



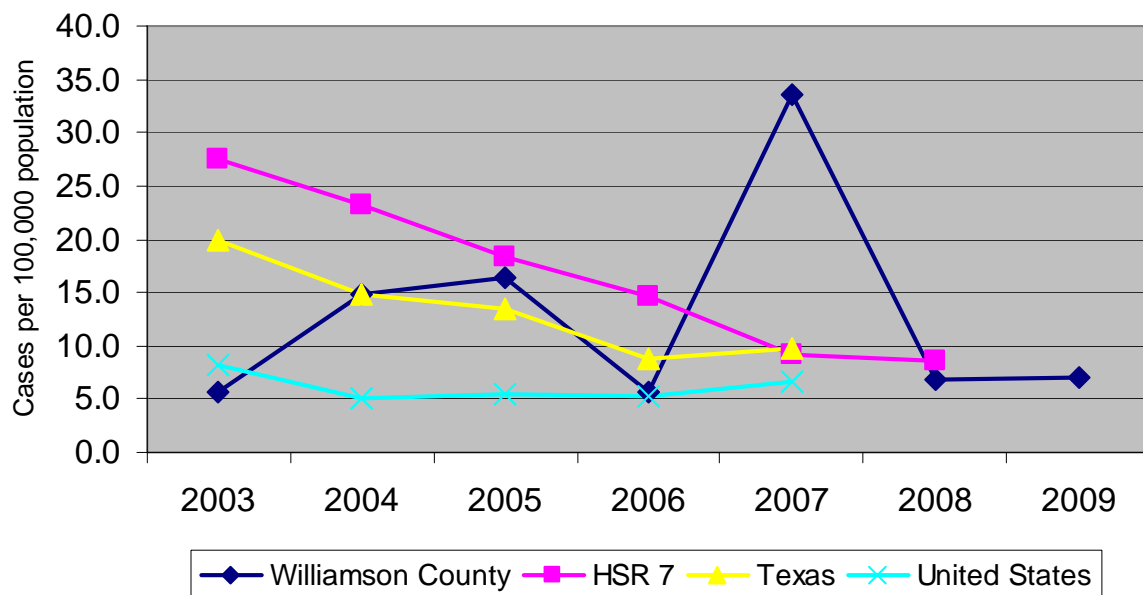
# Shigellosis Trends & Statistics Williamson County, Texas

Shigellosis is a disease caused by bacteria from the genus *Shigella*. Symptoms of shigellosis include diarrhea, fever, and stomach cramps. The diarrhea is often bloody. The majority of shigellosis cases and outbreaks are likely due to person-to-person transmission; transmission helped in part by inadequate hygiene and hand washing habits. Most *Shigella* infections are the result of the bacterium passing from stools or soiled fingers of one person to the mouth of another person. Toddlers who are not fully toilet-trained, and family members and playmates of these children, are at high risk of becoming infected. Some shigellosis cases may be the result of eating contaminated food or drinking or swimming in contaminated water.

## Shigellosis Incidence

Incidence is the number of new cases of a disease that arise during a specific period of time. Williamson County is one of thirty counties in the Texas Department of State Health Services (DSHS) Health Services Region 7 (HSR 7). HSR 7 is one of the eight health service regions of DSHS. Texas incidence for shigellosis has generally been higher than incidence for the United States.

### Shigellosis Incidence 2005 - 2009 Williamson County, Texas



In Williamson County, shigellosis has most frequently been reported for children one to fourteen years of age. Peaks in incidence and cases reported are usually associated with one or more outbreaks related to a school setting, child care facility, food service establishment, or any event involving large numbers of people, such as a family gathering.



## Williamson County Shigellosis Incidence by Age Group\*

Age Range (in years)	Incidence (per 100,000 population)				
	2005	2006	2007	2008	2009
<1	<5 cases	<5 cases	<5 cases	<5 cases	<5 cases
1 – 4	61.7	<5 cases	57.8	18.6	N.A.
5 – 14	39.8	13.8	132.3	20.6	N.A.
15 – 24	17.9	<5 cases	11.5	<5 cases	<5 cases
25 – 39	13.3	<5 cases	12.5	7.2	<5 cases
40 – 64	<5 cases	4.5	10.8	<5 cases	<5 cases
>64	<5 cases	<5 cases	<5 cases	<5 cases	<5 cases
All Ages	16.7	5.4	33.5	6.9	7.1

\*Incidence was not calculated if <5 cases were reported in an age group, population estimates or projections by age group were not available at the time this report was prepared.

### Shigellosis Surveillance Data

WCCHD nurses, public health technicians, and epidemiologists work together to conduct public health surveillance. Public health surveillance for shigellosis has clear objectives and provides and interprets data to facilitate the prevention and control of disease by:

- Identifying cases and outbreaks and responding appropriately;
- Confirming the agent causing illness and conducting further laboratory studies if necessary to ensure control measures and treatment recommendations are optimal;
- Raising awareness of disease in the medical community and the general public.

To achieve these objectives, disease reporting systems must be timely, provide an accurate picture in time of the disease, be sensitive enough to identify persons with disease, and be specific enough to exclude persons not having disease. The ultimate goal is to reduce the morbidity and mortality associated with shigellosis.

### *Case Definitions and Laboratory Confirmation*

Shigellosis is an illness of variable severity characterized by diarrhea, fever, nausea, cramps, and tenesmus (a straining to urinate or defecate, without the ability to do so). Asymptomatic infections may occur. Laboratory criteria for diagnosis: isolation of *Shigella* from a clinical specimen.

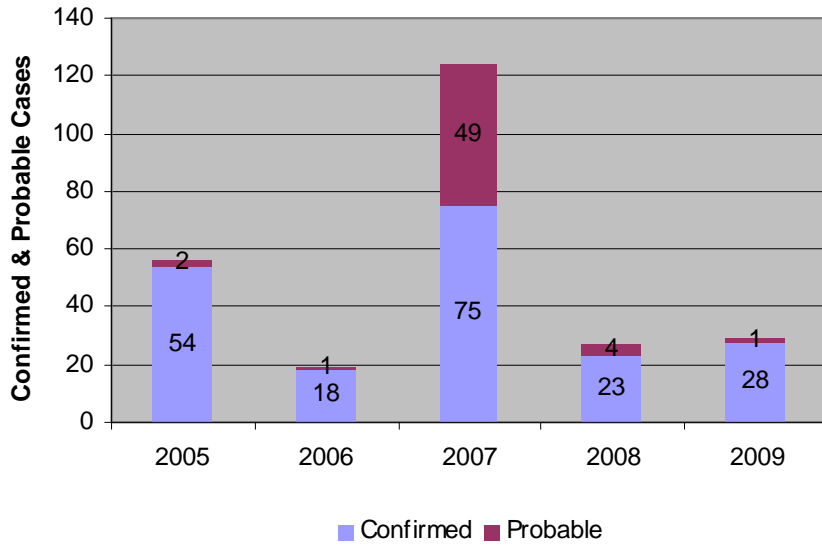
Cases are classified as “probable” or “confirmed” based on the following criteria:

**Probable** - a clinically compatible case that is epidemiologically linked to a confirmed case.

**Confirmed** - a case that meets the laboratory criteria for diagnosis. When available, O antigen serotype characterization should be reported. Serotyping of *Shigella* isolates is important for detecting outbreaks, evaluating intervention strategies, and guiding vaccine development strategies.



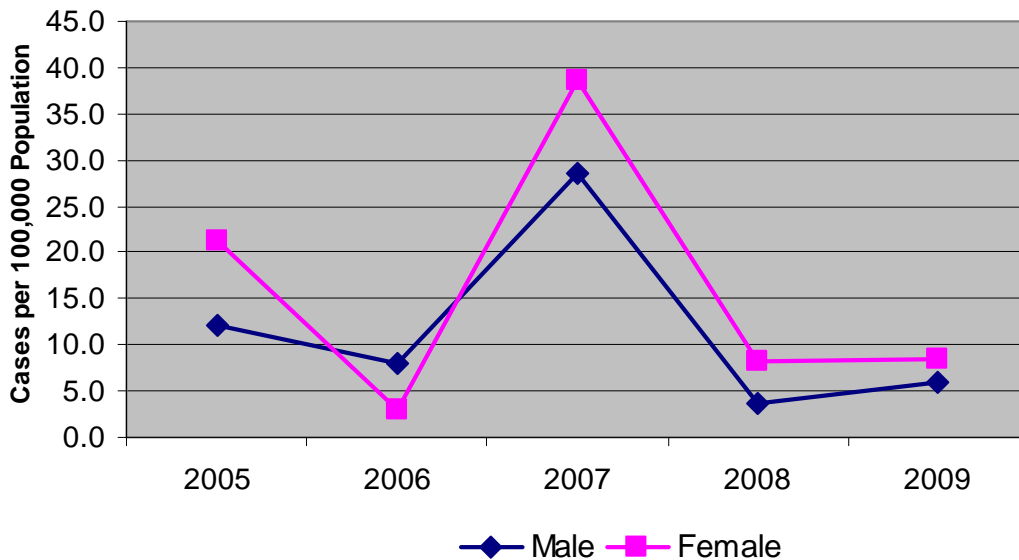
### Shigellosis Cases 2005 - 2009 Williamson County, Texas



### Williamson County Shigellosis Cases by Gender

Gender	Reported Cases				
	2005	2006	2007	2008	2009
Male	20	14	53	9	12
Female	35	5	71	18	17
Unknown	1	0	0	0	0

### Shigellosis Incidence By Gender 2005 - 2009 Williamson County, Texas



### Williamson County Shigellosis Cases by Race/Ethnicity

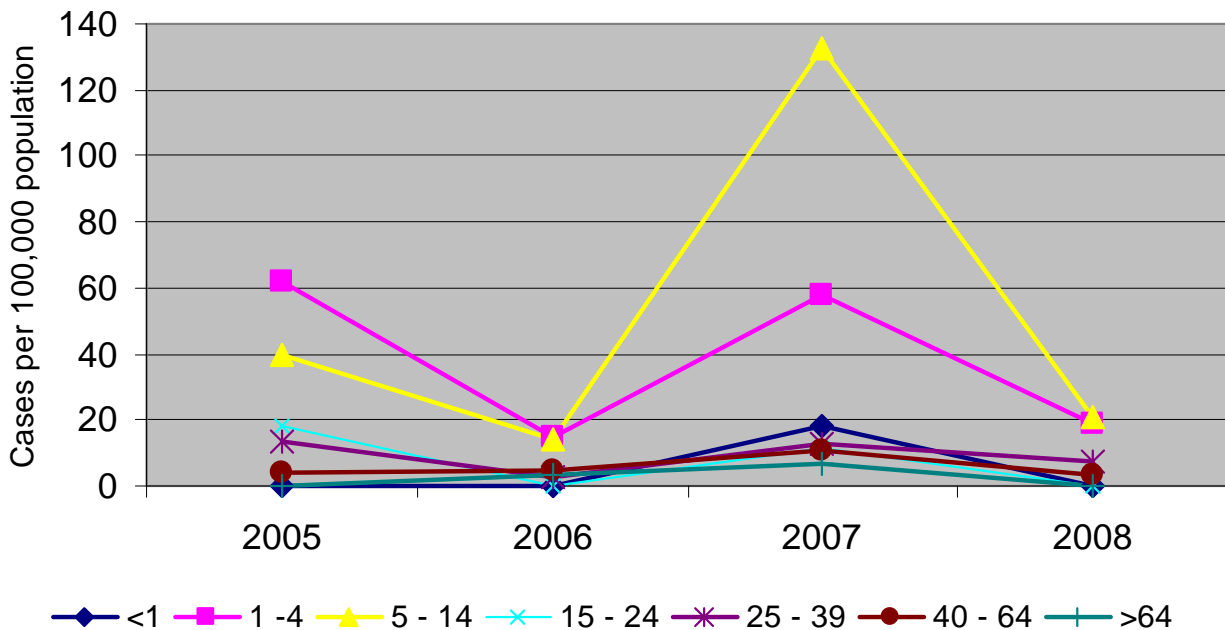
Race/Ethnicity	Reported Cases				
	2005	2006	2007	2008	2009
White non-Hispanic	18	11	52	10	7
Black or African American	7	0	12	1	3
Hispanic ethnicity	15	5	25	10	11
Other/Unknown	16	3	35	6	8

NOTE: An incidence trend was not prepared for Race/Ethnicity due to a high number of cases (27%) overall from 2005 – 2009 with “unknown” recorded in race/ethnicity field of the surveillance database.

### Williamson County Shigellosis Cases by Age (years)

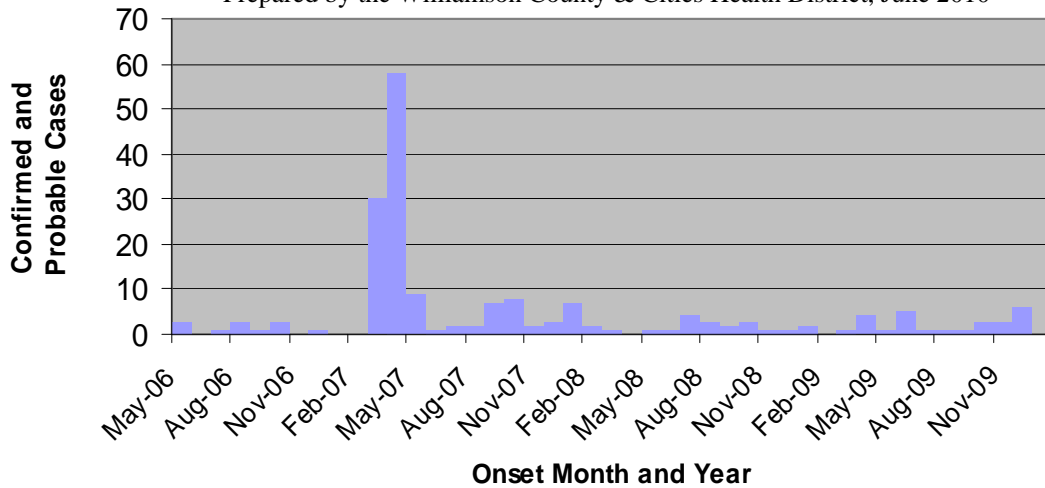
Age (years)	Reported Cases				
	2005	2006	2007	2008	2009
<1	0	0	1	0	1
1 – 4	12	3	12	4	10
5 – 14	22	8	80	13	13
15 – 24	8	0	6	0	2
25 – 39	10	2	10	6	3
40 – 64	4	5	13	4	0
>64	0	1	2	0	0

## Shigellosis Incidence by Age Group 2005 - 2008 Williamson County, Texas



## Shigellosis Reported to WCCHD by Onset Month and Year

Prepared by the Williamson County & Cities Health District, June 2010

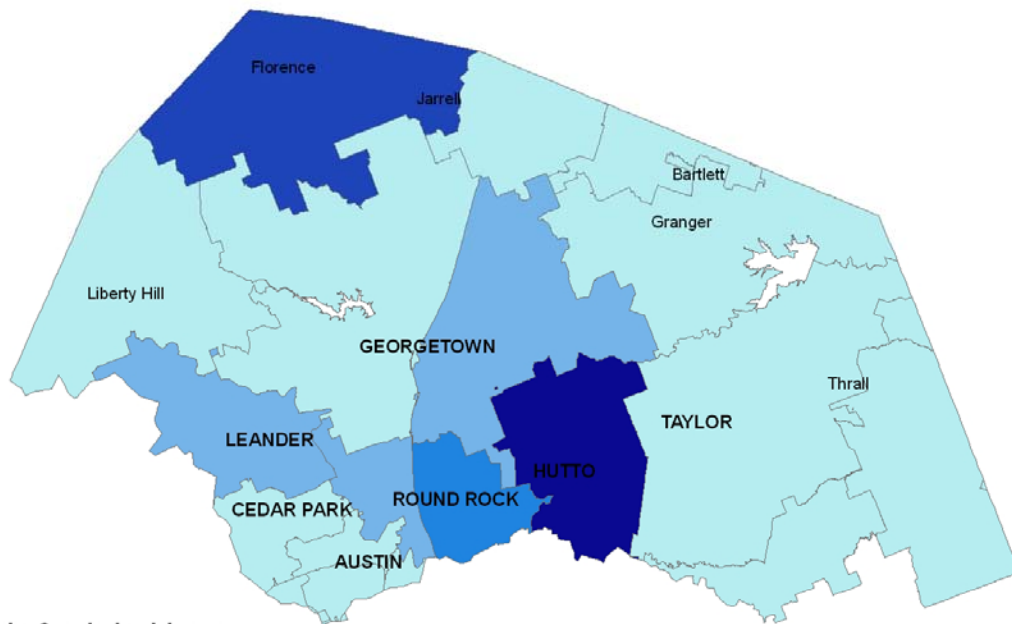


### Williamson County Shigellosis Cases by Area

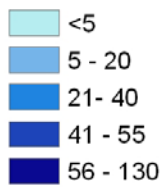
Area*	Reported Cases				
	2005	2006	2007	2008	2009
Round Rock	16	5	100	8	10
Cedar Park	6	0	2	3	2
Georgetown	5	4	5	2	11
Taylor	1	0	0	2	1
Hutto	19	1	10	1	0
Leander	4	0	0	6	2
Austin (Williamson County)	5	1	7	5	1
Bartlett	0	0	0	0	0
Coupland	0	0	0	0	0
Florence	0	8	0	0	1
Granger	0	0	0	0	0
Jarrell	0	0	0	0	0
Liberty Hill	0	0	0	0	1
Thrall	0	0	0	0	0
Weir	0	0	0	0	0
Other/Unknown	0	0	0	0	0

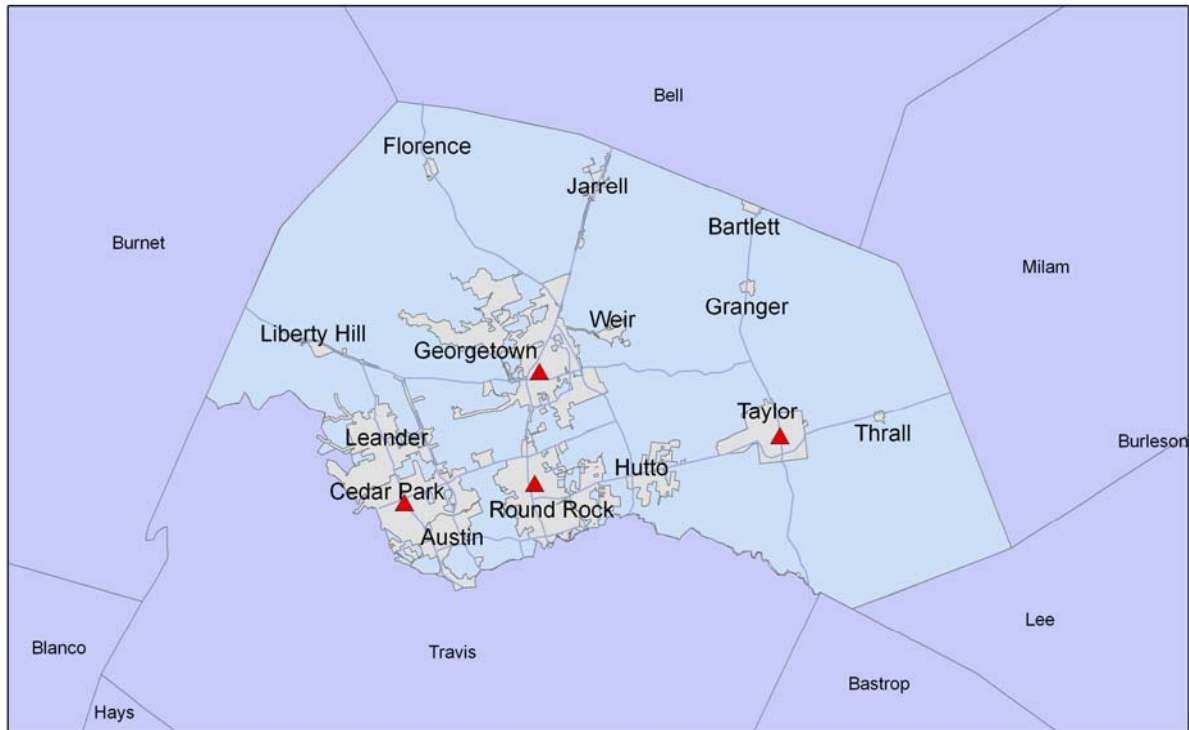
\*Areas defined by one or more zip code boundaries. Parts of zip codes located outside of county are excluded.





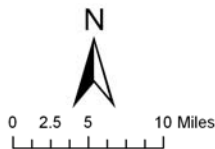
**Shigellosis Crude Incidence**  
 (cases per 100,000 population)  
 Combined Year Data 2005 - 2009





Williamson County, Texas

- ▲ WCCHD Clinic Sites
- Incorporated City



## **Response and Prevention**

### ***Outbreaks Investigated***

Health care providers and other reporters are required to report shigellosis to assist public health investigators in detecting and responding to possible outbreaks.

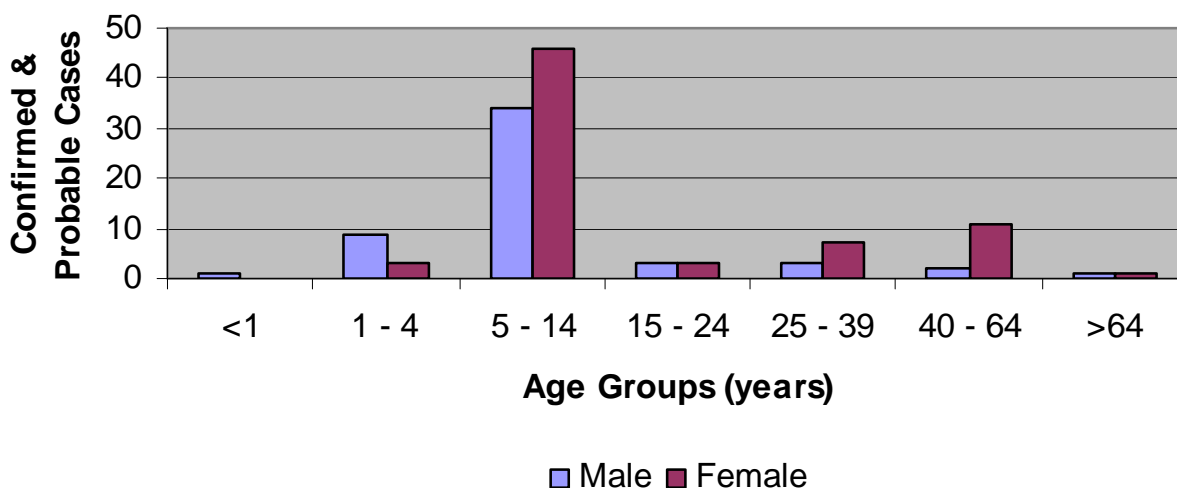
The Williamson County and Cities Health District (WCCHD) requests official outbreak names from the Texas Department of State Health Services for large *Shigella* outbreaks (outbreaks associated with schools, food establishments, large family gatherings, jails, health care facilities etc.). The number of named outbreaks for 2005, 2006, 2007, 2008, and 2009 was 1, 0, 1, 0, and 0 respectively.

WCCHD responded to a shigellosis outbreak in the Round Rock area from March 2007 to May 2007, primarily within the 78664 zip code. WCCHD issued a news release on April 10, 2007 alerting the public to the increase in shigellosis. By the end of the outbreak, student cases had been reported from 4 different elementary schools, 1 middle school, and 2 high schools. School cases were reported from 33 different classes and 7 grade levels from kindergarten to 11<sup>th</sup> grade. Cases were also reported from 4 day care centers. Many secondary cases occurred within families. Cases from 22 family units accounted for over 50% (58/97) of total cases. Without exception, parents, grandparents, and older siblings got sick *after* a younger family member was ill.

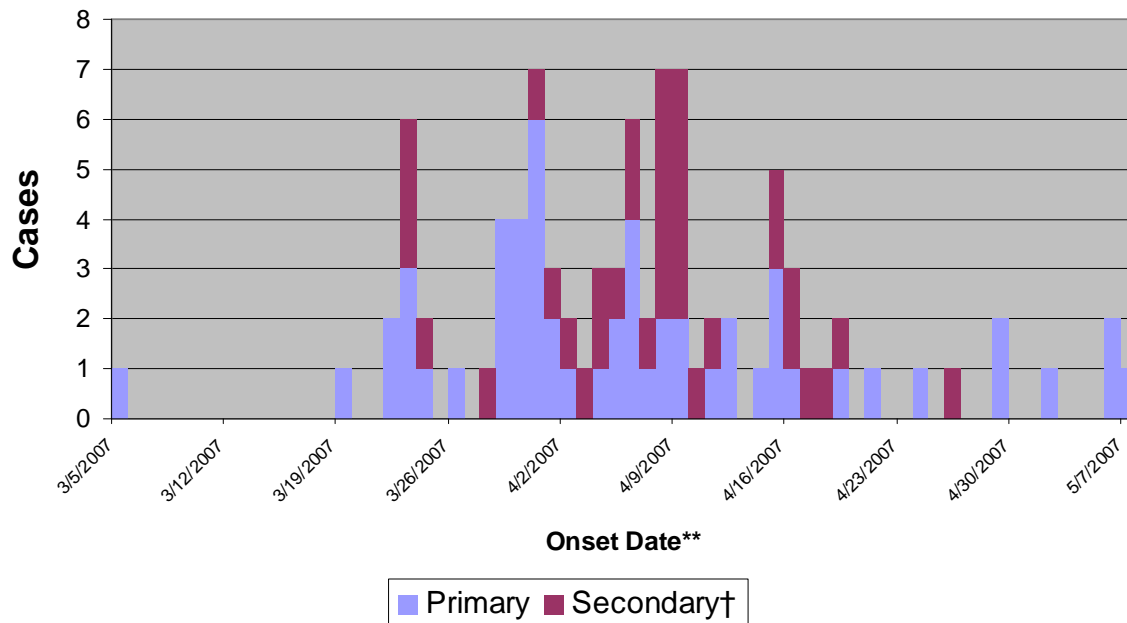


The source of the *Shigella* infections was never clearly identified. Spring break preceded the outbreak so an elementary school student(s) or a staff member may have been infected over the break and passed the bacteria on to others upon their return to school. Following spring break, there were two field trips and two large school events that could have provided a source of infection, either person-to-person or from water or food. WCCHD Retail Food Services inspectors visited schools and issued several recommendations for controlling the outbreak. The inspectors did not find any evidence to implicate food or school personnel as a source of the outbreak. The WCCHD Communicable Disease Management Team also consulted with school health officials, providing guidance and support for implementing outbreak control measures. As part of implementing WCCHD recommendations, the school district initiated an intense cleaning program of facilities and school buses. The school district also sent several letters out to parents informing them of the outbreak and the importance of basic hygiene and, especially, hand washing. In addition to the news release, WCCHD notified area health care providers, hospitals, and media outlets.

### 2007 Shigellosis Cases by Age and Gender



## 2007 Round Rock Shigellosis Outbreak Epi Curve\* 3/5/07 - 5/7/07



\***What is an “Epi Curve”?** The epidemiologic curve, also known as an epi curve, is a visual display of an outbreak’s magnitude and time trend. The x-axis is the date or time of onset of illness among cases and the y-axis is the number of cases.

\*\*If an onset date is not known, the diagnosis date of the date the case was reported to the health department is used in place of onset date.

†Secondary cases are linked to a household or family member with an earlier onset date.

### Limitations of Disease Surveillance Data

Incomplete reporting of diseases may impact the quality and limit the usefulness of disease statistics. Even though disease reporting is mandated by law, the completeness of reporting for different diseases varies greatly. Disease trends over time based on surveillance data should be interpreted with caution. Changes in laboratory technology may lead to new Centers for Disease Control and Prevention (CDC) case definitions and classifications, thereby increasing or decreasing the number of cases reported. Finally, as more is learned about a disease, the clinical case definition may be updated. Whenever possible such changes should be noted when analyzing or displaying disease trends. Case counts and incidence within Texas should be interpreted with caution because different surveillance systems have varying capabilities to detect cases, and reporting might vary.

### Use of Geographical Information Systems (GIS) to Estimate Disease Burden

Disease surveillance in Williamson County is performed by two health departments, the Austin Travis County Health and Human Services Department (ATCHHSD) and the Williamson County and Cities Health District (WCCHD). ATCHHSD investigates suspect cases that lie within Austin’s city limits and Williamson County. WCCHD investigates all other suspect cases in the county. WCCHD also investigates suspect cases that are outside Williamson County but lie within the city limits of Round Rock, Cedar Park, and Leander. To estimate



the true disease burden for the county, disease reports from both ATCHHSD and WCCHD must be combined. If the home address of a case is known, the “home county” is determined using Geographical Information Systems (GIS) techniques. Limitations of GIS include the inability to precisely match and map all addresses (P.O. Boxes, private roads, incorrectly entered address data).

### **Calculation of Incidence**

Incidence is the number of new cases of a disease that arise during a specific period of time. In this report it is expressed as:

$$\text{Incidence} = (\# \text{ cases of a disease or condition reported for a year/population at risk}) \times 100,000$$

= reported cases per 100,000 population

Disease incidence is only calculated if there were more than five cases reported. The reliability of incidence statistics based on a low number of reported cases should be questioned. WCCHD utilizes the mid-year population estimates produced by the Texas State Data Center and Office of the State Demographer to calculate incidence. Surveillance data is usually available before official population estimates are published; therefore, this report may contain surveillance data for the most recent year, but not incidence.

#### **For questions contact:**

**David G. Bastis, MPH, Epidemiologist, 512-248-3257 ([Hdbastis@wcchd.org](mailto:Hdbastis@wcchd.org)) or  
the  
WCCHD Communicable Disease Management Team, 512-943-3660**

**Visit the WCCHD webpage for current year statistics: [Hhttp://www.wcchd.org](http://www.wcchd.org)**

### **Shigellosis Online Resources & References**

Centers for Disease Control and Prevention (CDC) “Frequently Asked Questions”:  
<http://www.cdc.gov/nczved/divisions/dfbmd/diseases/shigellosis/>

Texas Department of State Health Services “Frequently Asked Questions”:  
<http://www.dshs.state.tx.us/idcu/disease/shigellosis/>

CDC Clean Hands Site:  
<http://www.cdc.gov/cleanhands/>

“Henry the Hand” hand washing site: <http://www.henrythehand.com/>

CDC information on *Shigella* and Drinking Water from Private Wells:  
<http://www.cdc.gov/ncidod/dpd/healthywater/factsheets/shigella.htm>

U.S. Food and Drug Administration Center for Food Safety and Applied Nutrition:  
<http://www.cfsan.fda.gov/~lrd/advice.html#foodborn>

