach and testing of high risk populations is extremely important. The 1997 and 1998 decrease in new AIDS cases and the decrease in AIDS deaths indicate that all facets of the private and public health system can work together to improve outcomes.

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6. Due, in part, to the extensive investigation and data collection on each case, there is a delay in reporting AIDS, so people reported in one year may have been diagnosed with AIDS either during that year or during a prior year.

HIV and STD Epidemiology Division
(512) 490-2545

Injuries Among Pedal Cyclists

Injury and death occurring to pedal cyclists continues to be an important public health problem as bike ridership continues to increase. In 1998 it was estimated there were 80.6 million pedal cyclists (an increase of 13.7 million from 1991).[1] The majority of deaths to pedal cyclists are traffic-related. Nationally there were 695 traffic-related deaths occurring among pedal cyclists in 1996 (the most current year for which data are available).[2] This comprises approximately 1.6% of all traffic-related deaths in the United States. Similarly, in Texas the percentage of traffic-related deaths to pedal cyclists in 1996 was 1.4% of all traffic-related deaths (5513,822). In 1996 among Texas residents there were a total of 60 deaths to pedal cyclists, approximately 92% of which were due to motor vehicle traffic-related incidents, 2% to motor vehicle non-traffic incidents (occurring off the highway), and 7% to pedal cyclist incidents not involving motor vehicles (eg, a fall from a pedal cycle). The majority of traffic-related deaths to pedal cyclists occur among males (86% nationally, 87% in Texas; 1996). In 1997, there were 61 deaths occurring among pedal cyclists in Texas, 93.4% of which were traffic-related.

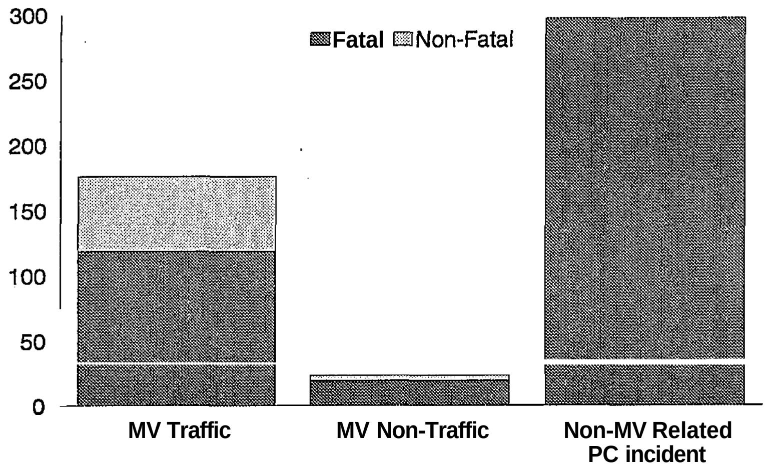
Nationally, the highest traffic-related pedal cyclist death rates among males in 1996 occurred in the 10 to 14 year age group followed by the 15 to 19 year age group and the 5 to 9 year age group (Table 1). Because the number of traffic-related deaths to pedal cyclists in Texas for **a** time period of 1 year results in numbers too small to provide stable rates, 5 years of data were used to calculate age/sex specific rates to compare with national rates. Using 5 years of data from 1993 thru 1997 for Texas residents, the highest death rates among males occurred in the 10 to 14 year age group followed by the 5 to 9 age group. To determine if Texas' rates were significantly higher than United State's rates, Standard Mortality Ratios (SMR) were calculated for males by 5 year age groups.

Table 1. Number of Observed and Expected Traffic-Related Deaths to Male Pedal Cyclists; 1993-1997

Age	US 1996 Rate	Tx 1993 to 1997 Rate	Observed	Expected	SMR*	95% CI
0-4	0.02	0.1	4	0.85	4.7**	1.28 -12.04
5-9	0.62	0.7	27	23.8	1.13	0.75 - 1.65
10-14	0.97	1.1	39	36.0	1.08	0.77 - 1.48
15-19	0.63	0.5	20	23.3	0.86	0.52 - 1.32
20-24	0.43	0.5	19	16.5	1.15	0.70 - 1.80
25-29	0.37	0.3	11	13.2	0.83	0.42 - 1.50
30-34	0.40	0.4	15	15.8	0.95	0.53 - 1.57
35-39	0.61	0.3	12	24.0	0.87	0.45 - 1.52
40-44	0.40	0.6	21	13.8	1.52	0.94 - 2.33
45-49	0.49	0.5	15	14.1	1.06	0.60 - 1.76
50-54	0.33	0.5	12	7.3	1.64	0.85 - 2.88
55-59	0.37	0.5	9	6.4	1.40	0.65 - 2.67
60-64	0.36	0.5	8	5.4	1.48	0.64 - 2.92
65-69	0.33	0.5	6	4.3	1.40	0.51 - 3.04
70-74	0.29	0.6	6	3.1	1.94	0.7 - 4.22
75+	0.45	0.5	7	6.7	1.04	0.42 - 2.15

*Standard Mortality Ratio
**Significantly higher (at the 5% level) than expected.

Figure 1. Pedal Cycle Injuries by Cause of Injury and Survival, 1997



MV-Motor Vehicle
PC-Pedal Cycle

The SMRs indicate there was no significant difference in the death rates in Texas, compared with the US, except in the age group 0-4 years (SMR=4.7), which was based on a small number of deaths (4) and does not provide for a reliable SMR.

Whereas more than 90% of deaths occurring in Texas among pedal cyclists were traffic-related, nonfatal injuries occurred more frequently due to pedal cycle incidents not involving motor vehicles (see Figure 1). In 1997 there were 515 pedal cyclists injuries reported to the Texas Trauma Registry. Approximately 81% of injuries occurred among males (see Table 2). Approximately 50% of these injured were 5 through 14 years of age. The highest number of cases occurred in the 10 to 14 year age group followed by the 5 to 9 year age group. Approximately 80% of the injuries occurred from March to October; 36% of all injuries occurred from April to June. One hundred and forty (27%) of the injuries occurred from 4:00 PM to 7:59 PM.

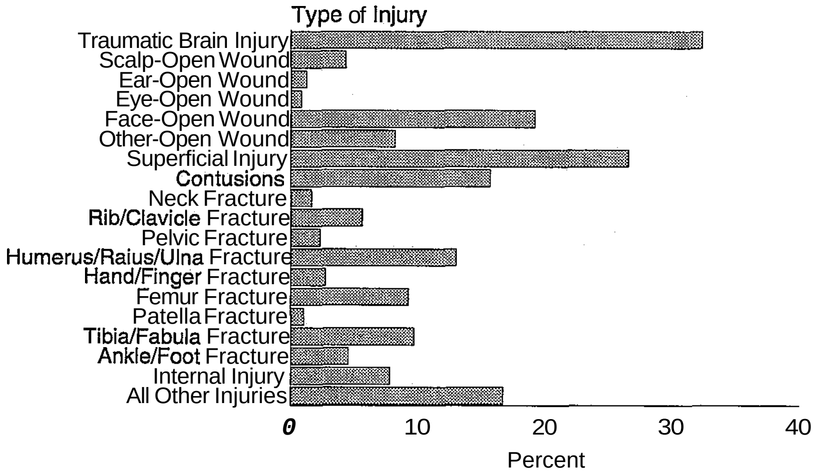
There were 1,202 injuries reported for 515 individuals (each individual could receive up to 5 diagnoses) of which the most frequent type of injury was traumatic brain injury (TBI) (18.6%), superficial injuries such as abrasions (14.7%), and open wounds to the face (12.7%) (Figure 2). There were 167 individuals who sustained a TBI, 137 who sustained superficial injuries, and 99 who sustained an open wound to the face. The majority of injured pedal cyclists were discharged in good condition (357, 69.3%), however nearly 19% (97) were discharged from the hospital in moderate condition, and almost 10% (51) were discharged with a severe disability or in a vegetative state. The condition at discharge was unknown for 2% (10) of the cases. Twentv-seven percent of hospital charges were billed to insurance companies, 26% were billed to the individual, and 20% were billed to medicaid or medicare. The total hospital charges were $4,505,721.

Among fatal and nonfatal cases, there were 209 individuals who sustained a TBI (36.3%). Seventy-four percent of those who sustained a

Table 2. Nonfatal Injuries to Pedal Cyclists by Age and Sex, 1997

Age Group (Years)	Male	Female	Total
Unknown	1	0	1
0-4	13	3	16
5-9	80	34	114
10-14	120	21	141
15-19	39	1	40
20-24	31	5	36
25-29	17	7	24
30-34	18	3	21
35-39	22	8	30
40-44	30	3	33
45-49	17	6	23
50-54	9	1	10
55-59	4	1	5
60-64	5	1	6
65-69	3	1	4
70-74	3	1	4
75+	4	3	7
Total	**416**	**99**	**515**

Figure 2. Nonfatal Injuries to Pedal Cyclist by Type of Injury



Individuals may have injuries in more than 1 category; Denominator used to calculate percentages is 515.

nonfatal TBI were discharged in good condition, 13% were discharged in moderate condition, 8% were discharged in severe condition, and 2% were discharged in vegetative condition. Among fatal cases nearly 69% sustained a traumatic brain injury, 93% of which were traffic-related. There were 105 children under the age of 15 years who sustained a traumatic brain injury (10 fatal, 95 non fatal). Half of the total hospital charges to pedal cyclists were to individuals with a TBI. Among the 167 individuals who sustained a nonfatal TBI, 13 were wearing a helmet at the time of the injury.

According to the Consumer Product Safety Commission, the percentage of pedal cyclists who report regularly wearing a helmet rose from 18% in 1991 to 50% in 1998. The latest 1997 statistics for helmet usage in Texas (Austin, Ft. Worth, Houston, Dallas, San Antonio, and El Paso combined) show the following percentage of helmet usage by age: 6.8%, less than 5 years of age; 7.9%, 5 to 14 years of age; 6.5%, 15 to 19 years of age; 37.9%, 20 to 30 years of age, and 37.5% over 30 years of age.[3] Helmet usage was unknown for 43.6% of the cases reported to the Trauma Registry in 1997. There were 39 (7.6%) case-patients reported to have been wearing a helmet at the time the injury occurred. In 1998 the Safe Riders Program at the Texas Department of Health distributed 985 helmets free of charge to people under 18 years of age.

References:

1. Consumer Product Safety Commission, National Bike Helmet Use Survey, April, 1999
2. National Center for Health Statistics, Vital Statistics of the United States
3. Texas Transportation Institute, The Texas A&M University System, College Station, Texas

Injury Epidemiology and Surveillance Program
(512) 458-7266

Lead Exposure in Adults

The Texas Administrative Code 99.1 requires reporting of adult elevated blood lead levels to the Texas Department of Health (TDH). As adopted in 1985, the statute set the reporting level at 40 μg/dL of blood in persons 15 years of age or older. During the 12 years since the original rule was approved, it became increasingly clear through scientific study that adverse health effects of lead can be demonstrated at exposure levels once considered "safe," and levels of lead exposure at which adverse health effects are detected have become progressively lower. As a result of these scientific findings, lead levels of concern to public health agencies have also decreased, and in Texas the reporting level was changed to 25 μg/dL in 1998.

In 1990 the US Centers for Disease Control and Prevention compiled the document, *Healthy People 2000: National Health Promotion and Disease Prevention Objectives,* which contained a national strategy for improving the health of the nation over the next decade by addressing major illnesses, injuries, and infectious diseases. Objective 10.8 was to "Eliminate exposures which result in workers having blood lead concentrations greater than 25 μg/dL of whole blood". The reporting level of 40 μg/dL in Texas did not allow for an accurate means to assess progress toward meeting the Healthy People 2000 objective.

TDH began the process of changing the reporting level from 40 μg/dL to 25 μg/dL in 1996. At this time, most other states were able to contribute information regarding the progress toward the Healthy People 2000 objective. There were 44 states reporting adult blood lead levels. Four of these states, including Texas, required reporting adult blood lead levels of 40 μg/dL or greater. These 4 states, in addition to the 6 states who did not require reporting blood lead levels at all, were not able to evaluate progress toward the Healthy People 2000 objective. The majority of states (40), however, were able to contribute information toward evaluating the Healthy People 2000 progress. Contributors included 15 states (34% of states requiring reporting) that require reporting blood lead levels greater than or equal to 25 μg/dL, and 25 states that had reporting levels set at less than 25 μg/dL, including 8 states (18%) that required reporting the results of all blood lead tests done, regardless of the level.

At the TDH Board of Health meeting in February 1996, a proposed rule change was presented that would lower the blood lead reporting requirement in Texas to 25 μg/dL. The Board agreed with the proposed change under the Occupational Disease Reporting Statute and the rule change was published in the *Texas Register* on March 8, 1996. The proposed rule change generated some concerns from the lead industry. To resolve those concerns, members of the Texas Legislature, representatives from the lead industry, and TDH staff worked collaboratively for several months to develop a rule change that was acceptable to all parties. The final rule change was published in the *Texas Register* on February 20, 1998 and became effective on March 1, 1998. This change lowered the blood lead reporting requirement from 40 μg/dL to 25 μg/dL.

Table 1. Distribution of Blood Lead Test Results and Number of individuals Tested by Blood Lead Level

Blood Lead Level (Micrograms per Deciliter of Whole Blood)	No. of Tests[1]	No. of Individuals[2]
0 to 24	11,312	9,546
25 to 39	1,207	446
40 to 49	142	74
50 to 59	40	27
60 and above	10	8
TOTAL	**12,711**	**10,101**

[1]The total number of tests received for the year.
[2]The number of individuals for whom reports were received for the year. An individual may have more than one blood lead test during the year.

During 1998 the Environmental and Occupational Epidemiology Program (EOEP) received 12,711 blood lead test results for 10,101 workers. EOEP often receives several tests during the year for a specific worker because the US Occupational Safety and Health Administration (OSHA) mandates blood lead testing when workers are exposed to lead. The frequency of blood lead testing as required by OSHA varies according to the worker's blood lead level and with the type of work (construction or general industry) associated with the lead exposure. Table 1 shows the distribution of blood lead levels compared with the number of tests and individuals who had blood leads drawn during 1998.

Laboratories and physicians reported 1,399 elevated blood lead results for 555 workers. The elevated blood lead results reported for 1998 increased by 526% from 1997, while the number of workers represented for 1998 increased by 378%. Elevated blood lead results for 1997 represented about 2 tests per worker and for 1998 about 3 tests per worker. The increase in the number of elevated blood lead reports is a direct result of lowering the blood lead reporting level from 40 μg/dL to 25 μg/dL.

The majority of workers were male (537); 18 were female. Race was not reported for 229 workers. The race profile for the remaining workers (326) was as follows: 252 (77.3%) were White, 69 (21.2%) were African American, and 5 (1.5%) were Asian/Pacific Islander. The reported ethnicity of workers shows that 133 (24%) workers were Hispanic.

EOEP conducts follow-up on workers with blood lead levels at or above 25 μg/dL. Follow-up includes collecting occupation and industry information. If the information is not on the laboratory report, the laboratory that performed the analysis is contacted for additional information. Follow-up may end at this point since most laboratories do not maintain the submitting company or physician information beyond 60 days. When the clinic or physician is known, they are contacted. The distribution of elevated blood lead levels by industry and occupation is presented in Table 2. A portion of the industry and occupation information that is missing can be attributed to the period January 1, 1998 - February 28, 1998. During this time the reporting level was 40 μg/dL. Follow-up that would have included obtaining industry and occupation information was not required for blood lead levels that were less than 40 μg/dL and greater than 25 μg/dL. The worker identified in the banking industry is a security guard for a federal reserve bank. The worker is required to qualify periodically at a firing range and blood lead testing is conducted to monitor the worker's lead exposure.

Increased employer and employee awareness of the sources of lead exposure in the workplace and methods for reducing worker exposure are essential for the prevention of occupational lead poisoning. To help employers identify potential lead hazards, TDH offers free workplace consultation. Part of the typical consultation visit is an industrial hygiene inspection that includes measurement of airborne lead levels, observation of work practices to assess exposure risk, and recommendations for reducing worker exposures. A workplace consultation is offered to employers of workers with reported blood lead levels of 60 μg/dL or greater and to all employers with workers that have blood lead levels averaging 50 μg/dL over a 6-month period.

Consultations are also conducted at the request of companies, regardless of the lead level of workers. Employers and employees who are aware of lead exposure in the workplace and the potential for take-home exposure also may help reduce the risks for lead exposure in children. The following case investigation illustrates how take-home exposure maybe a potential source of lead exposure for children.

Case Investigation

At the request of a Texas Department of Health Regional office, an investigation was conducted at a firearms manufacturing company in December. A 10-month-old child had been identified with a blood lead level of 29 μg/dL. An environmental

Table 2. Industry and Occupation for Workers with Elevated Blood Lead Levels

Industry	Frequency	Yo
Manufacturing	364	65.5
Business and Repair Services	56	10.1
Construction	50	9.0
Transportation, Communications, Public Utilities	28	5.0
Wholesale Trade	23	4.1
Professional and Related Services	6	1.1
Oil and Gas Extraction	3	. 5
Entertainment and Recreational Services	2	.4
Banking	1	.2
Missing Industry Information	22	4.0

Occupation	Frequency	Yo
Operators, Fabricators, and Laborers	309	55.7
Precision Production, Craft, and Repairers	134	24.1
Technical, Sales, and Administrative Support	18	3.2
Managerial and Professional Specialities	6	1.1
Service	4	.7
Missing Occupational Information	84	15.1

n=555

inspection of the home did not reveal any potential lead sources. It was felt that the exposure may be coming from the father who works at the firearms company. A blood lead monitoring program is in place at the company to evaluate worker lead exposures. The father works as a proofer which requires test firing each weapon to ensure it fires properly prior to shipment. The father's blood levels have ranged from 21 to 52 μg/dL since 1997. The most recent blood lead level was 29 μg/dL. Three employees work as proofers during a 4 hour shift. Each proofer fires approximately 1,500 rounds per 4 hour shift. Respirators and coveralls are provided to each proofer and worn during their shift. Some of the proofers wear their street clothes under the coveralls while others remove their shirt and store it in their locker. At the end of each shift the proofers are responsible for clean up, which includes removing the spent shot from the trap and loading it into 55 gallon barrels. Forearm length rubber gloves and disposable coveralls are available for the cleanup. Separate clean and dirty changing rooms are not available.

During the inspection several deficiencies were noted that could be potentially responsible for take home lead exposure. These deficiencies included no shower facility for the employees and no separated clean and dirty changing rooms. One recommendation provided to the company was the need to evaluate the proofing room to ensure the room is maintained under positive pressure and the workers are not being exposed to airborne lead. During this inspection the company's responsibility to educate their employees was emphasized. Specifically the importance of improving personal hygiene to reduce the potential risk of personal as well as take-home lead exposure was discussed with company management.

Occupational lead exposure continues to be a potential take-home source of exposure for family members. This case illustrates the importance of obtaining occupational information when children or adults are seen at medical facilities. The need to look at all potential lead sources is vital for the successful identification of the actual source since a variety of lead sources can contribute to an elevated blood lead level in a child.

Environmental Epidenziology and Toxicology Division (512) 458-7269

Lead Poisoning in Children

Elevated blood lead levels in children can impair mental and physical development. While potential sources of lead in the environment have been reduced dramatically due to regulatory bans of leaded gasoline and lead-soldered food cans, it is estimated that 890,000 children nationwide may still have elevated blood lead levels. In Texas, approximately 4% of children have elevated blood lead levels. Children may continue to be exposed to lead through chipping and peeling lead-based paint, imported pottery with leaded glazes, parental occupations and hobbies that involve work with lead, and folk medicines that contain lead. Children are at greater risk for lead exposure than are adults because children tend to have more hand-to-mouth activity and because their digestive systems absorb a greater portion of the ingested lead.

The Texas Childhood Lead Surveillance Program began operation on January 1, 1996, when childhood lead poisoning and elevated blood lead levels in children became reportable conditions in the State of Texas. In this report, the term "childhood lead poisoning" means blood lead concentrations of 45 µg/dL of blood or greater, in persons younger than 15 years old. The term "elevated blood lead levels in children" means blood lead concentrations of 10 µg/dL or greater in persons younger than 15 years old.

Laboratories and medical providers send reports of blood lead test results to the program staff by telephone, mail, fax, and on computer diskette. During 1998 over 320,000 reports of blood lead test results were received, representing 286,995 individual children. Only elevated blood lead test results are required by law to be reported, but laboratories have been asked to voluntarily report all blood lead test results. Currently, 45 laboratories located throughout the nation report blood lead results to the Texas Department of Health (TDH). Sixty percent of the laboratories (27 of 45) voluntarily report all blood lead test results. Reports from these 27 laboratories account for over 99% of the total reports received.

Tables 1 through 3 provide a summary of data collected during 1998. In these tables, only the first blood lead test result for a child is included; results of follow-up tests are not presented. During 1998, 4% (11,166) of the cases reported to the Childhood Lead Surveillance Program met the standard for elevated blood lead levels. While the majority of the children (70%) had only slightly elevated blood lead levels (10 to 14 µg/dL), 19 children had blood lead levels greater than 70 µg/dL, a level considered indicative of an acute medical emergency.

Table 1. Percent of Elevated Blood Lead Reports* in Children by Medicaid Status and Lead Level

	Blood Lead Level (micrograms per deciliter)					
Medicaid Status	**10 - 14**	**15 - 19**	**20 - 44**	**45 - 69**	**70+**	**Total**
Medicaid	2.9	0.6	0.3	0.1	0.1	**4**
Non-Medicaid	3.4	1.0	0.4	0.1	0.1	**5**

*based on results of the first blood lead test reported.

Ninety-two percent of the children in the Childhood Lead Surveillance Program database are or have been enrolled in the Texas Health Steps Medicaid program. Because this program includes blood lead screening at 12 and 24 months of age, children enrolled in the Texas Health Steps program may be tested for lead more often than are children who are not enrolled. Children receiving federal assistance, such as Medicaid, are generally

Table 2. Number of Reported Blood Lead Tests* in Children by Age (in months) and Lead Level

	Blood Lead Level (micrograms per deciliter)						
Age (Months)	**<10**	**10 - 14**	**15 - 19**	**20 - 44**	**45 - 69**	**70+**	**Total**
0-11	43,334	550	137	90	4	3	44,118
12-23	50,941	2,092	499	286	13	7	53,838
24-35	30,148	1,596	350	168	5	3	32,270
36-47	25,323	1,132	255	124	4	1	26,839
48-59	27,211	997	212	131	5	3	28,559
60-71	20,013	559	125	44	2	1	20,744
72+	78,859	1,292	301	167	7	1	80,627
Total	**275,829**	**8,218**	**1,879**	**1,010**	**40**	**19**	**286,995**

*based on results of the first blood lead test reported.

considered to be at higher risk for lead poisoning due to the potential for living in older housing with deteriorating lead-based paint. A recent report by the United States General Accounting Office' estimates that approximately 77% of the 890,000 children thought to have elevated blood lead levels are in, or are targeted by a federal assistance program. However, as is shown in Table 1, our data indicate that in Texas, non-Medicaid children are also at risk for lead poisoning. Five percent of non-Medicaid cases were reported as having an elevated blood lead level as compared to 4% of the Medicaid cases.

Figure 1. Percent of Elevated Blood Lead Reports by County

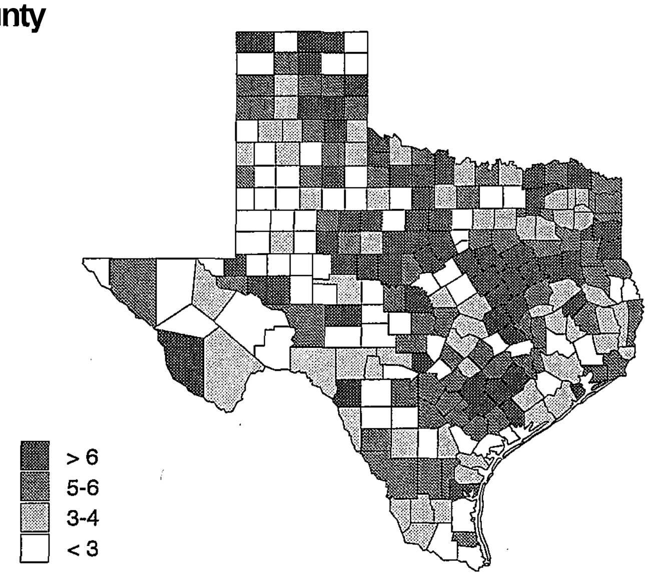


Table 2 shows that over 53,000 reports (nearly 20% of all reports) are for children from 12 to 24 months of age. However, of all the age groups, the percent of children with elevated blood lead levels was greatest among children aged 24 to 35 months, with 6.6% having elevated blood lead levels. Children aged 24 to 35 months are highly mobile and may have an increased opportunity to come into contact with lead in their environment. In addition, they may still explore their environment by putting non-food objects such as paint chips or dirt into their mouths, by playing on the floor or the ground or by chewing on window sills or other painted surfaces. These activities may increase the risk for exposure to lead.

Table 3 shows that over 170,000 children, representing more than 60% of the total cases reported to the Childhood Lead Surveillance Program, are of Hispanic ethnicity. As noted previously, children enrolled in Medicaid are required to be tested for blood lead and are more likely to have their test results reported to the Texas Department of Health. Therefore, it is likely that this ethnic distribution simply mirrors that of the Medicaid population, which also is nearly 50% Hispanic.

Table 3. Number of Reported Blood Lead Tests* in Children by Race/Ethnicity and Lead Level

Race/ Ethnicity	Blood Lead Level <10	10-14	15-19	20-44	45-69	70+	Total
Hispanic	171,565	4,939	1,070	606	21	7	178,208
African American, non-Hispanic	42,895	1,600	372	162	6	2	45,037
White, non-Hispanic	35,823	940	248	134	10	8	37,163
Asian, non-Hispanic	1,972	34	2	4	1	0	2,013
Native American, non-Hispanic	264	10	3	0	0	0	277
Other	3,711	94	16	8	0	0	3,829
Unknown	19,599	601	168	96	2	2	20,468
Total	275,829	8,218	1,879	1,010	40	19	286,995

***based on results of the first blood lead test reported.**

Figure 1 shows the "prevalence" of elevated blood lead tests by county. Prevalence in this case is the number of elevated blood lead tests divided by the total number of tests (elevated and nonelevated) reported for the county. The counties with the greatest prevalence of elevated lead tests are located primarily in the Panhandle and North Central portion (including the metropolitan statistical areas of Killeen, Temple and Waco) of the state. Many of the counties in the Panhandle area have greater than 33% pre-1950 housing.[2] During the 1990s the Panhandle was 1 of the 2 slowest growing regions in Texas.[3] Thus the amount of new construction in this area would be substantially lower than that seen in the rest of the state. This lack of new construction would account for the higher percent of pre-1950s housing and the risk of a child living in a house with deteriorating lead-based paint may be greater.

Although no definite reason has been identified as to why children living in counties in the North Central portion of the state have more elevated lead levels, some possibilities are the presence of old industrial sources of lead or the presence in metropolitan areas of older homes with lead-based paint. While the percent of housing built before 1950 is lower in this area there are still large pockets of housing, particularly in the inner-city neighborhoods, that were built before 1950 and may contain lead-based paint.

In 1991 the United States Public Health Service set a goal of eliminating childhood lead poisoning in the United States in 20 years. To meet this goal in Texas, the information described above is being used to help target screening and prevention activities so that all children with elevated lead levels will be identified and treated (when appropriate), and the sources of lead exposure eliminated.

References:

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2. United States Department of Commerce. Economics and Statistics Administration. Bureau of the Census. 1990 Census of Population and Housing. Washington: 1990. Pub. No: 1990 CPH-R-3.
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Environmental Epidemiology and Toxicology Division (512) 458-7269

Lyme Disease

Thirty-one of the 165 possible Lyme disease cases reported to the Texas Department of Health in 1998 met the CDC's current case definition: physician diagnosed erythema migrans (EM) at least 5 cm in diameter or rheumatologic, cardiac, or neurologic manifestations with a positive laboratory test. Seventeen (55%) of the 31 patients were female; ages ranged from 15 to 81 years. Seven persons were hospitalized.

Six (19%) of the 31 patients had physician-diagnosed EM; 2 of the 6 had multiple lesions. (EM was reported for an additional 5 patients, but the lesions were not witnessed by a physician.) Reported months of EM onset were April, May, June, July, September, and October. Bell's palsy was reported for **3** (10%) patients. Other commonly reported neurologic manifestations included peripheral neuropathies (reported for 17 patients), limb weakness (15), sensory impairment (5), and vision impairment (6). Fifteen (48%) patients had migratory joint pain; 14 (45%) had swollen joints.

Four (13%) of the 31 patients recalled tick exposure prior to onset of their illness; 2 (6%) reported flea bites prior to onset.

Infectious Disease Epidemiology and Surveillance Division (512) 458-7676

Measles

In 1998, no cases of measles were serologically confirmed in the state of Texas. A total of 214 persons were, however, suspected of having measles. These incidents were thoroughly investigated, but serologic laboratory testing ruled out all diagnoses of measles. Until measles is eliminated worldwide, the threat for outbreaks of the disease continues. Imported cases are a very important cause for concern because they have the potential to spread disease among susceptible populations.

Measles has been a reportable condition in Texas since 1920 when the mechanisms for disease reporting were first put into place by the Texas Department of Health. The greatest number of cases ever documented in Texas was in 1958 when 88,000 cases of measles were reported to health officials. Measles has declined dramatically in Texas in 3 phases. The first decrease occurred following vaccine licensure in 1963; the second decrease began in 1971 when vaccine requirements for children attending Texas schools and child-care facilities were implemented; and the third occurred following the requirement of 2 doses of measles vaccine for children in Texas schools and child-care facilities which was implemented in 1991.

Immunization Division (512) 458-7284

Neural Tube Defect Project

In late summer of 1992, Texas Department of Health responded to a Center for Disease Control and Prevention request for proposal (RFP) to implement neural tube defect (NTD) surveillance and risk reduction activities in a high prevalence area. The RFP also requested a case-control study for risk factors for NTD occurrence. TDH was awarded a cooperative agreement based on a proposal to carry out these activities in the 14 counties along the Texas-Mexico border: Cameron, Hidalgo, Starr, Webb, Zapata, Maverick, Kinney, Val Verde, Terrell, Brewster, Presidio, Jeff Davis, Hudspeth, and El Paso. CDC support of the project concluded this year, and this is the final report on the Texas Neural Tube Defect Project (TNTDP) activities.

Surveillance

The surveillance component of the TNTDP involved prospective casefinding through the following data sources: hospitals; birthing centers; ultrasound centers; abortion centers; prenatal clinics; genetics clinics; and birth attendants including lay midwives, certified nurse midwives, and nonhospital physicians. Because physician surveys and vital record data, are much less accurate, as well as less timely, data sources were used for quality control purposes.

Case ascertainment for the cooperative agreement commenced January 1, 1993, and concluded on September 30, 1998. NTD surveillance rates for the 14 Texas-Mexico border counties for this 69 month period are summarized in Tables 1 and 2. There were 352 resident NTD-affected births/terminations (cases). Of these cases, 319 (91%) occurred in the 4 most populated border counties—Cameron, Hidalgo, El Paso, and Webb. The remaining 10 border counties accounted for 9% of the births in the study area and 33 (9.4%) of the NTD-affected pregnancies in the study area.

A number of interesting facts emerged when the cumulative data were evaluated. The overall NTD rate for this period was 13.7 cases per 10,000 live births (6.2 for anencephaly, 6.5 for spina bifida, and 1.0 for encephalocele). El Paso County had a lower cumulative NTD rate (9.3 cases per 10,000 live births) than the rest of the border counties individually or combined (15.9 cases per 10,000 live births); this difference was highly significant ($p < 0.001$). There was also intra border geographic variation in the type of NTD. The percentage of NTDs classified as anencephaly ranged from 40%, 42%, and 44% for Cameron, Hidalgo, and El Paso Counties, respectively, to 60% for Webb County ($p = 0.005$). Finally craniorachischisis, a rare NTD involving a contiguous opening of the brain and spinal column, was much more common along the border than previously reported in the United States. Craniorachischisis accounted for 0.03% of all NTDs, with a rate of 0.5 per 10,000 live births compared to a rate of 0.1 reported by the Metropolitan Atlanta Congenital Defects Program. Half of these defects occurred in Hidalgo County (0.8 cases per 10,000).

A gestational age was known for 348 NTD-affected pregnancies; 64 (18%) were induced or spontaneously aborted at <20 weeks gestation; 85 (25%) were delivered or induced from 20 through 33 weeks gestation; and 199 (57%) were delivered at ≥ 34 weeks (Table 3). **A** prenatal (any time prior to labor or termination) diagnosis was reported for 77% of the resident cases. Unlike many surveillance systems the TNTDP includes cases in which the fetus is less than 20 weeks of gestational age. Excluding fetuses that failed to reach a gestational age of 20 weeks dramatically affected the rates. Overall, 67 (19%) of the cases would have been missed. Each of the women who would have been missed was at risk for an NTD recurrence and could not have been enrolled in the folic acid intervention had she not been identified.

Table 1. NTD Type,[*] NTD Rate,[†] and Anencephaly to Spina Bifida Ratio (A:SB) by County of Residence and Period: January 1993 - September 1998

County	Period	Anencephaly Cases	Anencephaly Rate	Spina Bifida Cases	Spina Bifida Rate	Enceph Cases	Total	Rate	NTDs 95% CI	A:SB Ratio
Cameron	1993	6	7.9	6	7.9	1	13	17.0	9.1-29.1	1.0: 1
	1994	6	7.8	9	11.7	0	15	19.5	10.9-32.2	0.7 : 1
	1995	2	2.6	11	14.2	0	13	16.8	9.0-28.8	0.2 : 1
	1996	7	9.0	4	5.2	0	11	14.2	7.1-25.4	1.8 : 1
	1997	3	3.9	5	6.6	0	8	10.5	4.5-20.7	0.6 : 1
	1998(9)[‡]	5	8.8	6	10.5	1	12	21.0	10.8-36.7	0.8 : 1
	93-98(9)	29	6.6	41	9.3	2	72	16.3	12.8-20.6	0.7 : 1
Hidalgo	1993	7	5.5	10	7.9	3	20	15.8	9.7-24.4	0.7 : 1
	1994	9	7.1	11	8.6	0	20	15.7	9.6-24.2	0.8 : 1
	1995	9	7.0	11	8.5	3	23	17.8	11.3-26.8	0.8 : 1
	1996	4	3.1	12	9.2	2	18	13.8	8.2-21.8	0.3 : 1
	1997	13		6	4.6		19	14.6	8.2-22.8	2.1 : 1
	1998(9)[‡]	6	6.1	7	7.2	1	14	14.3	7.8-24.0	0.8: 1
	93-98(9)	48	6.5	57	7.7	9	114	15.4	12.7-18.5	0.8 : 1
Webb	1993	7	14.8	4	8.4	0	11	23.2	11.6-41.4	1.7: 1
	1994	3	6.1	5	10.1	0	8	16.2	7.0-32.0	0.6 : 1
	1995	4	8.1	2	4.0	2	8	16.1	7.0-31.7	2.0 : 1
	1996	3	5.9	2	3.9	1	6	11.8	4.3-25.7	1.5 : 1
	1997	10	19.5	3	5.9	1	14	27.3	14.9-45.8	3.3 : 1
	1998(9)[‡]	4	10.4	1	2.6	0	5	13.0	4.2-30.3	4.0 : 0
	93-98(9)	31	10.8	17	5.9	4	52	18.1	13.5-23.8	1.8 : 1
El Paso	1993	7	4.4	7	4.4	0	14	8.8	4.8-14.7	1.0 : 1
	1994	8	5.1	5	3.2	4	17	10.9	6.3-17.4	1.6 : 1
	1995	6	3.9	8	5.2	1	15	9.7	5.4-16.0	0.7 : 1
	1996	8	5.4	5	3.4	1	14	9.4	5.1-15.8	1.6 : 1
	1997	4	2.8	6	4.2		10	7.0	3.3-12.7	0.7 : 1
	1998(9)[‡]			6	5.5		11	10.2	5.1-18.2	0.5 : 1
	93-98(9)	36	4.1	37	4.2	8	81	9.3	7.4-11.4	1.0: 1
Other 10	1998(9)[‡]	2	6.9	0	--	0	2	6.9	10.5-21.8	--
	93-98(9)	16	6.9	14	6.1	3	33	14.3	9.9 -20.1	1.1 : 1
Total	**1998(9)[‡]**	**20**	**6.0**	**20**	**6.0**	**4**	**44**	**13.2**	**9.6-17.7**	**1.0: 1**
	93-98(9)	**160**	**6.2**	**166**	**6.5**	**26**	**352**	**13.7**	**12.3-15.2**	**1.0: 1**

*NTD cases exclude the following accompanying conditions: trisomy, triploidy, Turner's syndrome, Meckel's syndrome, and amniotic band syndrome
†Rates are cases per 10,000 live births
‡Rate estimate for 1998 based on 1997 live births; status as of 10/1/98

Table 2. Summary of NTD Type* and Rates† by Year: 1993-1998

	Anencephaly		Spina Bifda		Enceph		NTDs		
Period	Cases	Rate	Cases	Rate	Cases	Total	Rate	95% CI	A:SB ratio
1993	30	6.7	31	6.9	5	66	14.6	11.3-18.6	1.0 : 1
1994	31	6.9	34	7.1	4	69	15.3	11.9-19.4	0.9 : 1
1995	25	5.1	33	7.3	6	64	14.2	10.9-18.1	0.8 : 1
1996	23	6.5	26	5.6	4	53	11.8	8.9-15.5	0.9 : 1
1997	31	6.5	22	5.4	3	56	12.7	9.6-16.5	1.4 : 1
1993-1997	140	6.0	146	6.4	22	308	13.7	12.2-15.4	0.9 : 1
1998(9)‡	20	6.0	20	6.0	4	44	13.2	9.6-17.7	1.0 : 1
93-98(9)	160	6.2	166	6.5	26	352	13.7	12.3-15.2	1.0 : 1

'NTD cases exclude the following accompanying conditions: trisomy, triploidy, Turner's syndrome, Meckel's syndrome, and amniotic band syndrome
†Rates are cases per 10,000 live births
‡Rate estimate for 1998 based on 1997 live births; status as of 10/1//98

Table 3. NTD Rates* by Gestational Age and County of Residence, 1993-1998†

	>20 Weeks Gestational Age at Birth/Termination			All Gestational Ages At Birth/Termination		
County	Cases	Rate	95% CI	Cases	Rate	95% CI
Cameron	54	12.2	9.2-16.0	72	16.3	12.8-20.6
Hidalgo	96	13.0	10.5-15.8	114	15.4	12.7-18.5
Webb	41	14.3	10.3-19.4	52	18.2	13.6-23.8
El Paso	66	7.6	5.9-9.6	81	9.3	7.4-11.6
Other 10	25	10.8	7.0-16.0	33	14.3	9.9-20.1
Total	**285**	**11.0**	**9.8-12.4**	**352**	**13.7**	**12.3-15.2**

*Rates are cases per 10,000 live births.
†Status as of 1011/98

Table 4. Surveillance Overview, 1993-1998(9): Demographic, Obstetric, and Diagnostic Characteristics

Characteristic	
Mean age in years, (SD)	24.9 (6.4)
Age group in years, %	
< 20	22.2
20-29	54.5
≥30	23.3
Race-ethnicity, %	
White-Hispanic	94.3
White Non-Hispanic	4.3
Black	0.8
Asianlother	0.6
Mean gestational age at delivery/termination, (SD)	30.9 (9.4)
Delivery outcome by gestational age, %	
Induced/spontaneous abortions, < 20 wk	18.2
Delivered or induced, 20-33 wk	24.3
Delivered, 234 wk	57.5
Delivery outcome, %	
Live birth	54.0
Stillbirth	14.4
Spontaneous abortion	2.3
Elective abortion	28.7
Unknown	0.6
Prenatal diagnosis of NTD, %	77.0
NTD type by sex, %	
Anencephaly	45.5
Male	31.7
Female	54.4
Ambiguous/Unknown	13.9
Spina bifida	47.2
Male	44.0
Female	50.6
AmbiguouslUnknown	5.4
Encephalocele	7.3
Male	34.6
Female	53.9
Ambiguous/Unknown	11.5
Anencephaly : spina bifida ratio	0.96

n=352

Table 5. Subsequent Pregnancies by Pregnancy Outcome and Year of Index Pregnancy, 1993-1998*

Pregnancy Outcome	1993†	1994	1995†	1996†	1997	1998	Total	%*
Non-NTD affected live birth	40	20	21	10	6	0	97	77
Stillbirth$	0	1	0	0	0	0	1	1
Spontaneous abortion$	6	6	4	2	2	1	21	15
Elective abortion$	2	2	1	1	0	0	6	6
Recurrent NTD	1§	0	0	0	0	0	1	1
Total live births/spontaneous abortions	49	29	26	13	8	1	126	100
Moved/lost	2	2	1	0	0	0	5	–
Pending delivery	3	4	5	5	7	1	25	–
Total Subsequent Pregnancies	**54**	**35**	**32**	**18**	**15**	**2**	**156**	

*status as of 10/1/98
† number of pregnancy outcomes in case series to date
* percent of total subsequent live births/spontaneous abortions
$ Non-NTD affected
§ woman was lost and not taking folic acid

Table 4 provides an overview of the demographic, obstetric, and diagnostic characteristics for 352 cases for 1993 to 1998. Three hundred thirty two (94.3%) of 352 resident NTD cases were White-Hispanic. Of the 20 non-Hispanic cases, 3 (0.9%) were African American, 1 (0.3%) was Egyptian, 1 was Korean (0.3%), and 15 (4.3%) were non-Hispanic Whites. As stated above, the NTD rate for all ethnicities was 13.7 cases per 10,000 live births. Ninety-one percent of the resident and 92% of the occurrent live births in the study area were to Hispanics. The Hispanic rate was 14.1 cases per 10,000 Hispanic live births and the Anglo rate was 8.7 cases per 10,000 Anglo live births (p=0.7).

Intervention

Women identified through the surveillance protocol were contacted by telephone, letter, and/or in person. Women who lived outside the study area and women with NTD-affected pregnancies before 1993 were provided education but not given folic acid. Women whose index pregnancy was delivered or terminated in 1993 or later and who resided in the study area were asked to enroll in the intervention program. The enrolled women were interviewed and provided preconception, pregnancy, and NTD risk-reduction education and counseling. If they were contracepting, they were given a multivitamin with 0.4 mg folic acid; if they were not, they were given daily dosepacs consisting of 4.0 mg folic acid: 1 multivitamin containing 1.0 mg of folic acid and 3 1.0 mg tablets of folic acid.

From 1993 to1998, 352 women were identified who met the intervention case definition. As of September 30, 1998, 81 (23%) of the 352 women were not currently eligible for enrollment. Of the 271 eligible women, 87 (32%) refused enrollment, quit, or were lost; 22 (8%) consented but were pending enrollment; and 162 (60%) were on folic acid; of these, 17 were pregnant. Eligible women with induced abortions were more likely (22.9%) to refuse to participate in the folic acid intervention than were those with natural outcomes (eg, liveborn, stillborn, or spontaneous abortions) (11.3%); (p=0.014).

The primary objective of the TNTDP was prevention of recurrent folic-acid preventable NTDs. Pregnancy outcomes subsequent to the index NTD-affected pregnancy are reported in Table 5. For the period January 1, 1993, through September 30, 1998, 111 women who qualified for folic acid supplementation had 1 or more pregnancies subsequent to their NTD-affected pregnancy. Of these women, 75 had 1 subsequent pregnancy only, 36 women each had 2 pregnancies, 7 women had **3** pregnancies, and 2 had 4 subsequent pregnancies for a total of 156 subsequent pregnancies.

A pregnancy outcome had already occurred in 126 of the subsequent pregnancies: 97 (77%) of the pregnancies resulted in non-NTD affected live births, 1 (0.8%) in a stillbirth, 21(17%) in miscarriages or incomplete spontaneous abortions, 6 (5%) in an elective abortion, and 1 (0.8%) in a recurrent NTD. Prior to her first subsequent pregnancy, the woman who had a recurrent NTD-affected pregnancy had declined enrollment in the intervention program, despite the efforts of the field team. She later enrolled in the intervention. Five women known to be pregnant were lost to follow-up and 25 women were pending delivery. None of the 6 elective abortions were NTD-affected.

Infectious Disease Epidemiology and Surveillance Division (512) 458-7676

Pesticide Poisoning—Acute Occupational Pesticide Exposure Surveillance

Background

The Environmental Epidemiology and Toxicology Division at the Texas Department of Health (TDH) conducts active surveillance and collects reports of occupationally-related pesticide poisonings throughout the state. Acute occupational pesticide poisoning was made a reportable condition with the passage of the Occupational Conditions Reporting Act in 1985. Over the past 13 years, the Texas Pesticide Poisoning Surveillance (TiPPS) program has collected surveillance data to evaluate the extent of this problem within the state, conduct case follow-up and site investigations, and guide intervention and prevention initiatives in efforts to improve the health of the Texas population.

In 1998 the TiPPS program continued to expand from a surveillance system primarily dependent upon reports received from sentinel health care providers to a system that functions collaboratively with other state agencies involved in pesticide management: the Texas Department of Agriculture (TDA), the Structural Pest Control Board (SPCB), and the Texas Poison Center Network (TPCN). During 1998, the TiPPS program began receiving data electronically from the TPCN. The TiPPS program also focused efforts on developing and strengthening collaborative reporting relationships with migrant clinicians, local and regional health departments, and other government agencies. The addition of these collaborating sources and the implementation of the TPCN electronic reporting is reflected in a 63% increase in occupationally-related pesticide poisoning reports received in 1998: 107 reports in 1998 compared with 44 reports in 1997 (Figure 1). As shown in Figure 1, the majority of this increase in case ascertainment was a result of increased reports received from the TPCN and other reporting sources, which includes reports received from the general public, local or regional health departments, other government agencies, and medical record and death certificate reviews.

The surveillance system received 230 reports of pesticide exposures which included 107 work-related exposures and 123 non-occupational exposures. Reports received indicate that the 107 work-related pesticide exposures occurred in 31 of the 254 Texas counties (Figure 2). Fifty-five were considered confirmed occupational pesticide poisoning cases. Reports are considered confirmed if enough information is available to determine that a pesticide was used and that the exposure to pesticides caused resulting symptoms. The remainder of this report discusses only these 55 confirmed cases.

Demographic Distribution

More than half of the 55 confirmed occupational pesticide poisoning cases reported in 1998 involved women (55%) while 45% of the individuals exposed were men. This is surprising since many of the workers who commonly use pesticides (pest

Figure 1. Occupational Pesticide-Related Reports by Reporting Source, 1997-1998

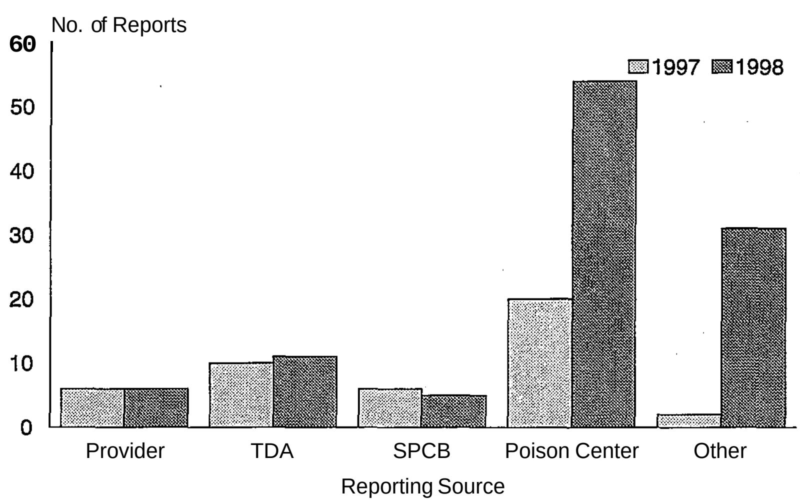


Table 1. Occupational Pesticide Poisonings by Age

Age (in years)	No.	%
<16	3	5
16-20	8	14
21-30	23	42
31-40	11	20
41-50	6	11
51-60	1	2
61+	1	2
Unknown	2	4
Total	**55**	

control technicians, farm workers, and chemical formulators) are traditionally men. However, the high incidence of exposures in women was partly a result of a single pesticide exposure incident that occurred at a local telecommunications company in which more than 30 administrative support employees were exposed to pesticides, most of whom were women. Fifty-one percent of the persons involved in the confirmed poisoning reports were White, 27% were African American, 16% were Hispanic, and the remaining 5% were of unreported racial/ethnic backgrounds. Sixty-two percent of the confirmed reports were from exposed individuals aged 21 to 40 years (Table 1).

In 1998, almost half (47%) of the pesticide poisoning cases reported occurred in the technical, sales, and administrative support occupations while only 27% of reports occurred in agricultural occupations (Figure 3). The US Department of Agriculture estimates that 225,000 farm workers and approximately 370,000 migrant workers and their dependents are employed in farming and ranching in Texas. Given these numbers and the nature of agricultural work, it was expected that most of the pesticide exposures would have occurred in the agricultural sector. However, the high incidence of exposures in the technical, sales, and administrative support occupations was again partly a result of the pesticide exposure incident that occurred at a local telecommunications company.

Reported Poisoning Symptoms

Of the 55 confirmed cases, neuromuscular symptoms such as headache, dizziness, confusion, irritability, and twitching muscles were most frequently reported (47 individuals) (Figure 4). Neuromuscular symptoms are common following exposure to organophosphates, due to their cholinesterase inhibiting activity. Cholinesterase is a chemical produced by the body to help regulate signals to the nervous system. When the body wants to send signals through the nervous system, the body releases a chemical known as acetylcholine. In order to stop nerve signals, the acetylcholine must be broken down by the cholinesterase enzyme. Organophosphates are known to decrease the amount of cholinesterase in the body, causing a build up of acetylcholine. This build up of acetylcholine can cause symptoms such as quick, uncontrolled movements, twitching muscles, and muscular weakness, many of which were reported in 1998.

Additional symptoms reported in 1998 cases include gastrointestinal symptoms, such as nausea,

Figure 2. Occupational Pesticide Poisoning Incidents by County of Residence (Confirmed and Non-Confirmed Reports)

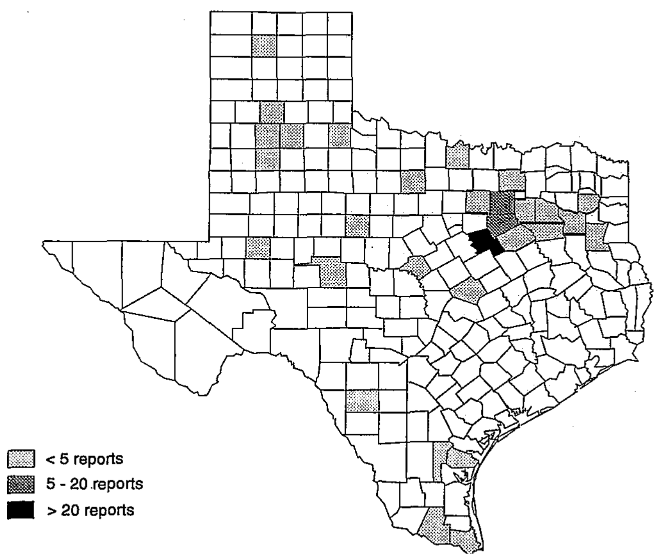
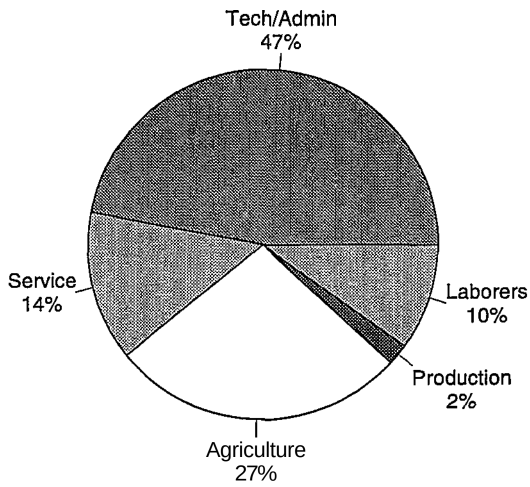


Figure 3. Occupational Pesticide Poisoning Reports by Occupation



vomiting, diarrhea, and stomach cramps, and respiratory symptoms such as nose and throat irritation, shortness of breath, and difficulty breathing. Thirty-nine individuals complained of gastrointestinal symptoms while 33 individuals complained of respiratory symptoms.

Commonly Reported Pesticides

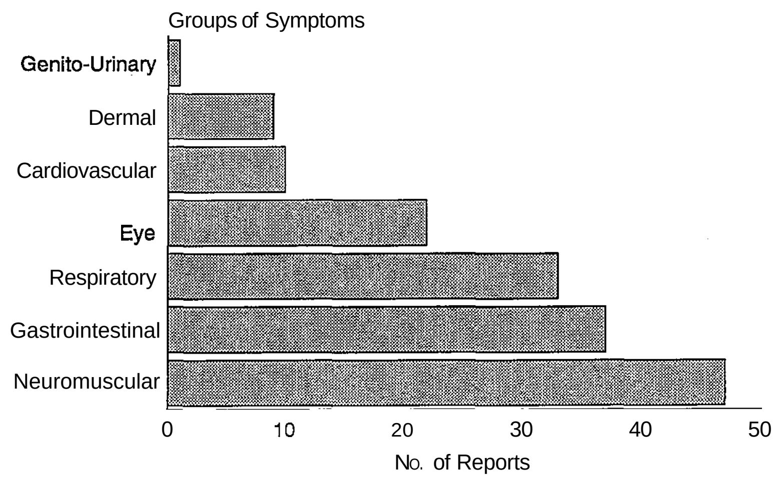
Pyrethroids and pyrethrins were the most commonly reported class of pesticides (51%) among exposed individuals (Figure 5). These plant-derived pesticides are considered only slightly to moderately toxic to mammals but are commonly combined with other potentially more toxic insecticides to enhance their ability to control insects and are widely used in agriculture, homes, and gardens.

Exposure to organophosphates accounted for 25% of confirmed reports. Organophosphates are most commonly used as insecticides but can also function as herbicides and fungicides. The wide array of formulations and functions make organophosphates ideal for use in the agricultural sector. In 5% of the cases, it was unknown what chemicals accounted for the exposures.

Collaborative Reporting Relationships

During 1998 the TiPPS program in the Environmental Epidemiology and Toxicology Division worked to strengthen reporting relationships with health care providers, migrant clinicians, and other statewide agencies involved in pesticide use and management. In an effort to enhance case ascertainment from local and regional health departments and health care providers, pesticide poisoning surveillance staff traveled and provided training to 6 Texas county health departments, reaching an estimated 350 employees. Collaborative reporting relationships were also initiated with migrant clinicians. Pesticide poisoning surveillance staff provided training on the recognition and reporting of pesticide exposures to 6 of the 14 federally-funded migrant clinics in Texas. Additional

Figure 4. Occupational Pesticide Poisoning: Reported Symptoms

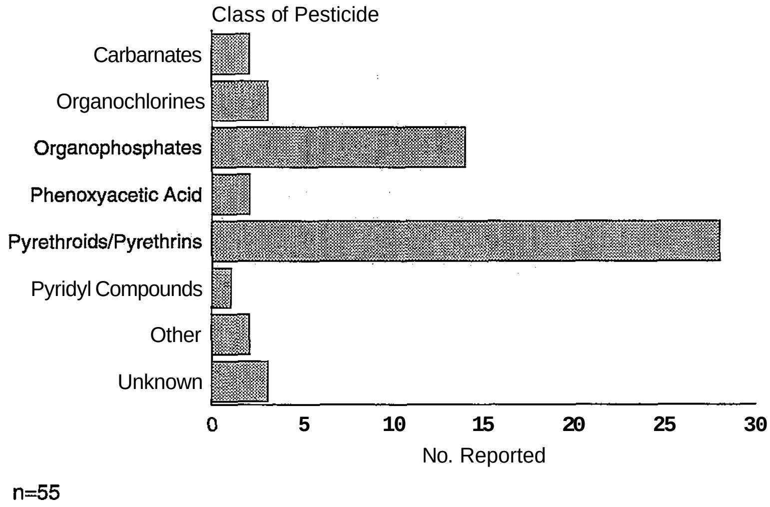


n=55

outreach and education was provided to a variety of health care professionals at continuing education seminars, workshops, and conferences statewide.

Reporting relationships were strengthened and case ascertainment increased as the Texas Poison Center Network (TPCN) began providing electronic downloading of information on pesticide-related calls received by the 6 Poison Centers statewide. In 1998, the TiPPS program also developed a collaborative agreement with the Texas Department of Health's Trauma Registry and began receiving an electronic transfer of reports of pesticide poisoning incidents that were seen at trauma centers statewide.

Figure 5. Most Frequently Reported Pesticides



In 1998 the TiPPS program continued to participate in the South Texas and Wintergarden Migrant Coordinating Subcommittees, collaborating with representatives from the United States Department of Labor, the Texas Workforce Commission, the US Occupational Safety and Health Administration, the United States Immigration and Naturalization Service, the Texas Department of Agriculture, and other participating agencies. This association was initiated in an effort to discuss and address migrant farmworker issues and concerns. Participation in this organization has provided the TiPPS program an opportunity to collaborate with a variety of agencies involved in pesticide use and management. Continued participation in the Texas Council on Agricultural Safety and Health (TCASH) has provided the TiPPS program the opportunity to collaborate with representatives from state, academic, and commercial organizations involved in agriculture safety. This initiative has provided a forum for the dissemination of agriculture-related safety and health information and has allowed the TiPPS program the opportunity to enhance collaborative relationships and increase reporting of occupationally-related pesticide poisonings.

Conclusion

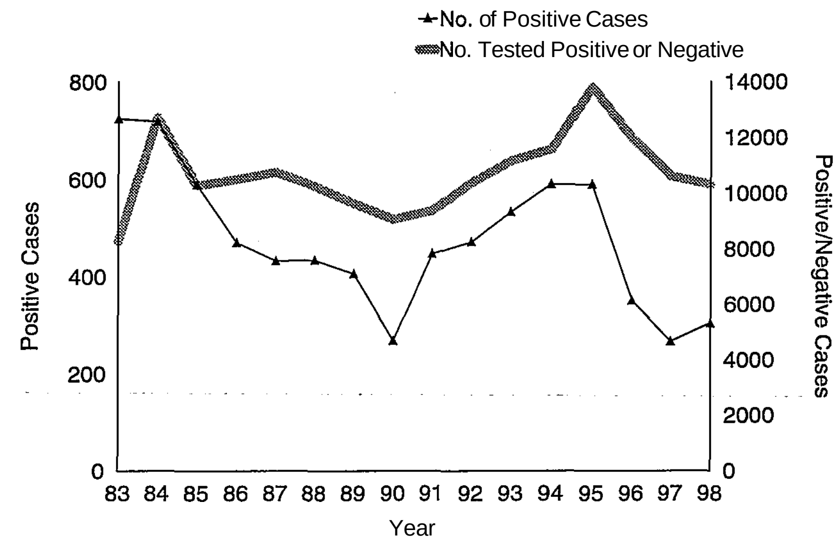
The effectiveness of developing and strengthening collaborative reporting relationships is demonstrated in the increase of occupational-related pesticide poisoning reports received in 1998 (107 reports), more than doubling the number of reports received in 1997 (44 reports). The development of electronic reporting relationships from a number of key collaborating agencies involved in pesticide use and management will continue to enhance surveillance and the quality of reports received. By maintaining collaborative relationships with valued reporting sources, reaching out to local and regional clinics and health departments, and merging traditional surveillance strategies with electronic reporting from nontraditional sources, the TiPPS program can continue to increase case ascertainment. Data and surveillance information collected using these methods will be valuable in the development of more accurate intervention and prevention programs that will successfully assist in reducing the incidence of occupationally-related pesticide poisonings in Texas.

Environmental Epidemiology and Toxicology Division (512) 458-7269

Rabies in Animals

Rabies is a viral zoonosis affecting the central nervous system of warm-blooded animals. The mode of transmission is by saliva containing rabies virus being introduced into an opening in the skin, usually via the bite (or possibly scratch) of a rabid animal. Though rare, transmission can also occur through contamination of mucous membranes. Animals considered to be high risk for transmitting rabies in Texas include bats, skunks, foxes, coyotes, and raccoons.

Figure 1. Positive Rabies Cases and Specimens Tested for Rabies: 1983-1998



In 1998, 303 (3%) of 10,294 animal specimens that were tested and confirmed as positive or negative in Texas were positive for rabies. This was a 14% increase over the 266 confirmed cases reported in 1997. In 1998, there were 29 positive rabies cases per 1,000 animals tested; in 1997, there were 25 positive rabies cases per 1,000 animals tested. Yearly totals for 1983 through 1998 are illustrated in Figure 1. The highest number of cases in 1998 occurred in April, with bats (26) and skunks (22) being the predominant rabid species reported during that month. Rabies in animals was confirmed in 95 of the 254 Texas counties (Figure 2). With 20 cases (all bats), Travis County had the highest number of reported rabies cases per county statewide for the third consecutive year.

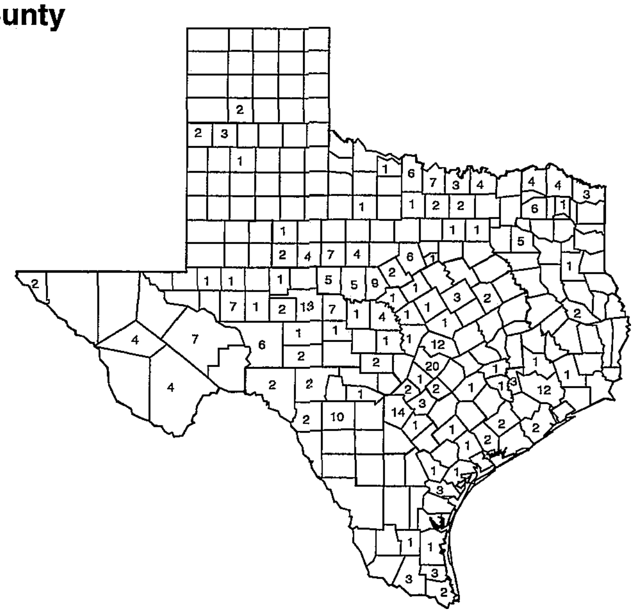
Rabies in wildlife accounted for 85% of the confirmed cases throughout the state. Skunks were the primary source of positive cases reported in 1998 (38% of all positive cases). During 1998, 116 skunks were positive for rabies compared with 94 (35% of all positive cases) in 1997. Of all skunks tested for rabies, 26% were positive in 1998 and 21% were positive in 1997.

Bats had the second highest number of confirmed rabies cases in a species with 104 cases (34% of all positive cases) in 1998 compared with 121 cases (45% of all positive cases) in 1997. Of all bats tested for rabies, 10% were positive in 1998 compared with 13% in 1997.

In addition to the cases in bats reported via routine surveillance, there were 2 studies conducted in 1998. During May through October, 155 dead or dying bats were collected from under the McNeil Bridge in Williamson County as part of an ongoing study by the Centers for Disease Control and Prevention. The test results reported for those bats were 107 positive, 45 negative, and 3 unsatisfactory.

In another special bat study, 66 bats that had died or were euthanatized due to illness or injury were tested for rabies at the New York State Department of Health's rabies laboratory. Results from this study included 7 positive bats from the following counties: Travis (5), Hays (1), and Mason (1). Additionally, there were 59 negative bats from the following counties: Travis (36), Bexar (22), and Comal (1).

Figure 2. Confirmed Cases of Animal Rabies (all species) by County



Rabies in domestic animals (15% of all positive cases) continued to be a concern because rabid domestic animals are more likely to have contact with humans than are rabid wildlife. Tables 1 and 2 compare the numbers of domestic and wildlife rabies cases, respectively, for various animal species for 1997 and 1998.

Twenty-one counties, 3 of which had recorded cases in 1998, have been involved in the South Texas canine rabies epizootic since 1988. Of all positive cases in 1998, 5 (2%) were the canine variant of rabies virus compared with 6 (2%) in 1997.

Forty-nine counties have been involved in the West-Central Texas gray fox rabies epizootic since 1988, 13 of which had recorded cases in 1998. Of all positive cases in 1998, 36 (12%) were the gray fox variant of rabies virus compared with 24 (9%) in 1997.

In response to the epizootics, the Oral Rabies Vaccination Program (ORVP) for coyotes in South Texas was initiated in February 1995, and the ORVP for gray foxes in West-Central Texas was initiated in January 1996; implementation has continued annually. These programs target the reservoir species for the canine and gray fox variants of rabies virus. Immunization is accomplished by aerial distribution of an edible bait containing oral rabies vaccine. The goals of the ORVP are to create zones of vaccinated coyotes and gray foxes along the leading edges of the epizootics to halt their expansion and, consequently, eliminate the epizootics. In addition to a marked reduction in the number of rabies cases involved in the epizootics since the ORVP began, results from postvaccination surveillance conducted in March 1998 have also demonstrated evidence of a successful program. The baits contain tetracycline as a biomark agent that replaces calcium in the teeth and bones of animals consuming the bait. Of the coyotes in the South Texas zone and the gray

Table 1. Confirmed Cases of Rabies in Domestic Animal Species: Texas 1997 and 1998

Species	1997	1998
Dogs	11	15
Cats	2	8
Cows	9	5
Horses	2	12
Goats	1	4
Sheep	0	1
Total	**25**	**45**

Table 2. Confirmed Cases of Rabies in Wild Animal Species: Texas 1997 and 1998

Species	1997	1998
Bats	121	104
Skunks	94	116
Foxes	13	21
Coyotes	7	6
Raccoons	5	5
Bobcats	1	5
Ringtail	0	1
Total	**241**	**258**

foxes in the West-Central Texas zone that showed evidence of the biomark agent, 61% and 93% respectively exhibited some level of serologic response. Data was also analyzed to determine the serologic response to rabies vaccine without regard to the presence of tetracycline biomark. Results from that analysis determined that coyotes in the South Texas zone and gray foxes in the West-Central zone exhibited 64% and 37% seropositivity respectively. Variations in detectable evidence of biomark can occur between these 2 species due to gray foxes having a shorter life span than coyotes and the fact that, as animals age, they have a slower rate of mineral mobilization in the bones and teeth which can result in a reduced retention of biomark agent in older animals.

Zoonosis Control Division (512) 458-7255

Rickettsial Diseases

Three rickettsia1 or rickettsia-like diseases of humans are reportable to the Texas Department of Health: typhus, caused by either Rickettsia *typhi* or Rickettsiafelis; Rocky Mountain spotted fever (RMSF), caused by Rickettsia *rickettsii*; and ehrlichiosis, usually caused by Ehrlichia *chaffeensis*. A brief epidemiologic summary of these diseases for 1998 is provided below.

Forty-four cases of flea-borne typhus were confirmed this year. Twenty-five patients were female; 19 were male. Their ages ranged from 2 to 80 years. As usual, most of the typhus cases occurred in patients who resided in South Texas: 24 in Hidalgo County; 15 in Nueces County; 2 in Cameron County; 2 in Duval County; and 1 in San Patricio County. Case investigations were completed for 29 of the cases; 15 patients were lost to follow up. Onsets of illness for these 29 patients occurred in January (1 case), March (2), April (4), May (7), June (4), July (2), September (3), October (1), November (2), and December **(3).** Their symptoms included fever (100% of patients investigated), headache (76%), malaise (59%), myalgia (48%), nausea and/or vomiting (48%), anorexia (38%), and diarrhea (28%). Seventeen (59%) of the 29 persons had a rash. All but 1 of the 29 patients were hospitalized; none of the patients died.

Two cases of RMSF, both with onset in June, were confirmed in 1998. Both patients were boys (aged 2 and 9), had a macular rash, and were hospitalized; neither died. They resided in Jim Wells and Parker Counties.

Two cases of human ehrlichiosis were also reported. The patients, males aged 56 and 62 years, resided in Eastland and Jim Wells Counties. Onsets of illness were in May and June. Both patients were hospitalized; neither had a rash.

Infectious Disease Epidemiology and Surveillance Division *(512) 458-7676*

Rubella and Congenital Rubella Syndrome

Rubella

Texas experienced a dramatic increase in confirmed rubella infections in 1998, the direct result of the rubella outbreak in Mexico in which over 40,000 cases were reported last year. During the past 10 years, Texas has averaged 33 to 34 cases of rubella per year, ranging from a low of only 8 cases both in 1995 and 1996 to a high of 99 cases in 1990. The 2-dose measles vaccine requirement for children attending Texas schools and child care facilities was implemented in 1991. Because compliance with this vaccine requirement is virtually always met through administration of a second dose of the combined measles, mumps, and rubella vaccine, rubella morbidity dropped significantly in 1991, and the average number of cases from 1991 through 1997 was only 12 cases per year (Figure 1).

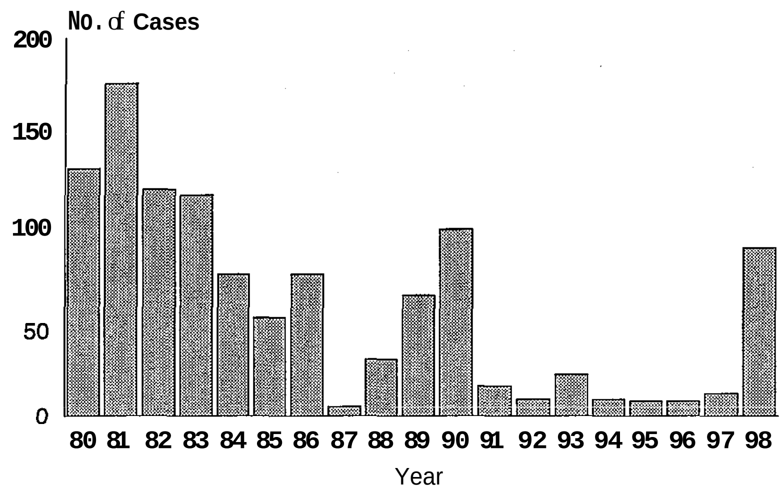
All 1998 case patients were White with 88% of Hispanic ethnicity. The age distributionbf the patients is illustrated in Figure 2. The majority of these patients grew up in Mexico or in the Central American countries of El Salvador, Honduras, and Guatemala—Countries which until very recently did not use rubella vaccine.

Although patients resided in 15 counties throughout the state (illustrated in Figure 3), there were 3 distinct outbreaks that occurred in Texas in 1998. The first occurred in an Immigration and Naturalization Service (INS) Processing Center in Cameron County and spread to another INS facility when infected detainees were transferred to El Paso. A total of 34 cases—7 of which occurred in December 1997—were associated with this INS outbreak. A facility-wide vaccination effort halted the outbreak in April 1998. The median age of patients in the INS outbreak was 22 years (range: 18-57 years), and 85% of the patients were male.

Soon after the INS outbreak began, another outbreak was detected in Houston and affected 22 individuals, all of whom were Hispanic and originally from Mexico or Central America. Median age was 27 years (range: 1-59 years), and unlike the INS outbreak, the majority of patients (55%) were female.

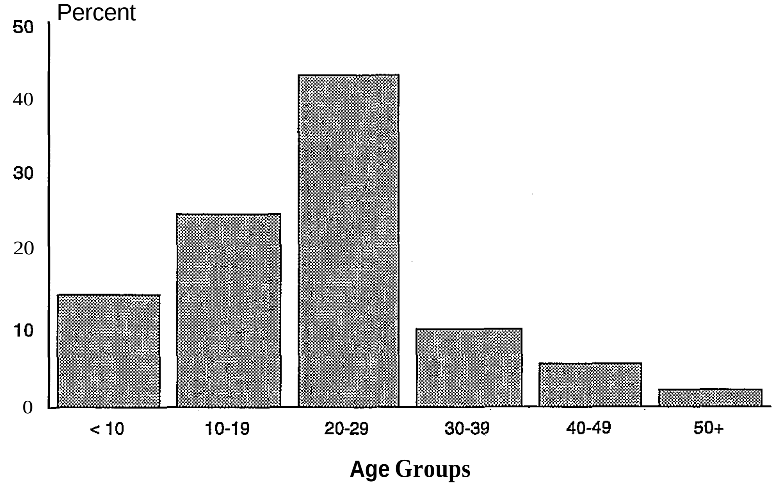
The third outbreak was much smaller and occurred among a family of unvaccinated, home-schooled children in Denton County who ranged in age from 7 years to 18 years. The eldest child traveled to Cancun (Mexico) in June 1998 and experienced onset of symptoms July 6. Six generations of cases were subsequently documented as siblings became ill on July 6, July 28, August 20, August 21, and September 4. The sixth, and youngest child, was asymptomatic, but this case was serologically confirmed as rubella infection in October 1998.

Figure 1. Reported Cases of Rubella, 1980-1998



Also significant is the number of rubella infections serologically confirmed in health-care workers (HCWs) recently. In 1997 and 1998, 6 rubella cases in HCWs were confirmed. Case-patients included a 57-year-old clinic nurse who was immune suppressed, a 55-year-old receptionist for a primary care doctor (verbal history of previous disease); a 35-year-old hospital nurse (verbal history of disease); a 38-year-old clinic assistant in a maternity clinic (foreign born and never vaccinated), a 46-year-old clinic assistant in a maternity clinic (foreign born and never vaccinated), and a 45-year-old clinic assistant in a maternity clinic (foreign born and never vaccinated). The Advisory Committee on Immunization Practices (ACIP) recommends that HCWs have documented proof of immunity to rubella, especially those who come in contact with pregnant women or women of child-bearing age. Documented proof of immunity includes serological evidence of immunity to rubella or an immunization record showing one dose of a rubella-containing vaccine.

Figure 2. Distribution of Cases of Rubella, by Age Group

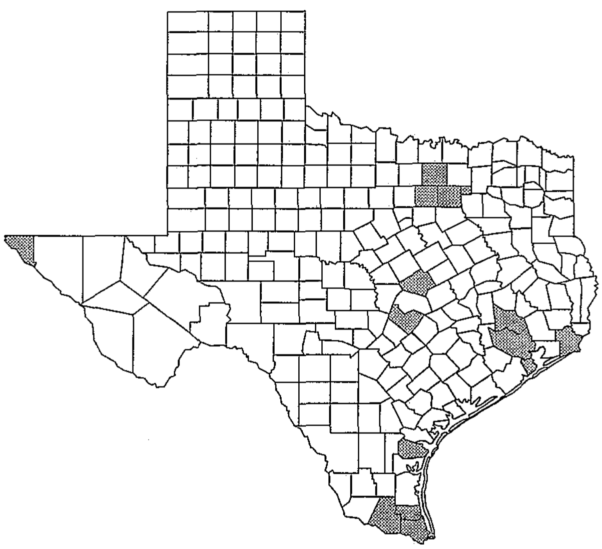


Congenital Rubella Syndrome

Congenital rubella syndrome (CRS) is the devastating consequence of rubella infection during early pregnancy. Up to 85% of infants born to mothers infected with rubella in the first trimester can be affected. Those who survive are usually afflicted with severe congenital anomalies which most commonly include ophthalmologic, cardiac, auditory, and/or neurologic defects.

Infants born with CRS pose a significant public health threat because some continue to shed rubella virus in nasopharyngeal (NP) secretions and urine for a year or longer and, therefore, transmit rubella infection to susceptible contacts. Infants with CRS are considered contagious until they are 1 year of age, unless NP and urine cultures are repeatedly negative for rubella virus before that time.

Figure 3. Counties with Confirmed Rubella



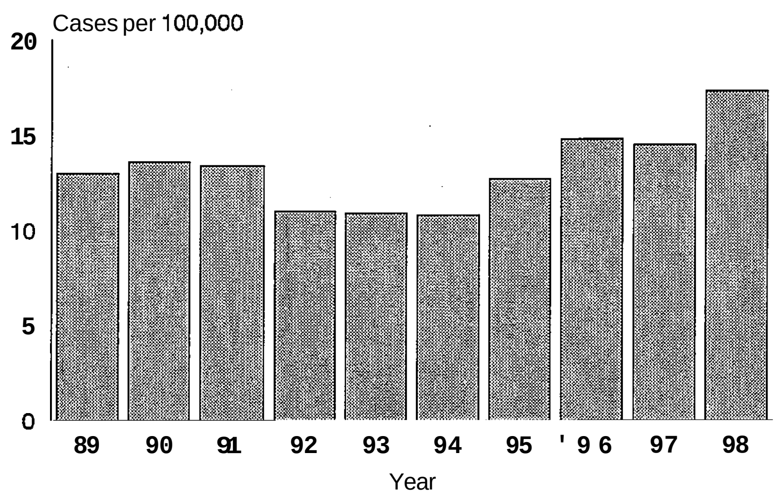
In Texas in 1998, 3 babies, all born to women from Mexico, were confirmed with CRS: 1 in Dallas and 2 in El Paso. All 3 babies were born in December, and each had classic signs and symptoms of CRS. Their mothers were 20, 24, and 26 years of age, and all were unvaccinated. Each of the mothers developed rashes early in their pregnancies following exposure to known rubella cases.

Immunization Division (512) 458-7284

Salmonellosis

According to the Center for Disease Control and Prevention salmonellosis is very underreported, even though some 40,000 cases are reported yearly in the United States. The United States Department of Agriculture (USDA) estimates the actual number of Americans made ill by *Salmonella* spp. to be roughly 3.8 million per year with consequent lost wages and medical costs in the billions of dollars. Salmonellosis is caused by *Salmonella* species (spp.), microbial contaminants of foods of animal origin. Poultry and poultry products comprise approximately 50% of common-vehicle epidemics.[1] Other epidemic vehicles include unpasteurized dairy products (4%) as well as meats (13%), particularly beef and pork.' Infective doses can be as small as 15 bacteria although 100 to 1,000 are generally required.' Because of increased exposure food handlers are more likely to acquire asymptomatic infections.[1] Infected food handlers can pass infection to others by the fecal-oral route. A decrease in the contamination of meat products would help to break this chain of infection.' Salmonellosis infection occurs 6 to 72 hours postingestion, and symptoms include diarrhea, abdominal cramping, fever, nausea, vomiting, and headache.' Severe infection may lead to serious dehydration and occasionally death. In less than 1% of cases, individuals may become a chronic carrier. Chronic carriers are asymptomatic individuals who continue to excrete *Salmonella* organisms for more than a year after infection. Biliary tract disease is a predisposing factor in becoming a chronic carrier of *Salmonella* spp.'

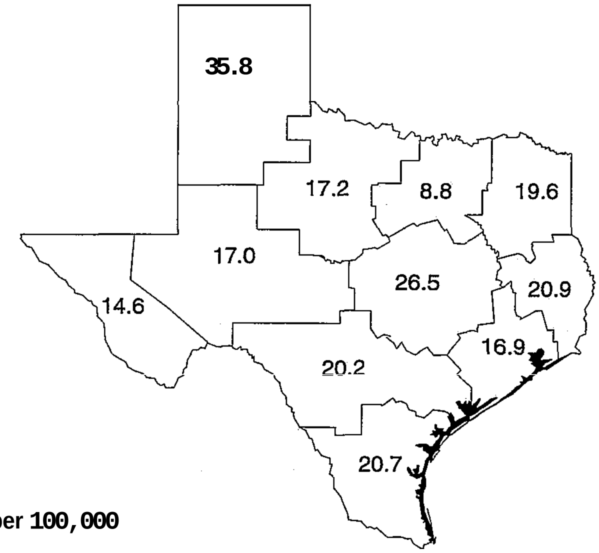
Figure 1. Salmonellosis Incidence Rates, 1989-1998



In January 1998 the Pathogen Reduction and Hazard Analysis and Critical Control Points (HACCP) was implemented to reduce microbial contamination in meat and poultry. This ruling mandates increased microbial testing and stricter sanitation to be phased in from 1998 through 2000. In 1998, 300 large plants comprising 75% of the US meat and poultry production fell under this ruling. From 1997 to 1998 there had been a marked decrease in *Salnzonella* spp. contaminated meats. *Salmonella* spp. contamination was reduced as follows: broiler's dropped from 20.0% to 10.9%; ground beef dropped from 7.5% to 4.8%; ground turkey fell from 49.9% to 36.4% of meats tested. This decrease in contamination was mirrored in the FoodNet Surveillance study designed to more precisely quantitate the national occurrence of foodborne illness cases. In 1997 the average incidence rate for the FoodNet Surveillance sites for *Salnzonella* spp. was 13.6 per 100,000 population and in 1998 this rate dropped to 12.4 per 100,000. Unfortunately, this trend was not seen in Texas, where the 3,401 cases (incidence rate of 17.3 per 100,000 population) of salmonellosis constituted the highest number of reported cases since 1951. Figure 1 displays the increasing salmonellosis rate for Texas over the last 10 years.

Statewide incidence by public health region is illustrated in Figure 2. Examination of the data by age group reveals that children under the age of 5 years, comprise 42.3% of the total cases. Due to their immature immune systems and lack of resistance, young children are particularly susceptible to *Salmonella* spp.[1] The incidence rate in this age group (birth to 4 years) increased from 74.4 in 1997 to 88.8 per 100,000 population in 1998. The incidence rate in children under 1 year of age was 230.9 per 100,000 population in 1998, dramatically illustrated in Figure 3. Overall the mean age of infected individuals in 1998 was 21 years old.

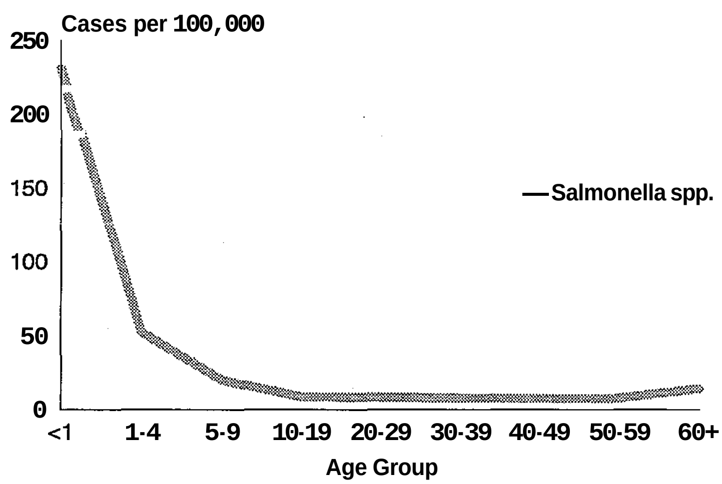
Figure 2. Salmonellosis Incidence Rates by Public Health Region



Serotypes of *Salmonella* spp. were identified for 2362 (69.5%) cases. The most prevalent organism isolated was *Salmonella* serotype *typhimurium.* The 5 most common serotypes reported for 1998 were *typhimurium* (14.2%), *newport* (11.9%), *enteritidis* (6.9%), *javiana* (6.5%), and *infantis* (4.5%). This pattern is similar to that exhibited in 1997.

In August 1998, 16 people residing just east of Dallas were diagnosed with *S. enteritidis* infections; 11 of the 16 were hospitalized. An investigation revealed the vehicle to be homemade ice cream ($p < .0005$) made with USDA Grade B eggs. Transovarial transmission of *S. enteritidis* from chickens to their eggs is well documented. This outbreak illustrates the risk of consuming undercooked/uncooked foods made with eggs.

Figure 3. Salmonellosis incidence Rates by Age Group



Salmonellosis is best prevented through safe food handling practices such as pasteurization of dairy products, thorough cooking of raw foods (especially eggs, poultry, fish, and ground beef), good hand washing, and careful cleaning of kitchen surfaces and utensils that contact raw foods. Additionally, reptiles should be handled with caution as they are more likely than other pets to carry *Salmonella* spp.

Reference:

1. Mandell, Gerald M.D., editor. *Principles and Practice of Infectious Diseases.* 2nd ed. John Wiley and Sons, Inc, 1979:1256-1267.

Infectious Disease Epidemiology and Surveillance Division (512) 458-7676

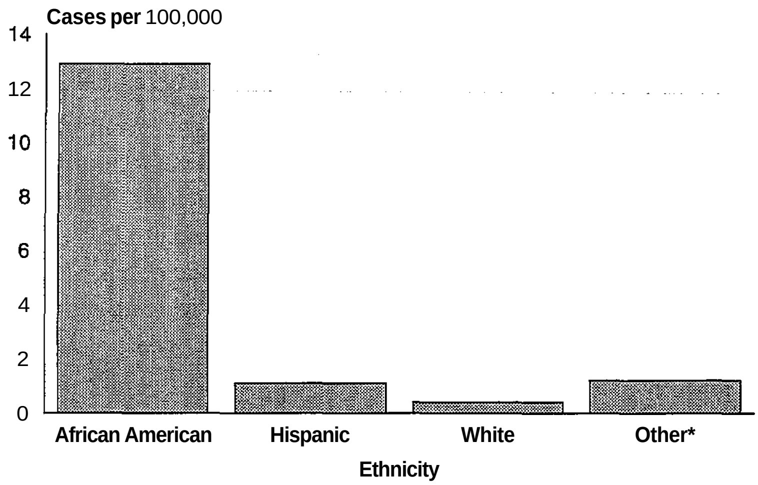
Sexually Transmitted Diseases

Primary and Secondary Syphilis

The spirochete Treponenzn *pallidum* causes syphilis. Primary lesions (ulcer or chancre at the site of infection) followed by secondary infection (manifestations that include rash, mucocutaneous lesions, and adenopathy) characterize the acute form of syphilis. Untreated syphilis progresses into a chronic disease with long periods of latency. Statewide, 430 cases of primary and secondary (P&S) syphilis were reported in 1998. This 36% decrease from cases reported in 1997 continues a downward trend. The number of P&S syphilis cases reported in 1998 was one-tenth the number reported in 1991. The overall state rate in 1998 for P&S syphilis was 2.2 cases per 100,000 population—the lowest rate since the late 1950s. More than 31% of the patients were 15 through 24 years of age. Females accounted for 177 cases (41% of the total) compared with 253 cases among males.

African Americans continue to account for the majority (67%) of P&S syphilis cases reported in Texas. The rate of P&S syphilis among African Americans was 12.9 cases per 100,000 population in 1998, less than one-fourth the 1995 rate of 53.2. Nonetheless, the rate for African Americans remained extremely high compared with that of other ethnic groups (Figure 1). The case rate for Hispanics was 1.1 cases per 100,000 population, for Whites 0.4 cases per 100,000, and for other ethnic groups (excluding cases with race unspecified) 1.2 cases per 100,000. Among African American females, those age 20 through 24 had the highest rate at 31.3 cases per 100,000 population. The highest rate for African American males was also found among those age 20 through 24 with 41.0 cases per 100,000 (Figure 2). The extremely high case rate for both sexes indicates the continuing severity of the problem of P&S syphilis among young African Americans in Texas.

Figure 1. Primary and Secondary Syphilis Case Rates by Ethnicity



*Excludes cases of unspecified ethnicity

Figure 2. Primary and Secondary Syphilis Case Rates Among African Americans by Age Group and Sex

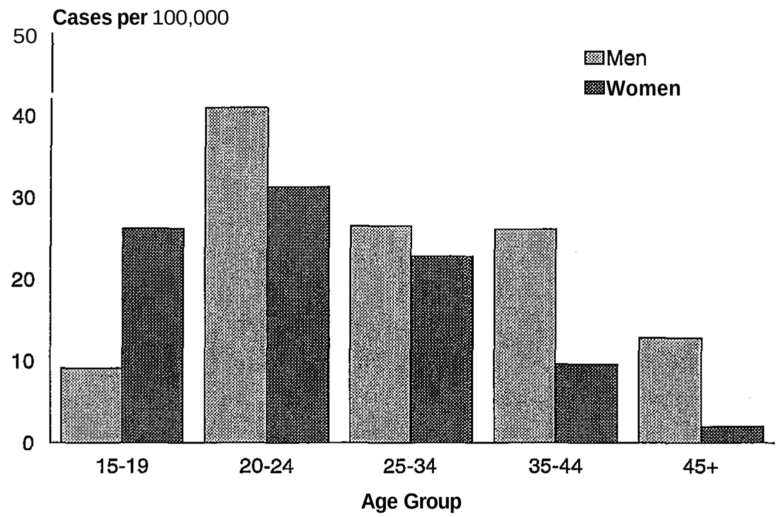
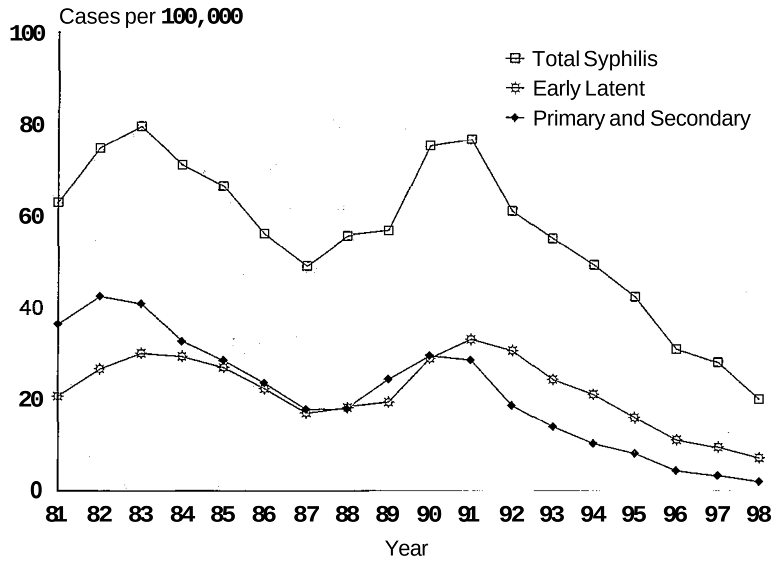


Figure 3. Syphilis Case Rates, 1981-1998



Early Latent Syphilis

The early latent stage of syphilis follows untreated secondary syphilis after a period of weeks or months up to 1 year. Untreated cases of more than 1 year's duration or of unknown duration are classified as late latent syphilis. In both early and late latent stages, positive clinical signs are absent, and detection of syphilis relies upon serologic tests.

In 1990 slightly over 5,000 cases of P&S and of early latent syphilis were reported with similar rates of 30.4 and 29.9 cases per 100,000 population, respectively (Figure 3). Since that time, the rate of P&S syphilis has steadily declined. However, the early latent syphilis rate increased in 1991 and since then has decreased more slowly than the P&S syphilis rate. This delayed decline of early latent syphilis rates is typical of periods of decreasing syphilis morbidity. Although both P&S syphilis and early latent syphilis cases were considerably lower in 1998 compared with 1990, the number of early latent syphilis cases (1,460) was over 3 times the number of P&S syphilis cases. The 1998 overall rate of early latent syphilis was 7.4 cases per 100,000 population. The incidence rates for early latent syphilis by race/ethnicity were as follows: African Americans, 39.4 cases per 100,000; Hispanics, 5.7; and Whites, 1.3.

Congenital Syphilis

Congenital syphilis, one of the most serious forms of the disease, may cause abortion, stillbirth, or premature delivery, as well as numerous severe complications in the newborn. In 1998, 99 cases of congenital syphilis were reported, marking the fifth straight year of decline. The lower number of congenital syphilis cases in 1998 represented a 38% decrease from 1997. With 51 cases, Harris County had the highest number of congenital cases—much less than the 108 cases reported from that county in 1997. Dallas County had the second-highest number with 23 cases. Statewide, 55% of congenital cases were in African Americans; 39% among Hispanics; and 2% in Whites.

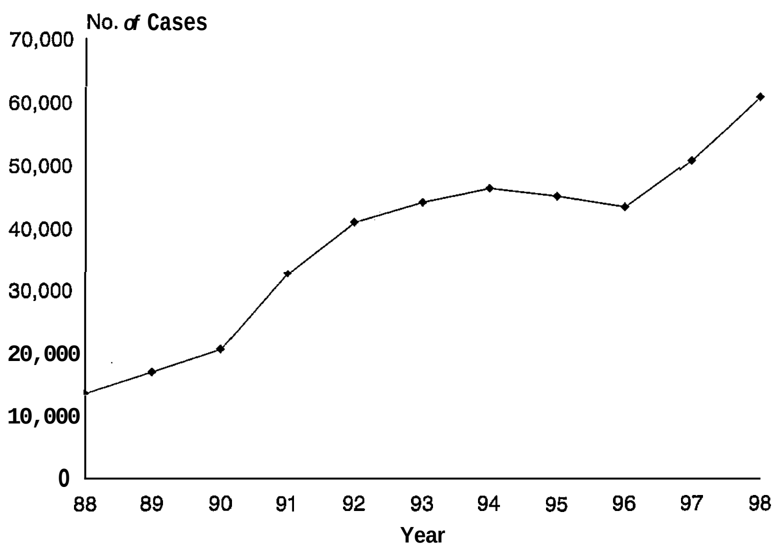
Total Syphilis

The term "total syphilis" refers to all reported syphilis cases regardless of the stage of the disease. Included in this total are congenital, primary and secondary, early latent, late latent, and tertiary syphilis. In 1998, 3,975 cases of syphilis were reported for a statewide rate of 20.2 cases per 100,000 population. This marks the seventh straight year of decline in total syphilis numbers, closely paralleling the decreases seen among P&S and early latent syphilis (Figure 3). The late latent and tertiary stages of syphilis are not discussed separately in this article because those individuals contracted the disease many years prior to their cases being diagnosed and reported, and syphilis is no longer infectious in these late stages.

Chlamydia

The bacteria *Chlamydia trachomatis* is one of the most common causes of sexually transmitted infections. Chlamydia infection in females can result in serious complications such as pelvic inflammatory disease and ectopic pregnancy. After chlamydia became reportable in 1987, the number of cases soared, reflecting increased testing but not necessarily increased disease. Reports of chlamydia in 1998 totaled 60,626, a 20% increase from the previous year's total of 50,661 (Figure 4). This increase may be the result of the state-wide implementation of a new morbidity surveillance software, Sexually Transmitted Disease Management Information System (STD*MIS), which makes more complete capture of morbidity data possible.

Figure 4. Chlamydia Cases, 1988-1998



Statewide the total number of clients screened by public funding decreased slightly (from 354,889 in 1997 to 349,517 in 1998); the number of positives resulting from those screenings decreased by 401 (from 24,108 to 23,707 positives).

Of the total chlamydia cases reported in 1998, 83% were in females. Females are more likely to be screened for chlamydia during clinical exams for family planning, prenatal care, and routine pap smear testing. Because of the increased risk of severe outcomes (including the potential to infect a newborn child), chlamydia screening programs focus on females. Males are often asymptomatic and therefore do not seek treatment. Given that men make up such a small proportion (17%) of chlamydia cases reported, there is no way to estimate the true incidence of chlamydia in the Texas population.

Because females accounted for the vast majority of chlamydia reports, rates for each sex should be examined separately. The 1998 case rate for females was 504 cases per 100,000 population with African American females having the highest rate (1,026/100,000), followed by Hispanics (5631100,000)-and Whites (1231100,000). Males showed a similar racial/ethnic distribution as did females but with far lower rates. However, if males were equally targeted for screening and testing, their incidence would undoubtedly be higher than is suggested by case reports.

Over 73% of all reported chlamydia patients were 15 through 24 years of age. With nearly 38,000 cases reported for females age 15 through 24 alone, the rates for chlamydia among females age 15 through 19 years and 20 through 24 years were 2,936 cases and 2,432 cases per 100,000 population, respectively.

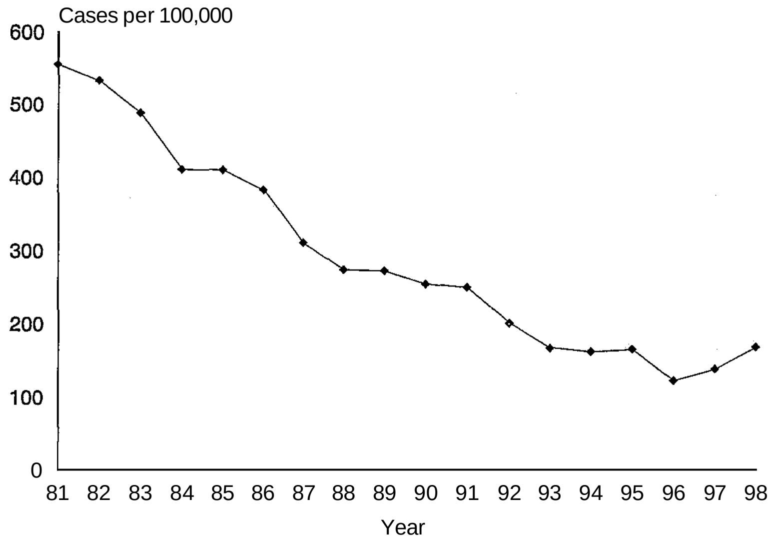
Gonorrhea

The bacteria *Neisseria gonorrhoeae* causes gonorrhea. Left untreated, gonorrhea may lead to sterility in men and pelvic inflammatory disease, ectopic pregnancy, and sterility in women. The 32,934 cases reported in 1998 represent a 24% increase from the number of cases reported in 1997 and the second straight year of increased incidence. In Texas the rate of gonorrhea had decreased each year from the late 1970s until the past 2 years when rates rose in concordance with the number of reported cases (Figure 5). The overall rate for

1998 was 168 cases per 100,000 population, the highest since the 1995 rate (165/100,000). As with Chlamydia, improved surveillance software may be responsible for some of this increase.

Statewide the total number of publicly-funded screenings decreased 2% (from 357,317 in 1997 to 350,643 in 1998); the number of positives resulting from these screenings dropped 5% from 14,689 to 13,930 between 1997 and 1998.

Figure 5. Gonorrhea Case Rates, 1981-1998



The 1998 overall rate for gonorrhea was 168 cases per 100,000 population; the rates for females (1691100,000) was slightly higher than that for males (1651 100,000). Among age groups, the highest rate for females was found in those age 15 through 19 (9461100,000) followed by those age 20 through 24 (7441100,000). Males in these age groups also had higher rates than did other males. Gonorrhea among young women age 15 through 24 comprised 71% of all cases in females; young men of the same age group accounted for 52% of all gonorrhea cases among males.

The rate for African Americans (756/100,000) is nearly 10 times greater than that for Hispanics (77/100,000) and 26 times higher than the rate for Whites (291100,000). African American males had the highest rate of all race-sex groups, with 874 cases per 100,000 population. Gonorrhea cases among African Americans age 15 through 24 accounted for the greatest share of African American cases (63% of those reported); they also represented 32% of all cases reported, regardless of race or age.

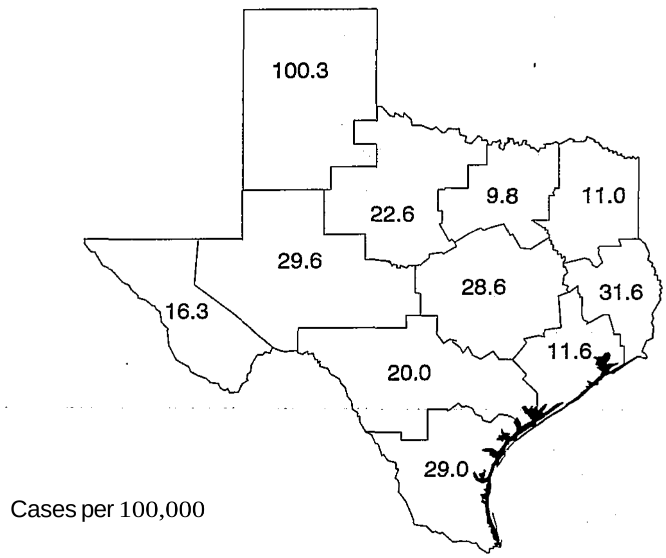
HIV and STD Epidemiology Division
(512) 490-2565

Shigellosis

According to the Food and Drug Administration approximately 300,000 cases of shigellosis occur in the United States annually. In Texas, shigellosis continues to be one of the most frequently reported enteric diseases.

Shigella spp., can cause disease with as few as 10 organisms. Symptoms appear 12 to 50 hours after infection and include mucoid or pus laden diarrhea, abdominal cramps, fever, nausea, vomiting, as well as tenesmus. Prevention of shigellosis is through standard sanitary practices such as thorough hand washing before food preparation, after bathroom use, and after diapering.

Figure 2. Shigellosis Rates by Public Health Region

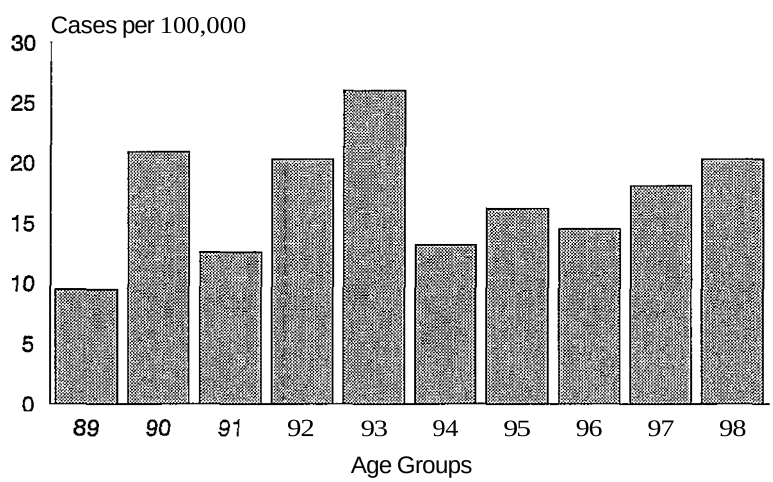


There were 3,988 shigellosis cases in Texas for 1998 for an incidence rate of 20.3 per 100,000 population. This constitutes the third highest number of reported cases over the past 10 years of surveillance (Figure 1). Of the 2,923 (73.3%) isolates that were speciated, the 3 most frequently identified species were *S. sonnei* (83.1%), *S. flexneri* (9.1%), and *S. boydii* (1.3%). Figure 2 displays the 1998 shigellosis cases per 100,000 population by region for the state of Texas. PHR 1 had the highest incidence rate at 100.3/100,000 population. Most of these can be attributed to Lubbock County which had the highest number of cases (418) in the entire State.

In the 66.5% of cases for which race and ethnicity were indicated, the highest incidence of shigellosis occurred in the Hispanic population at 24.5 cases per 100,000 population. Other population rates were 9.9 per 100,000 for African Americans and 8.7 per 100,000 for Whites.

Although the mean age of infected individuals was 34 years, the median age was only 6 years. The highest incidence rate (90.11100,000 populat-ion) occurred in children from birth to 4 years and the second highest rate (76.1/100,000 population), in the 5 to

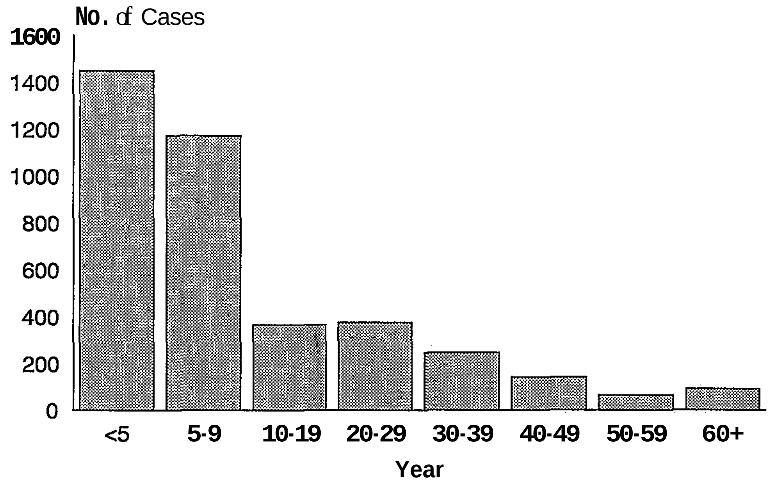
Figure 1. Shigellosis Rates, 1989-1998



9 year old age group (Figure 3). Most outbreaks occurred within the daycare setting.

Of particular interest in 1998 was the high rate of shigellosis in PHR 1; 38% of the cases occurred in children or adults affiliated with daycare settings. Of the 118 isolates for which antibiotic sensitivity results were known, 50.8% were resistant to both ampicillin and trimethoprim/sulfamethoxazole, 46.6% were resistant to ampicillin alone. It is especially important in such settings to have hot water and soap readily available for hand washing and to position sinks near diaper changing. Such measures can help lower shigellosis transmission within daycare settings and secondary spread into the community.

Figure 3. Shigellosis Cases by Age Groups



Infectious Disease Epidemiology and Surveillance Division (512) 458-7676

Silicosis and Asbestosis Surveillance

Two occupational lung diseases, asbestosis and silicosis, are reportable to the Texas Department of Health as mandated in the Occupational Condition Reporting Law (Texas Administrative Code 99.1). These 2 lung diseases were included in this reporting law because they both have a well-understood etiology, predominately result from occupational exposures, and are preventable.

Since the inception of the silicosis and asbestosis reporting law in 1986, surveillance for both conditions has grown tremendously. Much of this growth was made possible by the financial assistance from a cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH). NIOSH provides funding to states to conduct active surveillance for occupational conditions. This agreement ended in 1997 primarily because Texas no longer met the eligibility requirements.

As in most states, Texas law requires that designated professionals, primarily physicians and laboratorians, report specific information regarding certain diseases and other adverse health conditions to the state health department. This type of reporting is known as passive surveillance, that is, the health department receives the report and acts on the information received based on a standard protocol. With passive surveillance, the health departments typically make no effort to ascertain unreported cases. Active surveillance, however, occurs when state health departments attempt to identify otherwise unreported cases of a reportable condition, often for the purpose of more complete documentation of the magnitude of the problem.

Since reporting started in 1986, Environmental and Occupational Epidemiology Program (EOEP) staff have augmented the passive reporting of asbestosis and silicosis required by law by conducting quarterly reviews of death certificates to identify certificates with asbestosis or silicosis listed as a cause of death. In 1992 the EOEP began conducting active surveillance for silicosis, made possible by financial assistance from NIOSH. This active surveillance included annual reminders to physicians and hospitals of the reporting requirement; statewide review of hospital medical records of patients discharged with a diagnosis of silicosis; and initiation of a sentinel provider system for silicosis reporting, whereby pulmonary and occupational medicine physicians were called by an EOEP staff member on a quarterly basis to assess newly diagnosed cases of silicosis. NIOSH funding was for active silicosis surveillance only. With the elimination of NIOSH funding in 1997, active surveillance activity is currently limited to death certificate review.

Table 1. Industry for Asbestosis Cases

No.	Industry
15	Construction
12	Manufacturing
1	Transportation, Communications, and other Public Utilities
3	Retail Trade
4	Business and Repair Services
1	Public Administration
1	Unknown
37	**Total**

Silicosis

Silicosis is a lung disease that results from inhalation of crystalline silica. The relationship between dusty work conditions and occupational lung disease has been described since antiquity, and methods for the prevention of silicosis have been recommended by the US Department of Labor at least since the early 1930s. Unfortunately, this preventable lung condition continues to disable workers today. Historically, workers at high risk of silicosis have included miners, quarry workers, foundry workers, and sandblasters. Many of these occupations continue to be high risk today.

During 1998 EOEP received 3 reports of individuals with confirmed or suspected cases of silicosis. All the silicosis cases were identified through death certificate review. All the individuals were male. All the individuals were White. There were 2 workers identified as Hispanic and 1 as non-Hispanic. One worker was a stone cutter, 1 was a miner, and 1 was a sandblaster.

Asbestosis

Like silicosis, asbestosis is a chronic fibrotic lung disease which results from inhalation of a mineral, in this case asbestos fibers, in the workplace. Asbestos has been referred to as the magic mineral because of its heat resistance and fibrous nature. There are literally thousands of uses for asbestos, and the construction industry in the United States has been a major asbestos consumer. Some of these uses include: asbestos cement products (tile, roofing, drain pipes), floor tile, and insulation and fireproofing. Substitute materials have replaced asbestos since 1972, but the process of removing these asbestos-containing materials continues to pose a potential hazard.

During 1998, EOEP received reports of suspected or confirmed diagnoses of asbestosis in 45 individuals. In addition to the 3 reports from physicians, 42 asbestosis cases were identified through death certificate review. Of the 45 individuals reported, 38 had a confirmed diagnosis of asbestosis, 5 were suspected asbestos or asbestos exposure only, and 2 individuals (reported in previous years) were found during death certificate review because of their death during 1998. The majority of reported asbestosis cases were in males; 36 (95%). Of the 2 (5%) females, 1 was a housewife whose only exposure was to a male family member who worked with asbestos (take-home exposure). For the 37 individuals whose exposure was work-related, 35 (95%) were White, and 2 (5%) were African American; 1 (3%) was Hispanic, and 36 (97%) were non-Hispanic. Excluding the housewife exposed to asbestos through take-home exposure, Table 1 lists the industry and Table 2 the occupation of workers.

Table 2. Occupation for Asbestosis Cases

No.	Occupation
14	Managerial and Professional
1	Service
18	Precision Production, Craft, and Repair
3	Operators, Fabricators, and Laborers
1	Unknown
37	**Total**

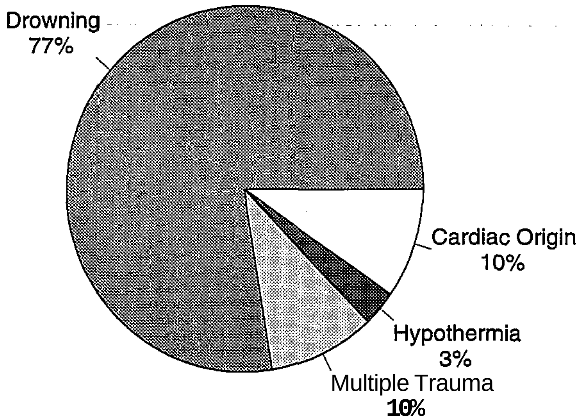
EOEP occasionally is able to obtain information on other lung conditions or smoking status for individuals with asbestosis. Of the workers reported during 1998, 2 of the workers with asbestosis also had mesothelioma, and 4 had lung cancer. Smoking status was reported for 24 individuals, 12 (50%) of whom were current smokers.

Environmental Epidemiology and Toxicology Division (512) 458-7269

Storm-Related Mortality in Central Texas: October 17-31, 1998

On October 17, 1998, a series of upper level disturbances moved across the Central Texas and South Texas regions. The resulting storms dropped more than 15 inches of rain in many areas and spawned several tornados. Rainfall amounts in areas of Bexar and Comal counties reached as high as 22 inches. Sixty Texas counties reported flooding from October 17 through 19 as a result of this storm system. Thirty-six counties became eligible for federal and/or state assistance as a direct result of storm damage suffered October 17 through 31. The October floods reportedly damaged almost 12,000 homes, 700 businesses, and extensive public property at an estimated cost of just over $900 million. This report summarizes findings of an epidemiologic investigation of deaths associated with the storm system.

Figure 1. Cause of Death



Information was obtained from the Bexar and Travis County Medical Examiners, as well as from Justice of the Peace offices and Department of Public Safety officers in outlying counties. Data was supplemented in some cases by information provided by the Bureau of Vital Statistics. A case was defined as a death directly or indirectly related to the storm system that occurred October 17 through October 20, 1998. To capture all storm related deaths, traumatic deaths occurring from October 17 through October 31 were considered. A directly related death was defined as one that resulted from physical contact with a storm product such as flood water, hail, lightning, or wind. An indirectly related death was defined as one that did not result from physical contact with a storm product but would not have happened if the storm had not occurred. Thirty-one deaths met the above criteria as directly or indirectly related to the storm. These deaths occurred in 24 separate incidents. Thirty of the victims were Texas residents, and 1 was a Louisiana resident visiting in Texas.

Figure 2. Deaths by Age

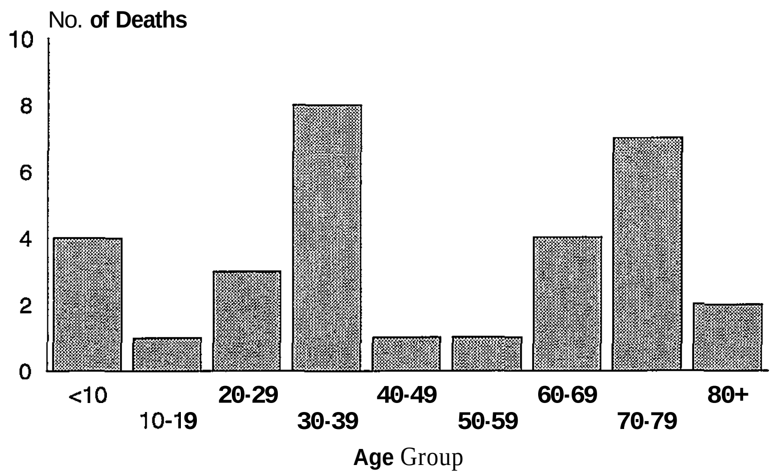


Figure 1 illustrates the cause of death for the 31 decedents: drowning 24 (77%); cardiac origin 3 (10%); multiple trauma 3 (10%); and hypotherrnia 1 (3%). Twenty-nine (94%) of the deaths were **directly** related to the storm. Drowning was the cause of death in 24 (83%) of the directly related cases. Three persons died of multiple trauma (1 death related to flash flooding and the remaining 2 caused by tornados in Navarro and Waller counties), 1 person died of hypothermia after submersion in water, and 1 died of cardiac arrhythmia induced after he became trapped in a water crossing. Two (6%) of the deaths were **indirectly related** to the storm. One man died while awaiting rescue by EMS who were unable to reach his residence because of area flooding. The second man died in his truck in a water crossing on his property.

Figure 3. Deaths by County of Occurrence

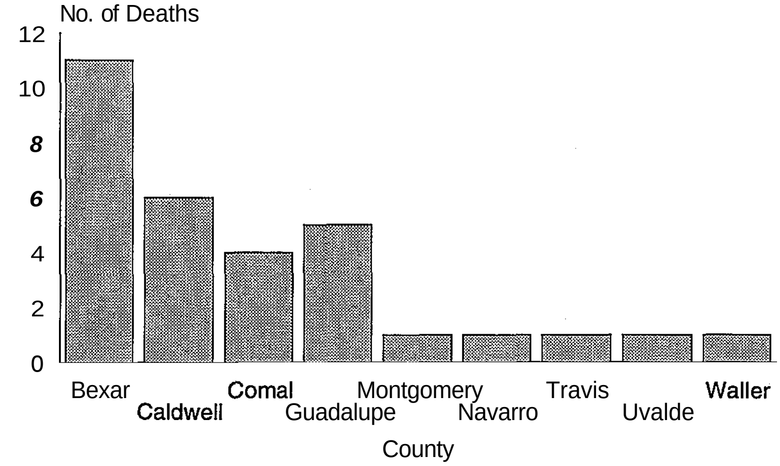
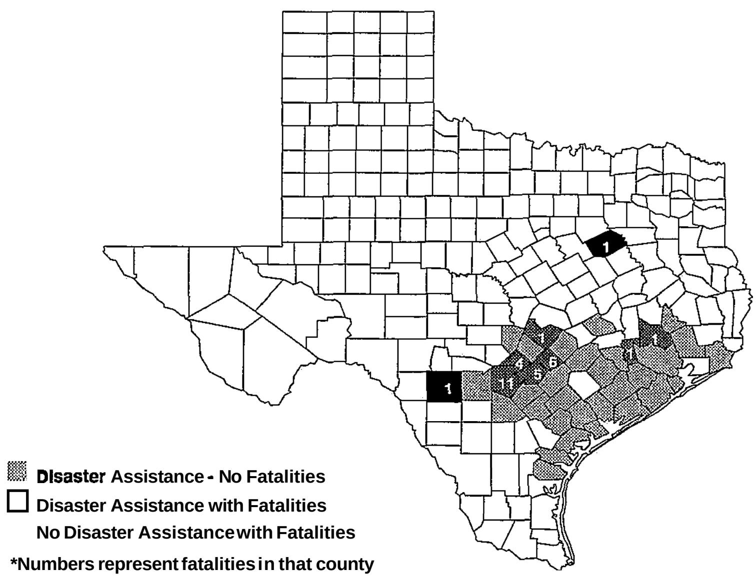


Figure 2 shows the age for all victims. Decedents ranged in age from 2 months to 83 years. Among the 31 decedents, males outnumbered females (20 [65%] to 11 [35%]). All 31 decedents were White, with 8 (26%) having Hispanic surnames. Deaths occurred in 9 Texas counties, as illustrated in Figure 3. Figure 4 illustrates the declared disaster areas and fatalities by county.

The circumstances surrounding the deaths were known for all but 2 cases. Twenty-two (76%) of the 29 cases with known circumstances occurred because a vehicle was driven into high water. These deaths occurred in 16 separate incidents. Four of these incidents resulted in multiple deaths (3 incidents resulted in 2 deaths each, and the fourth resulted in 4 deaths). Of the 16 water crossing incidents, 11 (69%) occurred at locations known to reporting authorities to have a history of flooding.

Figure 4. Declared Disaster Areas with Numeric Representation of Fatalities per County

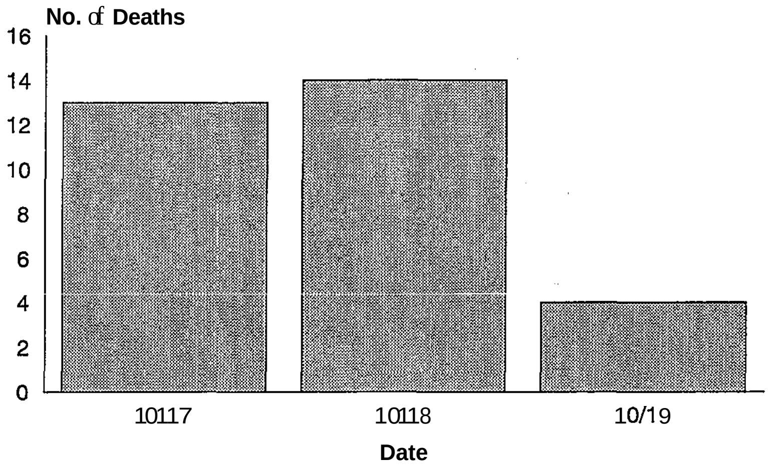


The type of vehicle driven is known for all 16 of the water-crossing incidents. Of these 16 vehicles, 10. (63%) were trucks, and/or sport-utility-vehicles. The largest of these vehicles was a produce truck swept off of the road into the Olmos Dam reservoir. Twenty (91%) of the vehicle related deaths were due to drowning.

Seven (24%) of the 29 remaining deaths with known circumstances were not water-crossing incidents. Three individuals drowned in their homes (2 of these in the same incident), and 1 drowned near the boat dock on his property. Two cases resulted from tornado related trauma in Navarro and Waller counties. One man died of a heart attack when the phone service was out and Emergency Medical Services were unable to reach his home because of flooding.

Figure 5 illustrates that most of the deaths (45% or 14/31) occurred on the second day of the storm.

Figure 5. Deaths by Date of Occurrence



Thirteen (42%) of the deaths occurred in the first day of the storm system (October 17, 1998). The last 4 deaths (13%) occurred on October 19. No deaths were reported after October 19, although rain and flooding persisted through October 31. Time of incident leading to death is known for 21 (72%) of the 29 cases with known circumstances. Nineteen (90%) of the deaths occurred within a 24-hour period, near the beginning of the storm, between 9:00 AM on October 17 to 9:00 AM on October 18. Seven (33%) of the 21 deaths occurred from midnight to 4:00 AM.

The South Central Texas region has historically been susceptible to damage and loss of life due to heavy rains. This period of flooding was the second most costly in terms of lives lost; 33 died in flooding August 1 through 4, 1978, and 29 died related to flooding during this storm period. This flood period was also the most costly: $900 million compared with a previous record of $110 million in 1978.

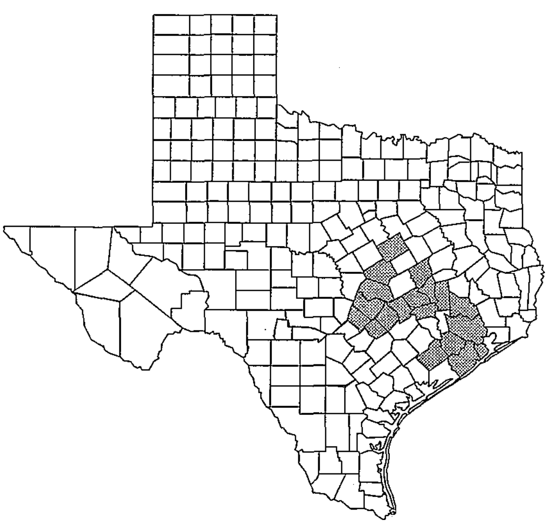
Injury Epidenziology and Surveillance Program (512) 458-7266

Streptococcus, Invasive Group *A*

Invasive streptococcal disease has been a reportable condition in Texas since 1994. Invasive streptococcal disease is defined as the isolation of streptococcal organisms from a normally sterile site (blood, cerebrospinal, synovial, pericardial, or peritoneal fluid) or extremely severe disease in a patient with positive cultures for streptococcal organisms from a nonsterile site. These criteria are met in cases of streptococcal toxic shock syndrome (STSS), necrotizing fasciitis (NF), or death following disseminated intravascular coagulation (DIC), hemorrhagic pneumonia, or NF with streptococcal organisms isolated from lung tissue or from necrotic wound specimens. Prior to 1998 the largest number of cases reported in a single year was 167 in 1997. Prior to December 1997 the Infectious Disease Epidemiology and Surveillance Division (IDEAS) had never received reports of even 20 cases of invasive streptococcus in a single month.

In December 1997, 40 cases of invasive Group A streptococcus (GAS) were reported to Texas Department of Health. These cases represented the beginning of a community epidemic of invasive GAS caused by *Streptococcus pyogenes.* On January 8, 1998, IDEAS received reports of other cases in both children and adults in the central Texas counties of Travis, Williamson, Caldwell, Hays, and Bastrop. Isolates from 10 patients were sent to the Centers for Disease Control and Prevention (CDC) in Atlanta for M serotyping in mid-January. On January 27, 1998, the CDC called to report that 7 of 10 isolates tested were M1 strains of GAS. The M1 serotype is highly virulent and has been associated with numerous invasive GAS outbreaks. A notice was sent to health professionals in central Texas and the media took an intense interest in the issue.

Figure 1. Invasive GAS Epidemic, 19 County Area



From December 1997 through May 1998, TDH received reports of 232 invasive GAS cases. One hundred thirty-three cases were reported from 19 contiguous central and coastal Texas counties; 99 invasive GAS cases were reported from the other 235 Texas counties.

Hospital charts were reviewed for 134 patients in Public Health Regions 6 and 7 for information about the epidemic cases. Focal pain was the most frequent symptom (64%), followed by vomiting (25%), rash (22%), dyspnea (21%), nausea (18%), and skin lesions (18%). Cellulitis was the most common GAS syndrome diagnosed. Fifty-two (41%) patients had cellulitis. Thirty-five patients (29%) met the CDC case definition for streptococcal toxic shock syndrome (STSS). Twenty-nine (23%) patients were diagnosed with pneumonia. Twenty-nine patients (23%) had severe wound infections and 21 (17%) patients were diagnosed with necrotizing fasciitis. Thirty-three (26%) patients died.

STSS was the most important predictor of death. Patients who died were 6 times more likely to have STSS than were patients who lived (OR=4.85, CI 1.86-13.14, $p=0.0001$). Patients with pneumonia were also significantly more likely to die than were other patients

(OR=4.89, CI 1.7-13.07, $p < 0.01$). A number of risk factors were associated with adverse outcomes. Cardiovascular disease was strongly associated with death (OR=5, CI 1.5-17, $p < 0.01$), and chronic obstructive pulmonary disease (COPD) was a significant risk factor for pneumonia (OR= 14.8, CI 1.4-372, $p < 0.01$). For children, varicella infection during the 2 weeks prior to their GAS infection was a significant risk factor for necrotizing fasciitis (RR=3.46, CI 1.05-11.38, $p=0.03$).

The issue of chemoprophylaxis for contacts of patients with invasive GAS is currently unresolved. In 1998 the Working Group on Prevention of Invasive GAS Infections concluded that there were insufficient data to recommend chemoprophylaxis to control outbreaks or prevent secondary cases. Two areas identified by the Working Group where more data needed to be collected were the rate of secondary disease and the efficacy of short-course preventive therapy (JAMA 1998;279:1206-1210).

The Texas outbreak provided an opportunity to study testing the effectiveness of azithromycin for eradicating oropharyngeal GAS carriage in contacts to invasive GAS patients. Azithromycin was recently approved for short-course (5 day) treatment of acute pharyngitis. The opportunity to study the efficacy of azithromycin as chemoprophylaxis for GAS arose when 2 school children in Gonzales County developed GAS infections. Three hundred children were cultured by nasopharyngeal swab; 150 children (50%) were colonized with GAS. All 150 were placed on azithromycin chemoprophylaxis and were retested 17 days after the initial culture. The repeat cultures yielded only 3 positive GAS isolates, for a 95% effectiveness at eradication. At 30 days after the initial culture, 137 children (90%) remained free of GAS carriage. Unfortunately, there was a slight but measurable increase in the percentage of children colonized with macrolide resistant *Streptococcus pneumoniae.* Azithromycin appears to be more effective for eradicating GAS carriage than either penicillin or clindamycin.

GAS carriage rates in close contacts to primary cases were also evaluated. Three hundred thirty-seven contacts were cultured during the outbreak. Of these, 103 (30%) were household contacts, and 234 (69%) were nonhousehold close contacts to the primary case. Overall, 72 (21%) of contacts cultured were positive for GAS. Household contacts had a significantly higher carriage rate (36%) when compared to nonhousehold contacts (14%). Ten of 12 household contacts to patients with M1 and M3 serotypes had positive cultures for a carriage rate of 83%. Household contacts of patients whose M-type was not an M1 or M3 had a much lower carriage rate (40%). Nonhousehold contacts had even lower carriage rates (0-20%) with daycare and school-aged children having the highest rates (20% and 18% respectively).

The 1998 invasive Group A strep outbreak was remarkable for several reasons. The outbreak generated a great deal of public interest. In the Austin/Travis County area and in PHR 7 generally, the rates of disease were increased 3-4 times over the expected rates. Varicella infection was significantly associated with necrotizing fasciitis in children, and cardiovascular disease was significantly associated with death in adult patients. The TDH studies confirmed the previously documented high mortality rates for patients with pneumonia and STSS. The CDC study in Gonzales County showed that short-course azithromycin was effective in eradicating GAS in children. Unfortunately, this course of therapy led to a small but detectable increase in drug-resistant *Streptococcus pneunzoniae* in contacts colonized with both organisms.

The most important question posed to TDH during and after the epidemic has been "Why did this happen?" TDH may never be able to say with absolute certainty why the epidemic occurred. The only apparent difference between parts of Texas that experienced the epidemic and areas where no increase in invasive GAS cases occurred was the different locally predominant serotypes. In the 19 county epidemic area, M1 and M3 serotypes were recovered from the majority of patient isolates serotyped, both among invasive GAS patients and strep throat patients. Few isolates were available for serotyping from other areas of the state. Of the few isolates that were obtained, only 1 (a strep throat isolate) yielded an M1, and 1 from a patient with invasive GAS yielded an M3 organism. A wide variety of M types was observed outside the epidemic area, and no one serotype was dominant.

Infectious Disease Epidemiology and Surveillance Division (512) 458-7676

Tuberculosis

Tuberculosis is a bacterial disease caused by *Mycobacterium tuberculosis.* This bacteria primarily infects the lungs and is transmitted from person-to-person by inhalation of droplet nuclei containing the bacteria. Patients with pulmonary or laryngeal tuberculosis generate droplet nuclei when they talk, cough, or sneeze. A majority of patients experience pulmonary tuberculosis characterized by fever, night sweats, weight loss, difficulty breathing, and cough.

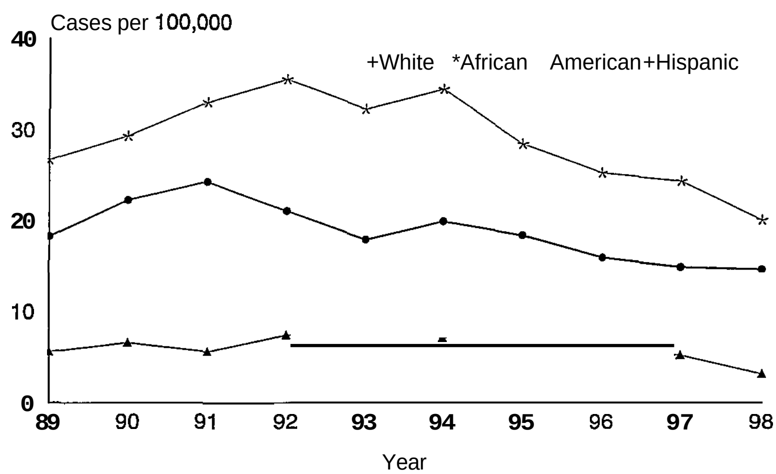
The initial treatment of tuberculosis involves administration of 4 drugs—isoniazid, rifampin, pyrazinamide, and either ethambutol or streptomycin—until drug susceptibility test results are obtained. Drug susceptibility test results determine the choice of drugs and duration to complete therapy. For patients with drug resistance, therapy may continue for two years or longer. In the United States, tuberculosis incidence rates are higher in males, low income racial/ ethnic populations, and in older age groups. Areas in the United States reporting the highest incidence rates include New York City and the states of California, Florida, New Jersey, and Texas.

From 1988 through 1997, 22,492 tuberculosis cases were reported in Texas. The number reported annually ranged from 1,901 cases reported in 1988 to 2,542 cases reported in 1994. A total of 1,820 tuberculosis cases were reported in Texas in 1998. This represents an 8.6% decline from the number of cases reported in 1997 and 722 fewer cases compared with the number of reported cases in 1994. The incidence rate in 1998 was 9.3 cases per 100,000 population.

In 1998, most patients were male (68.4%) and a majority (72.2%) were Hispanic or African American. Incidence rates (cases per 100,000 population) for Whites, Hispanics, and African Americans were 3.2, 14.7, and 20.1, respectively. Figure 1 shows annual incidence rates by race for 1989 through 1998. For each year, Whites had the lowest rates and African Americans had the highest rates. Rates for Hispanics and African Americans showed a trend of sharply increasing then decreasing rates. From 1989 to 1998, incidence rates for Whites have decreased 47%. Rates for African Americans have decreased only 18%.

The 1,820 cases reported in 1998 ranged in age from less than 1 year to 97 years, median 42 years. A total of 73 patients were 4 years of age or younger. A majority (93.2%) of patients 4 years of age or younger were Hispanic or African American.

Figure 1. Tuberculosis Incidence Rates by Race/Ethnicity, 1989-1998



Over one-third of the patients (37.7%) were born outside the United States. Only 4.2% of Whites were foreign born. A higher percentage of Hispanic (55.8%) and Asians (96.1%) were foreign born. The most frequent countries of birth for those born outside the United States were Mexico (58.7%), Vietnam (10.0%), Honduras (5.0%), and

India (3.7%). About 40% of the foreign-born patients arrived in the United States within the last 5 years; 11.5% arrived in 1998.

A total of 192 tuberculosis patients were coinfected with human immunodeficiency virus (HIV). A higher percentage (33.6%) of African Americans were coinfected with HIV compared with Whites (17.3%). Similarly, a higher percentage (26.8%) of males were coinfected with HIV compared with females (14.6%).

A history of incarceration was reported for 12.7% of the patients, drug abuse for 8.1%, and homelessness for 6.8%. A previous history of tuberculosis was reported for 81 patients.

A total of 1,455 cases were culture confirmed. Of these, a total of 131 patients (9.0%) were infected with a drug resistant strain of *Mycobacteriunz tuberculosis.* By comparison, 7.2% of culture confirmed patients reported in 1997 had drug resistant strains. Isoniazid resistance was noted, whether alone or in combination with other drugs, in 4.9%. Rifampin resistance was noted in 1.8%. Any M. *tuberculosis* strain that is resistant to both isoniazid and rifampin is classified as multidrug-resistant tuberculosis (MDR-TB). Sixteen patients in 1998 were identified as having MDR-TB. One of these 16 patients had tuberculosis resistant to all 4 first-line antibiotics—isoniazid, rifampin, pyrazinamide, and ethambutol. Multidrug resistance was more common in recurrent cases (11.4%) compared with new cases (8.1%) and more common in foreign-born patients (12.3%) compared with patients born in the United States (5.6%).

Patients with tuberculosis resided in 139 counties throughout the state. **A** majority (72.6%) resided in only 10 of the 254 counties in Texas. Harris County was the county of residence for 462 patients; 253 patients resided in Dallas County. Twelve counties had an annual incidence rate at least twice the state rate of 9.3. Three of the 12 counties with the highest incidence rates were located along the Mexico-Texas border. Annual incidence rates for Harris County and Dallas County were 14.4 and 11.8, respectively.

Tuberculosis Elimination Division (512) 458-7447

Tuberculosis–Drug Resistant

The initial treatment of tuberculosis (TB) involves administration of 4 of the 5 first-line antituberculous medications—isoniazid, rifampin, pyrazinamide, and either ethambutol or streptomycin—until drug susceptibility test results are obtained. Two of the 5 drugs, isoniazid and rifampin, are critical for the successful treatment of tuberculosis. Pyrazinamide, ethambutol, and streptomycin are added to shorten the duration of therapy and to prevent the emergence of drug resistant bacteria. Drug resistance develops from natural mutations, noncompliance with prescribed therapy, and inadequate antituberculous therapy. The duration of therapy for drug resistant TB may be extended from 6 months to 24 months or longer. Drug resistant TB is usually associated with a lower cure rate. Resistant tuberculosis strains threaten the success of control programs for the community as well as patient treatment plans.

Recent studies on drug resistant tuberculosis in the United States have reported overall resistance rates of 13% to 33%. Two separate nationwide surveys reported that approximately 14% of tuberculosis cases have isolates resistant to 1 or more drugs. In the few studies that have investigated risk factors associated with drug resistance, resistance to antituberculous drugs has been associated with previous history of tuberculosis, HIV infection, injecting-drug use, foreign birth, race/ethnicity, and age. The following report describes the secular trends, magnitude, and demographic characteristics of patients with drug resistant tuberculosis in Texas.

From 1987 through 1996, 22,257 tuberculosis cases were reported in Texas. The number of cases reported annually ranged from 1,757 in 1987 to 2,542 in 1994. The average annual incidence rate was 12.5 cases per 100,000 population. Most patients were males (68%) and from 20 through 59 years of age (65%). Also, most were Hispanic (40%) or African American (27%). Annual incidence rates of cases per 100,000 population for Whites ranged from 4.4 to 5.8; rates for African Americans ranged from 23.0 to 34.9; and rates for Hispanics ranged from 15.6 to 23.6. Of the 254 counties in Texas, 237 were listed as the residence of at least one patient with tuberculosis. Harris County, which includes the City of Houston, was the county of residence for 6,294 cases (28.3%). Counties with the highest average annual incidence rate were located along the Mexico-Texas border and in rural northwest Texas.

Drug susceptibility results were available for 17,425 patients. Demographic characteristics of patients with available susceptibility results were similar to those patients with unavailable results. Nine percent of the cases had isolates that were. resistant to at least 1 of the 5 first-line antituberculous drugs. Resistance to isoniazid, either alone or in combination with other antibiotics, occurred in 4.6% of the cases. Rifampin resistance was noted in 2.3% of the cases. Resistance to streptomycin and resistance to ethambutol was reported for 5.0% and 1.1% of the cases, respectively. Resistance to both isoniazid and rifampin was reported for 236 patients (1.4%) of all patients.

Table 1 presents the percentage of patients with drug resistance by various demographic and life-style characteristics. Almost one-fifth (17.8%) of Asians with tuberculosis had resistance to one or more drugs, followed by Hispanics (10.8%), Whites (7.4%), and African Americans (6.6%).

Drug resistance was seen more frequently in patients with a previous history of tuberculosis (recurrent cases) and in patients who were foreign born. Overall, 4.2% of the tuberculosis cases reported a previous history of tuberculosis. Most of the foreign-born patients reported their place of birth as Mexico (62%), Vietnam (12%), and the Philippines (4%). Resistance was reported in 15.0% of foreign-born patients compared with 7.4% of United States-born patients. A total of 2,221 tuberculosis patients were coinfected with human immunodeficiency virus (HIV). Only 9.3%

Table 1. The Percentage of Tuberculosis Cases with Drug Resistance by Demographic and Life-style Characteristics, 1987-1996

Characteristic	Any Drug Resistance*	Isoniazid Resistance	Rifampin Resistance	Multidrug Resistance†
Mexico-Texas Border County Residence				
Yes	12.6	7.1	4.1	2.6
No	8.6	4.2	2.0	1.1
Sex				
Male	9.0	4.4	2.3	1.3
Female	9.4	5.1	2.2	1.5
Age (Years)				
0-19	10.1	5.0	2.6	1.9
20-39	10.8	5.9	2.8	1.7
40-59	8.6	4.0	2.2	1.2
60+	7.3	3.6	1.6	0.9
Race/Ethnicity				
Asian	17.8	10.3	2.8	2.1
Hispanic	10.8	5.8	2.8	1.8
African American	6.6	2.7	1.8	0.8
White	7.4	3.6	2.0	1.0
Recurrent Tuberculosis				
Yes	17.5	10.9	8.4	5.7
No	8.8	4.4	2.0	1.2
Foreign Birth				
Yes	15.0	8.6	3.8	2.6
No	7.4	3.4	1.8	1.0
HIV Infection‡				
Yes	9.3	3.2	4.2	1.1
No	9.1	4.8	2.0	1.4
History of Incarceration				
Yes	9.5	5.9	2.4	1.5
No	9.1	4.5	2.3	1.3
History of Homelessness				
Yes	6.5	2.8	1.8	0.4
No	9.2	4.7	2.3	1.4
History of Drug Abuse				
Yes	9.0	4.5	3.2	1.6
No	9.2	4.6	2.2	1.3

*Resistance to isoniazid, rifampin, streptomycin, ethambutol, or pyrazinamide
†Multidrug resistance, resistance to isoniazid and rifampin
‡HIV, human immunodeficiency virus

of these patients had drug-resistant isolates whereas 9.1% of tuberculosis patients without evidence of HIV infection had drug-resistant isolates.

Isoniazid Resistance

A total of 806 (4.6%) patients had isoniazid resistant TB. Annually, the percentage of cases with isoniazid resistance ranged from 4.1% to 5.6%. For the time period studied, no secular trend of increasing or decreasing prevalence of isoniazid resistance was noted. Patients with isoniazid resistance were reported from counties throughout the state. Tables 1 and 2 present the percentage of patients and the relative risk for isoniazid resistance by various demographic and life-style characteristics. Relative risks for each characteristic for males and females were similar unless noted. Residence in a Mexico-Texas border county was associated with isoniazid resistance. A high percentage (93.2%) of patients residing in border counties were Hispanic. Hispanics with tuberculosis residing in border counties were more likely to have resistance (7.2%) than were Hispanics with tuberculosis residing in non-border counties (5.0%) (RR=1.45, 95% CI=1.19-1.76). Patients from 20 to 39 years of age were more likely to have isoniazid resistance compared with patients 60 years of age or older. Hispanics and Asians were more likely to have isoniazid resistant tuberculosis than were Whites; whereas African Americans were less likely to have isoniazid resistant tuberculosis than were Whites.

Isoniazid resistance was associated with a previous history of tuberculosis (recurrent cases) and birth. outside the United States. Resistance to isoniazid was reported in 7.8%, 13.3%, and 14.1% of patients born in Mexico, Vietnam, and the Philippines, respectively. Most Asians with isoniazid resistance (88.3%) were foreign born. Among Hispanics, foreign birth was also associated with resistance (RR=1.88, 95% CI= 1.54-2.30); almost half (44.8%) of Hispanics with tuberculosis were foreign born.

Isoniazid resistance was more common (4.8%) in tuberculosis patients without HIV infection than in those with HIV infection (3.2%). Isoniazid resistance was also more common in patients with a history of incarceration. The association with incarceration was observed for males (RR=1.49, 95% CI=1.19-1.87) but not for females (RR=0.59, 95% CI=0.22-1.57). For males, the association of isoniazid resistance with history of incarceration was observed only in African American males (RR=2.46, 95% CI= 1.68-3.61). No association for isoniazid resistance was observed in those with a history of drug abuse. Patients with a history of homelessness were less likely to have isoniazid resistance than were patients with no history of homelessness.

In multiple regression analysis, border residence, age, Asian and African American race, previous history of tuberculosis, foreign birth, HIV infection, and history of incarceration remained significant predictors of isoniazid resistance. When adjusted for all other factors, Hispanic ethnicity, male sex, and history of homelessness were no longer associated with isoniazid resistance.

Rifampin Resistance

A total of 399 (2.3%) patients had rifampin resistant TB. Annually, rifampin resistance ranged from 1.5% to 2.8%. No trend of decreasing or increasing resistance prevalence was noted. Similar to isoniazid resistance, rifampin resistance was associated with residing in a Mexico-Texas border county, being younger than 60 years of age, being Hispanic, having recurrent tuberculosis, and being foreign born (Table 2). Unlike isoniazid resistance, rifampin resistance was not associated with being Asian or African American or having a history of incarceration.

Rifampin resistance in Hispanics showed a decreasing annual trend from 3.8% in 1987 to 2.4% in 1996 (test for trend, p=0.03). No secular trend was observed for Whites or for African Americans. More foreign-born Hispanics with tuberculosis had resistance (4.0%) than United States-born Hispanics (1.8%) (OR=2.23, 95% CI=1.66-3.01).

Tuberculosis patients with HIV infection were more likely to have rifampin resistance than were patients without HIV coinfection. Overall 4.2% of tuberculosis patients coinfected with HIV had rifampin resistance when compared with 2% of tuberculosis patients without HIV infection. No

Table 2. Relative Risks and 95% Confidence Intervals for Drug Resistant Tuberculosis, 1987-1996

	Isoniazid Resistance		Rifampin Resistance		Multidrug Resistance*	
Characteristic	**RR***	**95% CI[†]**	**RR**	**95% CI**	**RR**	**95% CI**
Mexico-Texas Border County Residence	1.69	1.44-1.99	2.08	1.67-2.59	2.33	1.76-3.09
Sex						
Male	0.86	0.74-0.99	1.02	0.83-1.26	0.85	0.65-1.12
Female[¶]						
Age (Years)						
0-19	1.39	1.00-1.95	1.66	1.03-2.69	1.97	1.10-3.53
20-39	1.65	1.38-1.97	1.82	1.39-2.38	1.82	1.29-2.58
40-59	1.13	0.92-1.37	1.41	1.05-1.87	1.27	0.87-1.85
≥60[¶]						
Race/Ethnicity						
Asian	2.86	2.29-3.58	1.44	0.97-2.13	2.07	1.29-3.34
Hispanic	1.59	1.33-1.89	1.42	1.11-1.81	1.78	1.28-2.47
African American	0.76	0.61-0.95	0.92	0.69-1.23	0.81	0.54-1.22
White[¶]						
Recurrent Tuberculosis	2.50	2.01-3.12	4.14	3.18-5.39	4.91	3.54-6.82
Foreign Born	2.54	2.22-2.91	2.12	1.74-2.58	2.69	2.08-3.46
HIV Infections	0.68	0.53-0.87	2.05	1.62-2.60	0.78	0.50-1.21
History of Incarceration	1.32	1.07-1.64	1.06	0.75-1.48	1.10	0.71-1.69
History of Homelessness	0.60	0.37-0.98	0.76	0.41-1.42	0.25	0.06-1.02
History of Drug Abuse	0.98	0.71-1.35	1.44	0.98-2.12	1.16	0.66-2.01

*RR, relative risk
†CI, confidence interval
‡Multidrug resistance, resistance to isoniazid and rifampin
¶Reference group
§ HIV, human immunodeficiency virus

association with rifampin resistance was observed when histories of incarceration, homelessness, or drug abuse were compared.

With the exception of Hispanic ethnicity, the same factors that were found to be predictors in univariate analysis—Mexico-Texas border residence, age less than 60 years, previous history of tuberculosis, foreign birth, and HIV infection—remained significant predictors in multivariate analysis.

Multidrug Resistance

A total of 236 cases (1.3%) were resistant to both isoniazid and rifampin (ie, multidrug resistant) either alone (75 cases) or in combination with the other 3 first-line drugs (161 cases). Ten patients were resistant to all 5 first-line tuberculous antibiotics. No nosocomial outbreak or prison outbreak of multidrug resistant tuberculosis was identified during this time period. From 1987 through 1991, 1.7% of patients were multidrug resistant. From 1992 through 1996, 1.1% of patients were multidrug resistant. A secular trend of decreasing incidence of multidrug resistance was noted (test for trend p=0.002).

There were 53 counties in Texas listed as the county of residence for 1 or more of the 236 patients with multidrug resistant TB. The occurrence of multidrug resistance was higher in

Hispanics (1.8%) and in Asians (2.1%) than in Whites. The percentage of African Americans with multidrug resistance was similar to that of Whites. All 25 Asians with multidrug resistant tuberculosis were foreign born. No United States-born Asians had multidrug-resistant tuberculosis. Multidrug resistance was observed in 5.7% of recurrent cases compared with 1.2% of new cases. Only 1.0% of United States-born patients had multidrug resistant tuberculosis compared with 2.6% of foreign-born patients. Multidrug resistance was reported in 2.8% of patients born in Mexico, 1.7% of patients born in Vietnam, and 4.0% of patients born in the Philippines.

By univariate and multivariate analysis, multidrug resistance was associated with residing in a Mexico-Texas border county, being in a younger age group, having recurrent tuberculosis, and being foreign born. The association of multidrug resistance with being Asian or Hispanic was explained by other risk factors.

Demographic and life-style characteristics associated with having resistance to isoniazid, rifampin, or isoniazid and rifampin in Texas include a previous history of tuberculosis, foreign birth, younger age, and residence in a Mexico-Texas border county. Other characteristics, such as HIV infection and history of incarceration, were important in the occurrence of rifampin resistance and isoniazid resistance, respectively. Although race/ethnicity was important in the occurrence of isoniazid resistance, it was not important for rifampin or multidrug resistance.

The prevalence of drug resistant tuberculosis in Texas is lower than reported prevalences in the United States. A perception that Texas must have more drug resistant tuberculosis because Texas borders a foreign country is not supported from reviewing patient information. Although residence in a Mexico-Texas border county is a risk factor for drug resistant tuberculosis, the prevalence of resistance in border counties is lower than or similar to that reported for the United States. In general, the magnitude of drug resistance in Texas is lower than in other geographic areas. The prevalence of isoniazid resistance and rifampin resistance in Texas was much lower than in New York City where 26% of cases had isoniazid resistance and 22% had rifampin resistance. Multidrug resistance in Texas (1.4%) is lower than that in the United States (2.2%) and much lower than the 13% reported in New York City during 1994. In 1991, only 13 states reported multidrug resistant tuberculosis cases. Ten states had higher prevalence rates than did Texas. The variability in prevalence is possibly due to different time periods studied, studies based on patients from single medical centers, or populations of small geographic areas.

*Tuberculosis Elimination Division (512) 458-*7447

Varicella Surveillance Project

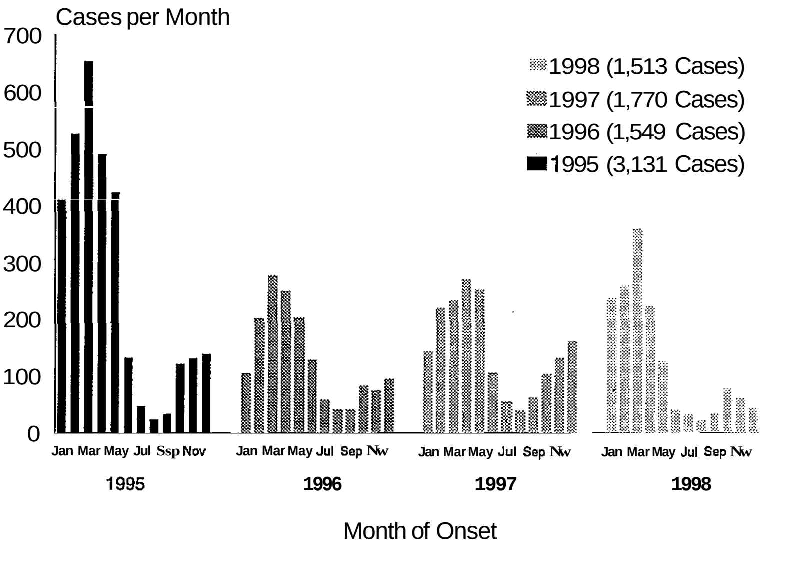
Varicella is a highly contagious, viral disease that affects virtually all people in the United States by adulthood. Primary infection results in chickenpox, which presents as a generalized, pruritic, vesicular rash and may be accompanied by mild fever and systemic symptoms. Complications include bacterial superinfection, viral pneumonia, encephalitis, meningitis, and thrombocytopenia. Secondary infection of lesions with invasive group A streptococci may cause necrotizing fasciitis or toxic shock syndrome.

Varicella vaccine was licensed in the United States on March 17, 1995. In May 1996, vaccine was made available through the Vaccine's for Children (VFC) program for VFC-eligible children who were either 12 through 18 months of age or 11 through 12 years of age with no history of chickenpox infection, or younger than 19 years of age and living with an immuno-compromised person. In June 1997, VFC coverage of varicella vaccine was expanded to all VFC-eligible children who are 12 months through 18 years of age and were born on or after January 1, 1983.

The Varicella Surveillance Project (VSP) in Travis County was established by the Centers for Disease Control and Prevention (CDC) to monitor varicella disease trends through active surveillance and epidemiological studies prior to and after licensure of varicella vaccine. The 5-year study began in January 1995. Two similar projects are being conducted in West Philadelphia, Pennsylvania and in the Antelope Valley of Los Angeles County, California. Approximately 500 sentinel reporting sites are participating in the Travis County VSP. These sentinels include approximately 60% of the licensed child-care facilities, 30% of public and private schools, a large university, all public health clinics and hospitals, and approximately 40% of the family practice, general practice, and pediatric physicians in Travis County. All reported cases of chickenpox are thoroughly investigated to obtain detailed epidemiological information including varicella vaccine status.

In 1998, 1,513 cases of chickenpox in Travis County were confirmed by the VSP (Figure 1). A confirmed case was one which met all of the following criteria: the illness met the case definition of chickenpox, the patient resided within Travis County, and an investigation was completed. The number of confirmed cases for 1998 was similar to that of 1997 (1,770) and 1996 (1,549) and about half the number of cases (3,131) confirmed in 1995, the first year of the project. As in previous years, the majority (79%) of cases occurred during the winter and spring (January through May).

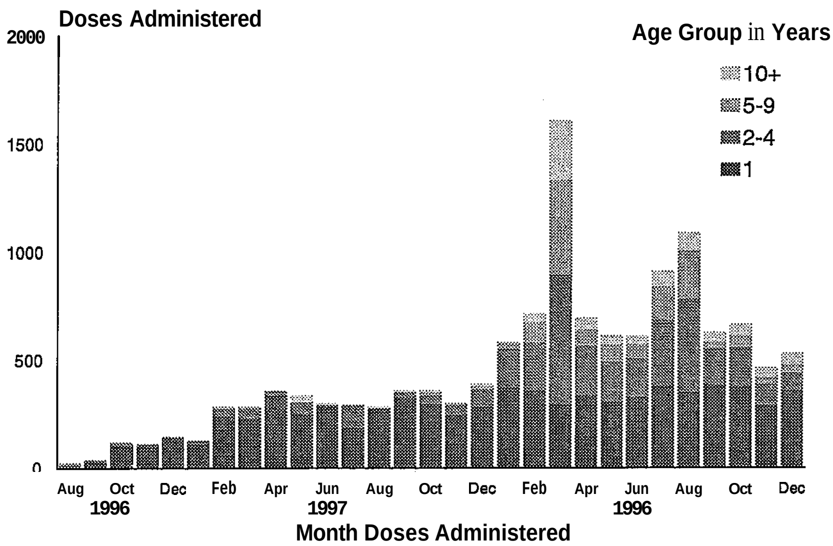
Figure 1. Confirmed Varicella Cases by Month in Travis County, 1995-1998



Cases have been evenly distributed between the sexes throughout the study period. In 1998, 51% of the case-patients were male. The distribution of cases by race/ethnicity, however, has changed during the years since the vaccine was introduced.

In 1995, the race/ethnicity of case-patients (55% White, 27% Hispanic, 13% Black, 4% Asian/Pacific Islander, and 1% "Other") was representative of the county population. Whereas the percentage of Hispanic persons in Travis County increased only from 23% to 25% between 1995 and 1998, the percentage of case-patients who were Hispanic increased from 27% in 1995 to 41% in both 1996 and 1997. In 1998, 39% of the case-patients were Hispanic, 42% were White, 16% were Black, 1% were Asian/Pacific Islander, and 2% were "Other."

Figure 2. VFC-Funded Varicella Vaccine Doses Administered in Travis County by Age group, 1996-1998



In each year of the study, most cases of chickenpox occurred in young children. The most prevalent age group has shifted from children 3 years of age in 1995, to those 4 years of age in 1996, and 5 years of age in 1997 and 1998. The mean age each year from 1995 to 1998 was 5.2, 5.7, 5.8, and 6.4 years, respectively. Since the majority of varicella vaccine in Travis County has been administered to children who are 1 year of age, disease incidence has decreased most rapidly among very young children. Although the total number of cases has decreased or remained static from year to year, the percentage of chickenpox infections in older age groups has increased.

The number of VFC-funded doses of varicella vaccine administered by public health clinics and physicians has increased during every year of the study (Figure 2). During the last 5 months of 1996, 485 doses were administered, followed by 3,274 doses in 1997, and 9,115 doses in 1998. In 1996 and 1997, 95% of these doses were administered to children 1 through 4 years of age. In 1998, when the number of catch-up doses given to older children, adolescents, and adults increased sharply, 77% of doses were administered to children 1 through 4 years of age, with 14% to children 5 through 9 years of age, 5% to children 10 through 14 years of age, 2% to adolescents 15-19 years of age, and 2% to adults. There was an abrupt increase in the number of VFC-funded doses administered from an average of 300 doses/month in 1997 to a peak of 1,608 doses in March 1998. The percentage of doses given to children 1 year of age dropped from an average of 82% in 1997 to an average of 45% in 1998 with a low of 18% in March 1998. Both the increased number of varicella vaccine doses administered and the increased usage in older children may have been caused in part by an outbreak of group A streptococcus (GAS) which affected Travis County between December 1997 and April 1998. News reports encouraged varicella vaccination and publicized the association between varicella infection in children and secondary infections of GAS resulting in necrotizing fasciitis.

Varicella vaccination prior to onset of disease was reported by 132 (9%) of the case-patients in the 1998 VSP study: 111 were considered breakthrough cases, and 21 were most likely exposed to varicella prior to vaccination. Breakthrough infections were much milder than natural disease. Case-patients vaccinated prior to exposure were 7.9 (95% CI 4.9-12.9) times more likely to have less than 50 chickenpox lesions compared to unvaccinated case-patients.

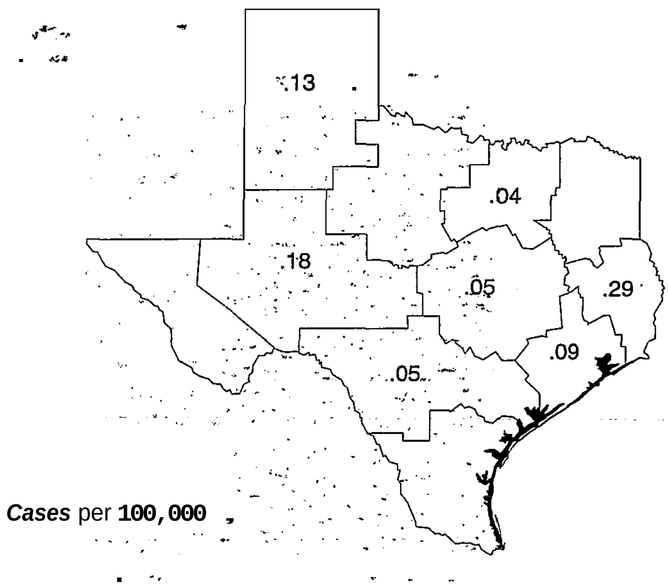
In 1998, 19 of the varicella patients reported to the VSP were hospitalized. Rates of hospitalization were highest among case-patients 20 years of age or older (2.5%, n=3) and children less than 1 year of age (5%, n=6). Hospital stays ranged from 1 to 13 days (median=5 days). One case-patient, a previously healthy, 35-year-old male, died 14 days after onset and 11 days after hospitalization. He had no history of previous chickenpox infection or vaccination and had been exposed 2 weeks earlier when 2 of his children, ages 5 and 9, contracted chickenpox. His infection was complicated by varicella pneumonia and a secondary Staphylococcal sepsis with thrombocytopenia, disseminated intervascular coagulation, and gangrene.

Immunization Division (512) 458-7284

Yersiniosis

Diseases caused by *Yersinia* species are zoonotic diseases where people are incidentally infected.[1] Unlike its close relative *Yersinia pestis*, the vector-borne agent of bubonic plague, yersiniosis is a gastrointestinal illness with fecal oral transmission.[1,2] Two species worldwide cause yersiniosis: *Yersinia enterocolitica* and *Yersinia pseudotuberculosis*. The Center for Disease Control and Prevention estimates that there are 17,000 annual cases of yersiniosis due to *Y. enterocolitica* in the United States.[2] Susceptible populations are the very young, the very old, and the immunosuppressed. Disease occurrence is seasonal with 41% of cases occurring from December through February in temperate climates.[2] In 1998 yersiniosis joined the list of reportable diseases in Texas.

Figure 1. Yersiniosis Rates by Public Health Region



In 1998 there were 12 cases of reported yersiniosis, for an incidence rate of .06 cases per 100,000 population. Figure 1 demonstrates the distribution of incidence rates by Texas public health region.

Symptoms of yersiniosis occur 3 to 7 days postingestion and persist for about a month.[2] Definitive symptoms are characterized by diarrhea (80%) and/or vomiting with fever and abdominal pain.[2] Clinical presentation of yersiniosis may be indistinguishable from Crohn's disease or acute appendicitis. In children, bloody diarrhea occurs in 10-30% of cases; 50% of adult cases report joint pain. Rare complications include postenteritis arthritis (2-3%) and sepsis. Predisposition to postenteritis arthritis occurs in individuals who possess either the human histocompatibility surface antigen (HLA)-B27 or HLA-B7.[2]

Identification of Y. *enterocolitica* is primarily through stool samples and occasionally from sterile sites. Metabolic pathways are similar to other Enterobacteriaceae with a hallmark biochemistry of negative lysine usage.[1,2] As *Y. enterocolitica* does not produce a siderophore for iron transport, iron availability limits its growth under normal circumstances.[1,2] Enhanced growth occurs either when other bacteria that produce siderophores are present or when an excess of iron is available in the host.[2] Due to its defective iron transport metabolism persons with underlying diseases such as thalassemia, diabetes mellitus, cirrhosis, and hemochromatosis compose about half of all *Yersinia* induced septicemic case-patients.[1,2]

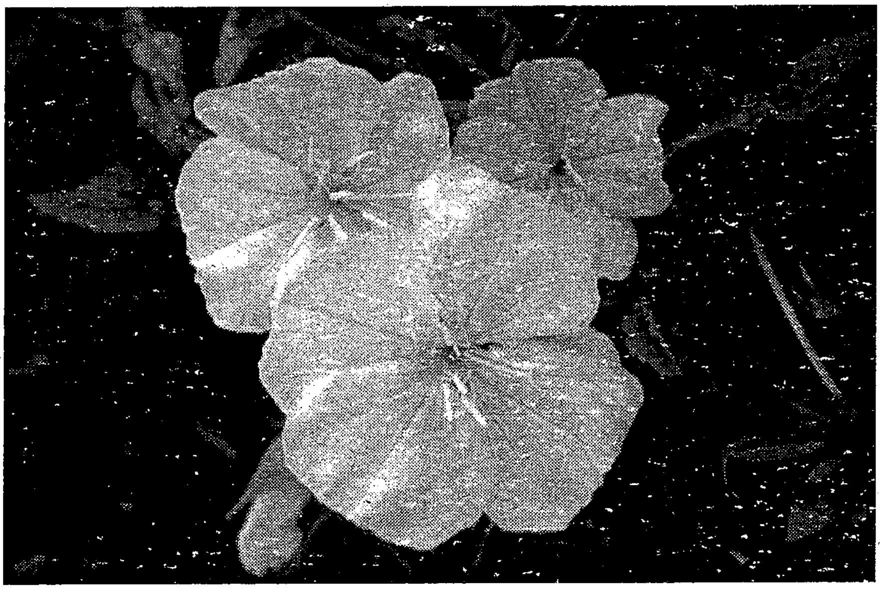
Reservoirs for *Y. enterocolitica* include untreated water, rodents, dogs, cats, beavers, and farm animals.[1,2] Pigs are the principle reservoir with asymptomatic heavy pharynx colonization.[2] US outbreaks have implicated dairy products, and pork, as well as sick puppies and kittens. Preventative measures include safe food handling practices such as: thorough cooking of animal-derived foodstuffs; maintenance of clean hands, kitchen surfaces, and utensils that contact raw animal foodstuffs; dairy product pasteurization;

water treatment; removal of the head and neck of pigs during slaughter; and enhancement of hygiene around sick puppies and kittens.

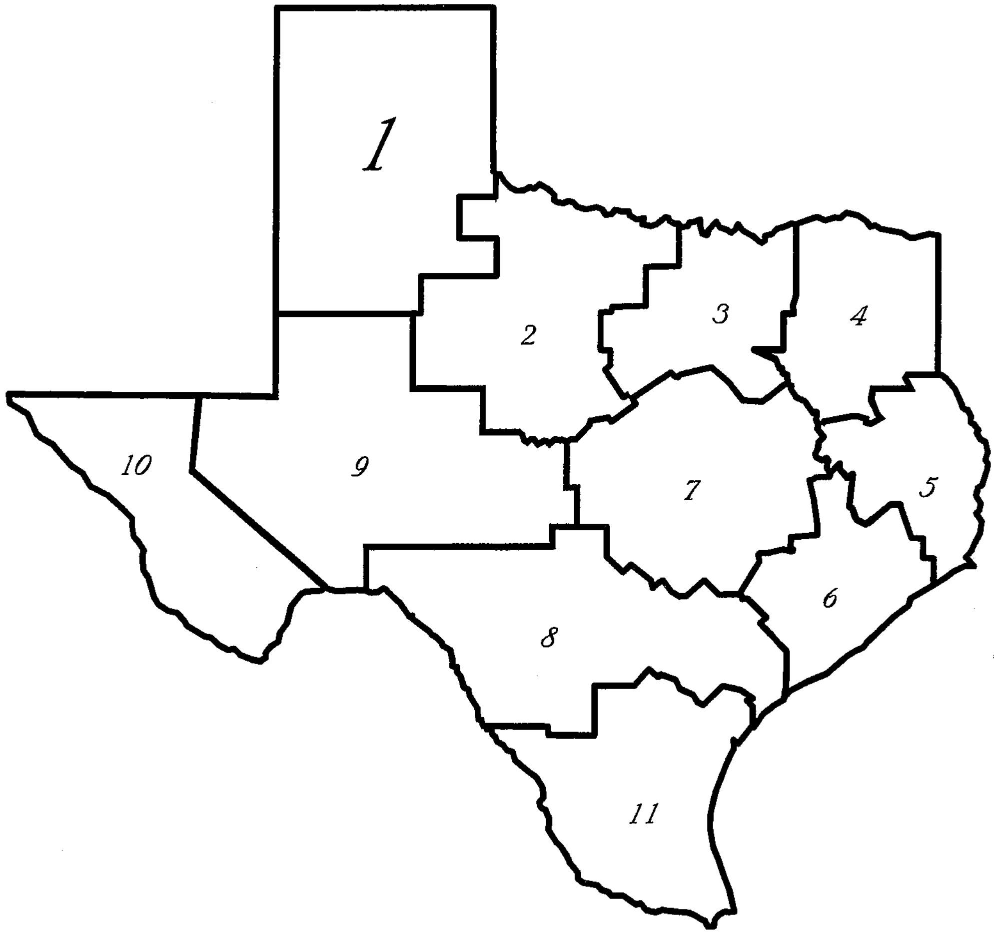
References:

1. Joklik et al. *Zinsser Microbiology,* 20th ed., Appleton & Lange, 1992:60-61, 590-593.
2. Mandel, GL, Bennett, JE, and Dolin, Raphael. *Principles and Practices of Infectious Diseases* Vol. 1, 4th ed., Churchill Livingstone, 1995:2076-2078.

Infectious Diseases Epidemiology and Surveillance Division (512) 458-7676



Regional Statistical Summaries



Public Health Region 1

REPORTED SELECTED GASTROINTESTINAL DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 1 - 1998

		AMEBIASIS		CAMPYLOBACTERIOSIS		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ARMSTRONG	1,984	0	0.0	0	0.0	1	50.4	0	0.0
BAILEY	7,414	0	0.0	1	13.5	3	40.5	2	27.0
BRISCOE	1,919	0	0.0	0	0.0	0	0.0	0	0.0
CARSON	6,458	0	0.0	0	0.0	1	15.5	3	46.5
CASTRO	9,523	0	0.0	7	73.5	0	0.0	7	73.5
CHILDRESS	6,890	0	0.0	0	0.0	0	0.0	0	0.0
COCHRAN	4,777	0	0.0	0	0.0	0	0.0	0	0.0
COLLINGSWORTH	3,413	0	0.0	1	29.3	1	29.3	0	0.0
CROSBY	7,591	0	0.0	0	0.0	2	26.3	15	197.6
DALLAM	5,489	0	0.0	0	0.0	1	18.2	2	36.4
DEAF SMITH	20,055	0	0.0	6	29.9	15	74.8	23	114.7
DICKENS	2,475	0	0.0	0	0.0	1	40.4	0	0.0
DONLEY	3,542	0	0.0	1	28.2	1	28.2	2	56.5
FLOYD	8,768	0	0.0	1	11.4	1	11.4	3	34.2
GARZA	5,283	0	0.0	0	0.0	1	18.9	0	0.0
GRAY	22,928	0	0.0	3	13.1	2	8.7	0	0.0
HALE	35,206	0	0.0	4	11.4	6	17.0	25	71.0
HALL	3,697	0	0.0	0	0.0	1	27.0	0	0.0
HANSFORD	5,862	0	0.0	0	0.0	0	0.0	0	0.0
HARTLEY	4,889	0	0.0	0	0.0	0	0.0	0	0.0
HEMPHILL	3,659	0	0.0	0	0.0	1	27.3	0	0.0
HOCKLEY	24,512	0	0.0	4	16.3	13	53.0	2.0	8.2
HUTCHINSON	24,964	0	0.0	0	0.0	13	52.1	6.0	24.0
KING	376	0	0.0	0	0.0	0	0.0	1.0	266.0
LAMB	14,711	0	0.0	2	13.6	6	40.8	2.0	13.6
LIPSCOMB	3,071	0	0.0	0	0.0	0	0.0	0	0.0
LUBBOCK	226,904	0	0.0	54	23.8	98	43.2	418	184.2
LYNN	6,854	0	0.0	0	0.0	2	29.2	3	43.8
MOORE	18,875	0	0.0	1	5.3	10	53.0	7	37.1
MOTLEY	1,446	0	0.0	0	0.0	0	0.0	0	0.0
OCHILTREE	9,106	0	0.0	0	0.0	2	22.0	0	0.0
OLDHAM	2,226	0	0.0	0	0.0	1	44.9	3	134.8
PARMER	10,414	0	0.0	3	28.8	2	19.2	3	28.8
POTTER	106,046	0	0.0	17	16.0	70	66.0	183	172.6
RANDALL	105,736	0	0.0	7	6.6	15	14.2	54	51.1
ROBERTS	1,022	0	0.0	0	0.0	0	0.0	0	0.0
SHERMAN	2,932	0	0.0	0	0.0	0	0.0	0	0.0
SWISHER	8,614	0	0.0	0	0.0	3	34.8	2	23.2
TERRY	13,822	0	0.0	1	7.2	3	21.7	5	36.2
WHEELER	5,442	0	0.0	0	0.0	0	0.0	1	18.4
YOAKUM	9,341	0	0.0	1	10.7	0	0.0	0	0.0
[illegible]L T	**768,236**	**0**	**0.0**	**114**	**14.8**	**276**	**35.9**	**772**	**100.5**
STATEWIDE TOTALS	**19,649,800**	**74**	**0.4**	**881**	**4.5**	**3,401**	**17.3**	**3**	**20.3**

REPORTED HEPATITIS RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 1 - 1998

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ARMSTRONG	1,984	0	0.0	0	0.0	0	0.0	0	0.0
BAILEY	7,414	10	134.9	0	0.0	0	0.0	0	0.0
BRISCOE	1,919	0	0.0	0	0.0	0	0.0	0	0.0
CARSON	6,458	2	31.0	0	0.0	0	0.0	0	0.0
CASTRO	9,523	1	10.5	0	0.0	0	0.0	0	0.0
CHILDRESS	6,890	1	14.5	2	29.0	2	29.0	0	0.0
COCHRAN	4,777	0	0.0	0	0.0	0	0.0	0	0.0
COLLINGSWORTH	3,413	0	0.0	0	0.0	0	0.0	0	0.0
CROSBY	7,591	1	13.2	0	0.0	0	0.0	0	0.0
DALLAM	5,489	1	18.2	0	0.0	0	0.0	0	0.0
DEAF SMITH	20,055	13	64.8	0	0.0	1	5.0	0	0.0
DICKENS	2,475	0	0.0	0	0.0	0	0.0	0	0.0
DONLEY	3,542	1	28.2	0	0.0	0	0.0	0	0.0
FLOYD	8,768	1	11.4	0	0.0	0	0.0	0	0.0
GARZA	5,283	6	113.6	0	0.0	0	0.0	0	0.0
GRAY	22,928	34	148.3	3	13.1	6	26.2	0	0.0
HALE	35,206	13	36.9	2	5.7	0	0.0	0	0.0
HALL	3,697	3	81.1	0	0.0	0	0.0	0	0.0
HANSFORD	3,697	3	81.1	0	0.0	0	0.0	0	0.0
HARTLEY	4,889	0	0.0	1	20.5	0	0.0	0	0.0
HEMPHILL	3,659	9	246.0	1	27.3	0	0.0	0	0.0
HOCKLEY	24,512	4	16.3	1	4.1	2	8.2	0	0.0
HUTCHINSON	24,964	28	112.2	3	12.0	1	4.0	0	0.0
KING	376	0	0.0	0	0.0	0	0.0	0	0.0
LAMB	14,711	2	13.6	0	0.0	0	0.0	0	0.0
LIPSCOMB	3,071	0	0.0	0	0.0	0	0.0	0	0.0
LUBBOCK	226,904	18	7.9	12	5.3	3	1.3	0	0.0
LYNN	6,854	0	0.0	0	0.0	0	0.0	0	0.0
MOORE	18,875	15	79.5	1	5.3	2	10.6	0	0.0
MOTLEY	1,446	0	0.0	0	0.0	0	0.0	0	0.0
OCHILTREE	9,106	1	11.0	0	0.0	0	0.0	0	0.0
OLDHAM	2,226	2	89.8	0	0.0	0	0.0	0	0.0
PARMER	10,414	0	0.0	0	0.0	0	0.0	0	0.0
POTTER	106,046	179	168.8	27	25.5	2	1.9	0	0.0
RANDALL	105,736	11	10.4	2	1.9	0	0.0	0	0.0
ROBERTS	1,022	0	0.0	0	0.0	0	0.0	0	0.0
SHERMAN	2,932	1	34.1	0	0.0	0	0.0	0	0.0
SWISHER	8,614	3	34.8	0	0.0	0	0.0	0	0.0
TERRY	13,822	9	65.1	5	36.2	0	0.0	0	0.0
WHEELER	5,442	3	55.1	0	0.0	0	0.0	0	0.0
YOAKUM	9,341	1	10.7	1	10.7	0	0.0	0	0.0
REGIONAL TOTALS	**768,236**	**376**	**48.9**	**61**	**7.9**	**19**	**2.5**	**0**	**0.0**
STATEWIDE TOTALS	**19,649,800**	**3,538**	**18.0**	**1,960**	**10.0**	**462**	**2.4**	[illegible]	**0.1**

REPORTED OTHER SELECTED DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 1 - 1998

		ASEPTIC MENINGITIS		CHICKENPOX		ENCEPHALITIS		TUBERCULOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ARMSTRONG	1,984	0	0.0	0	0.0	0	0.0	0	0.0
BAILEY	7,414	0	0.0	0	0.0	0	0.0	1	13.5
BRISCOE	1,919	0	0.0	0	0.0	0	0.0	0	0.0
CARSON	6,458	0	0.0	0	0.0	0	0.0	1	15.5
CASTRO	9,523	0	0.0	0	0.0	0	0.0	0	0.0
CHILDRESS	6,890	0	0.0	4	58.1	0	0.0	0	0.0
COCHRAN	4,777	2	41.9	0	0.0	0	0.0	1	20.9
COLLINGSWORTH	3,413	0	0.0	0	0.0	0	0.0	0	0.0
CROSBY	7,591	1	13.2	0	0.0	0	0.0	0	0.0
DALLAM	5,489	0	0.0	13	236.8	0	0.0	0	0.0
DEAF SMITH	20,055	1	5.0	47	234.4	0	0.0	2	10.0
DICKENS	2,475	0	0.0	0	0.0	0	0.0	0	0.0
DONLEY	3,542	0	0.0	0	0.0	0	0.0	0	0.0
FLOYD	8,768	0	0.0	5	57.0	0	0.0	1	11.4
GARZA	5,283	1	18.9	0	0.0	0	0.0	1	18.9
GRAY	22,928	0	0.0	36	157.0	0	0.0	0	0.0
HALE	35,206	1	2.8	3	8.5	0	0.0	6	17.0
HALL	3,697	1	27.0	0	0.0	1	27.0	0	0.0
HANSFORD	5,862	0	0.0	0	0.0	0	0.0	0	0.0
HARTLEY	4,889	0	0.0	0	0.0	0	0.0	0	0.0
HEMPHILL	3,659	0	0.0	5	136.6	0	0.0	1	27.3
HOCKLEY	24,512	3	12.2	20	81.6	0	0.0	1	4.1
HUTCHINSON	24,964	1	4.0	34	136.2	0	0.0	1	4.0
KING	376	0	0.0	0	0.0	0	0.0	0	0.0
LAMB	14,711	1	6.8	0	0.0	0	0.0	1	6.8
LIPSCOMB	3,071	0	0.0	0	0.0	0	0.0	0	0.0
LUBBOCK	226,904	96	42.3	394	173.6	3	1.3	16	7.1
LYNN	6,854	0	0.0	0	0.0	0	0.0	1	14.6
MOORE	18,875	1	5.3	16	84.8	0	0.0	1	5.3
MOTLEY	1,446	0	0.0	0	0.0	0	0.0	0	0.0
OCHILTREE	9,106	0	0.0	0	0.0	0	0.0	1	11.0
OLDHAM	2,226	0	0.0	7	314.5	0	0.0	0	0.0
PARMER	10,414	0	0.0	0	0.0	0	0.0	1	9.6
POTTER	106,046	40	37.7	29	27.3	0	0.0	2	1.9
RANDALL	105,736	8	7.6	0	0.0	0	0.0	2	1.9
ROBERTS	1,022	0	0.0	0	0.0	0	0.0	0	0.0
SHERMAN	2,932	0	0.0	0	0.0	0	0.0	0	0.0
SWISHER	8,614	2	23.2	0	0.0	0	0.0	0	0.0
TERRY	13,822	2	14.5	0	0.0	1	7.2	1	7.2
WHEELER	5,442	0	0.0	0	0.0	0	0.0	1	18.4
YOAKUM	9,341	0	0.0	13	139.2	0	0.0	0	0.0
REGIONAL TOTALS	**768,236**	**161**	**21.0**	**626**	**81.5**	**5**	**0.7**	**43**	**5.6**
STATEWIDE TOTALS	**19,649,800**	**1,576**	**8.0**	**20,484**	**104.2**	**38**	**0.2**	**1,820**	**9.3**

REPORTED SEXUALLY TRANSMITTED DISEASE RATES
(CASES PER 100,000 POPULATION)

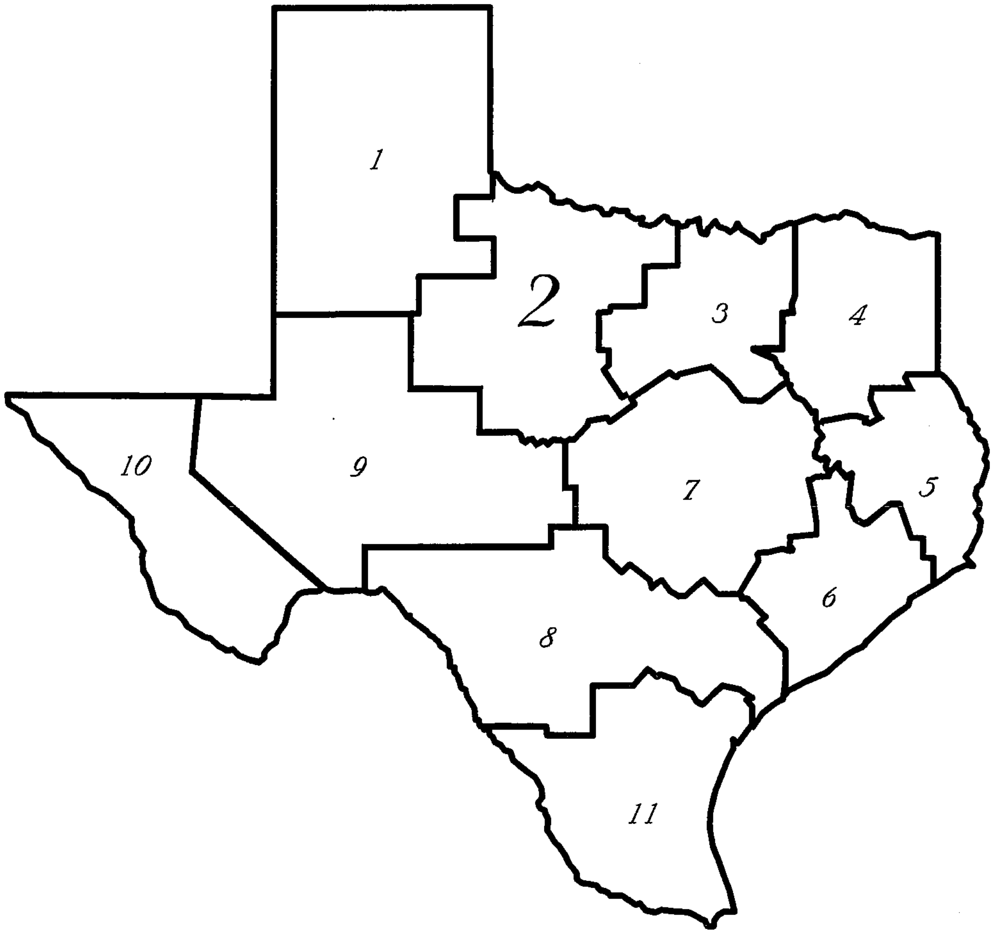
PUBLIC HEALTH REGION 1 - 1998

		AIDS		CHLAMYDIA		GONORRHEA		P & S SYPHILIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ARMSTRONG	1,984	0	0.0	1	50.4	0	0.0	0	0.0
BAILEY	7,414	0	0.0	28	377.7	3	40.5	0	0.0
BRISCOE	1,919	0	0.0	5	260.6	0	0.0	0	0.0
CARSON	6,458	1	15.5	5	77.4	1	15.5	0	0.0
CASTRO	9,523	0	0.0	29	304.5	6	63.0	0	0.0
CHILDRESS	6,890	0	0.0	30	435.4	3	43.5	0	0.0
COCHRAN	4,777	0	0.0	4	83.7	1	20.9	0	0.0
COLLINGSWORTH	3,413	0	0.0	5	146.5	0	0.0	0	0.0
CROSBY	7,591	1	13.2	30	395.2	3	39.5	0	0.0
DALLAM	5,489	1	18.2	13	236.8	7	127.5	0	0.0
DEAF SMITH	20,055	1	5.0	105	523.6	11	54.8	0	0.0
DICKENS	2,475	0	0.0	6	242.4	1	40.4	0	0.0
DONLEY	3,542	0	0.0	11	310.6	1	28.2	0	0.0
FLOYD	8,768	1	11.4	19	216.7	2	22.8	0	0.0
GARZA	5,283	0	0.0	18	340.7	5	94.6	1	18.9
GRAY	22,928	2	8.7	58	253.0	25	109.0	2	8.7
HALE	35,206	1	2.8	129	366.4	25	71.0	0	0.0
HALL	3,697	1	27.0	19	513.9	3	81.1	0	0.0
HANSFORD	5,862	0	0.0	7	119.4	0	0.0	0	0.0
HARTLEY	4,889	0	0.0	4	81.8	0	0.0	0	0.0
HEMPHILL	3,659	0	0.0	4	109.3	2	54.7	0	0.0
HOCKLEY	24,512	0	0.0	91	371.2	30	122.4	0	0.0
HUTCHINSON	24,964	0	0.0	72	288.4	24	96.1	0	0.0
KING	376	0	0.0	0	0.0	0	0.0	0	0.0
LAMB	14,711	0	0.0	34	231.1	12	81.6	0	0.0
LIPSCOMB	3,071	0	0.0	6	195.4	0	0.0	0	0.0
LUBBOCK	226,904	29	12.8	1,181	520.5	671	295.7	2	0.9
LYNN	6,854	0	0.0	25	364.8	5	73.0	0	0.0
MOORE	18,875	0	0.0	77	407.9	3	15.9	0	0.0
MOTLEY	1,446	0	0.0	1	69.2	1	69.2	0	0.0
OCHILTREE	9,106	1	11.0	10	109.8	0	0.0	0	0.0
OLDHAM	2,226	0	0.0	3	134.8	1	44.9	0	0.0
PARMER	10,414	0	0.0	23	220.9	3	28.8	0	0.0
POTTER	106,046	32	30.2	733	691.2	332	313.1	0	0.0
RANDALL	105,736	2	1.9	223	210.9	71	67.1	0	0.0
ROBERTS	1,022	0	0.0	0	0.0	0	0.0	0	0.0
SHERMAN	2,932	0	0.0	4	136.4	0	0.0	0	0.0
SWISHER	8,614	0	0.0	35	406.3	5	58.0	0	0.0
TERRY	13,822	0	0.0	52	376.2	8	57.9	0	0.0
WHEELER	5,442	0	0.0	10	183.8	9	165.4	0	0.0
YOAKUM	9,341	1	10.7	17	182.0	6	64.2	0	0.0
REGIONAL TOTALS	**768,236**	**74**	**9.6**	**3,127**	**407.0**	**1,280**	**166.6**	**5**	**0.7**
STATEWIDE TOTAI	**19,649,800**	**01**	**21.4**	**60,626**	**308.5**	**32,934**	**167.6**	**430**	**2.2**

REPORTED VACCINE-PREVENTABLE DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 1 - 1998

		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ARMSTRONG	1,984	0	0.0	0	0.0	0	0.0	0	0.0
BAILEY	7,414	0	0.0	0	0.0	0	0.0	0	0.0
BRISCOE	1,919	0	0.0	0	0.0	0	0.0	0	0.0
CARSON	6,458	0	0.0	0	0.0	0	0.0	0	0.0
CASTRO	9,523	0	0.0	1	10.5	0	0.0	0	0.0
CHILDRESS	6,890	0	0.0	0	0.0	0	0.0	0	0.0
COCHRAN	4,777	0	0.0	0	0.0	0	0.0	0	0.0
COLLINGSWORTH	3,413	0	0.0	0	0.0	0	0.0	0	0.0
CROSBY	7,591	0	0.0	0	0.0	0	0.0	0	0.0
DALLAM	5,489	0	0.0	0	0.0	0	0.0	0	0.0
DEAF SMITH	20,055	0	0.0	1	5.0	0	0.0	0	0.0
DICKENS	2,475	0	0.0	0	0.0	0	0.0	0	0.0
DONLEY	3,542	0	0.0	0	0.0	0	0.0	0	0.0
FLOYD	8,768	0	0.0	0	0.0	0	0.0	0	0.0
GARZA	5,283	0	0.0	0	0.0	1	18.9	0	0.0
GRAY	22,928	0	0.0	0	0.0	0	0.0	0	0.0
HALE	35,206	0	0.0	0	0.0	1	2.8	0	0.0
HALL	3,697	0	0.0	0	0.0	0	0.0	0	0.0
HANSFORD	5,862	0	0.0	0	0.0	0	0.0	0	0.0
HARTLEY	4,889	0	0.0	0	0.0	0	0.0	0	0.0
HEMPHILL	3,659	0	0.0	0	0.0	0	0.0	0	0.0
HOCKLEY	24,512	0	0.0	0	0.0	1	4.1	0	0.0
HUTCHINSON	24,964	0	0.0	0	0.0	2	8.0	0	0.0
KING	376	0	0.0	0	0.0	0	0.0	0	0.0
LAMB	14,711	0	0.0	0	0.0	0	0.0	0	0.0
LIPSCOMB	3,071	0	0.0	0	0.0	0	0.0	0	0.0
LUBBOCK	226,904	0	0.0	2	0.9	17	7.5	0	0.0
LYNN	6,854	0	0.0	0	0.0	0	0.0	0	0.0
MOORE	18,875	0	0.0	0	0.0	0	0.0	0	0.0
MOTLEY	1,446	0	0.0	0	0.0	0	0.0	0	0.0
OCHILTREE	9,106	0	0.0	0	0.0	0	0.0	0	0.0
OLDHAM	2,226	0	0.0	0	0.0	0	0.0	0	0.0
PARMER	10,414	0	0.0	0	0.0	1	9.6	0	0.0
POTTER	106,046	0	0.0	0	0.0	1	0.9	0	0.0
RANDALL	105,736	0	0.0	0	0.0	4	3.8	0	0.0
ROBERTS	1,022	0	0.0	0	0.0	0	0.0	0	0.0
SHERMAN	2,932	0	0.0	0	0.0	0	0.0	0	0.0
SWISHER	8,614	0	0.0	0	0.0	0	0.0	0	0.0
TERRY	13,822	0	0.0	0	0.0	0	0.0	0	0.0
WHEELER	5,442	0	0.0	0	0.0	0	0.0	0	0.0
YOAKUM	9,341	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	**768,236**	**0**	**0.0**	**4**	**0.5**	**28**	**3.6**	**0**	**0.0**
ATEWIDE TOTALS	**19,649,800**	**0**	**0.0**	**42**	**0.2**	**287**	**1.5**	**89**	**0.5**



Public Health Region 2

REPORTED SELECTED GASTROINTESTINAL DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 2 - 1998

COUNTY	1998 POP.	AMEBIASIS CASE	AMEBIASIS RATE	CAMPYLOBACTERIOSIS CASE	CAMPYLOBACTERIOSIS RATE	SALMONELLOSIS CASE	SALMONELLOSIS RATE	SHIGELLOSIS CASE	SHIGELLOSIS RATE
ARCHER	8,290	0	0.0	0	0.0	0	0.0	0	0.0
BAYLOR	4,159	0	0.0	1	24.0	0	0.0	0	0.0
BROWN	34,162	0	0.0	0	0.0	1	2.9	1	2.9
CALLAHAN	11,923	0	0.0	1	8.4	3	25.2	2	16.8
CLAY	9,981	0	0.0	0	0.0	0	0.0	0	0.0
COLEMAN	9,285	0	0.0	0	0.0	1	10.8	0	0.0
COMANCHE	13,209	0	0.0	0	0.0	2	15.1	0	0.0
COTTLE	2,147	0	0.0	0	0.0	0	0.0	0	0.0
EASTLAND	17,625	0	0.0	1	5.7	4	22.7	1	5.7
FISHER	4,678	0	0.0	2	42.8	4	85.5	1	21.4
FOARD	1,710	0	0.0	0	0.0	0	0.0	0	0.0
HARDEMAN	5,039	0	0.0	0	0.0	0	0.0	0	0.0
HASKELL	6,593	0	0.0	0	0.0	6	91.0	3	45.5
JACK	6,864	0	0.0	0	0.0	1	14.6	0	0.0
JONES	19,011	0	0.0	1	5.3	2	10.5	1	5.3
KENT	1,002	0	0.0	0	0.0	0	0.0	0	0.0
KNOX	4,732	0	0.0	0	0.0	2	42.3	2	42.3
MITCHELL	9,148	0	0.0	0	0.0	0	0.0	0	0.0
MONTAGUE	16,205	0	0.0	0	0.0	4	24.7	0	0.0
NOLAN	16,933	0	0.0	0	0.0	6	35.4	7	41.3
RUNNELS	11,402	0	0.0	2	17.5	1	8.8	2	17.5
SCURRY	19,223	0	0.0	0	0.0	0	0.0	1	5.2
SHACKELFORD	3,182	0	0.0	0	0.0	0	0.0	2	62.9
STEPHENS	9,119	0	0.0	0	0.0	0	0.0	0	0.0
STONEWALL	1,961	0	0.0	0	0.0	1	51.0	0	0.0
TAYLOR	123,904	0	0.0	15	12.1	27	21.8	96	77.5
THROCKMORTON	1,823	0	0.0	0	0.0	0	0.0	0	0.0
WICHITA	127,690	2	1.6	2	1.6	18	14.1	1	0.8
WILBARGER	15,269	0	0.0	0	0.0	3	19.6	0	0.0
YOUNG	17,203	0	0.0	0	0.0	5	29.1	0	0.0
REGIONAL TOTALS	533,472	2	0.4	25	4.7	91	17.1	120	22.5
STATEWIDE TOTALS	19,649,800	75	0.4	881	4.5	3,401	17.3	3,988	20.3

REPORTED HEPATITIS RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 2 - 1998

COUNTY	1998 POP.	HEPATITIS A CASE	HEPATITIS A RATE	HEPATITIS B CASE	HEPATITIS B RATE	HEPATITIS C CASE	HEPATITIS C RATE	HEPATITIS UNSPECIFIED CASE	HEPATITIS UNSPECIFIED RATE
ARCHER	8,290	1	12.1	1	12.1	1	12.1	0	0.0
BAYLOR	4,159	0	0.0	0	0.0	0	0.0	0	0.0
BROWN	34,162	15	43.9	3	8.8	2	5.9	0	0.0
CALLAHAN	11,923	1	8.4	0	0.0	0	0.0	0	0.0
CLAY	9,981	0	0.0	0	0.0	1	10.0	0	0.0
COLEMAN	9,285	1	10.8	1	10.8	0	0.0	0	0.0
COMANCHE	13,209	0	0.0	0	0.0	0	0.0	0	0.0
COTTLE	2,147	0	0.0	0	0.0	0	0.0	0	0.0
EASTLAND	17,625	1	5.7	1	5.7	0	0.0	0	0.0
FISHER	4,678	0	0.0	0	0.0	0	0.0	0	0.0
FOARD	1,710	0	0.0	0	0.0	0	0.0	0	0.0
HARDEMAN	5,039	1	19.8	0	0.0	0	0.0	0	0.0
HASKELL	6,593	0	0.0	0	0.0	0	0.0	0	0.0
JACK	6,864	2	29.1	3	43.7	3	43.7	0	0.0
JONES	19,011	2	10.5	0	0.0	0	0.0	0	0.0
KENT	1,002	0	0.0	0	0.0	0	0.0	0	0.0
KNOX	4,732	0	0.0	0	0.0	0	0.0	0	0.0
MITCHELL	9,148	0	0.0	4	43.7	0	0.0	0	0.0
MONTAGUE	16,205	0	0.0	3	18.5	1	6.2	0	0.0
NOLAN	16,933	0	0.0	1	5.9	1	5.9	0	0.0
RUNNELS	11,402	0	0.0	1	8.8	0	0.0	0	0.0
SCURRY	19,223	1	5.2	1	5.2	4	20.8	0	0.0
SHACKELFORD	3,182	0	0.0	0	0.0	0	0.0	0	0.0
STEPHENS	9,119	72	789.6	7	76.8	1	11.0	0	0.0
STONEWALL	1,961	0	0.0	0	0.0	0	0.0	0	0.0
TAYLOR	123,904	36	29.1	41	33.1	13	10.5	0	0.0
THROCKMORTON	1,823	0	0.0	0	0.0	0	0.0	0	0.0
WICHITA	127,690	14	11.0	32	25.1	13	10.2	0	0.0
WILBARGER	15,269	1	6.5	6	39.3	9	58.9	0	0.0
YOUNG	17,203	2	11.6	3	17.4	0	0.0	0	0.0
REGIONAL TOTA	**533**	**150**	**28.1**	**108**	**20.2**	**49**	**9.2**	**0**	**0.0**
STATEWIDE TOTALS	**19,649,800**	**3,538**	**18.0**	**1,960**	**10.0**	**162**	**2.4**	**16**	**0.1**

REPORTED OTHER SELECTED DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 2 - 1998

		ASEPTIC MENINGITIS		CHICKENPOX		ENCEPHALITIS		TUBERCULOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ARCHER	8,290	0	0.0	1	12.1	0	0.0	0	0.0
BAYLOR	4,159	2	48.1	1	24.0	0	0.0	0	0.0
BROWN	34,162	0	0.0	0	0.0	0	0.0	0	0.0
CALLAHAN	11,923	0	0.0	0	0.0	0	0.0	0	0.0
CLAY	9,981	2	20.0	0	0.0	0	0.0	0	0.0
COLEMAN	9,285	0	0.0	0	0.0	0	0.0	1	10.8
COMANCHE	13,209	0	0.0	6	45.4	0	0.0	0	0.0
COTTLE	2,147	0	0.0	0	0.0	0	0.0	0	0.0
EASTLAND	17,625	0	0.0	1	5.7	0	0.0	0	0.0
FISHER	4,678	0	0.0	2	42.8	0	0.0	0	0.0
FOARD	1,710	0	0.0	0	0.0	0	0.0	0	0.0
HARDEMAN	5,039	1	19.8	0	0.0	0	0.0	0	0.0
HASKELL	6,593	1	15.2	0	0.0	0	0.0	0	0.0
JACK	6,864	3	43.7	0	0.0	0	0.0	1	14.6
JONES	19,011	1	5.3	1	5.3	0	0.0	0	0.0
KENT	1,002	0	0.0	0	0.0	0	0.0	0	0.0
KNOX	4,732	1	21.1	1	21.1	0	0.0	0	0.0
MITCHELL	9,148	0	0.0	0	0.0	0	0.0	0	0.0
MONTAGUE	16,205	1	6.2	4	24.7	0	0.0	1	6.2
NOLAN	16,933	1	5.9	8	47.2	0	0.0	0	0.0
RUNNELS	11,402	1	8.8	0	0.0	1	8.8	0	0.0
SCURRY	19,223	0	0.0	2	10.4	0	0.0	0	0.0
SHACKELFORD	3,182	0	0.0	1	31.4	0	0.0	0	0.0
STEPHENS	9,119	0	0.0	1	11.0	0	0.0	0	0.0
STONEWALL	1,961	0	0.0	0	0.0	0	0.0	0	0.0
TAYLOR	123,904	42	33.9	236	190.5	0	0.0	1	0.8
THROCKMORTON	1,823	0	0.0	0	0.0	0	0.0	0	0.0
WICHITA	127,690	28	21.9	27	21.1	0	0.0	10	7.8
WILBARGER	15,269	2	13.1	0	0.0	0	0.0	0	0.0
YOUNG	17,203	17	98.8	6	34.9	0	0.0	0	0.0
REGIONAL TOTALS	**533,472**	**103**	**19.3**	**298**	**55.9**	**1**	**0.2**	**14**	**2.6**
STATEWIDE TOTALS	**19,649,800**	**1,576**	**8.0**	**20,484**	**104.2**	**38**	**0.2**	**1,820**	**9.3**

REPORTED SEXUALLY TRANSMITTED DISEASE RATES
(CASES PER 100,000 POPULATION)

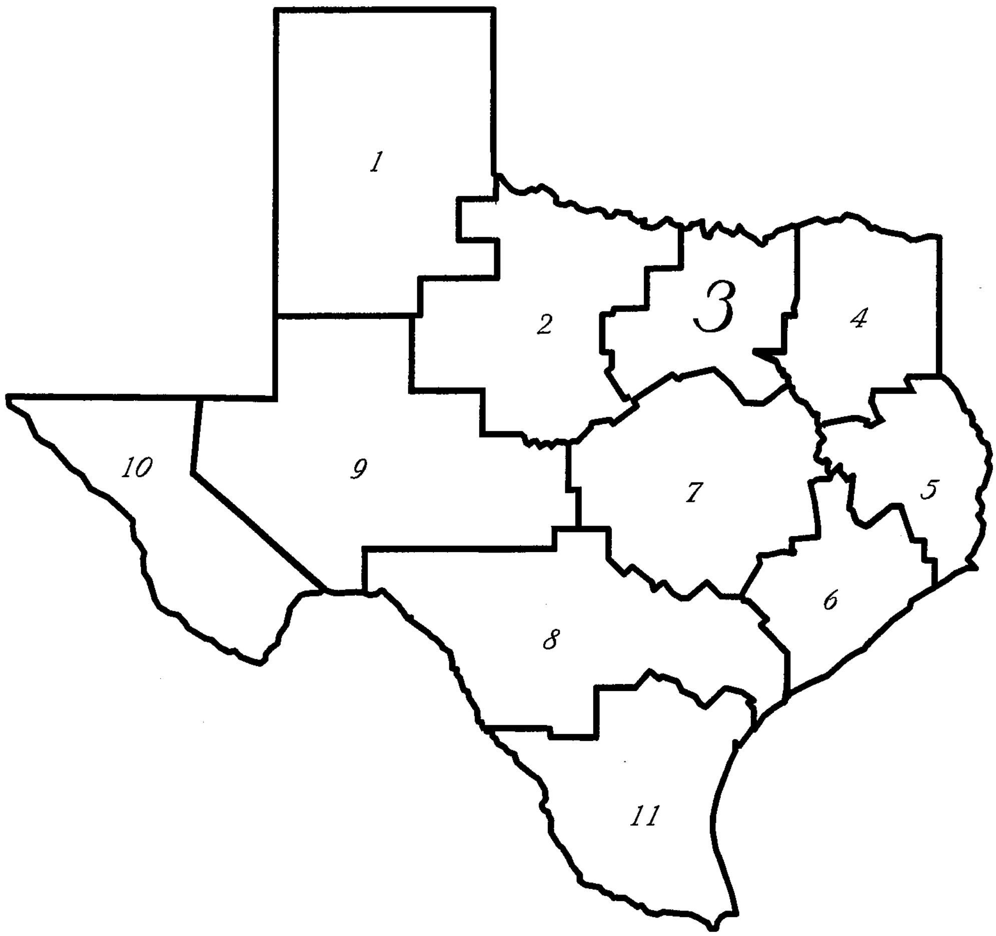
PUBLIC HEALTH REGION 2 - 1998

		AIDS		CHLAMYDIA		GONORRHEA		P & S SYPHILIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ARCHER	8,290	1	12.1	7	84.4	4	48.3	0	0.0
BAYLOR	4,159	0	0.0	15	360.7	10	240.4	0	0.0
BROWN	34,162	2	5.9	58	169.8	38	111.2	0	0.0
CALLAHAN	11,923	0	0.0	14	117.4	5	41.9	0	0.0
CLAY	9,981	0	0.0	6	60.1	1	10.0	0	0.0
COLEMAN	9,285	2	21.5	9	96.9	3	32.3	0	0.0
COMANCHE	13,209	0	0.0	17	128.7	2	15.1	0	0.0
COTTLE	2,147	0	0.0	1	46.6	0	0.0	0	0.0
EASTLAND	17,625	1	5.7	9	51.1	3	17.0	0	0.0
FISHER	4,678	0	0.0	2	42.8	0	0.0	0	0.0
FOARD	1,710	0	0.0	5	292.4	0	0.0	0	0.0
HARDEMAN	5,039	0	0.0	4	79.4	1	19.8	0	0.0
HASKELL	6,593	0	0.0	17	257.8	6	91.0	0	0.0
JACK	6,864	0	0.0	4	58.3	1	14.6	1	14.6
JONES	19,011	1	5.3	28	147.3	6	31.6	0	0.0
KENT	1,002	0	0.0	1	99.8	1	99.8	0	0.0
KNOX	4,732	0	0.0	9	190.2	3	63.4	0	0.0
MITCHELL	9,148	0	0.0	12	131.2	2	21.9	0	0.0
MONTAGUE	16,205	0	0.0	8	49.4	2	12.3	0	0.0
NOLAN	16,933	1	5.9	95	561.0	21	124.0	0	0.0
RUNNELS	11,402	1	8.8	26	228.0	5	43.9	0	0.0
SCURRY	19,223	0	0.0	66	343.3	18	93.6	0	0.0
SHACKELFORD	3,182	0	0.0	4	125.7	0	0.0	0	0.0
STEPHENS	9,119	0	0.0	19	208.4	3	32.9	0	0.0
STONEWALL	1,961	0	0.0	0	0.0	0	0.0	0	0.0
TAYLOR	123,904	7	5.6	530	427.8	205	165.5	0	0.0
THROCKMORTON	1,823	0	0.0	1	54.9	1	54.9	0	0.0
WICHITA	127,690	8	6.3	490	383.7	235	184.0	4	3.1
WILBARGER	15,269	5	32.7	61	399.5	19	124.4	0	0.0
YOUNG	17,203	0	0.0	24	139.5	2	11.6	0	0.0
REGIONAL TOTALS	533,472	29	5.4	1,542	289.0	597	111.9	5	0.9
STATEWIDE TOTALS	19,649,800	4,201	21.4	60,626	308.5	32,934	167.6	430	2.2

REPORTED VACCINE-PREVENTABLE DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 2 - 1998

		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ARCHER	8,290	0	0.0	0	0.0	0	0.0	0	0.0
BAYLOR	4,159	0	0.0	0	0.0	0	0.0	0	0.0
BROWN	34,162	0	0.0	0	0.0	0	0.0	0	0.0
CALLAHAN	11,923	0	0.0	0	0.0	1	8.4	0	0.0
CLAY	9,981	0	0.0	0	0.0	0	0.0	0	0.0
COLEMAN	9,285	0	0.0	0	0.0	0	0.0	0	0.0
COMANCHE	13,209	0	0.0	0	0.0	0	0.0	0	0.0
COTTLE	2,147	0	0.0	0	0.0	0	0.0	0	0.0
EASTLAND	17,625	0	0.0	0	0.0	0	0.0	0	0.0
FISHER	4,678	0	0.0	0	0.0	0	0.0	0	0.0
FOARD	1,710	0	0.0	0	0.0	0	0.0	0	0.0
HARDEMAN	5,039	0	0.0	0	0.0	0	0.0	0	0.0
HASKELL	6,593	0	0.0	0	0.0	0	0.0	0	0.0
JACK	6,864	0	0.0	0	0.0	0	0.0	0	0.0
JONES	19,011	0	0.0	0	0.0	1	5.3	0	0.0
KENT	1,002	0	0.0	0	0.0	0	0.0	0	0.0
KNOX	4,732	0	0.0	0	0.0	0	0.0	0	0.0
MITCHELL	9,148	0	0.0	0	0.0	0	0.0	0	0.0
MONTAGUE	16,205	0	0.0	0	0.0	0	0.0	0	0.0
NOLAN	16,933	0	0.0	0	0.0	0	0.0	0	0.0
RUNNELS	11,402	0	0.0	0	0.0	0	0.0	0	0.0
SCURRY	19,223	0	0.0	0	0.0	0	0.0	0	0.0
SHACKELFORD	3,182	0	0.0	0	0.0	0	0.0	0	0.0
STEPHENS	9,119	0	0.0	0	0.0	0	0.0	0	0.0
STONEWALL	1,961	0	0.0	0	0.0	0	0.0	0	0.0
TAYLOR	123,904	0	0.0	0	0.0	2	1.6	0	0.0
THROCKMORTON	1,823	0	0.0	0	0.0	0	0.0	0	0.0
WICHITA	127,690	0	0.0	0	0.0	0	0.0	0	0.0
WILBARGER	15,269	0	0.0	0	0.0	0	0.0	0	0.0
YOUNG	17,203	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	533,472	0	0.0	0	0.0	4	0.7	0	0.0
STATEWIDE TOTALS	19,649,800	0	0.0	42	0.2	287	1.5	89	0.5



Public Health Region 3

REPORTED SELECTED GASTROINTESTINAL DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 3 - 1998

		AMEBIASIS		CAMPYLOBACTERIOSIS		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
COLLIN	393,638	2	0.5	13	3.3	38	9.7	28	7.1
COOKE	32,255	0	0.0	0	0.0	1	3.1	0	0.0
DALLAS	2,136,125	10	0.5	53	2.5	209	9.8	313	14.7
DENTON	384,554	0	0.0	5	1.3	39	10.1	23	6.0
ELLIS	114,458	1	0.9	3	2.6	11	9.6	10	8.7
ERATH	30,544	0	0.0	2	6.5	4	13.1	0	0.0
FANNIN	25,840	0	0.0	0	0.0	1	3.9	10	38.7
GRAYSON	96,957	1	1.0	1	1.0	20	20.6	3	3.1
HOOD	39,943	0	0.0	2	5.0	2	5.0	0	0.0
HUNT	71,386	0	0.0	1	1.4	30	42.0	24	33.6
JOHNSON	129,747	1	0.8	3	2.3	6	4.6	6	4.6
KAUFMAN	68,110	0	0.0	0	0.0	4	5.9	11	16.2
NAVARRO	43,388	0	0.0	2	4.6	6	13.8	3	6.9
PALO PINTO	26,670	0	0.0	0	0.0	0	0.0	0	0.0
PARKER	88,528	0	0.0	5	5.6	4	4.5	1	1.1
ROCKWALL	37,676	1	2.7	4	10.6	3	8.0	2	5.3
SOMERVELL	6,260	0	0.0	0	0.0	3	47.9	1	16.0
TARRANT	1,466,587	1	0.1	14	1.0	75	5.1	64	4.4
WISE	41,282	0	0.0	0	0.0	6	14.5	11	26.6
REGIONAL TOTALS	**5,233,948**	17	0.3	108	2.1	462	8.8	510	9.7
STATEWIDE TOTALS	19,649	75	0.4	881	4.5	3,401	17.3	3,988	20.3

REPORTED HEPATITIS RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 3 - 1998

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
COLLIN	393,638	60	15.2	137	34.8	14	3.6	1	0.3
COOKE	32,255	4	12.4	8	24.8	3	9.3	0	0.0
DALLAS	2,136,125	171	8.0	467	21.9	71	3.3	3	0.1
DENTON	384,554	32	8.3	85	22.1	6	1.6	1	0.3
ELLIS	114,458	14	12.2	17	14.9	2	1.7	0	0.0
ERATH	30,544	1	3.3	3	9.8	0	0.0	0	0.0
FANNIN	25,840	2	7.7	7	27.1	0	0.0	0	0.0
GRAYSON	96,957	23	23.7	31	32.0	9	9.3	0	0.0
HOOD	39,943	13	32.5	1	2.5	1	2.5	0	0.0
HUNT	71,386	4	5.6	17	23.8	0	0.0	0	0.0
JOHNSON	129,747	12	9.2	11	8.5	0	0.0	0	0.0
KAUFMAN	68,110	5	7.3	22	32.3	0	0.0	0	0.0
NAVARRO	43,388	3	6.9	9	20.7	0	0.0	0	0.0
PALO PINTO	26,670	2	7.5	6	22.5	0	0.0	0	0.0
PARKER	88,528	21	23.7	12	13.6	0	0.0	0	0.0
ROCKWALL	37,676	5	13.3	6	15.9	0	0.0	0	0.0
SOMERVELL	6,260	1	16.0	1	16.0	0	0.0	0	0.0
TARRANT	1,466,587	71	4.8	217	14.8	7	0.5	0	0.0
WISE	41,282	10	24.2	5	12.1	1	2.4	0	0.0
REGIONAL TOTALS	**5,233,948**	**454**	**8.7**	**1,062**	**20.3**	**114**	**2.2**	**5**	**0.1**
STATEWIDE TOTALS	**19,649,800**	**3,538**	**18.0**	**1,960**	**10.0**	**462**	**2.4**	**16**	**0.1**

REPORTED OTHER SELECTED DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 3 - 1998

		ASEPTIC MENINGITIS		CHICKENPOX		ENCEPHALITIS		TUBERCULOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
COLLIN	393,638	37	9.4	110	27.9	0	0.0	10	2.5
COOKE	32,255	3	9.3	1	3.1	2	6.2	0	0.0
DALLAS	2,136,125	104	4.9	4303	201.4	4	0.2	253	11.8
DENTON	384,554	27	7.0	258	67.1	0	0.0	12	3.1
ELLIS	114,458	11	9.6	74	64.7	0	0.0	4	3.5
ERATH	30,544	0	0.0	64	209.5	0	0.0	2	6.5
FANNIN	25,840	2	7.7	2	7.7	0	0.0	1	3.9
GRAYSON	96,957	14	14.4	91	93.9	0	0.0	3	3.1
HOOD	39,943	5	12.5	106	265.4	0	0.0	0	0.0
HUNT	71,386	1	1.4	60	84.1	0	0.0	2	2.8
JOHNSON	129,747	33	25.4	248	191.1	1	0.8	1	0.8
KAUFMAN	68,110	4	5.9	4	5.9	0	0.0	1	1.5
NAVARRO	43,388	1	2.3	33	76.1	0	0.0	5	11.5
PALO PINTO	26,670	2	7.5	9	33.7	0	0.0	0	0.0
PARKER	88,528	6	6.8	5	5.6	0	0.0	3	3.4
ROCKWALL	37,676	5	13.3	0	0.0	0	0.0	1	2.7
SOMERVELL	6,260	4	63.9	2	31.9	0	0.0	0	0.0
TARRANT	1,466,587	8	0.5	400	27.3	1	0.1	113	7.7
WISE	41,282	0	0.0	96	232.5	0	0.0	0	0.0
REG TOT	**5,233,948**	**267**	**5.1**	**5,866**	**112.1**	**8**	**0.2**	**411**	**7.9**
ST E T	**[illegible]9,800**	**1,576**	**8.0**	**20,484**	**104.2**	**38**	**0.2**	**1,820**	**9.3**

REPORTED SEXUALLY TRANSMITTED DISEASE RATES
(CASES PER 100,000 POPULATION)

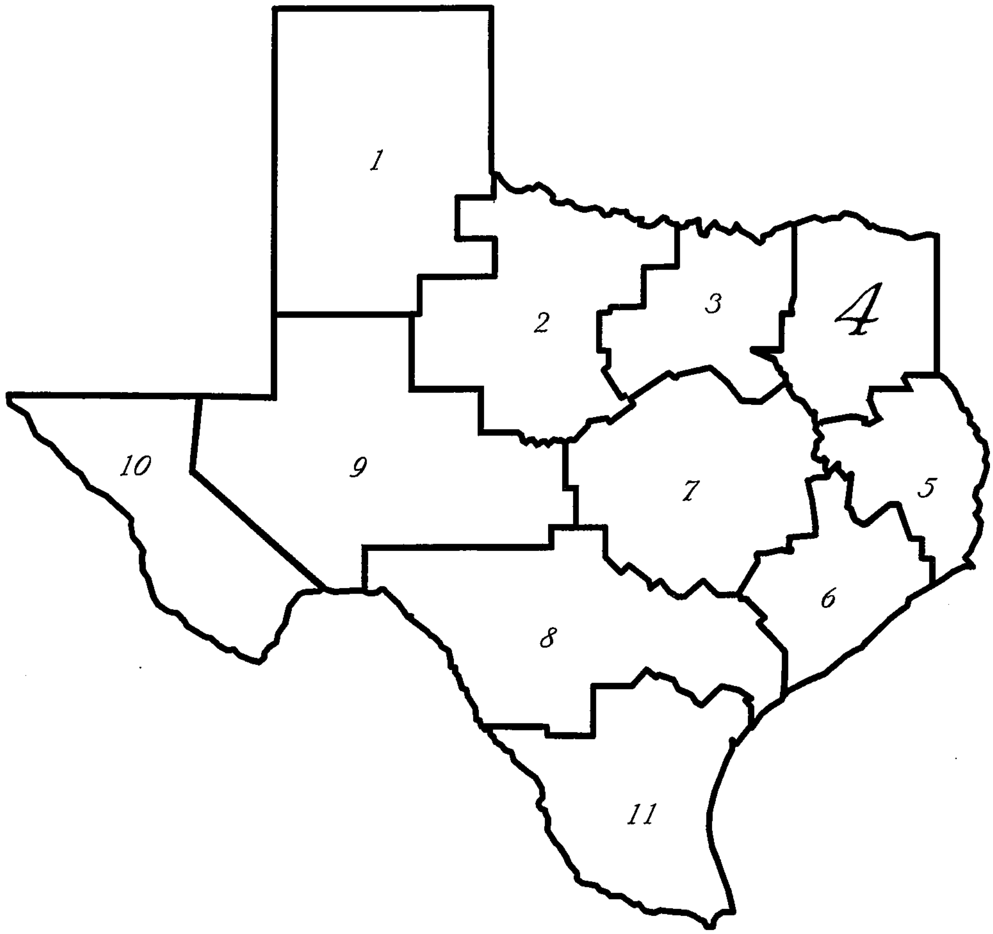
PUBLIC HEALTH REGION 3 - 1998

		AIDS		CHLAMYDIA		GONORRHEA		P & S SYPHILIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
COLLIN	393,638	34	8.6	483	122.7	249	63.3	2	0.5
COOKE	32,255	2	6.2	64	198.4	35	108.5	0	0.0
DALLAS	2,136,125	617	28.9	8,920	417.6	7,444	348.5	124	5.8
DENTON	384,554	25	6.5	493	128.2	208	54.1	1	0.3
ELLIS	114,458	4	3.5	219	191.3	106	92.6	1	0.9
ERATH	30,544	2	6.5	67	219.4	7	22.9	0	0.0
FANNIN	25,840	2	7.7	60	232.2	22	85.1	0	0.0
GRAYSON	96,957	8	8.3	255	263.0	119	122.7	1	1.0
HOOD	39,943	1	2.5	35	87.6	7	17.5	0	0.0
HUNT	71,386	4	5.6	181	253.6	166	232.5	0	0.0
JOHNSON	129,747	10	7.7	214	164.9	99	76.3	0	0.0
KAUFMAN	68,110	4	5.9	164	240.8	51	74.9	0	0.0
NAVARRO	43,388	8	18.4	172	396.4	107	246.6	2	4.6
PALO PINTO	26,670	2	7.5	50	187.5	8	30.0	0	0.0
PARKER	88,528	6	6.8	75	84.7	24	27.1	0	0.0
ROCKWALL	37,676	1	2.7	48	127.4	16	42.5	0	0.0
SOMERVELL	6,260	1	16.0	7	111.8	1	16.0	0	0.0
TARRANT	1,466,587	210	14.3	4,138	282.2	3,331	227.1	22	1.5
WISE	41,282	3	7.3	52	126.0	14	33.9	0	0.0
REGIONAL TOTALS	**5,233,948**	**944**	**18.0**	**15,697**	**299.9**	**12,011**	**229.5**	**153**	**2.9**
TEWIDE TC	19,649,800	4,201	21.4	60,626	308.5	32,934	167.6	430	2.2

REPORTED VACCINE-PREVENTABLEDISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 3 - 1998

		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
COLLIN	393,638	0	0.0	0	0.0	5	1.3	0	0.0
COOKE	32,255	0	0.0	1	3.1	0	0.0	0	0.0
DALLAS	2,136,125	0	0.0	11	0.5	52	2.4	1	0.0
DENTON	384,554	0	0.0	0	0.0	11	2.9	6	1.6
ELLIS	114,458	0	0.0	0	0.0	1	0.9	0	0.0
ERATH	30,544	0	0.0	0	0.0	0	0.0	0	0.0
FANNIN	25,840	0	0.0	0	0.0	0	0.0	0	0.0
GRAYSON	96,957	0	0.0	1	1.0	0	0.0	0	0.0
HOOD	39,943	0	0.0	0	0.0	0	0.0	0	0.0
HUNT	71,386	0	0.0	1	1.4	0	0.0	0	0.0
JOHNSON	129,747	0	0.0	0	0.0	2	1.5	0	0.0
KAUFMAN	68,110	0	0.0	0	0.0	0	0.0	0	0.0
NAVARRO	43,388	0	0.0	0	0.0	1	2.3	0	0.0
PALO PINTO	26,670	0	0.0	0	0.0	0	0.0	0	0.0
PARKER	88,528	0	0.0	1	1.1	6	6.8	0	0.0
ROCKWALL	37,676	0	0.0	0	0.0	0	0.0	1	2.7
SOMERVELL	6,260	0	0.0	0	0.0	1	16.0	0	0.0
TARRANT	1,466,587	0	0.0	1	0.1	23	1.6	1	0.1
WISE	41,282	0	0.0	0	0.0	5	12.1	0	0.0
REGIONAL TOTALS	**5,233,948**	**0**	**0.0**	**16**	**0.3**	**107**	**2.0**	**9**	**0.2**
STATEWIDETOTALS	**19,649,800**	**0**	**0.0**	**42**	**0.2**	**287**	**1.5**	**9**	**0.5**



Public Health Region 4

REPORTED SELECTED GASTROINTESTINAL DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 4 - 1998

		AMEBIASIS		CAMPYLOBACTERIOSIS		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ANDERSON	51,560	0	0.0	0	0.0	5	9.7	2	3.9
BOWIE	84,555	0	0.0	10	11.8	21	24.8	6	7.1
CAMP	10,633	0	0.0	0	0.0	0	0.0	0	0.0
CASS	29,921	0	0.0	0	0.0	2	6.7	0	0.0
CHEROKEE	43,562	0	0.0	1	2.3	11	25.3	5	11.5
DELTA	4,843	0	0.0	0	0.0	1	20.6	1	20.6
FRANKLIN	8,084	0	0.0	1	12.4	0	0.0	0	0.0
GREGG	107,903	0	0.0	1	0.9	12	11.1	7	6.5
HARRISON	62,715	0	0.0	0	0.0	2	3.2	0	0.0
HENDERSON	72,871	0	0.0	0	0.0	7	9.6	13	17.8
HOPKINS	29,605	1	3.4	3	10.1	2	6.8	4	13.5
LAMAR	43,938	0	0.0	6	13.7	7	15.9	36	81.9
MARION	10,359	0	0.0	0	0.0	1	9.7	0	0.0
MORRIS	12,892	0	0.0	0	0.0	1	7.8	0	0.0
PANOLA	23,550	0	0.0	0	0.0	2	8.5	0	0.0
RAINS	7,856	0	0.0	0	0.0	0	0.0	1	12.7
RED RIVER	13,872	0	0.0	0	0.0	2	14.4	3	21.6
RUSK	45,760	0	0.0	0	0.0	13	28.4	3	6.6
SMITH	166,586	0	0.0	7	4.2	81	48.6	16	9.6
TITUS	25,223	0	0.0	0	0.0	7	27.8	3	11.9
UPSHUR	33,176	0	0.0	1	3.0	3	9.0	0	0.0
VAN ZANDT	42,336	0	0.0	0	0.0	0	0.0	2	4.7
WOOD	32,685	0	0.0	3	9.2	8	24.5	4	12.2
REGIONAL TOTALS	964,485	1	0.1	33	3.4	188	19.5	106	11.0
STATEWIDE TOTALS	19,649,800	75	0.4	881	4.5	3,401	17.3	3,988	20.3

REPORTED HEPATITIS RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 4 - 1998

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ANDERSON	51,560	3	5.8	1	1.9	2	3.9	0	0.0
BOWIE	84,555	8	9.5	14	16.6	17	20.1	0	0.0
CAMP	10,633	0	0.0	0	0.0	1	9.4	0	0.0
CASS	29,921	1	33	2	6.7	1	3.3	0	0.0
CHEROKEE	43,562	0	0.0	1	23	1	2.3	0	0.0
DELTA	4,843	0	0.0	1	20.6	0	0.0	0	0.0
FRANKLIN	8,084		0.0	0	0.0	0	0.0	0	0.0
GREGG	107,903	7	6.5	11	10.2	4	3.7	1	0.9
HARRISON	62,715	4	6.4	4	6.4	2	3.2	0	0.0
HENDERSON	72,871	4	5.5	5	6.9	2	2.7	0	0.0
HOPKINS	29,605	1	3.4	1	3.4	1	3.4	0	0.0
LAMAR	43,938	5	11.4	4	9.1	1	2.3	0	0.0
MARION	10,359	0	0.0	0	0.0	0	0.0	0	0.0
MORRIS	12,892	0	0.0	1	7.8	1	7.8	0	0.0
PANOLA	23,550	0	0.0	0	0.0	1	4.2	0	0.0
RAINS	7,856	0	0.0	0	0.0	1	12.7	0	0.0
RED RIVER	13,872	3	21.6	1	7.2	0	0.0	0	0.0
RUSK	45,760	0	-0.0	1	2,2	0	0.0	0	0.0
SMITH	166,586	11	6;6	6	3.6	2	1.2	0	0.0
TITUS	25,223	3	1Y.3	1	4.0	0	0.0	0	0.0
UPSHUR	33,176	2	6.0	3	9.0	1	3.0	0	0.0
VAN ZANDT	42,336	10	23.6	3	7.1	0	0.0	0	0.0
WOOD	32,685	4	12.2	3	9.2	4	12.2	0	0.0
REGIONAL	964,485	66	6.8	63	6.5	42	4.4	1	0.1
STATEWIDE TOTALS	19,649,800	3,538	18.0	1,960	10.0	462	2.4	16	0.1

REPORTED OTHER SELECTED DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 4 - 1998

		ASEPTIC MENINGITIS		CHICKENPOX		ENCEPHALITIS		TUBERCULOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ANDERSON	51,560	0	0.0	42	81.5	0	0.0	4	7.8
BOWIE	84,555	17	20.1	43	50.9	0	0.0	9	10.6
CAMP	10,633	1	9.4	0	0.0	0	0.0	1	9.4
CASS	29,921	3	10.0	3	10.0	0	0.0	3	10.0
CHEROKEE	43,562	4	9.2	2	4.6	1	2.3	2	4.6
DELTA	4,843	0	0.0	0	0.0	0	0.0	0	0.0
FRANKLIN	8,084	1	12.4	0	0.0	0	0.0	1	12.4
GREGG	107,903	40	37.1	24	22.2	0	0.0	7	6.5
HARRISON	62,715	3	4.8	15	23.9	0	0.0	1	1.6
HENDERSON	72,871	2	2.7	1	1.4	1	1.4	8	11.0
HOPKINS	29,605	0	0.0	3	10.1	0	0.0	3	10.1
LAMAR	43,938	0	0.0	2	4.6	0	0.0	4	9.1
MARION	10,359	0	0.0	0	0.0	0	0.0	0	0.0
MORRIS	12,892	2	15.5	0	0.0	0	0.0	0	0.0
PANOLA	23,550	0	0.0	11	46.7	0	0.0	1	4.2
RAINS	7,856	0	0.0	1	12.7	0	0.0	0	0.0
RED RIVER	13,872	1	7.2	0	0.0	0	0.0	0	0.0
RUSK	45,760	4	8.7	0	0.0	0	0.0	3	6.6
SMITH	166,586	21	12.6	24	14.4	2	1.2	6	3.6
TITUS	25,223	0	0.0	0	0.0	0	0.0	0	0.0
UPSHUR	33,176	9	27.1	1	3.0	0	0.0	2	6.0
VAN ZANDT	42,336	0	0.0	114	269.3	0	0.0	2	4.7
WOOD	32,685	5	15.3	24	73.4	0	0.0	0	0.0
REGIONAL TOTALS	**964,485**	**113**	**11.7**	**310**	**32.1**	**4**	**0.4**	**57**	**5.9**
STATEWIDE TOTALS	**19,649,800**	**1,576**	**8.0**	**20,484**	**104.2**	**38**	**0.2**	**1,820**	**9.3**

REPORTED SEXUALLY TRANSMITTED DISEASE RATES
(CASES PER 100,000 POPULATION)

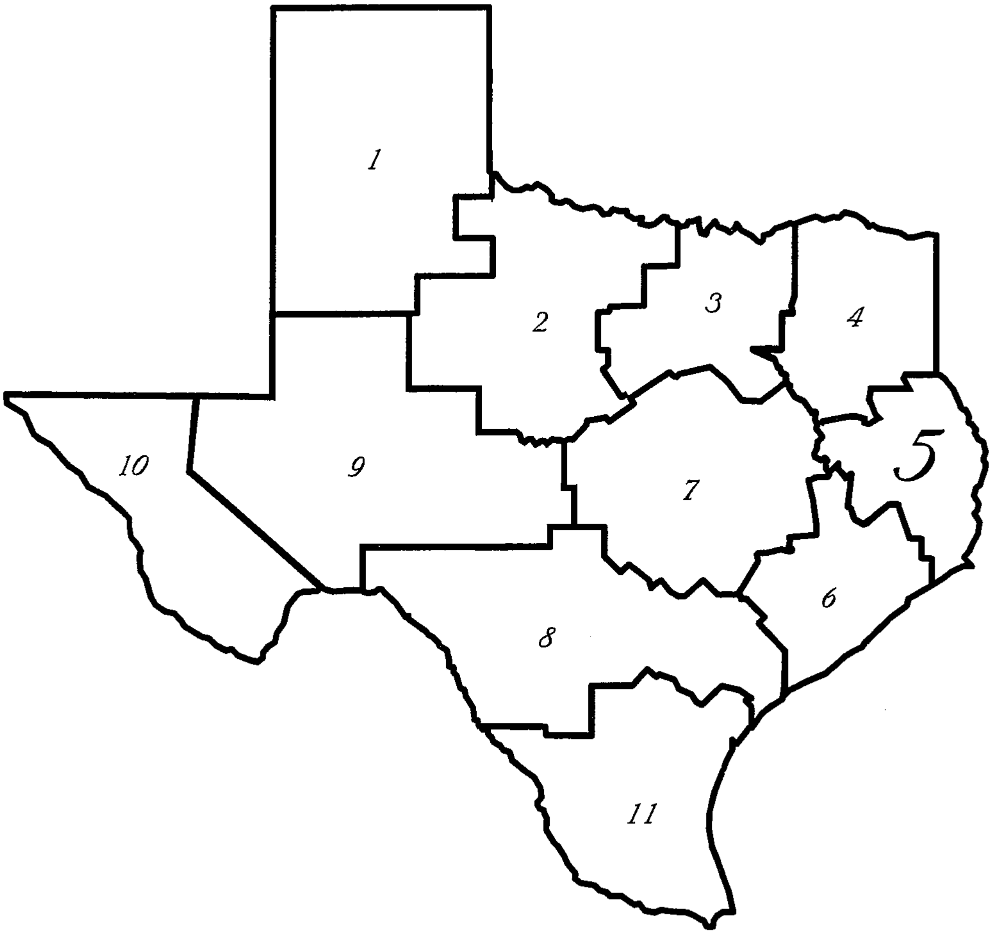
PUBLIC HEALTH REGION 4 - 1998

		AIDS		CHLAMYDIA		GONORRHEA		P & S SYPHILIS	
COUNTY	**1998 POP.**	**CASE**	**RATE**	**CASE**	**RATE**	**CASE**	**RATE**	**CASE**	**RATE**
ANDERSON	51,560	4	7.8	67	129.9	38	73.7	1	1.9
BOWIE	84,555	13	15.4	312	369.0	276	326.4	8	9.5
CAMP	10,633	0	0.0	21	197.5	7	65.8	0	0.0
CASS	29,921	2	6.7	44	147.1	21	70.2	0	0.0
CHEROKEE	43,562	3	6.9	131	300.7	55	126.3	2	4.6
DELTA	4,843	0	0.0	2	41.3	3	61.9	0	0.0
FRANKLIN	8,084	0	0.0	8	99.0	4	49.5	0	0.0
GREGG	107,903	25	23.2	282	261.3	81	75.1	16	14.8
HARRISON	62,715	4	6.4	138	220.0	105	167.4	2	3.2
HENDERSON	72,871	3	4.1	87	119.4	32	43.9	3	4.1
HOPKINS	29,605	4	13.5	35	118.2	16	54.0	0	0.0
LAMAR	43,938	2	4.6	138	314.1	93	211.7	0	0.0
MARION	10,359	1	9.7	14	135.1	4	38.6	0	0.0
MORRIS	12,892	0	0.0	20	155.1	23	178.4	0	0.0
PANOLA	23,550	1	4.2	37	157.1	14	59.4	0	0.0
RAINS	7,856	1	12.7	2	25.5	3	38.2	0	0.0
RED RIVER	13,872	2	14.4	34	245.1	6	43.3	0	0.0
RUSK	45,760	4	8.7	44	96.2	25	54.6	1	2.2
SMITH	166,586	20	12.0	638	383.0	381	228.7	5	3.0
TITUS	25,223	2	7.9	63	249.8	19	75.3	1	4.0
UPSHUR	33,176	4	12.1	31	93.4	8	24.1	1	3.0
VAN ZANDT	42,336	1	2.4	19	44.9	9	21.3	0	0.0
WOOD	32,685	1	3.1	23	70.4	13	39.8	0	0.0
REGIONAL TOTALS	**964,485**	**97**	**10.1**	**2,190**	**227.1**	**1,236**	**128.2**	**40**	**4.1**
STATEWIDE TOTAL	**[illegible]**	**4,201**	**21.4**	**60,626**	**308.5**	**32,934**	**167.6**	**430**	**2.2**

REPORTED VACCINE-PREVENTABLE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 4 - 1998

		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ANDERSON	51,560	0	0.0	0	0.0	0	0.0	0	0.0
BOWIE	84,555	0	0.0	0	0.0	1	1.2	0	0.0
CAMP	10,633	0	0.0	0	0.0	0	0.0	0	0.0
CASS	29,921	0	0.0	0	0.0	0	0.0	0	0.0
CHEROKEE	43,562	0	0.0	0	0.0	1	2.3	0	0.0
DELTA	4,843	0	0.0	0	0.0	0	0.0	0	0.0
FRANKLIN	8,084	0	0.0	0	0.0	0	0.0	0	0.0
GREGG	107,903	0	0.0	0	0.0	2	1.9	0	0.0
HARRISON	62,715	0	0.0	0	0.0	0	0.0	0	0.0
HENDERSON	72,871	0	0.0	0	0.0	1	1.4	0	0.0
HOPKINS	29,605	0	0.0	0	0.0	0	0.0	0	0.0
LAMAR	43,938	0	0.0	0	0.0	0	0.0	0	0.0
MARION	10,359	0	0.0	0	0.0	0	0.0	0	0.0
MORRIS	12,892	0	0.0	0	0.0	0	0.0	0	0.0
PANOLA	23,550	0	0.0	0	0.0	0	0.0	0	0.0
RAINS	7,856	0	0.0	0	0.0	0	0.0	0	0.0
RED RIVER	13,872	0	0.0	0	0.0	0	0.0	0	0.0
RUSK	45,760	0	0.0	0	0.0	0	0.0	0	0.0
SMITH	166,586	0	0.0	0	0.0	2	1.2	0	0.0
TITUS	25,223	0	0.0	0	0.0	0	0.0	0	0.0
UPSHUR	33,176	0	0.0	0	0.0	1	3.0	0	0.0
VAN ZANDT	42,336	0	0.0	0	0.0	0	0.0	0	0.0
WOOD	32,685	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	**961,185**	**0**	**0.0**	**0**	**0.0**	**8**	**0.8**	**0**	**0.0**
STATEWIDE TOTALS	19,649,800	0	0.0	42	0.2	287	1.5	89	0.5



Public Health Region 5

REPORTED SELECTED GASTROINTESTINAL DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 5 - 1998

		AMEBIASIS		CAMPYLOBACTERIOSIS		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ANGELINA	73,801	0	0.0	1	1.4	7	9.5	8	10.8
HARDIN	42,567	0	0.0	0	0.0	14	32.9	27	63.4
HOUSTON	22,492	0	0.0	1	4.4	5	22.2	0	0.0
JASPER	31,739	0	0.0	2	6.3	8	25.2	7	22.1
JEFFERSON	236,970	0	0.0	11	4.6	44	18.6	82	34.6
NACOGDOCHES	56,278	0	0.0	8	14.2	22	39.1	17	30.2
NEWTON	14,402	0	0.0	0	0.0	2	13.9	1	6.9
ORANGE	82,061	0	0.0	3	3.7	16	19.5	62	75.6
POLK	37,330	0	0.0	1	2.7	5	13.4	1	2.7
SABINE	10,158	0	0.0	0	0.0	4	39.4	1	9.8
SAN AUGUSTINE	7,983	0	0.0	0	0.0	1	12.5	0	0.0
SAN JACINTO	20,284	0	0.0	1	4.9	4	19.7	0	0.0
SHELBY	21,894	1	4.6	0	0.0	6	27.4	2	9.1
TRINITY	12,629	0	0.0	0	0.0	4	31.7	0	0.0
TYLER	18,520	1	5.4	4	21.6	2	10.8	10	54.0
F [illegible] TO	689,108	2	0.3	32	4.6	144	20.9	218	31.6
E [illegible]	19,649,800	75	0.4	881	4.5	3,401	17.3	3,988	20.3

REPORTED HEPATITIS RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 5 - 1998

		HEPATITIS A		HEPATITIS B		HEPATITIS		HEPATITIS UNSPECIFIED	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ANGELINA	73,801	11	14.9	10	13.5	2	2.7	0	0.0
HARDIN	42,567	13	30.5	5	11.7	0	0.0	0	0.0
HOUSTON	22,492	0	0.0	1	4.4	0	0.0	0	0.0
JASPER	31,739	12	37.8	2	6.3	0	0.0	0	0.0
JEFFERSON	236,970	159	67.1	44	18.6	11	4.6	0	0.0
NACOGDOCHES	56,278	27	48.0	0	0.0	0	0.0	0	0.0
NEWTON	14,402	3	20.8	1	6.9	0	0.0	0	0.0
ORANGE	82,061	54	65.8	8	9.7	0	0.0	0	0.0
POLK	37,330	1	2.7	1	2.7	0	0.0	0	0.0
SABINE	10,158	0	0.0	0	0.0	0	0.0	0	0.0
SAN AUGUSTINE	7,983	0	0.0	0	0.0	0	0.0	0	0.0
SAN JACINTO	20,284	0	0.0	0	0.0	0	0.0	0	0.0
SHELBY	21,894	8	36.5	3	13.7	0	0.0	0	0.0
TRINITY	12,629	1	7.9	0	0.0	2	15.8	0	0.0
TYLER	18,520	3	16.2	2	10.8	0	0.0	0	0.0
REGIONAL TOTALS	689,108	292	42.41	77	11.2	15	2.2	0	0.0
STATEWIDE TOTALS	19,649,800	3,538	18.0	1,960	30.0	462	2.4	16	0.1

REPORTED OTHER SELECTED DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 5 - 1998

		ASEPTIC MENINGITIS		CHICKENPOX		ENCEPHALITIS		TUBERCULOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ANGELINA	73,801	2	2.7	10	13.5	1	1.4	3	4.1
HARDIN	42,567	3	7.0	49	115.1	0	0.0	0	0.0
HOUSTON	22,492	0	0.0	0	0.0	0	0.0	1	4.4
JASPER	31,739	2	6.3	20	63.0	0	0.0	0	0.0
JEFFERSON	236,970	10	4.2	264	111.4	1	0.4	20	8.4
NACOGDOCHES	56,278	1	1.8	118	209.7	0	0.0	3	5.3
NEWTON	14,402	1	6.9	0	0.0	0	0.0	1	6.9
ORANGE	82,061	7	8.5	124	151.1	0	0.0	2	2.4
POLK	37,330	0	0.0	1	2.7	0	0.0	3	8.0
SABINE	10,158	0	0.0	1	9.8	0	0.0	0	0.0
SAN AUGUSTINE	7,983	0	0.0	0	0.0	0	0.0	0	0.0
SAN JACINTO	20,284	0	0.0	10	49.3	0	0.0	2	9.9
SHELBY	21,894	1	4.6	12	54.8	0	0.0	0	0.0
TRINITY	12,629	1	7.9	22	174.2	0	0.0	2	15.8
TYLER	18,520	0	0.0	6	32.4	0	0.0	1	5.4
REGIONAL TOTALS	**689,108**	**28**	**4.1**	**637**	**92.4**	**2**	**0.3**	**38**	**5.5**
STATEWIDE TOTALS	**19,649,800**	**1,576**	**8.0**	**20,484**	**104.2**	**38**	**0.2**	**1,820**	**9.3**

REPORTED SEXUALLY TRANSMITTED DISEASE RATES
(CASES PER 100,000 POPULATION)

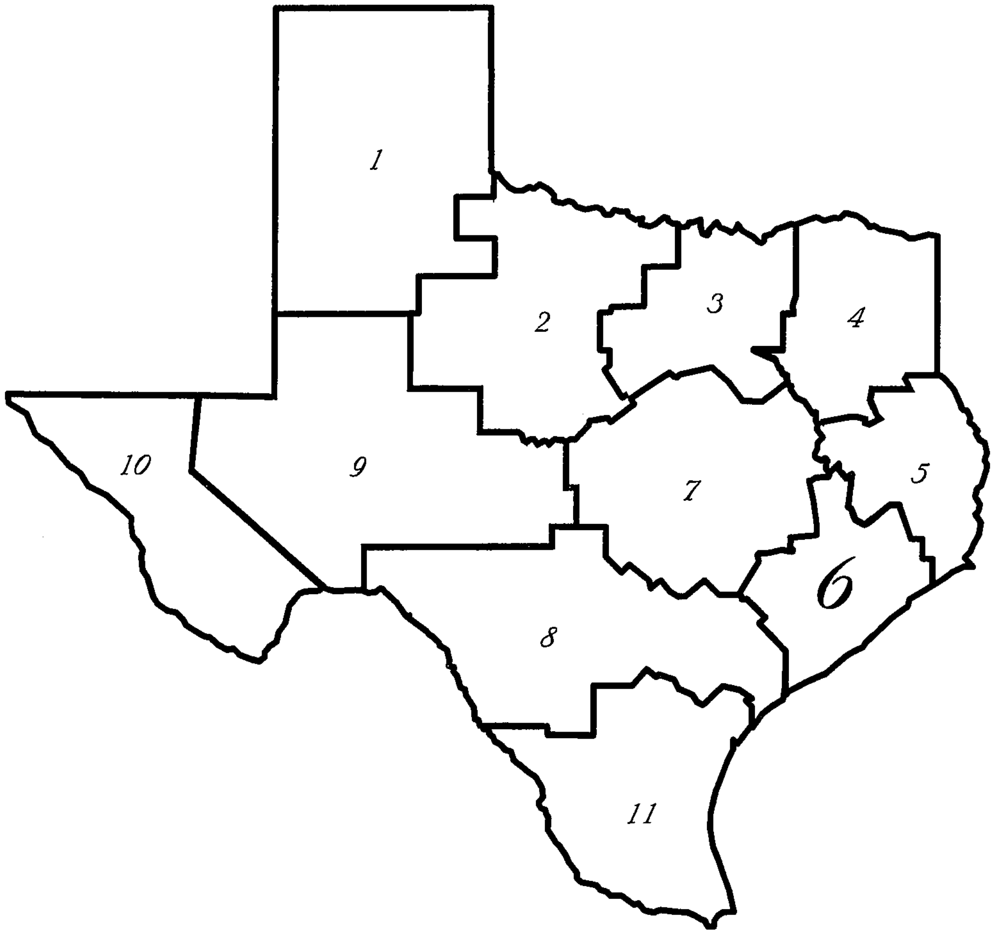
PUBLIC HEALTH REGION 5 - 1998

		AIDS		CHLAMYDIA		GONORRHEA		P & S SYPHILIS	
COUNTY	**1998 POP.**	**CASE**	**RATE**	**CASE**	**RATE**	**CASE**	**RATE**	**CASE**	**RATE**
ANGELINA	73,801	4	5.4	121	164.0	121	164.0	6	8.1
HARDIN	42,567	1	2.3	77	180.9	48	112.8	3	7.0
HOUSTON	22,492	4	17.8	35	155.6	17	75.6	0	0.0
JASPER	31,739	1	3.2	129	406.4	82	258.4	0	0.0
JEFFERSON	236,970	46	19.4	966	407.6	965	407.2	15	6.3
NACOGDOCHES	56,278	7	12.4	162	287.9	93	165.3	1	1.8
NEWTON	14,402	0	0.0	42	291.6	10	69.4	0	0.0
ORANGE	82,061	2	2.4	144	175.5	88	107.2	3	3.7
POLK	37,330	1	2.7	74	198.2	29	77.7	2	5.4
SABINE	10,158	0	0.0	14	137.8	5	49.2	0	0.0
SAN AUGUSTINE	7,983	0	0.0	19	238.0	2	25.1	0	0.0
SAN JACINTO	20,284	3	14.8	18	88.7	7	34.5	0	0.0
SHELBY	21,894	3	13.7	29	132.5	6	27.4	0	0.0
TRINITY	12,629	0	0.0	13	102.9	10	79.2	1	7.9
TYLER	18,520	0	0.0	19	102.6	6	32.4	0	0.0
REGIONAL TOTALS	**689,108**	**72**	**10.4**	**1,862**	**270.2**	**1,489**	**216.1**	**31**	**45**
STATEWIDE TOTALS	**19,649,800**	**4,201**	**21.4**	**60,626**	**308.5**	**32,934**	**167.6**	**430**	**2.2**

REPORTED VACCINE-PREVENTABLE DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 5 - 1998

		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1998 POP	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ANGELINA	73,801	0	0.0	0	0.0	0	0.0	0	0.0
HARDIN	42,567	0	0.0	0	0.0	0	0.0	0	0.0
HOUSTON	22,492	0	0.0	0	0.0	0	0.0	0	0.0
JASPER	31,739	0	0.0	0	0.0	0	0.0	0	0.0
J[illegible]SON	236,970	0	0.0	1	0.4	1	0.4	1	0.4
NACOGDOCHES	56,27[illegible]	0	0.0	0	0.0	0	0.0	0	0.0
NEWTON	1[illegible],402	0	0.0	0	0.0	0	0.0	0	0.0
ORANGE	82,061	0	0.0	0	0.0	0	0.0	0	0.0
POLK	37,330	0	0.0	0	0.0	0	0.0	0	0.0
SABINE	10,158	0	0.0	0	0.0	0	0.0	0	0.0
SAN AUGUSTINE	7,983	0	0.0	0	0.0	0	0.0	0	0.0
SAN JACINTO	20,284	0	0.0	0	0.0	0	0.0	0	0.0
SHELBY	21,894	0	0.0	0	0.0	0	0.0	0	0.0
TRINITY	12,629	0	0.0	0	0.0	0	0.0	0	0.0
TYLER	18,520	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	**689,108**	**0**	**0.0**	**1**	**0.1**	**1**	**0.1**	1	**0.1**
STATEWIDE	**[illegible]800**	**0**	**0.0**	**42**	**0.2**	**287**	**1.5**	**89**	**0.5**



Public Health Region 6

REPORTED SELECTED GASTROINTESTINALDISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 6 - 1998

		AMEBIASIS		CAMPYLOBACTERIOSIS		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
AUSTIN	20,659	0	0.0	0	0.0	3	14.5	1	4.8
BRAZORIA	218,281	0	0.0	1	0.5	35	16.0	24	11.0
CHAMBERS	20,802	0	0.0	0	0.0	0	0.0	0	0.0
COLORADO	18,198	0	0.0	0	0.0	2	11.0	2	11.0
FORT BEND	309,119	0	0.0	4	1.3	34	11.0	14	4.5
GALVESTON	231,925	0	0.0	11	4.7	49	21.1	18	7.8
HARRIS	3,215,478	6	0.2	54	1.7	569	17.7	409	12.7
LIBERTY	59,457	0	0.0	3	5.0	16	26.9	11	18.5
MATAGORDA	38,320	0	0.0	0	0.0	2	5.2	0	0.0
MONTGOMERY	229,286	0	0.0	3	1.3	21	9.2	31	13.5
WALKER	51,989	0	0.0	0	0.0	17	32.7	9	17.3
WALLER	26,016	0	0.0	0	0.0	2	7.7	3	11.5
WHARTON	40,867	0	0.0	0	0.0	8	19.6	0	0.0
RE TOTALS	4,480,397	6	0.1	76	1.7	758	16.9	522	11.7
STATEWIDE TOTALS	19,649,800	75	0.4	881	4.5	3,401	17.3	3,988	20.3

REPORTED HEPATITIS RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 6 - 1998

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1998	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
AUSTIN	[illegible]	3	14.5	2	9.7	0	0.0	0	0.0
BRAZORIA	218,281	15	6.9	11	5.0	1	0.5	0	0.0
[illegible]	0	1	4.8	1	4.8	0	0.0	0	0.0
COLORADO	18,198	1	5.5	0	0.0	0	0.0	0	0.0
FORT BEND	9,119	55	17.8	11	3.6	1	0.3	1	0.3
GALVESTON	231,925	16	6.9	45	19.4	1	0.4	0	0.0
[illegible]	3,215,47	405	12.6	115	3.6	24	0.7	7	0.2
LIBERT	59,457	5	8.4	1	1.7	1	1.7	0	0.0
MATAGORDA	38,320	18	47.0	1	2.6	0	0.0	0	0.0
MONTGOMERY	229,286	15	6.5	9	3.9	0	0.0	0	0.0
WALKER	51,989	4	7.7	6	11.5	2	3.8	0	0.0
[illegible]	26,016	1	3.8	1	3.8	1	3.8	0	0.0
WHARTON	40,867	7	17.1	2	4.9	1	2.4	0	0.0
REGIONAL TOTALS	4,480,397	546	12.2	205	4.6	32	0.7	8	0.2
STATEWIDE TOTALS	19,649,800	3,538	18.0	1,960	10.0	462	2.41	16	0.1

REPORTED OTHER SELECTED DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 6 - 1998

		ASEPTIC MENINGITIS		CHICKENPOX		ENCEPHALITIS		TUBERCULOSIS*	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE*	RATE
AUSTIN	20,659	0	0.0	0	0.0	0	0.0	0	0.0
BRAZORIA	218,281	13	6.0	122	55.9	0	0.0	11	5.0
CHAMBERS	20,802	0	0.0	1	4.8	0	0.0	1	4.8
COLORADO	18,198	0	0.0	3	16.5	0	0.0	0	0.0
FORT BEND	309,119	11	3.6	138	44.6	1	0.3	6	1.9
GALVESTON	231,925	63	27.2	462	199.2	1	0.4	34	14.7
HARRIS	3,215,478	162	5.0	4193	130.4	9	0.3	463	14.4
LIBERTY	59,457	3	5.0	49	82.4	0	0.0	2	3.4
MATAGORDA	38,320	1	2.6	1	2.6	0	0.0	4	10.4
MONTGOMERY	229,286	31	13.5	297	129.5	1	0.4	11	4.8
WALKER	51,989	1	1.9	14	26.9	0	0.0	1	1.9
WALLER	26,016	4	15.4	20	76.9	0	0.0	0	0.0
WHARTON	40,867	2	4.9	7	17.1	1	2.4	2	4.9
REGIONAL TOTALS	4,480,397	291	6.5	5,307	118.4	13	0.3	535	11.9
STATEWIDE TOTALS	19,649,800	1,576	8.0	20,484	104.2	38	0.2	1,820	9.3

*Regional totals do not include the Texas Department of Criminal Justice (TDCJ) as they have in previous years. TDCJ totals are included in a separate table following the Region 11 tables.

REPORTED SEXUALLY TRANSMITTED DISEASE RATES
(CASES PER 100,000 POPULATION)

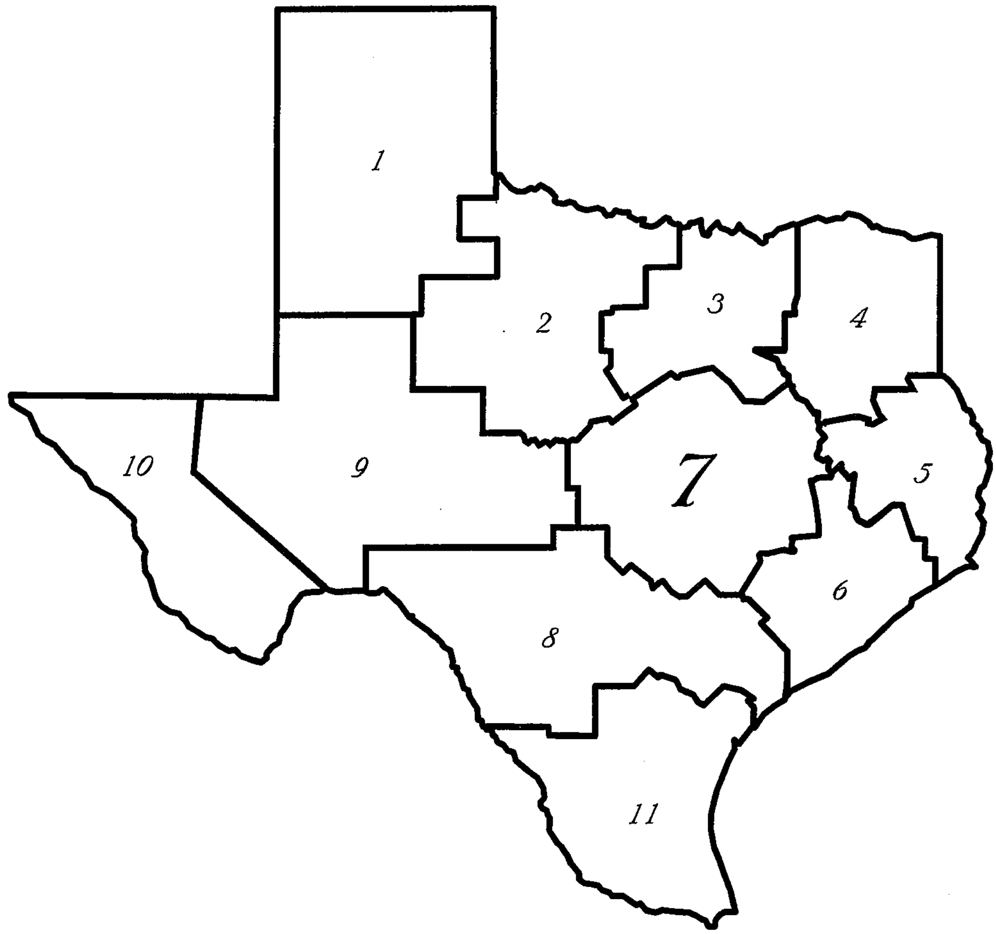
PUBLIC HEALTH REGION 6 - 1998

		AIDS		CHLAMYDIA		GONORRHEA		P & S SYPHILIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
AUSTIN	20,659	2	9.7	51	246.9	27	130.7	0	0.0
BRAZORIA	218,281	28	12.8	286	131.0	116	53.1	0	0.0
CHAMBERS	20,802	2	9.6	7	33.7	6	28.8	0	0.0
COLORADO	18,198	0	0.0	35	192.3	18	98.9	1	5.5
FORT BEND	309,119	46	14.9	432	139.8	214	69.2	4	1.3
GALVESTON	231,925	49	21.1	683	294.5	659	284.1	5	2.2
HARRIS	3,215,478	1,605	49.9	11,575	360.0	7,237	225.1	96	3.0
LIBERTY	59,457	12	20.2	114	191.7	50	84.1	0	0.0
MATAGORDA	38,320	2	5.2	74	193.1	64	167.0	1	2.6
MONTGOMERY	229,286	33	14.4	184	80.2	72	31.4	1	0.4
WALKER	51,989	5	9.6	136	261.6	63	121.2	0	0.0
WALLER	26,016	4	15.4	139	534.3	61	234.5	3	11.5
WHARTON	40,867	1	2.4	155	379.3	73	178.6	1	2.4
REGIONAL TOTALS	**4,480,397**	**1,789**	**39.9**	**13,871**	**309.6**	**8,660**	**193.3**	**112**	**2.5**
STATEWIDE TOTALS	**19,649,800**	**4,201**	**21.4**	**60,626**	**308.5**	**32,934**	**167.6**	**430**	**2.2**

REPORTED VACCINE-PREVENTABLEDISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 6 - 1998

		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
AUSTIN	20,659	0	0.0	0	0.0	0	0.0	0	0.0
BRAZORIA	218,281	0	0.0	0	0.0	1	0.5	0	0.0
CHAMBERS	20,802	0	0.0	0	0.0	0	0.0	0	0.0
COLORADO	18,198	0	0.0	0	0.0	1	5.5	0	0.0
FORT BEND	309,119	0	0.0	0	0.0	2	0.6	0	0.0
GALVESTON	231,925	0	0.0	0	0.0	2	0.9	1	0.4
HARRIS	3,215,478	0	0.0	3	0.1	25	0.8	22	0.7
LIBERTY	59,457	0	0.0	0	0.0	2	3.4	0	0.0
MATAGORDA	38,320	0	0.0	0	0.0	2	5.2	0	0.0
MONTGOMERY	229,286	0	0.0	0	0.0	0	0.0	1	0.4
WALKER	51,989	0	0.0	0	0.0	0	0.0	0	0.0
WALLER	26,016	0	0.0	0	0.0	0	0.0	0	0.0
WHARTON	40,867	0	0.0	0	0.0	2	4.9	0	0.0
REGIONAL TOTALS	**4,480,397**	**0**	**0.0**	**3**	**0.1**	**37**	**0.8**	**24**	**0.5**
STATEWIDE TOTALS	**19,649,800**	**0**	**0.0**	**42**	**0.2**	**287**	**15**	**89**	**0.5**



Public Health Region 7

REPORTED SELECTED GASTROINTESTINAL DISEASE RATES (CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 7 - 1998

		AMEBIASIS		CAMPYLOBACTERIOSIS		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
BASTROP	51,570	0	0.0	6	11.6	5	11.6	4	7.8
BELL	209,537	0	0.0	19	9.1	77	9.1	48	22.9
BLANCO	7,111	0	0.0	0	0.0	1	0.0	0	0.0
BOSQUE	16,029	0	0.0	0	0.0	3	0.0	3	18.7
BRAZOS	121,418	0	0.0	15	12.4	34	12.4	10	8.2
BURLESON	15,143	0	0.0	0	0.0	5	0.0	0	0.0
BURNET	27,322	0	0.0	2	7.3	4	7.3	5	18.3
CALDWELL	31,480	0	0.0	5	15.9	4	15.9	15	47.6
CORYELL	75,462	0	0.0	0	0.0	6	0.0	0	0.0
FALLS	18,777	0	0.0	1	5.3	1	5.3	2	10.7
FAYETTE	20,332	0	0.0	1	4.9	17	4.9	0	0.0
FREESTONE	17,039	0	0.0	0	0.0	2	0.0	0	0.0
GRIMES	22,291	0	0.0	0	0.0	3	0.0	0	0.0
HAMILTON	7,378	0	0.0	1	13.6	5	13.6	1	13.6
HAYS	83,924	1	1.2	9	10.7	27	10.7	33	39.3
HILL	28,681	0	0.0	0	0.0	4	0.0	4	13.9
LAMPASAS	14,421	0	0.0	0	0.0	1	0.0	2	13.9
LEE	14,530	0	0.0	1	6.9	1	6.9	0	0.0
LEON	15,246	0	0.0	0	0.0	0	0.0	0	0.0
LIMESTONE	21,601	0	0.0	0	0.0	0	0.0	1	4.6
LLANO	12,360	0	0.0	0	0.0	0	1.0	0	0.0
MADISON	11,780	0	0.0	0	0.0	1	0.0	0	0.0
MCLENNAN	192,331	0	0.0	6	3.1	24	3.1	23	12.0
MILAM	23,246	0	0.0	0	0.0	3	0.0	0	0.0
MILLS	4,453	0	0.0	0	0.0	0	0.0	0	0.0
ROBERTSON	16,839	0	0.0	1	5.9	1	5.9	1	5.9
SAN SABA	5,470	0	0.0	0	0.0	1	18.3	0	0.0
TRAVIS	640,223	17	2.7	114	17.8	243	38.0	371	57.9
WASHINGTON	28,806	0	0.0	0	0.0	3	10.4	0	0.0
WILLIAMSON	205,391	1	0.5	13	6.3	42	20.4	38	18.5
REGIONAL TOTALS	1	**19**	**1.0**	**194**	**9.9**	**518**	**26.4**	**561**	**28.6**
STATEWIDE TOTALS	**19,649**	75	**0.4**	**881**	**4.5**	**3,401**	**17.3**	**3,988**	**20.3**

REPORTED HEPATITIS RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 7 - 1998

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
BASTROP	51,570	15	29.1	3	5.8	0	0.0	0	0.0
BELL	209,537	4	1.9	5	2.4	0	0.0	0	0.0
BLANCO	7,111	2	28.1	0	0.0	0	0.0	0	0.0
BOSQUE	16,029	1	6.2	0	0.0	0	0.0	0	0.0
BRAZOS	121,418	5	4.1	7	5.8	1	0.8	0	0.0
BURLESON	15,143	0	0.0	1	6.6	0	0.0	0	0.0
BURNET	27,322	4	14.6	1	3.7	2	7.3	0	0.0
CALDWELL	31,480	0	0.0	2	6.4	0	0.0	0	0.0
CORYELL	75,462	0	0.0	0	0.0	0	0.0	0	0.0
FALLS	18,777	0	0.0	1	5.3	0	0.0	0	0.0
FAYETTE	20,332	4	19.7	2	9.8	0	0.0	0	0.0
FREESTONE	17,039	0	0.0	1	5.9	0	0.0	0	0.0
GRIMES	22,291	2	9.0	0	0.0	1	4.5	0	0.0
HAMILTON	7,378	0	0.0	0	0.0	0	0.0	0	0.0
HAYS	83,924	14	16.7	2	2.4	1	1.2	0	0.0
HILL	28,681	3	10.5	2	7.0	0	0.0	0	0.0
LAMPASAS	14,421	0	0.0	1	6.9	0	0.0	0	0.0
LEE	14,530	1	6.9	0	0.0	0	0.0	0	0.0
LEON	15,246	0	0.0	1	6.6	0	0.0	0	0.0
LIMESTONE	21,601	5	23.1	2	9.3	0	0.0	0	0.0
LLANO	12,360	0	0.0	0	0.0	1	8.1	0	0.0
MADISON	11,780	0	0.0	2	17.0	0	0.0	0	0.0
MCLENNAN	192,331	11	5.7	5	2.6	3	1.6	0	0.0
MILAM	23,246	0	0.0	0	0.0	0	0.0	0	0.0
MILLS	4,453	0	0.0	0	0.0	0	0.0	0	0.0
ROBERTSON	16,839	0	0.0	0	0.0	0	0.0	0	0.0
SAN SABA	5,470	0	0.0	0	0.0	0	0.0	0	0.0
TRAVIS	640,223	177	27.6	40	6.2	8	1.2	0	0.0
WASHINGTON	28,806	1	3.5	0	0.0	0	0.0	0	0.0
WILLIAMSON	205,391	30	14.6	2	1.0	2	1.0	0	0.0
REGIONAL TOTALS	I	**279**	**14.2**	**80**	**4.1**	**19**	**1.0**	**0**	**0.0**
TATEWIDE TALS	**00**	**3,538**	**18.0**	**1,960**	**10.0**	**462**	**2.4**	**16**	**0.1**

REPORTED OTHER SELECTED DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 7 - 1998

		ASEPTIC MENINGITIS		CHICKENPOX		ENCEPHALITIS		TUBERCULOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
BASTROP	51,570	8	15.5	204	395.6	0	0.0	7	13.6
BELL	209,537	43	20.5	334	159.4	0	0.0	10	4.8
BLANCO	7,111	1	14.1	3	42.2	0	0.0	0	0.0
BOSQUE	16,029	0	0.0	11	68.6	0	0.0	0	0.0
BRAZOS	121,418	4	3.3	201	165.5	0	0.0	8	6.6
BURLESON	15,143	0	0.0	118	779.2	0	0.0	0	0.0
BURNET	27,322	0	0.0	28	102.5	0	0.0	2	7.3
CALDWELL	31,480	3	9.5	54	171.5	0	0.0	7	22.2
CORYELL	75,462	6	8.0	168	222.6	0	0.0	0	0.0
FALLS	18,777	0	0.0	8	42.6	0	0.0	2	10.7
FAYETTE	20,332	0	0.0	24	118.0	0	0.0	2	9.8
FREESTONE	17,039	0	0.0	0	0.0	0	0.0	2	11.7
GRIMES	22,291	0	0.0	0	0.0	0	0.0	4	17.9
HAMILTON	7,378	0	0.0	0	0.0	0	0.0	0	0.0
HAYS	83,924	7	8.3	197	234.7	0	0.0	4	4.8
HILL	28,681	1	3.5	6	20.9	0	0.0	0	0.0
LAMPASAS	14,421	0	0.0	5	34.7	0	0.0	1	6.9
LEE	14,530	0	0.0	33	227.1	0	0.0	1	6.9
LEON	15,246	0	0.0	9	59.0	0	0.0	2	13.1
LIMESTONE	21,601	0	0.0	0	0.0	0	0.0	7	32.4
LLANO	12,360	3	24.3	2	16.2	0	0.0	0	0.0
MADISON	11,780	1	8.5	16	135.8	0	0.0	1	8.5
MCLENNAN	192,331	0	0.0	279	145.1	0	0.0	5	2.6
MILAM	23,246	0	0.0	18	77.4	0	0.0	1	4.3
MILLS	4,453	0	0.0	1	22.5	0	0.0	0	0.0
ROBERTSON	16,839	0	0.0	76	451.3	0	0.0	1	5.9
SAN SABA	5,470	0	0.0	3	54.8	0	0.0	1	18.3
TRAVIS	640,223	119	18.6	2,070	323.3	1	0.2	69	10.8
WASHINGTON	28,806	0	0.0	4	13.9	0	0.0	4	13.9
WILLIAMSON	205,391	12	5.8	325	158.2	0	0.0	5	2.4
REGIONAL TOTALS	1,960,191	208	10.6	4,197	214.1	1	0.1	14	7.4
STATEWIDE 1ALS	19,6	1,576	8.0	20,484	104.2	38	0.2	1,820	9.3

REPORTED SEXUALLY TRANSMITTED DISEASE RATES
(CASES PER 100,000 POPULATION)

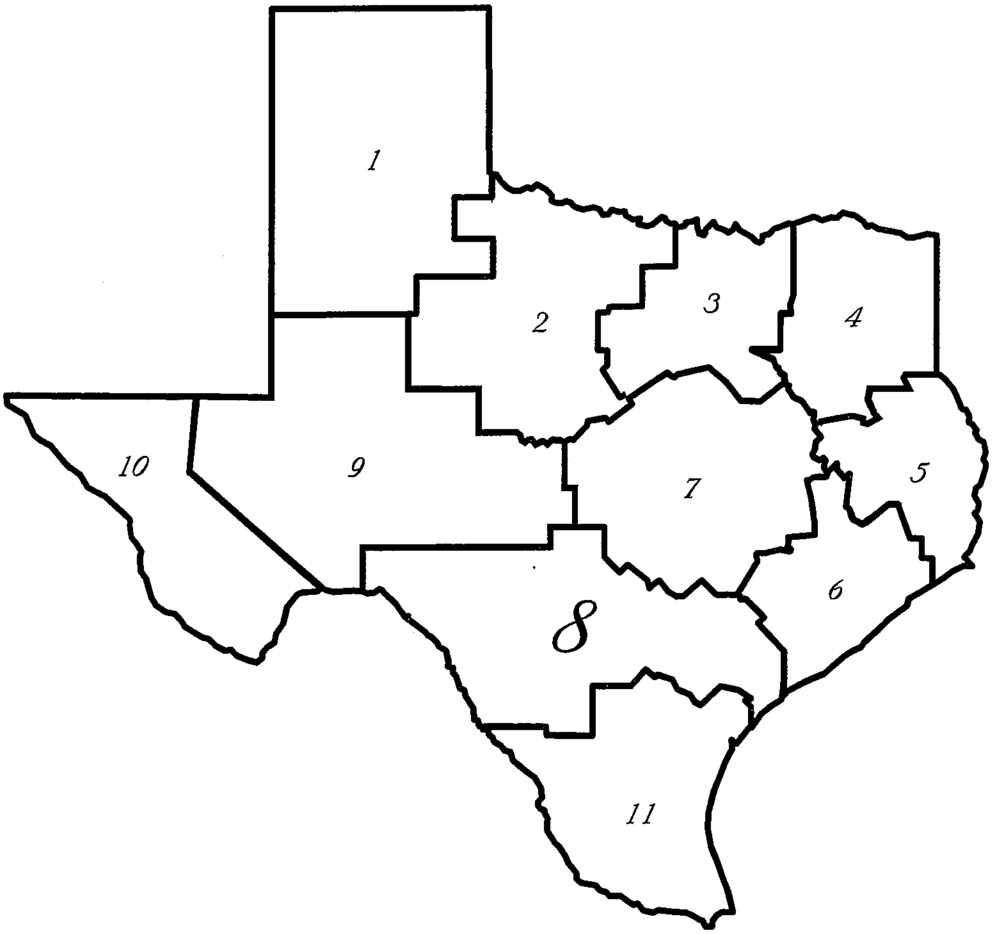
PUBLIC HEALTH REGION 7 - 1998

		AIDS		CHLAMYDIA		GONORRHEA		P & S SYPHILIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
BASTROP	51,570	5	9.7	76	147.4	24	46.5	0	0.0
BELL	209,537	19	9.1	1,313	626.6	527	251.5	11	5.2
BLANCO	7,111	0	0.0	4	56.3	1	14.1	0	0.0
BOSQUE	16,029	1	6.2	20	124.8	15	93.6	0	0.0
BRAZOS	121,418	8	6.6	331	272.6	208	171.3	3	2.5
BURLESON	15,143	1	6.6	26	171.7	24	158.5	0	0.0
BURNET	27,322	2	7.3	52	190.3	4	14.6	0	0.0
CALDWELL	31,480	1	3.2	53	168.4	15	47.6	2	6.4
CORYELL	75,462	4	5.3	68	90.1	31	41.1	0	0.0
FALLS	18,777	1	5.3	61	324.9	39	207.7	0	0.0
FAYETTE	20,332	0	0.0	24	118.0	23	113.1	0	0.0
FREESTONE	17,039	1	5.9	14	82.2	9	52.8	1	5.9
GRIMES	22,291	1	4.5	29	130.1	25	112.2	3	13.5
HAMILTON	7,378	2	27.1	3	40.7	0	0.0	0	0.0
HAYS	83,924	12	14.3	316	376.5	96	114.4	0	0.0
HILL	28,681	3	10.5	38	132.5	22	76.7	1	3.5
LAMPASAS	14,421	0	0.0	33	228.8	2	13.9	0	0.0
LEE	14,530	1	6.9	18	123.9	12	82.6	0	0.0
LEON	15,246	1	6.6	10	65.6	8	52.5	0	0.0
LIMESTONE	21,601	4	18.5	55	254.6	27	125.0	0	0.0
LLANO	12,360	1	8.1	17	137.5	0	0.0	0	0.0
MADISON	11,780	1	8.5	28	237.7	21	178.3	0	0.0
MCLENNAN	192,331	32	16.6	1,275	662.9	710	369.2	4	2.1
MILAM	23,246	0	0.0	81	348.4	32	137.7	2	8.6
MILLS	4,453	0	0.0	2	44.9	0	0.0	0	0.0
ROBERTSON	16,839	1	5.9	47	279.1	18	106.9	0	0.0
SAN SABA	5,470	0	0.0	8	146.3	1	18.3	0	0.0
TRAVIS	640,223	265	41.4	3,017	471.2	1,797	280.7	15	2.3
WASHINGTON	28,806	0	0.0	42	145.8	29	100.7	0	0.0
WILLIAMSON	205,391	14	6.8	223	108.6	116	56.5	0	0.0
REGIONAL TOTALS	1,960,191	381	19.4	7,284	371.6	3,836	195.7	42	2.1
STATEWIDE TOTALS	19,649,800	4,201	21.4	60,626	308.5	32,934	167.6	430	2.2

REPORTED VACCINE-PREVENTABLE DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 7 - 1998

		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
BASTROP	51,570	0	0.0	0	0.0	4	7.8	0	0.0
BELL	209,537	0	0.0	1	0.5	5	2.4	1	0.5
BLANCO	7,111	0	0.0	0	0.0	0	0.0	0	0.0
BOSQUE	16,029	0	0.0	0	0.0	0	0.0	0	0.0
BRAZOS	121,418	0	0.0	0	0.0	4	3.3	0	0.0
BURLESON	15,143	0	0.0	0	0.0	0	0.0	0	0.0
BURNET	27,322	0	0.0	0	0.0	0	0.0	0	0.0
CALDWELL	31,480	0	0.0	0	0.0	0	0.0	0	0.0
CORYELL	75,462	0	0.0	0	0.0	0	0.0	0	0.0
FALLS	18,777	0	0.0	0	0.0	0	0.0	0	0.0
FAYETTE	20,332	0	0.0	0	0.0	0	0.0	0	0.0
FREESTONE	17,039	0	0.0	0	0.0	0	0.0	0	0.0
GRIMES	22,291	0	0.0	0	0.0	0	0.0	0	0.0
HAMILTON	7,378	0	0.0	0	0.0	0	0.0	0	0.0
HAYS	83,924	0	0.0	0	0.0	0	0.0	0	0.0
HILL	28,681	0	0.0	0	0.0	0	0.0	0	0.0
LAMPASAS	14,421	0	0.0	0	0.0	0	0.0	0	0.0
LEE	14,530	0	0.0	0	0.0	0	0.0	0	0.0
LEON	15,246	0	0.0	0	0.0	0	0.0	0	0.0
LIMESTONE	21,601	0	0.0	0	0.0	0	0.0	0	0.0
LLANO	12,360	0	0.0	0	0.0	0	0.0	0	0.0
MADISON	11,780	0	0.0	0	0.0	1	8.5	0	0.0
MCLENNAN	192,331	0	0.0	0	0.0	1	0.5	0	0.0
MILAM	23,246	0	0.0	0	0.0	0	0.0	0	0.0
MILLS	4,453	0	0.0	0	0.0	0	0.0	0	0.0
ROBERTSON	16,839	0	0.0	0	0.0	0	0.0	0	0.0
SAN SABA	5,470	0	0.0	0	0.0	0	0.0	0	0.0
TRAVIS	640,223	0	0.0	4	0.6	19	3.0	8	1.2
WASHINGTON	28,806	0	0.0	0	0.0	0	0.0	0	0.0
WILLIAMSON	205,391	0	0.0	0	0.0	6	2.9	0	0.0
REGIONAL TOTALS	**1,960,191**	**0**	**0.0**	**5**	**0.3**	**40**	**2.0**	**9**	**0.5**
STATEWIDE TOTALS	**19,649,800**	**0**	**0.0**	**42**	**0.2**	**287**	**1.5**	**89**	**0.5**



Public Health Region 8

REPORTED SELECTED GASTROINTESTINAL DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 8 - 1998

		AMEBIASIS		CAMPYLOBACTERIOSIS		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ATASCOSA	36,181	0	0.0	0	0.0	1	0.0	0	0.0
BANDERA	13,542	0	0.0	1	7.4	3	7.4	2	14.8
BEXAR	1,342,480	1	0.1	116	8.6	211	8.6	286	21.3
CALHOUN	20,008	0	0.0	0	0.0	8	0.0	3	15.0
COMAL	71,060	0	0.0	2	2.8	15	2.8	14	19.7
DE WITT	20,298	0	0.0	0	0.0	7	0.0	0	0.0
DIMMIT	11,163	0	0.0	0	0.0	2	0.0	1	9.0
EDWARDS	2,476	0	0.0	0	0.0	0	0.0	0	0.0
FRIO	16,272	0	0.0	1	6.1	3	6.1	1	6.1
GILLESPIE	19,514	0	0.0	0	0.0	1	0.0	0	0.0
GOLIAD	6,453	0	0.0	1	15.5	0	15.5	0	0.0
GONZALES	18,101	0	0.0	3	16.6	6	16.6	7	38.7
GUADALUPE	81,951	0	0.0	9	11.0	18	11.0	4	4.9
JACKSON	13,202	0	0.0	1	7.6	1	7.6	0	0.0
KARNES	15,692	0	0.0	0	0.0	2	0.0	1	6.4
KENDALL	18,445	0	0.0	1	5.4	5	5.4	1	5.4
KERR	41,390	0	0.0	2	4.8	3	4.8	4	9.7
KINNEY	3,329	0	0.0	0	0.0	1	0.0	0	0.0
LA SALLE	6,346	0	0.0	0	0.0	0	0.0	0	0.0
LAVACA	18,146	0	0.0	0	0.0	5	0.0	9	49.6
MAVERICK	43,366	0	0.0	1	2.3	7	2.3	11	25.4
MEDINA	33,624	0	0.0	3	8.9	3	8.9	7	20.8
REAL	2,525	0	0.0	0	0.0	0	0.0	0	0.0
UVALDE	25,752	2	7.8	0	0.0	4	0.0	0	0.0
VAL VERDE	43,626	0	0.0	5	11.5	19	43.6	20	45.8
VICTORIA	80,074	0	0.0	1	1.2	83	103.7	36	45.0
WILSON	28,909	0	0.0	2	6.9	5	17.3	1	3.5
ZAVALA	13,569	0	0.0	0	0.0	1	7.4	2	14.7
REGIONAL TOTALS	2,047,494	3	0.1	149	7.3	414	20.2	410	20.0
STATEWIDE TOTALS	19,649,800	75	0.4	881	4.5	3,401	17.3	3,988	20.3

REPORTED HEPATITIS RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 8 - 1998

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
Y	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ɔOSA	36,181	1	2.8	1	2.8	0	0.0	0	0.0
BANDERA	I ,	2	14.8	0	0.0	0	0.0	0	0.0
BEXAR	1,342,180	301	22.4	74	5.5	43	3.2	0	0.0
C ,LHOUN	20,008	0	0.0	1	5.0	0	0.0	0	0.0
COMAL	71,060	13	18.3	4	5.6	4	5.6	0	0.0
DE WITT	20,298	0	0.0	0	0.0	0	0.0	0	0.0
DIMMIT	11,163	2	17.9	1	9.0	0	0.0	0	0.0
EDWARDS	2, 76	0	0.0	0	0.0	0	0.0	0	0.0
FRIO	16,272	4	24.6	0	0.0	0	0.0	0	0.0
GILLESPIE	9	2	10.2	2	10.2	0	0.0	0	0.0
GOLIAD	6,453	0	0.0	0	0.0	0	0.0	0	0.0
GONZALES	18,101	13	71.8	0	0.0	0	0.0	0	0.0
AD	81,951	16	19.5	1	1.2	2	2.4	0	0.0
OI	13,202	0	0.0	0	0.0	0	0.0	0	0.0
KARNES	15,692	0	0.0	1	6.4	0	0.0	0	0.0
KENDALL	18,445	4	21.7	1	5.4	1	5.4	0	0.0
KERR	41,390	0	0.0	0	0.0	4	9.7	0	0.0
KINNEY	3,329	0	0.0	0	0.0	0	0.0	0	0.0
LA SALLE	6,346	0	0.0	0	0.0	0	0.0	0	0.0
LAVACA	18,146	59	325.1	1	5.5	0	0.0	0	0.0
MAVERICK	43,366	2	4.6	0	0.0	0	0.0	0	0.0
MEDINA	33,624	0	0.0	0	0.0	1	3.0	0	0.0
REAL	2,525	0	0.0	0	0.0	0	0.0	0	0.0
U	25,752	1	3.9	1	3.9	0	0.0	0	0.0
VAL VERDE	43,626	5	11.5	2	4.6	3	6.9	0	0.0
VICTORIA	80,074	12	15.0	6	7.5	1	1.2	0	0.0
WIL	28,	0	0.0	0	0.0	1	3.5	0	0.0
ZAVALA	13,569	11	81.1	2	14.7	1	7.4	0	0.0
REGIONAL TOTALS	**2,047,494**	**448**	**21.9**	**98**	**4.8**	**61**	**3.0**	**0**	**0.0**
STATEWIDE TOTALS	**19,649,800**	**3,538**	**18.0**	**1,960**	**10.0**	**462**	**2.4**	**16**	**0.1**

REPORTED OTHER SELECTED DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 8 - 1998

		ASEPTIC MENINGITIS		CHICKENPOX		ENCEPHALITIS		TUBERCULOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ATASCOSA	36,181	3	8.3	6	16.6	0	0.0	3	8.3
BANDERA	13,542	2	14.8	2	14.8	0	0.0	0	0.0
BEXAR	1,342,480	168	12.5	114	8.5	1	0.1	92	6.9
CALHOUN	20,008	0	0.0	0	0.0	0	0.0	1	5.0
COMAL	71,060	9	12.7	256	360.3	0	0.0	0	0.0
DE WITT	20,298	0	0.0	20	98.5	0	0.0	0	0.0
DIMMIT	11,163	0	0.0	58	519.6	0	0.0	0	0.0
EDWARDS	2,476	0	0.0	0	0.0	0	0.0	0	0.0
FRIO	16,272	0	0.0	3	18.4	0	0.0	2	12.3
GILLESPIE	19,514	0	0.0	27	138.4	0	0.0	0	0.0
GOLIAD	6,453	0	0.0	14	217.0	0	0.0	2	31.0
GONZALES	18,101	0	0.0	4	22.1	0	0.0	0	0.0
GUADALUPE	81,951	4	4.9	58	70.8	0	0.0	5	6.1
JACKSON	13,202	0	0.0	0	0.0	0	0.0	1	7.6
KARNES	15,692	0	0.0	0	0.0	0	0.0	0	0.0
KENDALL	18,445	2	10.8	7	38.0	1	5.4	2	10.8
KERR	41,390	0	0.0	103	248.9	0	0.0	1	2.4
KINNEY	3,329	0	0.0	0	0.0	0	0.0	0	0.0
LA SALLE	6,346	0	0.0	0	0.0	0	0.0	2	31.5
LAVACA	18,146	0	0.0	1	5.5	0	0.0	1	5.5
MAVERICK	43,366	1	2.3	15	34.6	0	0.0	11	25.4
MEDINA	33,624	3	8.9	122	362.8	0	0.0	6	17.8
REAL	2,525	0	0.0	0	0.0	0	0.0	0	0.0
UVALDE	25,752	1	3.9	10	38.8	0	0.0	1	3.9
VAL VERDE	43,626	0	0.0	83	190.3	0	0.0	5	11.5
VICTORIA	80,074	0	0.0	26	32.5	0	0.0	6	7.5
WILSON	28,909	3	10.4	8	27.7	0	0.0	1	3.5
ZAVALA	13,569	0	0.0	13	95.8	0	0.0	2	14.7
REGIONAL TOTALS	**2,047,494**	**196**	**9.61**	**950**	**46.4)**	**2**	**0.1**	**144**	**7.0**
STATEWIDE TOTALS	**19,649,800**	**1,576**	**8.0**	**20,484**	**104.2**	**38**	**0.2**	**1,820**	**9.3**

REPORTED SEXUALLY TRANSMITTED DISEASE RATES
(CASES PER 100,000 POPULATION)

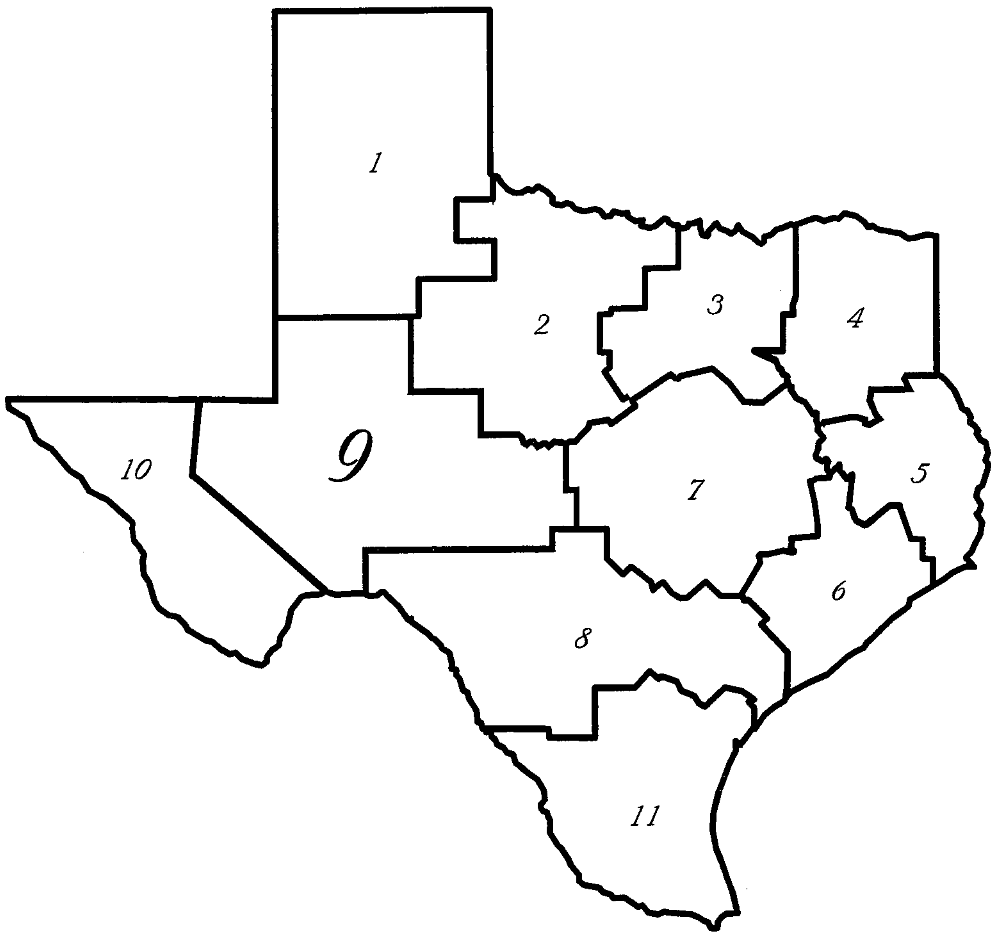
PUBLIC HEALTH REGION 8 - 1998

		AIDS		CHLAMYDIA		GONORRHEA		P & S SYPHILIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ATASCOSA	36,181	1	2.8	68	187.9	10	27.6	0	0.0
BANDERA	13,542	2	14.8	8	59.1	0	0.0	0	0.0
BEXAR	1,342,480	228	17.0	5,939	442.4	1,873	139.5	26	1.9
CALHOUN	20,008	0	0.0	21	105.0	11	55.0	0	0.0
COMAL	71,060	8	11.3	75	105.5	15	21.1	1	1.4
DE WITT	20,298	0	0.0	45	221.7	18	88.7	0	0.0
DIMMIT	11,163	1	9.0	23	206.0	3	26.9	0	0.0
EDWARDS	2,476	0	0.0	1	40.4	0	0.0	0	0.0
FRIO	16,272	1	6.1	38	233.5	5	30.7	0	0.0
GILLESPIE	19,514	0	0.0	18	92.2	4	20.5	0	0.0
GOLIAD	6,453	0	0.0	5	77.5	1	15.5	0	0.0
GONZALES	18,101	1	5.5	37	204.4	11	60.8	2	11.0
GUADALUPE	81,951	2	2.4	94	114.7	30	36.6	0	0.0
JACKSON	13,202	1	7.6	12	90.9	11	83.3	0	0.0
KARNES	15,692	0	0.0	23	146.6	2	12.7	0	0.0
KENDALL	18,445	0	0.0	14	75.9	2	10.8	2	10.8
KERR	41,390	5	12.1	64	154.6	15	36.2	0	0.0
KINNEY	3,329	0	0.0	3	90.1	1	30.0	0	0.0
LA SALLE	6,346	0	0.0	6	94.5	2	31.5	0	0.0
LAVACA	18,146	0	0.0	41	225.9	20	110.2	0	0.0
MAVERICK	43,366	4	9.2	49	113.0	2	4.6	0	0.0
MEDINA	33,624	0	0.0	44	130.9	9	26.8	0	0.0
REAL	2,525	0	0.0	3	118.8	0	0.0	0	0.0
UVALDE	25,752	0	0.0	70	271.8	13	50.5	0	0.0
VAL VERDE	43,626	4	9.2	115	263.6	22	50.4	0	0.0
VICTORIA	80,074	9	11.2	409	510.8	204	254.8	2	2.5
WILSON	28,909	3	10.4	19	65.7	3	10.4	0	0.0
ZAVALA	13,569	1	7.4	20	147.4	0	0.0	0	0.0
REGIONAL TOTALS	**2,047,494**	271	**13.2**	**7,264**	**354.8**	**2,287**	**111.7**	**33**	**1.6**
STATEWIDE TOTALS	**19,649,800**	**4,201**	**21.4**	**60,626**	**308.5**	**32,932**	**167.6**	**130**	**2.2**

REPORTED VACCINE-PREVENTABLEDISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 8 - 1998

		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ATASCOSA	36,181	0	0.0	0	0.0	0	0.0	0	0.0
BANDERA	13,542	0	0.0	0	0.0	0	0.0	0	0.0
BEXAR	1,342,480	0	0.0	2	0.1	21	1.6	0	0.0
CALHOUN	20,008	0	0.0	0	0.0	0	0.0	0	0.0
COMAL	71,060	0	0.0	0	0.0	0	0.0	0	0.0
DE WITT	20,298	0	0.0	0	0.0	0	0.0	0	0.0
DIMMIT	11,163	0	0.0	0	0.0	0	0.0	0	0.0
EDWARDS	2,476	0	0.0	0	0.0	0	0.0	0	0.0
FRIO	16,272	0	0.0	0	0.0	0	0.0	0	0.0
GILLESPIE	19,514	0	0.0	0	0.0	0	0.0	0	0.0
GOLIAD	6,453	0	0.0	0	0.0	0	0.0	0	0.0
GONZALES	18,101	0	0.0	0	0.0	0	0.0	0	0.0
GUADALUPE	81,951	0	0.0	0	0.0	1	1.2	0	0.0
JACKSON	13,202	0	0.0	0	0.0	1	7.6	0	0.0
KARNES	15,692	0	0.0	0	0.0	0	0.0	0	0.0
KENDALL	18,445	0	0.0	0	0.0	0	0.0	0	0.0
KERR	41,390	0	0.0	0	0.0	0	0.0	0	0.0
KINNEY	3,329	0	0.0	0	0.0	0	0.0	0	0.0
LA SALLE	6,346	0	0.0	0	0.0	1	15.8	0	0.0
LAVACA	18,146	0	0.0	0	0.0	0	0.0	0	0.0
MAVERICK	43,366	0	0.0	2	4.6	0	0.0	0	0.0
MEDINA	33,624	0	0.0	0	0.0	0	0.0	0	0.0
REAL	2,525	0	0.0	0	0.0	0	0.0	0	0.0
UVALDE	25,752	0	0.0	0	0.0	2	7.8	0	0.0
VAL VERDE	43,626	0	0.0	1	2.3	0	0.0	0	0.0
VICTORIA	80,074	0	0.0	0	0.0	6	7.5	0	0.0
WILSON	28,909	0	0.0	0	0.0	0	0.0	0	0.0
ZAVALA	13,569	0	0.0	1	7.4	0	0.0	0	0.0
REGIONAL TOTALS	**2,047,**	**0**	**0.0**	**6**	**0.3**	**32**	**1.6**	**0**	**0.0**
STATEWIDE TOTALS	**19,619,800**	**0**	**0.0**	**42**	**0.2**	**287**	**1.5**	**89**	**0.5**



Public Health Region 9

REPORTED SELECTED GASTROINTESTINAL DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 9 - 1998

		AMEBIASIS		CAMPYLOBACTERIOSIS		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ANDREWS	15,393	0	0.0	0	0.0	2	13.0	0	0.0
BORDEN	814	0	0.0	0	0.0	0	0.0	0	0.0
COKE	3,424	0	0.0	0	0.0	0	0.0	0	0.0
CONCHO	3,272	0	0.0	0	0.0	0	0.0	0	0.0
CRANE	5,077	0	0.0	0	0.0	0	0.0	0	0.0
CROCKETT	4,289	0	0.0	0	0.0	2	46.6	2	46.6
DAWSON	15,786	0	0.0	0	0.0	2	12.7	0	0.0
ECTOR	127,184	0	0.0	3	2.4	34	26.7	20	15.7
GAINES	14,909	0	0.0	0	0.0	0	0.0	3	20.1
GLASSCOCK	1,593	0	0.0	0	0.0	0	0.0	0	0.0
HOWARD	31,998	0	0.0	0	0.0	1	3.1	102	318.8
IRION	1,729	0	0.0	0	0.0	2	115.7	0	0.0
KIMBLE	4,115	0	0.0	1	24.3	0	0.0	0	0.0
LOVING	115	0	0.0	0	0.0	0	0.0	0	0.0
MARTIN	5,370	0	0.0	0	0.0	0	0.0	0	0.0
MASON	3,302	0	0.0	0	0.0	0	0.0	0	0.0
MCCULLOCH	8,849	0	0.0	2	22.6	1	11.3	2	22.6
MENARD	2,297	0	0.0	0	0.0	0	0.0	0	0.0
MIDLAND	125,457	0	0.0	0	0.0	18	14.3	12	9.6
PECOS	17,487	0	0.0	0	0.0	3	17.2	2	11.4
REAGAN	5,074	0	0.0	0	0.0	0	0.0	1	19.7
REEVES	16,918	0	0.0	0	0.0	1	5.9	0	0.0
SCHLEICHER	3,214	0	0.0	3	93.3	2	62.2	0	0.0
STERLING	1,519	0	0.0	0	0.0	0	0.0	0	0.0
SUTTON	4,470	0	0.0	0	0.0	0	0.0	0	0.0
TERRELL	1,502	0	0.0	0	0.0	0	0.0	0	0.0
TOM GREEN	108,809	0	0.0	5	4.6	23	21.1	21	19.3
UPTON	4,778	0	0.0	0	0.0	0	0.0	0	0.0
WARD	13,488	0	0.0	0	0.0	1	7.4	0	0.0
WINKLER	8,993	0	0.0	0	0.0	3	33.4	1	11.1
REGIONAL TOTALS	**561,225**	**0**	**0.0**	**14**	**2.5**	**95**	**16.9**	**166**	**29.6**
STATEWIDE TOTALS	**19,649,800**	**75**	**0.4**	**881**	**4.5**	**3,401**	**17.3**	**3,988**	**20.3**

REPORTED HEPATITIS RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 9 - 1998

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ANDREWS	15,393	1	6.5	0	0.0	0	0.0	0	0.0
BORDEN	814	0	0.0	0	0.0	0	0.0	0	0.0
COKE	3,424	0	0.0	0	0.0	1	29.2	0	0.0
CONCHO	3,272	1	30.6	0	0.0	0	0.0	0	0.0
CRANE	5,077	0	0.0	0	0.0	0	0.0	0	0.0
CROCKETT	4,289	0	0.0	0	0.0	0	0.0	0	0.0
DAWSON	15,786	0	0.0	2	12.7	2	12.7	0	0.0
ECTOR	127,184	20	15.7	10	7.9	4	3.1	0	0.0
GAINES	14,909	1	6.7	1	6.7	0	0.0	0	0.0
GLASSCOCK	1,593	0	0.0	0	0.0	0	0.0	0	0.0
HOWARD	31,998	2	6.3	0	0.0	0	0.0	0	0.0
IRION	1,729	0	0.0	0	0.0	0	0.0	0	0.0
KIMBLE	4,115	0	0.0	0	0.0	0	0.0	0	0.0
LOVING	115	0	0.0	0	0.0	0	0.0	0	0.0
MARTIN	5,370	0	0.0	0	0.0	0	0.0	0	0.0
MASON	3,302	0	0.0	0	0.0	0	0.0	0	0.0
MCCULLOCH	8,849	0	0.0	0	0.0	0	0.0	0	0.0
MENARD	2,297	0	0.0	0	0.0	0	0.0	0	0.0
MIDLAND	125,457	13	10.4	12	9.6	7	5.6	0	0.0
PECOS	17,487	4	22.9	5	28.6	2	11.4	0	0.0
REAGAN	5,074	2	39.4	0	0.0	0	0.0	0	0.0
REEVES	16,918	0	0.0	1	5.9	0	0.0	0	0.0
SCHLEICHER	3,214	0	0.0	0	0.0	0	0.0	0	0.0
STERLING	1,519	0	0.0	0	0.0	0	0.0	0	0.0
SUTTON	4,470	0	0.0	0	0.0	0	0.0	0	0.0
TERRELL	1,502	0	0.0	0	0.0	0	0.0	0	0.0
TOM GREEN	108,809	23	21.1	15	13.8	7	6.4	0	0.0
UPTON	4,778	0	0.0	0	0.0	0	0.0	0	0.0
WARD	13,488	0	0.0	1	7.4	0	0.0	0	0.0
WINKLER	8,993	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	561,225	67	11.9	47	8.4	23	4.1	0	0.0
STATEWIDE TOTALS	19,649,800	3,538	18.0	1,960	10.0	462	2.4	16	0.1

REPORTED OTHER SELECTED DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 9 - 1998

		ASEPTIC MENINGITIS		CHICKENPOX		ENCEPHALITIS		TUBERCULOSIS	
COUNTY	**1998 POP.**	**CASE**	**RATE**	**CASE**	**RATE**	**CASE**	**RATE**	**CASE**	**RATE**
ANDREWS	15,393	0	0.0	0	0.0	0	0.0	0	0.0
BORDEN	814	0	0.0	0	0.0	0	0.0	0	0.0
COKE	3,424	0	0.0	0	0.0	0	0.0	0	0.0
CONCHO	3,272	0	0.0	0	0.0	0	0.0	0	0.0
CRANE	5,077	0	0.0	0	0.0	0	0.0	0	0.0
CROCKETT	4,289	1	23.3	0	0.0	0	0.0	0	0.0
DAWSON	15,786	1	6.3	0	0.0	0	0.0	0	0.0
ECTOR	127,184	8	6.3	22	17.3	0	0.0	18	14.2
GAINES	14,909	0	0.0	0	0.0	0	0.0	1	6.7
GLASSCOCK	1,593	0	0.0	0	0.0	0	0.0	0	0.0
HOWARD	31,998	1	3.1	53	165.6	0	0.0	0	0.0
IRION	1,729	1	57.8	0	0.0	0	0.0	0	0.0
KIMBLE	4,115	0	0.0	0	0.0	1	24.3	1	24.3
LOVING	115	0	0.0	0	0.0	0	0.0	0	0.0
MARTIN	5,370	1	18.6	0	0.0	0	0.0	1	18.6
MASON	3,302	0	0.0	0	0.0	0	0.0	0	0.0
MCCULLOCH	8,849	0	0.0	3	33.9	0	0.0	0	0.0
MENARD	2,297	1	43.5	0	0.0	0	0.0	0	0.0
MIDLAND	125,457	23	18.3	257	204.9	1	0.8	6	4.8
PECOS	17,487	0	0.0	0	0.0	0	0.0	3	17.2
REAGAN	5,074	2	39.4	0	0.0	0	0.0	0	0.0
REEVES	16,918	0	0.0	0	0.0	0	0.0	0	0.0
SCHLEICHER	3,214	0	0.0	0	0.0	0	0.0	0	0.0
STERLING	1,519	0	0.0	0	0.0	0	0.0	0	0.0
SUTTON	4,470	2	44.7	0	0.0	0	0.0	0	0.0
TERRELL	1,502	0	0.0	0	0.0	0	0.0	0	0.0
TOM GREEN	108,809	24	22.1	92	84.6	0	0.0	3	2.8
UPTON	4,778	0	0.0	40	837.2	0	0.0	0	0.0
WARD	13,488	0	0.0	1	7.4	0	0.0	1	7.4
WINKLER	8,993	0	0.0	1	11.1	0	0.0	1	11.1
REGIONAL TOTALS	561,225	65	11.6	469	83.6	2	0.4	35	6.2
STATEWIDE TOTALS	19,649,800	1,576	8.0	20,484	104.2	38	0.2	1,820	9.3

REPORTED SEXUALLY TRANSMITTED DISEASE RATES
(CASES PER 100,000 POPULATION)

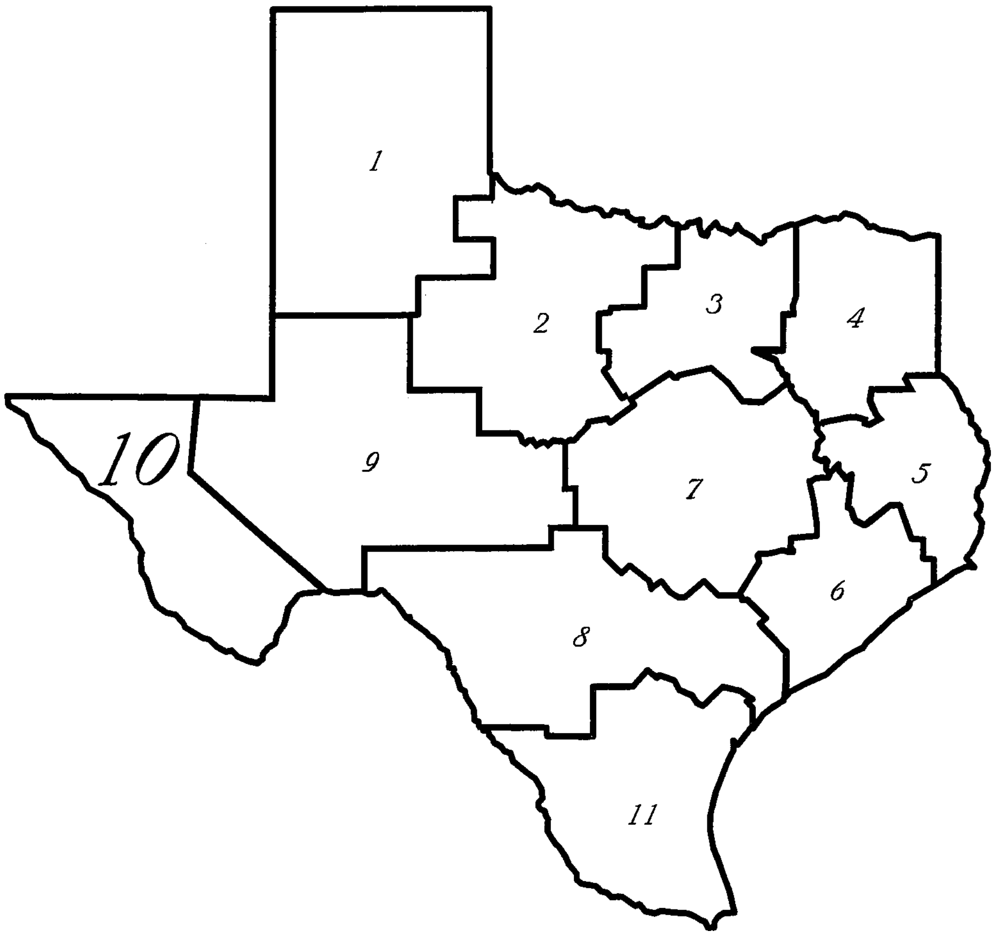
PUBLIC HEALTH REGION 9 - 1998

		AIDS		CHLAMYDIA		GONORRHEA		P & S SYPHILIS	
COUNTY	**1998 POP.**	**CASE**	**RATE**	**CASE**	**RATE**	**CASE**	**RATE**	**CASE**	**RATE**
ANDREWS	15,393	0	0.0	16	103.9	3	19.5	0	0.0
BORDEN	814	0	0.0	0	0.0	0	0.0	0	0.0
COKE	3,424	0	0.0	9	262.9	4	116.8	0	0.0
CONCHO	3,272	0	0.0	1	30.6	0	0.0	0	0.0
CRANE	5,077	0	0.0	3	59.1	1	19.7	0	0.0
CROCKETT	4,289	0	0.0	18	419.7	0	0.0	0	0.0
DAWSON	15,786	0	0.0	53	335.7	15	95.0	0	0.0
ECTOR	127,184	8	6.3	392	308.2	131	103.0	1	0.8
GAINES	14,909	0	0.0	28	187.8	5	33.5	0	0.0
GLASSCOCK	1,593	0	0.0	0	0.0	0	0.0	0	0.0
HOWARD	31,998	1	3.1	62	193.8	19	59.4	0	0.0
IRION	1,729	0	0.0	1	57.8	0	0.0	0	0.0
KIMBLE	4,115	0	0.0	3	72.9	0	0.0	0	0.0
LOVING	115	0	0.0	0	0.0	0	0.0	0	0.0
MARTIN	5,370	0	0.0	3	55.9	0	0.0	0	0.0
MASON	3,302	0	0.0	6	181.7	0	0.0	0	0.0
MCCULLOCH	8,849	1	11.3	19	214.7	4	45.2	0	0.0
MENARD	2,297	0	0.0	1	43.5	0	0.0	0	0.0
MIDLAND	125,457	7	5.6	453	361.1	209	166.6	1	0.8
PECOS	17,487	0	0.0	42	240.2	7	40.0	0	0.0
REAGAN	5,074	0	0.0	3	59.1	1	19.7	0	0.0
REEVES	16,918	2	11.8	43	254.2	6	35.5	0	0.0
SCHLEICHER	3,214	1	31.1	5	155.6	1	31.1	0	0.0
STERLING	1,519	0	0.0	0	0.0	0	0.0	0	0.0
SUTTON	4,470	0	0.0	10	223.7	0	0.0	0	0.0
TERRELL	1,502	0	0.0	0	0.0	0	0.0	0	0.0
TOM GREEN	108,809	5	4.6	268	246.3	56	51.5	1	0.9
UPTON	4,778	0	0.0	8	167.4	2	41.9	0	0.0
WARD	13,488	1	7.4	26	192.8	1	7.4	0	0.0
WINKLER	8,993	1	11.1	26	289.1	2	22.2	0	0.0
REGIONAL TOTALS	**561,225**	**27**	**4.8**	**1,499**	**267.1**	**467**	**83.2**	**3**	**0.5**
STATEWIDE TOTALS	**19,649,800**	**4,201**	**21.4**	**60,626**	**308.5**	**32,934**	**167.6**	**430**	**2.2**

REPORTED VACCINE-PREVENTABLE DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 9 - 1998

		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ANDREWS	15,393	0	0.0	0	0.0	0	0.0	0	0.0
BORDEN	814	0	0.0	0	0.0	0	0.0	0	0.0
COKE	3,424	0	0.0	0	0.0	0	0.0	0	0.0
CONCHO	3,272	0	0.0	0	0.0	0	0.0	0	0.0
CRANE	5,077	0	0.0	0	0.0	0	0.0	0	0.0
CROCKETT	4,289	0	0.0	0	0.0	0	0.0	0	0.0
DAWSON	15,786	0	0.0	0	0.0	0	0.0	0	0.0
ECTOR	127,184	0	0.0	0	0.0	0	0.0	0	0.0
GAINES	14,909	0	0.0	0	0.0	0	0.0	0	0.0
GLASSCOCK	1,593	0	0.0	0	0.0	0	0.0	0	0.0
HOWARD	31,998	0	0.0	0	0.0	0	0.0	0	0.0
IRION	1,729	0	0.0	0	0.0	0	0.0	0	0.0
KIMBLE	4,115	0	0.0	0	0.0	0	0.0	0	0.0
LOVING	115	0	0.0	0	0.0	0	0.0	0	0.0
MARTIN	5,370	0	0.0	0	0.0	0	0.0	0	0.0
MASON	3,302	0	0.0	0	0.0	0	0.0	0	0.0
MCCULLOCH	8,849	0	0.0	0	0.0	0	0.0	0	0.0
MENARD	2,297	0	0.0	0	0.0	1	43.5	0	0.0
MIDLAND	125,457	0	0.0	0	0.0	0	0.0	0	0.0
PECOS	17,487	0	0.0	0	0.0	0	0.0	0	0.0
REAGAN	5,074	0	0.0	0	0.0	0	0.0	0	0.0
REEVES	16,918	0	0.0	0	0.0	0	0.0	0	0.0
SCHLEICHER	3,214	0	0.0	0	0.0	0	0.0	0	0.0
STERLING	1,519	0	0.0	0	0.0	1	65.8	0	0.0
SUTTON	4,470	0	0.0	0	0.0	0	0.0	0	0.0
TERRELL	1,502	0	0.0	0	0.0	0	0.0	0	0.0
TOM GREEN	108,809	0	0.0	0	0.0	0	0.0	0	0.0
UPTON	4,778	0	0.0	0	0.0	0	0.0	0	0.0
WARD	13,488	0	0.0	0	0.0	0	0.0	0	0.0
WINKLER	8,993	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	561,225	0	0.0	0	0.0	2	0.4	0	0.0
STATEWIDE TOTALS	19,[illegible]	0	0.0	42	0.2	287	1.5	89	0.5



Public Health Region 10

REPORTED SELECTED GASTROINTESTINAL DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 10 - 1998

		AMEBIASIS		CAMPYLOBACTERIOSIS		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
BREWSTER	10,744	0	0.0	0	0.0	0	0.0	1	9.3
CULBERSON	4,031	0	0.0	0	0.0	0	0.0	0	0.0
EL PASO	735,294	1	0.1	35	4.8	111	15.1	122	16.6
HUDSPETH	3,308	0	0.0	0	0.0	0	0.0	1	30.2
JEFF DAVIS	2,162	0	0.0	0	0.0	0	0.0	0	0.0
PRESIDIO	8,276	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	763,815	1	0.1	35	4.6	111	14.5	124	16.2
STATEWIDE TOTALS	19,649,800	75	0.4	881	4.5	3,401	17.3	3,988	20.3

REPORTED HEPATITIS RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 10 - 1998

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
BREWSTER	10,744	11	102.4	1	9.3	0	0.0	0	0.0
CULBERSON	4,031	0	0.0	0	0.0	0	0.0	0	0.0
EL PASO	735,294	128	17.4	25	3.4	11	1.5	0	0.0
HUDSPETH	3,308	1	30.2	1	30.2	0	0.0	0	0.0
JEFF DAVIS	2,162	0	0.0	0	0.0	0	0.0	0	0.0
PRESIDIO	8,276	2	24.2	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	763	142	18.6	27	3.5	1	1.4	0	0.0
TATE TAL	19,649,800	3,538	18.0	1,9	10.0	462	2.4	16	0.1

REPORTED OTHER SELECTED DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 10 - 1998

		ASEPTIC MENINGITIS		CHICKENPOX		ENCEPHALITIS		TUBERCULOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
BREWSTER	10,744	2	18.6	41	381.6	0	0.0	0	0.0
CULBERSON	4,031	0	0.0	0	0.0	0	0.0	1	24.8
EL PASO	735,294	34	4.6	265	36.0	0	0.0	81	11.0
HUDSPETH	3,308	0	0.0	0	0.0	0	0.0	0	0.0
JEFF DAVIS	2,162	0	0.0	0	0.0	0	0.0	0	0.0
PRESIDIO	8,276	0	0.0	90	1,087.5	0	0.0	1	12.1
REGIONAL TOTALS	763,815	36	4.7	396	51.8	0	0.0	83	10.9
STATEWIDE TOTALS	19,649,800	1,576	8.0	20,484	104.2	38	0.2	1,820	9.3

REPORTED SEXUALLY TRANSMITTED DISEASE RATES
(CASES PER 100,000 POPULATION)

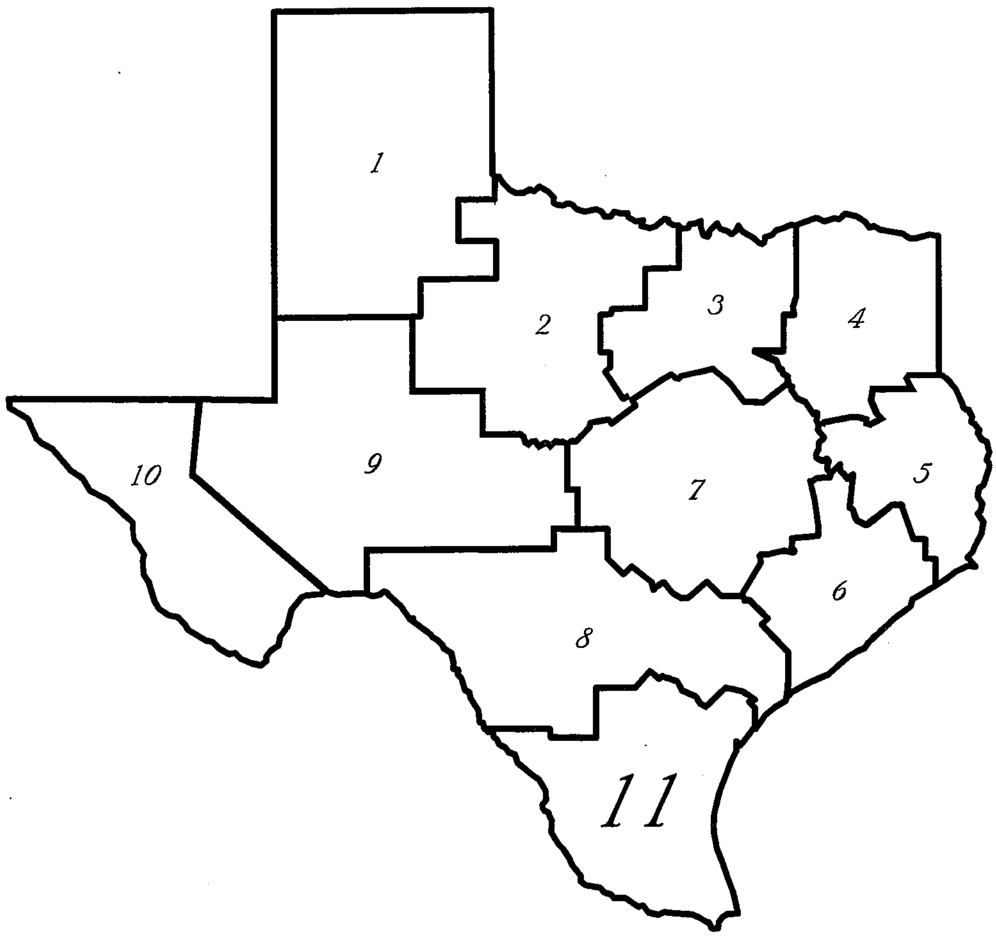
PUBLIC HEALTH REGION 10 - 1998

		AIDS						P & S SYPHILIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
BREWSTER	10,744	0	0.0	25	232.7	0	0.0	0	0.0
CULBERSON	4,031	1	24.8	2	49.6	0	0.0	0	0.0
EL PASO	735,294	126	17.1	1,698	230.9	256	34.8	2	0.3
HUDSPETH	3,308	0	0.0	2	60.5	0	0.0	0	0.0
JEFF DAVIS	2,162	0	0.0	2	92.5	0	0.0	0	0.0
PRESIDIO	8,276	0	0.0	10	120.8	5	60.4	0	0.0
REGIONAL TOTALS	763,815	127	16.6	1,739	227.7	261	34.2	2	0 3
STATEWIDE TOTALS	19,649,800	4,201	21.4	60,626	308.5	32,934	167.6	430	2.2

REPORTED VACCINE-PREVENTABLE DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 10 - 1998

		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
BREWSTER	10,744	0	0.0	0	0.0	0	0.0	0	0.0
CULBERSON	4,031	0	0.0	0	0.0	0	0.0	0	0.0
EL PASO	735,294	0	0.0	3	0.4	6	0.8	8	1.1
HUDSPETH	3,308	0	0.0	0	0.0	0	0.0	0	0.0
JEFF DAVIS	2,162	0	0.0	0	0.0	0	0.0	0	0.0
PRESIDIO	8,276	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	763,815	0	0.0	3	0.4	6	0.8	8	1.0
STATEWIDE TOTALS	19,649,800	0	0.0	42	0.2	287	1.5	89	0.5



Public Health Region 11

REPORTED SELECTED GASTROINTESTINAL DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 11 - 1998

		AMEBIASIS		CAMPYLOBACTERIOSIS		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ARANSAS	19,459	0	0.0	0	0.0	6	30.8	2	10.3
BEE	29,164	0	0.0	0	0.0	1	3.4	1	3.4
BROOKS	8,873	0	0.0	1	11.3	0	0.0	0	0.0
CAMERON	320,037	20	6.2	12	3.7	51	15.9	134	41.9
DUVAL	14,524	0	0.0	1	6.9	1	6.9	0	0.0
HIDALGO	510,203	1	0.2	42	8.2	123	24.1	219	42.9
JIM HOGG	6,153	0	0.0	0	0.0	2	32.5	0	0.0
JIM WELLS	39,597	1	2.5	1	2.5	10	25.3	2	5.1
KENEDY	512	0	0.0	0	0.0	0	0.0	0	0.0
KLEBERG	32,042	0	0.0	0	0.0	18	56.2	4	12.5
LIVE OAK	9,973	0	0.0	0	0.0	0	0.0	0	0.0
MCMULLEN	866	0	0.0	0	0.0	0	0.0	0	0.0
NUECES	313,643	0	0.0	30	9.6	76	24.2	57	18.2
REFUGIO	8,142	0	0.0	0	0.0	3	36.8	0	0.0
SAN PATRICIO	66,973	0	0.0	4	6.0	10	14.9	30	44.8
STARR	58,966	1	1.7	0	0.0	11	18.7	4	6.8
WEBB	176,249	0	0.0	5	2.8	28	15.9	16	9.1
WILLACY	19,658	0	0.0	2	10.2	1	5.1	6	30.5
ZAPATA	12,395	0	0.0	3	24.2	1	8.1	4	32.3
REGIONAL TOTALS	**1,647,429**	**23**	**1.4**	**101**	**6.1**	**342**	**20.8**	**479**	**29.1**
ST[illegible] TOTALS	**19,649,800**	**75**	**0.4**	**881**	**4.5**	**3[illegible]1**	**17.3**	**3,988**	**20.3**

REPORTED HEPATITIS RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 11 - 1998

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ARANSAS	19,459	1	5.1	2	10.3	0	0.0	0	0.0
BEE	29,164	0	0.0	0	0.0	1	3.4	0	0.0
BROOKS	8,873	0	0.0	1	11.3	0	0.0	0	0.0
CAMERON	320,037	217	67.8	25	7.8	13	4.1	1	0.3
DUVAL	14,524	1	6.9	0	0.0	1	6.9	0	0.0
HIDALGO	510,203	365	71.5	22	4.3	10	2.0	0	0.0
JIM HOGG	6,153	1	16.3	0	0.0	0	0.0	0	0.0
JIM WELLS	39,597	1	2.5	3	7.6	0	0.0	0	0.0
KENEDY	512	0	0.0	0	0.0	0	0.0	0	0.0
KLEBERG	32,042	1	3.1	0	0.0	0	0.0	0	0.0
LIVE OAK	9,973	0	0.0	0	0.0	0	0.0	0	0.0
MCMULLEN	866	0	0.0	0	0.0	0	0.0	0	0.0
NUECES	313,643	39	12.4	55	17.5	15	4.8	1	0.3
REFUGIO	8,142	0	0.0	0	0.0	0	0.0	0	0.0
SAN PATRICIO	66,973	27	40.3	15	22.4	5	7.5	0	0.0
STARR	58,966	24	40.7	5	8.5	0	0.0	0	0.0
WEBB	176,249	25	14.2	4	2.3	29	16.5	0	0.0
WILLACY	19,658	6	30.5	0	0.0	2	10.2	0	0.0
ZAPATA	12,395	10	80.7	0	0.0	1	8.1	0	0.0
REGIONAL TOTALS	1,647,429	718	43.6	132	8.0	77	4.7	2	0.1
STATEWIDE TOTALS	19,649,800	3,538	18.0	1,960	10.0	462	2.41	16	0.1

REPORTED OTHER SELECTED DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 11 - 1998

		ASEPTIC MENINGITIS		CHICKENPOX		ENCEPHALITIS		TUBERCULOSIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ARANSAS	19,459	0	0.0	0	0.0	0	0.0	0	0.0
BEE	29,164	1	3.4	31	106.3	0	0.0	0	0.0
BROOKS	8,873	0	0.0	0	0.0	0	0.0	1	11.3
CAMERON	320,037	8	2.5	369	115.3	0	0.0	86	26.9
DUVAL	14,524	0	0.0	5	34.4	0	0.0	1	6.9
HIDALGO	510,203	24	4.7	448	87.8	0	0.0	80	15.7
JIM HOGG	6,153	0	0.0	0	0.0	0	0.0	0	0.0
JIM WELLS	39,597	1	2.5	31	78.3	0	0.0	2	5.1
KENEDY	512	0	0.0	0	0.0	0	0.0	0	0.0
KLEBERG	32,042	0	0.0	2	6.2	0	0.0	3	9.4
LIVE OAK	9,973	0	0.0	0	0.0	0	0.0	0	0.0
MCMULLEN	866	0	0.0	0	0.0	0	0.0	0	0.0
NUECES	313,643	71	22.6	455	145.1	0	0.0	38	12.1
REFUGIO	8,142	0	0.0	0	0.0	0	0.0	0	0.0
SAN PATRICIO	66,973	2	3.0	14	20.9	0	0.0	5	7.5
STARR	58,966	0	0.0	11	18.7	0	0.0	6	10.2
WEBB	176,249	1	0.6	29	16.5	0	0.0	54	30.6
WILLACY	19,658	0	0.0	33	167.9	0	0.0	3	15.3
ZAPATA	12,395	0	0.0	0	0.0	0	0.0	1	8.1
REGIONAL TOTALS	1,647,429	108	6.61	1,428	86.7	0	0.0	280	17.0
STATEWIDE TOTALS	19,649,800	1,576	8.0	20,484	104.2	38	0.2	1,820	9.3

REPORTED SEXUALLY TRANSMITTED DISEASE RATES
(CASES PER 100,000 POPULATION)

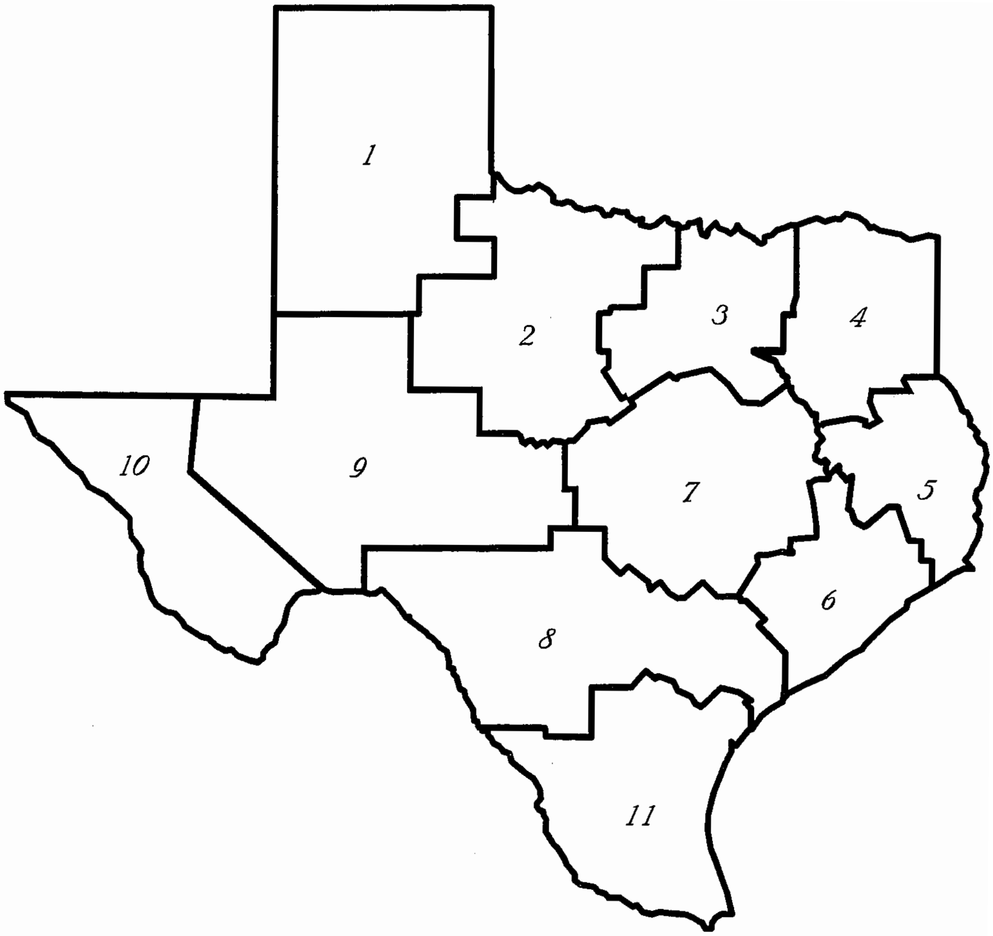
PUBLIC HEALTH REGION 11 - 1998

		AIDS		CHLAMYDIA		GONORRHEA		P & S SYPHILIS	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ARANSAS	19,459	0	0.0	53	272.4	8	41.1	0	0.0
BEE	29,164	1	3.4	58	198.9	7	24.0	0	0.0
BROOKS	8,873	1	11.3	35	394.5	5	56.4	0	0.0
CAMERON	320,037	33	10.3	862	269.3	79	24.7	0	0.0
DUVAL	14,524	0	0.0	35	241.0	2	13.8	0	0.0
HIDALGO	510,203	49	9.6	1,160	227.4	99	19.4	1	0.2
JIM HOGG	6,153	0	0.0	15	243.8	0	0.0	0	0.0
JIM WELLS	39,597	0	0.0	149	376.3	11	27.8	1	2.5
KENEDY	512	0	0.0	0	0.0	1	195.3	0	0.0
KLEBERG	32,042	4	12.5	173	539.9	41	128.0	0	0.0
LIVE OAK	9,973	0	0.0	19	190.5	0	0.0	0	0.0
MCMULLEN	866	0	0.0	0	0.0	0	0.0	0	0.0
NUECES	313,643	44	14.0	1,220	389.0	448	142.8	0	0.0
REFUGIO	8,142	0	0.0	19	233.4	7	86.0	0	0.0
SAN PATRICIO	66,973	6	9.0	122	182.2	29	43.3	0	0.0
STARR	58,966	2	3.4	101	171.3	8	13.6	0	0.0
WEBB	176,249	15	8.5	438	248.5	51	28.9	1	0.6
WILLACY	19,658	1	5.1	58	295.0	5	25.4	0	0.0
ZAPATA	12,395	0	0.0	30	242.0	4	32.3	0	0.0
REGIONAL TOTALS	1,647,429	156	9.5	4,547	276.0	805	48.9	3	0.2
STATEWIDE TOTALS	19,649,800	4,201	21.4	60,626	308.5	32,934	167.6	430	2.2

REPORTED VACCINE-PREVENTABLE DISEASE RATES
(CASES PER 100,000 POPULATION)

PUBLIC HEALTH REGION 11 - 1998

		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
ARANSAS	19,459	0	0.0	0	0.0	0	0.0	0	0.0
BEE	29,164	0	0.0	0	0.0	0	0.0	0	0.0
BROOKS	8,873	0	0.0	0	0.0	1	11.3	0	0.0
CAMERON	320,037	0	0.0	1	0.3	8	2.5	24	7.5
DUVAL	14,524	0	0.0	0	0.0	0	0.0	0	0.0
HIDALGO	510,203	0	0.0	1	0.2	6	1.2	10	2.0
JIM HOGG	6,153	0	0.0	0	0.0	0	0.0	0	0.0
JIM WELLS	39,597	0	0.0	0	0.0	0	0.0	0	0.0
KENEDY	512	0	0.0	0	0.0	0	0.0	0	0.0
KLEBERG	32,042	0	0.0	0	0.0	0	0.0	0	0.0
LIVE OAK	9,973	0	0.0	0	0.0	0	0.0	0	0.0
MCMULLEN	866	0	0.0	0	0.0	0	0.0	0	0.0
NUECES	313,643	0	0.0	0	0.0	5	1.6	3	1.0
REFUGIO	8,142	0	0.0	0	0.0	0	0.0	0	0.0
SAN PATRICIO	66,973	0	0.0	0	0.0	0	0.0	0	0.0
STARR	58,966	0	0.0	1	1.7	1	1.7	0	0.0
WEBB	176,249	0	0.0	0	0.0	1	0.6	0	0.0
WILLACY	19,658	0	0.0	1	5.1	0	0.0	1	5.1
ZAPATA	12,395	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	**1,647,429**	**0**	**0.0**	**4**	**0.2**	**22**	**1.3**	**38**	**2.3**
STATEWIDE TOTALS	**19,649,800**	**0**	**0.0**	**42**	**0.2**	**287**	**1.5**	**89**	**0.5**



Texas Department of Criminal Justice

SELECTED DISEASE RATES
(CASES PER 100,000 POPULATION)

TEXAS DEPARTMENT OF CRIMINAL JUSTICE (TDCJ) - 1998

		AIDS		CHLAMYDIA		GONORRHEA		P & S SYPHILIS	
	1998 POP.	CASE	RATE	CASE	RATE	CASE	RATE	CASE	RATE
TDCJ	146,269	234	160.0	4	2.7	2	1.4	1	0.7

		TUBERCULOSIS	
	1998 POP.	CASE	RATE
TDCJ	146,269	34	23.2

TDCJ population as of 12/31/98. AIDS, Chlamydia, Gonorrhea, P&S Syphilis, and Tuberculosis cases for TDCJ prisoners are included in the regional tables. County and Regional population totals include TDCJ prisondrs. For all other reportable diseases, TDCJ cases are include in County and Regional totals.

Reported Cases of Selected Diseases

TABLE I
REPORTED SELECTED DISEASES
1989 - 1998

DISEASE	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989
AIDS	4,201	4,720	4,932	4,598	5,513	7,555	3,249	3,035	3,182	2,597
AMEBIASIS	75	153	130	118	110	86	108	86	139	159
BOTULISM	5	10	9	0	27	2	1	4	7	4
BRUCELLOSIS	26	19	23	19	29	34	27	36	18	23
CAMPYLOBACTERIOSIS	881	981	897	993	997	849	996	810	739	625
CHICKENPOX	20,484	26,688	20,332	22,568	16,159	14,291	20,554	19,409	26,636	23,722
CHLAMYDIA	60,626	50,675	43,003	44,738	46,046	43,874	40,791	32,560	20,575	-
CHOLERA	0	1	0	2	4	2	5	3	0	0
CREUTZFELDT-JAKOB DISEASE	13		-	-	-	-	-	-	-	-
CRYPTOSPORIDIOSIS	906	43	-	-	-	-	-	-	-	-
DENGUE FEVER	6	10	5	29	1	2	0	2	0	2
EHRLICHIOSIS	2	4	-	-	-	-	-	-	-	-
ENCEPHALITIS PRIMARY	25	44	31	71	54	61	89	121	74	60
ENCEPHALITIS PI CPOX*	1	-	-	-	-	-	-	-	-	-
ENCEPHALITIS PI OTHER*	8	-	-	-	-	-	-	-	-	-
ENCEPHALITIS ST LOUIS*	4	-	-	-	-	-	-	-	-	-
ESCHERICHIA COLI O157:H7	85	42	53	38	72	-	-	-	-	-
GONORRHEA	32,934	26,611	23,124	30,892	29,757	30,122	36,172	44,181	43,231	45,786
HAEMOPHILUS INFLUENZAE INF†	3	5	6	40	20	51	42	152	625	797
HANSEN'S DISEASE	28	24	29	36	31	31	52	38	37	25
HANTAVIRUS INFECTIONS	0	4	3	2	1	-	-	-	-	-
HEMOLYTIC UREMIC SYNDROME	6	7	7	8	11	-	-	-	-	-
HEPATITIS A	3,538	4,511	3,460	3,001	2,877	2,798	1,828	2,663	2,722	3,211
HEPATITIS B	1,960	1,245	1,258	1,211	1,422	1,354	1,528	1,958	1,789	1,853
HEPATITIS C‡	462	376	205	340	305	384	255	-	-	-
HEPATITIS D‡	0	0	3	2	4	1	5	-	-	-
HEPATITIS NANB	1	3	3	7	9	28	26	144	130	236
HEPATITIS UNSPECIFIED	16	31	40	67	86	157	191	260	287	530
LEGIONELLOSIS	17	32	32	13	15	22	24	23	25	50
LISTERIOSIS	29	37	47	41	64	28	26	52	32	40
LYME DISEASE	32	60	97	77	56	48	113	57	44	82
MALARIA	78	111	141	89	93	48	45	75	80	79
MEASLES	0	7	49	14	17	10	1,097	294	4,409	3,313
MENINGITIS, ASEPTIC	1,576	1,018	927	1,566	970	1,329	1,242	1,275	811	836
MENINGITIS, BACTERIAL/OTHER	713	458	510	409	360	262	380	337	345	371
MENINGOCOCCAL INFECTIONS	176	195	218	253	237	157	111	100	93	93
MUMPS	42	75	44	43	234	231	388	363	470	551
PERTUSSIS	287	233	151	217	160	121	161	143	158	366
RABIES, HUMAN	0	0	0	0	1	1	0	1	1	0
RELAPSING FEVER	0	2	1	1	3	0	0	0	0	0
RUBELLA	89	12	8	8	9	22	10	16	99	64
SALMONELLOSIS	3,401	2,793	2,800	2,363	1,983	1,924	1,933	2,317	2,315	2,277
SHIGELLOSIS	3,988	3,504	2,757	3,017	2,410	4,581	3,568	2,178	3,550	1,654
SPOTTED FEVER GP RICKETTSIOSES	3	4	5	6	7	7	1	2	6	
STREPTOCOCCAL DISEASE	597	167	65	95	82	-	-	-	-	-
SYPHILIS, PRIMARY & SECONDARY	430	676	890	1,557	1,913	2,530	3,343	5,012	5,165	4,267
TETANUS	4	6	3	3	12	7	5	10	7	5
TUBERCULOSIS	1,820	1,992	2,103	2,369	2,542	2,392	2,510	2,525	2,242	1,915
TYPHOID FEVER	29	20	17	21	10	15	23	31	28	20
TYPHUS MURINE	45	72	41	53	9	12	18	22	36	30
VIBRIO INFECTIONS	61	36	24	24	31	17	15	25	25	17
YERSINIOSIS	12	-	-	-	-	-	-	-	-	-

'Beginning in 1998, encephalitis will now be split up by etiology.

†Beginning in 1996, only *Haemophilus influenzae* type b infections were counted. Prior to 1996, all invasive infections due to any type of Haernophilus *influenzae* were counted.

‡Prior to 1992, hepatitis C and D cases were counted as hepatitis non A-non **B.**

TABLE II
REPORTED SELECTED DISEASE RATES
(CASES PER 100,000 POPULATION)
1989 - 1998

DISEASE	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989
AIDS	21.4	24.4	26.0	24.6	30.0	41.9	18.4	17.5	18.7	15.5
AMEBIASIS	0.4	0.8	0.7	0.6	0.6	0.5	0.6	0.5	0.8	0.9
BOTULISM	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
BRUCELLOSIS	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1
CAMPYLOBACTERIOSIS	4.5	5.1	4.7	5.3	5.5	4.8	5.7	4.7	4.4	3.6
CHICKENPOX	104.2	138.2	107.2	121.2	88.4	81.3	116.7	112.5	156.8	135.8
CHLAMYDIA	308.5	262.5	226.7	240.3	251.8	244.0	231.0	187.7	121.1	-
CHOLERA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CREUTZFELDT-JAKOB DISEASE	0.1	-	-	-	-	-	-	-	-	-
CRYPTOSPORIDIOSIS	4.6	0.2	-	-	-	-	-	-	-	-
DENGUE FEVER	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
EHRLICHIOSIS	0.0	0.0	-	-	-	-	-	-	-	-
ENCEPHALITIS PRIMARY	0.1	0.2	0.2	0.4	0.3	0.3	0.5	0.7	0.4	0.3
ENCEPHALITIS PI CPOX*	0.0	-	-	-	-	-	-	-	-	
ENCEPHALITIS PI OTHER*	0.0	-	-	-	-	-	-	-	-	
ENCEPHALITIS ST LOUIS*	0.0	-	-	-	-	-	-	-	-	
ESCHERICHIA COLI O157:H7	0.4	0.2	0.3	0.2	0.4	-	-	-	-	-
GONORRHEA	167.6	137.8	127.2	165.0	162.7	171.3	204.9	254.7	254.5	262.1
HAEMOPHILUS INFLUENZAE INF†	0.0	0.0	0.0	0.2	0.1	0.3	0.2	0.9	3.7	4.6
HANSEN'S DISEASE	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.1
HANTAVIRUS INFECTIONS	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-
HEMOLYTIC UREMIC SYNDROME	0.0	0.0	0.0	0.0	0.1	-	-	-	-	-
HEPATITIS A	18.0	23.4	18.2	16.1	15.7	15.9	10.4	15.4	16.0	18.4
HEPATITIS B	10.0	6.4	6.6	6.5	7.8	7.7	8.7	11.3	10.5	10.6
HEPATITIS C‡	2.4	1.9	1.1	1.8	1.7	2.2	1.5	-	-	-
HEPATITIS D‡	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
HEPATITIS NANB	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.8	0.8	1.4
HEPATITIS UNSPECIFIED	0.1	0.2	0.2	0.4	0.5	0.9	1.1	1.5	1.7	3.0
LEGIONELLOSIS	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3
LISTERIOSIS	0.1	0.2	0.2	0.2	0.4	0.2	0.1	0.3	0.2	0.2
LYME DISEASE	0.2	0.3	0.5	0.4	0.3	0.3	0.6	0.3	0.3	0.5
MALARIA	0.4	0.6	0.7	0.5	0.5	0.3	0.3	0.4	-	-
MEASLES	0.0	0.0	0.3	0.1	0.1	0.1	6.2	1.7	26.0	19.0
MENINGITIS, ASEPTIC	8.0	5.3	4.9	8.4	5.3	7.6	7.1	7.4	4.8	4.8
MENINGITIS, BACTERIAL/OTHER	3.6	2.4	2.7	2.2	2.0	1.5	2.2	2.0	2.0	2.1
MENINGOCOCCAL INFECTIONS	0.9	1.0	1.1	1.4	1.3	0.9	0.6	0.6	0.5	0.5
MUMPS	0.2	0.4	0.2	0.2	1.3	1.3	2.2	2.1	2.8	3.2
PERTUSSIS	1.5	1.2	0.8	1.2	0.9	0.7	0.9	0.8	0.9	2.1
RABIES, HUMAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RELAPSING FEVER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RUBELLA	0.5	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.6	0.4
SALMONELLOSIS	17.3	14.5	14.8	12.7	10.8	10.9	11.0	13.4	13.6	13.0
SHIGELLOSIS	20.3	18.1	14.5	16.2	13.2	26.0	20.3	12.6	20.9	9.5
SPOTTED FEVER GP RICKETTSIOSES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
STREPTOCOCCAL DISEASE	3.0	0.9	0.3	0.5	0.5	-	-	-	-	-
SYPHILIS, PRIMARY & SECONDARY	2.2	3.5	4.7	8.4	10.5	14.1	18.9	28.9	30.4	24.4
TETANUS	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
TUBERCULOSIS	9.3	10.3	11.1	12.7	13.9	13.3	14.2	14.6	13.2	11.0
TYPHOID FEVER	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1
TYPHUS MURINE	0.2	0.4	0.2	0.3	0.0	0.1	0.1	0.1	0.2	0.2
VIBRIO INFECTIONS	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
YERSINIOSIS	0.1	-	-	-	-	-	-	-	-	0.1

*Beginning in 1998, encephalitis will now be split up by etiology.

†Beginning in 1996, only Haemophilus *influenzae* type b infections were counted. Prior to 1996, all invasive infections due to any type of *Haemophilus influenzae* were counted.

‡Prior to 1992, hepatitis C and D cases were counted as hepatitis non A-non B.

TABLE III
REPORTED SELECTED DISEASES BY MONTH OF ONSET*
1998

DISEASE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AIDS	372	427	396	326	316	327	410	285	394	359	292	297
AMEBIASIS	5	4	4	5	4	10	4	6	6	16	6	5
BOTULISM	0	1	2	0	0	0	0	1	1	0	0	0
BRUCELLOSIS	2	0	3	3	4	3	1	1	1	3	4	1
CAMPYLOBACTERIOSIS	69	59	56	75	73	71	72	68	70	79	103	86
CHICKENPOX	2,390	2,964	3,310	2,723	1,924	1,407	222	69	208	357	536	4,374
CHLAMYDIA	4,128	4,899	5,070	4,786	4,917	5,528	5,043	5,327	5,313	5,837	4,787	4,991
CHOLERA	0	0	0	0	0	0	0	0	0	0	0	0
CREUTZFELDT-JAKOB DISEASE	1	2	1	1	0	0	4	1	2	1	0	0
CRYPTOSPORIDIOSIS	0	3	2	1	0	1	707	113	44	15	13	7
DENGUE FEVER	0	0	0	0	0	0	0	0	0	2	1	3
EHRLICHIOSIS	0	0	0	0	1	1	0	0	0	0	0	0
ENCEPHALITIS PRIMARY	5	1	0	2	3	1	4	1	5	0	3	0
ENCEPHALITIS PI CPOX	1	0	0	0	0	0	0	0	0	0	0	0
ENCEPHALITIS PI OTHER	2	1	0	0	0	1	0	3	0	1	0	0
ENCEPHALITIS ST LOUIS	0	0	0	0	0	0	0	3	0	1	0	0
ESCHERICHIA COLI 0157:H7	5	0	3	8	6	15	14	7	5	8	8	6
GONORRHEA	2,539	2,473	2,338	2,360	2,516	3,104	2,956	3,096	2,975	3,023	2,664	2,890
HAEMOPHILUS INFLUENZAE INF	1	1	0	0	0	0	0	0	0	1	0	0
HANSEN'S DISEASE	3	2	2	2	0	5	4	2	0	3	1	4
HANTAVIRUS INFECTIONS	0	0	0	0	0	0	0	0	0	0	0	0
HEMOLYTIC UREMIC SYNDROME	0	0	0	2	0	3	0	0	1	0	0	0
HEPATITIS A	328	332	478	307	269	219	231	293	248	406	223	204
HEPATITIS B	158	149	157	214	216	168	217	156	126	147	135	117
HEPATITIS C	56	80	69	30	28	30	32	32	25	26	27	27
HEPATITIS D	0	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS NANB	0	0	0	0	0	0	0	0	0	0	1	0
HEPATITIS UNSPECIFIED	1	0	0	1	2	2	1	3	1	1	0	4
LEGIONELLOSIS	2	2	3	1	0	0	2	3	1	1	2	0
LISTERIOSIS	0	0	1	1	5	0	3	4	3	7	4	1
LYME DISEASE	2	0	0	2	4	0	4	2	7	5	2	4
MALARIA	13	5	5	6	5	10	11	11	5	2	2	3
MEASLES	0	0	0	0	0	0	0	0	0	0	0	0
MENINGITIS. ASEPTIC	42	52	82	85	125	197	236	183	214	174	103	83
MENINGITIS, BACT/OTHER	85	87	85	79	76	51	36	39	39	56	46	34
MENINGOCOCCAL INFECTIONS	25	23	25	18	6	17	12	12	7	12	8	11
MUMPS	9	8	7	2	4	2	1	4	1	2	1	1
PERTUSSIS	26	25	22	25	33	38	27	18	17	14	18	24
RABIES, HUMAN	0	0	0	0	0	0	0	0	0	0	0	0
RELAPSING FEVER	0	0	0	0	0	0	0	0	0	0	0	0
RUBELLA	5	5	22	26	12	8	5	3	1	2	0	0
SALMONELLOSIS	123	81	158	177	208	302	458	551	468	416	267	192
SHIGELLOSIS	238	185	263	218	409	326	274	338	436	532	510	259
SPOTTED FEVER GROUP RICKETTSIOSE	0	0	0	0	0	2	0	0	0	0	1	0
STREPTOCOCCAL DISEASE	70	74	100	54	57	35	34	31	44	15	43	40
SYPHILIS, PRIMARY & SECONDARY	28	23	41	43	36	42	21	52	32	37	36	39
TETANUS	0	0	0	1	1	0	0	0	2	0	0	0
TUBERCULOSIS	109	139	172	180	147	167	159	161	168	137	124	157
TYPHOID FEVER	3	2	5	2	2	2	3	7	3	0	0	0
TYPHUS MURINE	4	0	3	6	8	7	4	1	4	1	4	3
VIBRIO INFECTION	0	0	1	0	7	36	5	4	2	4	1	1
YERSINIOSIS	0	0	1	0	1	2	1	1	1	4	0	1

*Some totals are by month of report rather than by month of onset.

TABLE IV
REPORTED SELECTED DISEASES BY AGE GROUP
1998

DISEASE	<1	1-4	5-9	10-14	15-19	20-29	30-39	40-49	50-59	60+	UNK
AIDS	10	6	4	10	24	703	1,876	1,119	340	109	0
AMEBIASIS	2	11	13	5	3	10	14	5	5	6	1
BOTULISM	5	0	0	0	0	0	0	0	0	0	0
BRUCELLOSIS	0	5	1	2	2	3	3	3	1	6	0
CAMPYLOBACTERIOSIS	69	172	92	33	54	125	115	93	44	66	18
CHICKENPOX	353	3,153	7,840	781	168	135	63	9	5	5	7,972
CHLAMYDIA	261	21	33	1,395	24,347	28,032	4,554	817	145	120	901
CHOLERA	0	0	0	0	0	0	0	0	0	0	0
CREUTZFELDT-JAKOB DISEASE	0	0	0	0	0	0	1	0	2	10	0
CRYPTOSPORIDIOSIS	13	163	86	50	33	81	246	126	52	36	20
DENGUE FEVER	1	0	0	0	0	1	0	2	1	1	0
EHRLICHIOSIS	0	0	0	0	0	0	0	0	1	1	0
ENCEPHALITIS PRIMARY	0	3	3	3	1	1	1	4	3	6	0
ENCEPHALITIS PI CPOX	0	0	1	0	0	0	0	0	0	0	0
ENCEPHALITIS PI OTHER	0	0	0	2	0	0	1	2	1	2	0
ENCEPHALITIS ST LOUIS	0	0	0	0	0	0	1	2	1	0	0
ESCHERICHIA COLI 0157:H7	6	27	11	7	3	4	6	4	7	8	2
GONORRHEA	82	25	38	602	10,394	14,913	4,601	1,452	292	109	426
HAEMOPHILUS INFLUENZAE INF	1	1	0	0	0	0	0	0	0	1	0
HANSEN'S DISEASE	0	0	1	0	0	2	7	4	1	12	1
HANTAVIRUS INFECTIONS	0	0	0	0	0	0	0	0	0	0	0
HEMOLYTIC UREMIC SYNDROME	0	4	1	0	1	0	0	0	0	0	0
HEPATITIS A	27	258	766	364	240	570	530	313	156	241	73
HEPATITIS B	19	12	18	28	116	406	617	424	152	137	31
HEPATITIS C	2	0	2	2	15	62	141	152	40	38	8
HEPATITIS D	0	0	0	0	0	0	0	0	0	0	0
HEPATITIS NANB	0	0	0	0	0	1	0	0	0	0	0
HEPATITIS UNSPECIFIED	0	2	3	2	1	2	1	2	0	1	2
LEGIONELLOSIS	0	0	0	0	0	0	1	8	4	4	0
LISTERIOSIS	5	1	0	0	1	1	4	5	1	11	0
LYME DISEASE	0	0	0	0	5	4	7	8	6	2	0
MALARIA	2	3	3	3	7	12	21	15	5	1	6
MEASLES	0	0	0	0	0	0	0	0	0	0	0
MENINGITIS, ASEPTIC	312	156	259	166	77	227	188	58	42	37	54
MENINGITIS, BACTERIAL/OTHER	123	98	48	22	32	47	87	64	56	128	8
MENINGOCOCCAL INFECTIONS	40	19	17	10	25	16	11	12	8	17	1
MUMPS	0	4	11	6	4	8	5	3	0	1	0
PERTUSSIS	128	32	13	17	17	23	25	15	9	4	4
RABIES, HUMAN	0	0	0	0	0	0	0	0	0	0	0
RELAPSING FEVER	0	0	0	0	0	0	0	0	0	0	0
RUBELLA	7	5	1	4	18	38	9	5	2	0	0
SALMONELLOSIS	762	677	304	157	103	243	252	212	144	379	168
SHIGELLOSIS	137	1,313	1,172	241	124	374	246	142	63	91	85
SPOTTED FEVER GRP RICKETTSIOSES	0	1	1	0	0	0	0	0	0	1	0
STREPTOCOCCAL DSEASE	50	53	24	18	13	43	58	62	61	188	27
SYPHILIS, PRIMARY & SECONDARY	0	0	1	2	48	141	130	74	28	5	1
TETANUS	0	0	0	0	1	0	1	0	1	1	0
TYPHOID FEVER	1	3	2	3	3	7	3	3	3	1	0
TYPHUS MURINE	0	2	3	6	6	4	6	10	2	4	2
VIBRIO INFECTIONS	1	2	1	0	2	7	19	13	9	5	2
YERSINIOSIS	4	0	0	4	0	0	1	1	0	2	0
TUBERCULOSIS AGE GROUPS	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**	**UNK**
TUBERCULOSIS	73	38	24	59	130	312	385	289	205	305	0

TABLE V
REPORTED SELECTED DISEASE RATES BY AGE GROUP
(CASES PER 100,000 POPULATION)
1998

DISEASE	<1	1-4	5-9	10-14	15-19	20-29	30-39	40-49	50-59	60+
AIDS	3.1	0.5	0.3	0.7	1.6	24.1	58.1	39.0	18.2	4.1
AMEBIASIS	0.6	0.9	0.8	0.3	0.2	0.3	0.4	0.2	0.3	0.2
BOTULISM	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BRUCELLOSIS	0.0	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
CAMPYLOBACTERIOSIS	21.2	13.3	6.0	2.2	3.6	4.3	3.6	3.2	2.4	2.5
CHICKENPOX	108.3	244.6	509.6	53.0	11.2	4.6	2.0	0.3	0.3	0.2
CHLAMYDIA	80.1	1.6	2.1	94.6	1,621.7	959.2	141.1	28.4	7.8	4.6
CHOLERA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CREUTZFELDT-JAKOB DISEASE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
CRYPTOSPORIDIOSIS	4.0	12.6	5.6	3.4	2.2	2.8	7.6	4.4	2.8	1.4
DENGUE	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
EHRLICHIOSIS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
ENCEPHALITIS PRIMARY	0.0	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.2	0.2
ENCEPHALITIS PI CPOX	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENCEPHALITIS PI OTHER	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1
ENCEPHALITIS ST LOUIS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
ESCHERICHIA COLI O157:H7	1.8	2.1	0.7	0.5	0.2	0.1	0.2	0.1	0.4	0.3
GONORRHEA	25.2	1.9	2.5	40.8	692.3	510.3	142.5	50.5	15.6	4.1
HAEMOPHILUS INFLUENZAE INF	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HANSEN'S DISEASE	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.5
HANTAVIRUS INFECTIONS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEMOLYTIC UREMIC SYNDROME	0.0	0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
HEPATITIS A	8.3	20.0	49.8	24.7	16.0	19.5	16.4	10.9	8.3	9.2
HEPATITIS B	5.8	0.9	1.2	1.9	7.7	13.9	19.1	14.8	8.1	5.2
HEPATITIS C	0.6	0.0	0.1	0.1	1.0	2.1	4.4	5.3	2.1	1.4
HEPATITIS D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEPATITIS NANB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEPATITIS UNSPECIFIED	0.0	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.0
LEGIONELLOSIS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.2
LISTERIOSIS	1.5	0.1	0.0	0.0	0.1	0.0	0.1	0.2	0.1	0.4
LYME DISEASE	0.0	0.0	0.0	0.0	0.3	0.1	0.2	0.3	0.3	0.1
MALARIA	0.6	0.2	0.2	0.2	0.5	0.4	0.7	0.5	0.3	0.0
MEASLES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MENINGITIS, ASEPTIC	95.8	12.1	16.8	11.3	5.1	7.8	5.8	2.0	2.2	1.4
MENINGITIS, BACTERIAL/OTHER	37.8	7.6	3.1	1.5	2.1	1.6	2.7	2.2	3.0	4.9
MENINGOCOCCAL INFECTIONS	12.3	1.5	1.1	0.7	1.7	0.5	0.3	0.4	0.4	0.6
MUMPS	0.0	0.3	0.7	0.4	0.3	0.3	0.2	0.1	0.0	0.0
PERTUSSIS	39.3	2.5	0.8	1.2	1.1	0.8	0.8	0.5	0.5	0.2
RABIES, HUMAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RELAPSING FEVER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RUBELLA	2.1	0.4	0.1	0.3	1.2	1.3	0.3	0.2	0.1	0.0
SALMONELLOSIS	233.9	52.5	19.8	10.7	6.9	8.3	7.8	7.4	7.7	14.4
SHIGELLOSIS	42.0	101.9	76.2	16.4	8.3	12.8	7.6	4.9	3.4	3.5
SPOTTED FEVER GRP RICKETTSIOSES	15.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
STREPTOCOCCAL DSEASE	15.3	4.1	1.6	1.2	0.9	1.5	1.8	2.2	3.3	7.2
SYPHILIS, PRIMARY & SECONDARY	0.0	0.0	0.1	0.1	3.2	4.8	4.0	2.6	1.5	0.2
TETANUS	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
TYPHOID FEVER	0.3	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.0
TYPHUS MURINE	0.0	0.2	0.2	0.4	0.4	0.1	0.2	0.3	0.1	0.2
VIBRIO INFECTIONS	0.3	0.2	0.1	0.0	0.1	0.2	0.6	0.5	0.5	0.2
YERSINIOSIS	1.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1
TUBERCULOSIS AGE GROUPS	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
TUBERCULOSIS	4.5	2.5	1.6	3.9	9.3	10.1	11.9	12.1	14.1	15.5

TABLE VI
REPORTED SELECTED DISEASES BY PUBLIC HEALTH REGION
1998

DISEASE	PHR 1	PHR 2	PHR 3	PHR 4	PHR 5	PHR 6	PHR 7	PHR 8	PHR 9	PHR 10	PHR 11	TDCJ*
AIDS	74	29	944	97	72	1,789	381	271	27	127	156	234
AMEBIASIS	0	3	17	1	2	6	19	3	0	1	23	
BOTULISM	0	0	1	1	0	1	0	0	0	0	2	
BRUCELLOSIS	0	0	8	0	0	3	1	0	1	0	13	
CAMPYLOBACTERIOSIS	114	25	108	33	32	76	194	149	14	35	101	
CHICKENPOX	626	298	5,866	310	637	5,307	4,197	950	469	396	1,428	
CHLAMYDIA	3,122	1,536	15,697	2,190	1,863	13,869	7,295	7,264	1,500	1,739	4,547	4
CHOLERA	0	0	0	0	0	0	0	0	0	0	1	
CREUTZFELDT-JAKOB DISEASE	1	1	3	0	0	5	1	0	1	1	0	
CRYPTOSPORIDIOSIS	1	0	22	3	2	10	846	9	2	1	10	
DENGUE FEVER	0	0	0	0	0	1	1	0	0	0	4	
EHRLICHIOSIS	0	1	0	0	0	0	0	0	0	0	1	
ENCEPHALITIS PRIMARY	4	1	5	4	1	6	0	2	2	0	0	
ENCEPHALITIS PI CPOX	0	0	0	0	0	1	0	0	0	0	0	
ENCEPHALITIS PI OTHER	1	0	3	0	1	2	1	0	0	0	0	
ENCEPHALITIS ST LOUIS	0	0	0	0	0	4	0	0	0	0	0	
ESCHERICHIA COLI 0157:H7	20	10	28	10	3	3	2	4	0	2	3	
GONORRHEA	1,279	597	12,013	1,236	1,489	8,655	3,841	2,287	467	262	806	2
HAEMOPHILUS INFLUENZAE INF	0	0	0	1	0	0	1	1	0	0	0	
HANSEN'S DISEASE	0	0	5	0	1	9	2	8	0	0	3	
HANTAVIRUS INFECTIONS	0	0	0	0	0	0	0	0	0	0	0	
HEMOLYTIC UREMIC SYNDROME	1	1	3	1	0	0	0	0	0	0	0	
HEPATITIS A	376	151	454	66	292	545	279	448	67	142	718	
HEPATITIS B	61	108	1,062	63	77	205	80	98	47	27	132	
HEPATITIS C	19	49	114	42	15	32	19	61	23	11	77	
HEPATITIS D	0	0	0	0	0	0	0	0	0	0	0	
HEPATITIS NANB	0	0	0	0	0	0	1	0	0	0	0	
HEPATITIS UNSPECIFIED	0	0	5	1	0	8	0	0	0	0	2	
LEGIONELLOSIS	0	1	9	0	0	2	2	3	0	0	0	
LISTERIOSIS	1	0	5	0	0	11	4	2	1	2	3	
LYME DISEASE	0	1	15	4	0	2	4	4	1	1	0	
MALARIA	1	2	27	4	1	33	1	1	2	0	6	
MEASLES	0	0	0	0	0	0	0	0	0	0	0	
MENINGITIS, ASEPTIC	161	103	267	113	28	291	208	196	65	36	108	
MENINGITIS, BACTERIAL/OTHER	29	13	113	63	21	274	78	50	27	23	22	
MENINGOCOCCAL INFECTIONS	5	6	42	16	5	49	22	17	1	5	8	
MUMPS	4	0	16	0	1	3	5	6	0	3	4	
PERTUSSIS	28	4	107	8	1	37	40	32	2	6	22	
RABIES, HUMAN	0	0	0	0	0	0	0	0	0	0	0	
RELAPSING FEVER	0	0	0	0	0	0	0	0	0	0	0	
RUBELLA	0	0	9	0	1	24	9	0	0	8	38	
SALMONELLOSIS	276	91	462	188	144	758	520	414	95	111	342	
SHIGELLOSIS	772	120	510	106	218	522	561	410	166	124	479	
SPOTTED FEVER GRP RICKETTSIOSES	0	0	1	1	0	0	0	0	0	0	1	
STREPTOCOCCAL DISEASE	33	2	84	67	25	175	100	67	19	9	16	
SYPHILIS, PRIMARY & SECONDARY	5	5	153	40	31	112	42	33	3	2	3	1
TETANUS	0	0	0	0	1	2	0	0	0	1	0	
TUBERCULOSIS	43	14	411	57	38	535	146	144	35	83	280	34
TYPHOID FEVER	0	0	9	0	0	13	4	1	0	0	2	
TYPHUS MURINE	0	0	0	0	0	1	0	0	0	0	44	
VIBRIO INFECTION	3	2	15	1	0	23	13	3	0	0	2	
YERSINIOSIS	1	0	2	0	2	4	1	1	1	0	0	

*In 1998, cases were only reported by TDCJ for AIDS, Chlamydia, Gonorrhea, Syphillis P&S, and Tuberculosis.

TABLE VII
REPORTED SELECTED DISEASE RATES BY PUBLIC HEALTH REGION
(CASES PER 100,000 POPULATION)
1998

DISEASE	PHR 1	PHR 2	PHR 3	PHR 4	PHR 5	PHR 6	PHR 7	PHR 8	PHR 9	PHR 10	PHR 11	TDCJ
AIDS	9.6	5.4	18.0	10.1	10.4	39.9	19.4	13.2	4.8	16.6	9.5	163.1
AMEBIASIS	0.0	0.6	0.3	0.1	0.3	0.1	1.0	0.1	0.0	0.1	1.4	-
BOTULISM	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-
BRUCELLOSIS	0.0	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.2	0.0	0.8	-
CAMPYLOBACTERIOSIS	14.8	4.7	2.1	3.4	4.6	1.7	9.9	7.3	2.5	4.6	6.1	-
CHICKENPOX	81.5	55.9	112.1	32.1	92.4	118.4	214.1	46.4	83.6	51.8	86.7	-
CHLAMYDIA	406.4	287.9	299.9	227.1	270.3	309.5	372.2	354.8	267.3	227.7	276.0	2.8
CHOLERA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-
CREUTZFELDT-JAKOB DISEASE	0.1	0.2	0.1	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.0	-
CRYPTOSPORIDIOSIS	0.1	0.0	0.4	0.3	0.3	0.2	43.2	0.4	0.4	0.1	0.6	-
DENGUE	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	-
EHRLICHIOSIS	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-
ENCEPHALITIS	0.5	0.2	0.1	0.4	0.1	0.1	0.0	0.1	0.4	0.0	0.0	-
ENCEPHALITIS PI CPOX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
ENCEPHALITIS PI OTHER	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	-
ENCEPHALITIS ST LOUIS	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-
ESCHERICHIA COLI O157:H7	2.6	1.9	0.5	1.0	0.4	0.1	0.1	0.2	0.0	0.3	0.2	-
GONORRHEA	166.5	111.9	229.5	128.2	216.1	193.2	196.0	111.7	83.2	34.3	48.9	1.4
HAEMOPHILUS INFLUENZAE INF	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	-
HANSEN'S DISEASE	0.0	0.0	0.1	0.0	0.1	0.2	0.1	0.4	0.0	0.0	0.2	-
HANTAVIRUS INFECTIONS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
HEMOLYTIC UREMIC SYNDROME	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
HEPATITIS A	48.9	19.7	59.1	8.6	38.0	70.9	36.3	58.3	8.7	18.5	93.5	-
HEPATITIS B	7.9	20.2	20.3	6.5	11.2	4.6	4.1	4.8	8.4	3.5	8.0	-
HEPATITIS C	2.5	9.2	2.2	4.4	2.2	0.7	1.0	3.0	4.1	1.4	4.7	-
HEPATITIS D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
HEPATITIS NANB	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	-
HEPATITIS UNSPECIFIED	0.0	0.0	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.1	-
LEGIONELLOSIS	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	-
LISTERIOSIS	0.1	0.0	0.1	0.0	0.0	0.2	0.2	0.1	0.2	0.3	0.2	-
LYME DISEASE	0.0	0.2	0.3	0.4	0.0	0.0	0.2	0.2	0.2	0.1	0.0	-
MALARIA	0.1	0.4	0.5	0.4	0.1	0.7	0.1	0.0	0.4	0.0	0.4	-
MEASLES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
MENINGITIS, ASEPTIC	21.0	19.3	5.1	11.7	4.1	6.5	10.6	9.6	11.6	4.7	6.6	-
MENINGITIS, BACTERIAL/OTHER	3.8	2.4	2.2	6.5	3.0	6.1	4.0	2.4	4.8	3.0	1.3	-
MENINGOCOCCAL INFECTIONS	0.7	1.1	0.8	1.7	0.7	1.1	1.1	0.8	0.2	0.7	0.5	-
MUMPS	0.5	0.0	0.3	0.0	0.1	0.1	0.3	0.3	0.0	0.4	0.2	-
PERTUSSIS	3.6	0.7	2.0	0.8	0.1	0.8	2.0	1.6	0.4	0.8	1.3	-
RABIES, HUMAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
RELAPSING FEVER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
RUBELLA	0.0	0.0	0.2	0.0	0.1	0.5	0.5	0.0	0.0	1.0	2.3	-
SALMONELLOSIS	35.9	17.1	8.8	19.5	20.9	16.9	26.5	20.2	16.9	14.5	20.8	-
SHIGELLOSIS	100.5	22.5	9.7	11.0	31.6	11.7	28.6	20.0	29.6	16.2	29.1	-
SPOTTED FEVER GRP RICKETTSIOSES	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-
STREPTOCOCCAL DISEASE	4.3	0.4	1.6	6.9	3.6	3.9	5.1	3.3	3.4	1.2	1.0	-
SYPHILIS, PRIMARY & SECONDARY	0.7	0.9	2.9	4.1	4.5	2.5	2.1	1.6	0.5	0.3	0.2	0.7
TETANUS	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	-
TUBERCULOSIS*	5.6	2.6	7.9	5.9	5.5	11.9	7.4	7.0	6.2	10.9	17.0	23.7
TYPHOID FEVER	0.0	0.0	0.2	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.1	-
TYPHUS MURINE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	-
VIBRIO INFECTIONS	0.4	0.4	0.3	0.1	0.0	0.5	0.7	0.1	0.0	0.0	0.1	-
YERSINIOSIS	0.1	0.0	0.0	0.0	0.3	0.1	0.1	0.0	0.2	0.0	0.0	-

Appendix

Reportable Conditions in Texas

Several Texas laws require *specific* information regarding reportable conditions to be provided to the Texas Department of Health (Health & Safety Code, Chapters 81/84, and 87). Health care providers, hospitals, laboratories, schools, and justices of the peace are required to report patients who are suspected of having a reportable condition. (Article 97, Title 25, Texas Administrative Code.)

Diseases reportable immediately by telephone to local health departments or the Texas Department of Health by name, age, sex, race/ethnicity, DOB, address, telephone number, disease, date of onset, method of diagnosis, and name, address, and telephone number of physician:

Outbreaks, exotic diseases, and unusual group expressions of illness which may be of public health concern

Botulism, foodborne
Cholera
Meningococcal infections, invasive[1]
Plague
Rabies, human
Viral hemorrhagic fever
Yellow fever

TDH Infectious Disease Epidemiology & Surveillance Division (800) 252-8239

Diphtheria
Haemophilus *influenzae* type b infections, invasive[1]
Measles (rubeola)
Pertussis
Poliomyelitis, acute paralytic

TDH Immunization Division (800) 252-9152

Diseases reportable to local health departments[2] by name, age, sex, *race/ethnicity,* DOB, address, telephone number, disease, date of *onset/occurrence,* method of diagnosis, and name, address, and phone number of physician. Report these diseases on a weekly basis except for rubella and tuberculosis which should be reported within one working day. Refer to reverse side for reporting information.

Acquired immune deficiency syndrome (AIDS)[3,6]
Amebiasis
Anthrax
Asbestosis
Botulism (infant)
Brucellosis
Campylobacteriosis
Chancroid[6]
Chlamydia *trachomatis* infection[6]
Creutzfeldt-Jakob disease (CJD)
Cryptosporidiosis
Dengue
Drowning/near drowning
Ehrlichiosis
Encephalitis (specify etiology)
Escherichia coli O157:H7
Gonorrhea[6]
Hansen's disease (leprosy)
Hantavirus infection
Hemolytic uremic syndrome (HUS)
Hepatitis, acute viral (speufy type)[4]
Human immunodeficiency virus (HIV) infection[6]
Lead, adult elevated blood
Lead, childhood elevated blood
Legionellosis
Listeriosis
Lyme disease
Malaria
Meningitis (speufy type)[5]
Mumps
Pesticide poisoning, acute occupational
Relapsing fever
Rubella
Salmonellosis, including typhoid fever
Shigellosis
Silicosis
Spotted fever group rickettsioses
Streptococcal disease, invasive[1]
Syphilis[6,7]
Tetanus
Trichinosis
Tuberculosis
Typhus
Vibrio infection
Yersiniosis

By number and age group only: Chickenpox

Laboratories are required to report vancomycin-resistant Enterococcus species, vancomycin-resistant Staphylococcus *aureus,* vancomycin-resistant coagulase negative Staphylococcus species, and penicillin-resistant Streptococcus *pneumoniae* directly to the Texas Department of Health. Refer to "Isolate Reporting by Laboratories" on reverse side for more information.

Laboratories, blood banks, mobile units, and other facilities in which a laboratory examination of a blood specimen is made are required to report patients with a CD4 + T lymphocyte cell count below 200 cells per microliter or CD4 +T lyphocyte percentage less than 14%.

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[1]Includes meningitis, septicemia, cellulitis, epiglottitis, osteomyelitis, pericarditis, and septic arthritis. Laboratories should submit all *Neisseria meningitidis* from normally sterile sites to the Texas Department of Health, Bureau of Laboratories, 1100 W. 49th Street, Austin, TX 78756-3199.

[2]The local or regional health department shall collect reports of diseases and transmit them at weekly intervals to TDH.

[3]Reported by physician only once following initial physician diagnosis.

[4]Includes types: A, B, C, D (delta), E, unspecified, and non-A, non-B.

[5]Includes aseptic/viral, bacterial (specify etiology), fungal, parasitic, and other.

[6]Also report date, type, and results of tests.

[7]Also report stage of diagnosis.

Disease Reporting

Initial reporting of any reportable disease may be made by calling **(800) 705-8868.** An EPI-1 (for all conditions except sexually transmitted diseases, including HIV infections and AIDS) or an EPI-4 (Private Provider Initial Morbidity Report) form may also be used to initially report notifiable conditions except:

- outbreaks, exotic diseases, and unusual group expressions of disease. Immediately call your local health department at (800) 705-8868 or the Infectious Disease Epidemiology and Surveillance Division at (800) 252-8239 (press 1) or (512) 458-7218 to report.
- foodborne botulism, cholera, invasive meningococcal infection, plague, rabies in humans, viral hemorrhagic fever, and yellow fever. Immediately call (800) 252-8239 to report.
- diphtheria, invasive *Haemophilus influenzae* type b infection, measles, pertussis, and acute paralytic poliomyelitis. Immediately call (800) 252-9152 to report.
- rubella. Call (800) 252-9152 within one **working** day.
- tuberculosis. Use TB-400 forms to report within one **working** day. Call your regional TDH office to order forms.

Other forms are available to report:

- chancroid, *Chlamydia trachomatis* infection, gonorrhea, and syphilis. Use form STD-27 to report these sexually transmitted diseases. Call your regional TDH office to order forms.
- HIV/AIDS. Use CDC 50.42A to report HIV infection or AIDS in persons $>$ 13 years of age. To report HIV infection or AIDS in persons $\leq$ 13 years of age, use form CDC 54.42B. Call your regional TDH office to order forms.

In addition to an initial report, the following require further medical information for confirmation. Case report forms are available for the following diseases/conditions:

Botulism (infant and foodborne)
Brucellosis
California encephalitis
Dengue
Drowning/near drowning
Eastern equine encephalitis
Ehrlichiosis
Elevated blood lead levels (children)
Escherichia coli O157:H7 infection
Haemophilus influenzae type b infection (invasive)
Hantavirus infection
Hepatitis (acute viral)
Legionellosis
Lyme disease
Malaria
Measles
Meningitis, bacterial
Meningococcal infection (invasive)
Mumps
Occupationally acquired disease*
Pertussis
Relapsing fever
Rubella
Spotted fever group rickettsioses
St. Louis encephalitis
Tetanus
Trichinosis
Typhoid fever
Typhus
Venezuelan equine encephalitis
Vibrio infection
Western equine encephalitis
Yersiniosis

Forms are available and required for food- and waterborne disease outbreaks.

*including asbestosis, elevated blood lead levels in adults, acute pesticide poisoning, and silicosis.

Isolate Reporting by Laboratories

Immediately report isolates of vancomycin-resistant *Staphylococcus aureus* and vancomycin-resistant coagulase negative *Staphylococcus* species by calling ([800] 252-8239) or faxing ([512] 458-7616) the Infectious Disease Epidemiology and Surveillance Division. All isolates of vancomycin-resistant *Staphylococcus aureus* and vancomycin-resistant coagulase negative *Staphylococcus* species should be submitted to the Bureau of Laboratories, 1100 West 49th Street, Austin, Texas 78756-3199.

Isolates of vancomycin-resistant *Enterococcus* species and penicillin-resistant *Streptococcus pneumoniae* should be reported to the Infectious Disease Epidemiology and Surveillance Division on at least a quarterly basis.

All reports of vancomycin-resistant *Staphylococcus aureus,* vancomycin-resistant coagulase negative *Staphylococcus* species, vancomycin-resistant *Enterococcus,* and penicillin-resistant *Streptococcus pneumoniae* should include patient name, date of birth or age, and sex; city of submitter; anatomic site of culture; and date of culture.

In addition, numeric totals of all isolates of *Enterococcus* species and all isolates of *Streptococcus pneumoniae* should be reported to the Infectious Disease Epidemiology and Surveillance Division no later than the last working day of March, June, September, and December.

Finally, laboratories should submit all *Neisseria meningitidis* isolates from normally sterile sites to the Texas Department of Health, Bureau of Laboratories, 1100 West 49th Street, Austin, TX 78756-3199.

For more information, call the Infectious Disease Epidemiology and Surveillance Division at (800) 252-8239 (press 1).

TDH

Associateship for Disease Control & Prevention
Texas Department of Health
1100 West 49th Street
Austin, Texas 78756
www.tdh.state.tx.us/epidemiology