

Infectious Disease in Harris County, Texas

March 2016

Infectious disease refers to a broad range of conditions caused by pathogens that can be spread directly or indirectly, from one person to another. Improved sanitation, immunizations and the availability of pharmaceuticals have decreased the threat of infectious disease, however, it remains a major cause of illness, disability and death in the U.S. and is the leading cause of death worldwide.¹ Further, emerging infectious diseases, those that are new or recently identified, pose new challenges to protecting the public's health.

For some infectious diseases, state rules and regulations require health care providers, hospitals, labs, schools, child care facilities and others to report any known or suspected cases.² In Texas, diseases are typically reported to local health departments; they in turn report cases to the Texas Department of State Health Services. Infectious disease reporting allows health officials to recognize disease patterns and intervene appropriately in order to prevent or control outbreaks and epidemics.

This profile highlights data about various infectious diseases in Harris County.

Table 1: Frequency and Rate of Notifiable Conditions in Harris County (excluding City of Houston) in 2014

Reportable Diseases	2014	
	Number of Cases	Rate per 100,000 Population
Salmonellosis	339	14.91
Multi-Drug Resistant Organism	209	9.2
Streptococcal Disease, Invasive	173	7.61
Campylobacteriosis	162	7.13
Shigellosis	148	6.51
Pertussis	130	5.72
Chickenpox	79	3.48
Arboviral Diseases	71	3.12
Shiga Toxin-Producing Escherichia coli	65	2.86
Amoebiasis	46	2.02
Cryptosporidiosis	33	1.45
Viral Hepatitis	22	0.97
Malaria	15	0.66
Vibriosis	11	0.48
Legionellosis	8	0.35
Cyclosporiasis	7	0.31
Cysticercosis	6	0.26
Meningococcal Disease, Invasive	4	0.18
Chagas Disease	3	0.13
Rickettsia	3	0.13
Typhus	3	0.13
Brucellosis	2	0.09
Ehrlichiosis	2	0.09
Listeriosis	2	0.09
Measles	2	0.09
Anaplasmosis	1	0.04
Influenza-Related Mortality, Non-Specific	1	0.04
Leishmaniasis	1	0.04
Lyme Disease	1	0.04
Q Fever	1	0.04
Typhoid Fever	1	0.04

Source: HCPH Disease Control and Clinical Prevention

Vaccine-Preventable Diseases and Immunizations

Occurrences of once-common diseases such as measles, mumps and tetanus are at or near record lows due to the availability of safe and effective vaccines. However, occurrences of certain vaccine-preventable diseases persist.

For example, a vaccine for chicken pox was introduced in 1995. According to the Centers for Disease Control and Prevention (CDC), between 1995 and 2005, occurrence of and hospitalizations related to chicken pox declined by 90% nationwide.³

Following the sharp decline in chicken pox nationally, there was an increasing number of U.S. chicken pox cases among those who had been previously vaccinated. Between 2002 and 2006 in Harris County (outside the City of Houston), there was an 80% increase, or 400 additional cases, in chicken pox infections during this time period.

In 2006, after examining these data nationwide, the Federal Advisory Committee on Immunization Practices determined that children should receive a booster dose of the vaccine between the ages of 4-6. Since then, chicken pox in Harris County decreased to a rate of 3.39 cases per 100,000 persons in 2014, which represents a 58.6% decline since 2010.

Table 2: Number of Reported Vaccine-Preventable Disease Cases and Crude Rates per 100,000 Population Harris County (Excluding City of Houston), 2010-2014

	2010		2011		2012		2013		2014	
	N	Rate								
Varicella	186	8.18	140	6.16	90	3.96	106	4.66	77	3.39
Measles	0	0	2	0.09	0	0	1	0.04	2	0.09
Mumps	4	0.18	1	0.04	1	0.04	1	0.04	0	0
Pertussis	62	2.73	47	2.07	109	4.8	164	7.22	110	4.84
Rubella	0	0	0	0	0	0	0	0	0	0
Tetanus	0	0	0	0	0	0	0	0	0	0

Source: HCPH Disease Control and Clinical Prevention Division

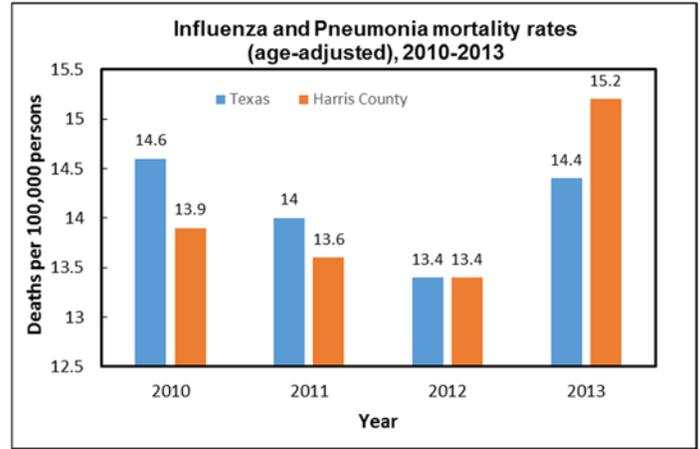
Childhood Immunizations

The Advisory Committee on Immunization Practices and the American Academy of Family Physicians recommends a schedule of vaccines that all children should receive by a certain age. According to CDC's 2014 National Immunization Survey, an estimated 70.4% of Houston-area children were appropriately immunized at age two with the 4:3:1:3:3:1 series of vaccines.⁴ In comparison, 64.0% of Texas children and 71.6% of U.S. children were appropriately vaccinated.



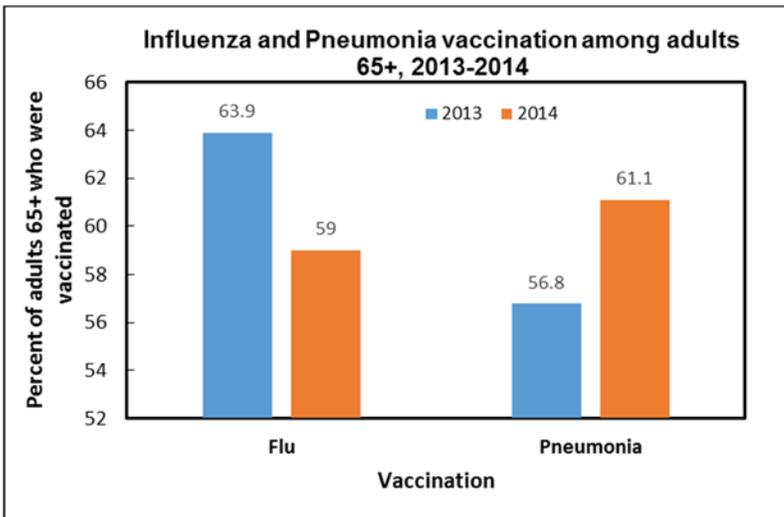
Adult Immunizations

In 2013, 70% of the 3697 influenza-related deaths in the US, were among adults over 65 years of age.⁵ Older adults are at high risk for complications from influenza, one of which is pneumococcal pneumonia. Pneumococcal pneumonia kills about 40,000 people in the U.S. each year, more than all other vaccine-preventable diseases combined, including influenza. About 48,000 adults over 65 years of age died of pneumonia in 2013.⁵ In Harris County in 2013, 316 of the 434 pneumonia-related deaths were among older adults.⁶



Source: Center for Health Statistics, Texas DSHS

CDC recommends that adults age 65 and over be vaccinated against influenza each year, and receive vaccination against pneumococcal pneumonia. In most cases just one dose of pneumococcal vaccine is needed, unless the first dose was given before age 65 and at least five years have passed since that dose.



Source: BRFSS, Texas DSHS

Behavioral Risk Factor Surveillance System (BRFSS) data from 2014 show that among adults age 65 and over surveyed in Harris County, 41.0% reported not receiving a flu vaccine in the past year, compared to 41.2% of Texas older adults and 39.2% of U.S. older adults.⁷ Similarly, 38.9% of Harris County older adults reported never receiving a pneumococcal pneumonia vaccine, compared to 32.1% older adults in Texas and 29.7% in the U.S.

HIV/AIDS and Sexually Transmitted Diseases

HIV and AIDS

The human immunodeficiency virus (HIV) is the virus that can lead to acquired immune deficiency syndrome (AIDS). HIV damages a person's health by destroying the blood cells needed to help the body fight disease.

According to the Texas Department of State Health Services (DSHS), at the end of 2014 there were 22,924 people living with HIV and AIDS in Harris County.⁸ In addition, CDC estimates that up to one quarter of HIV/AIDS infections are undiagnosed. Therefore, it is possible that over 5,254 additional Harris County residents are unaware they are infected with HIV.



The rate of HIV infection differs between racial and ethnic groups. Among Harris County residents living with HIV (non-AIDS) in 2013, 49.6% were African American, 20.6% were white and 26.2% were Latino.⁹

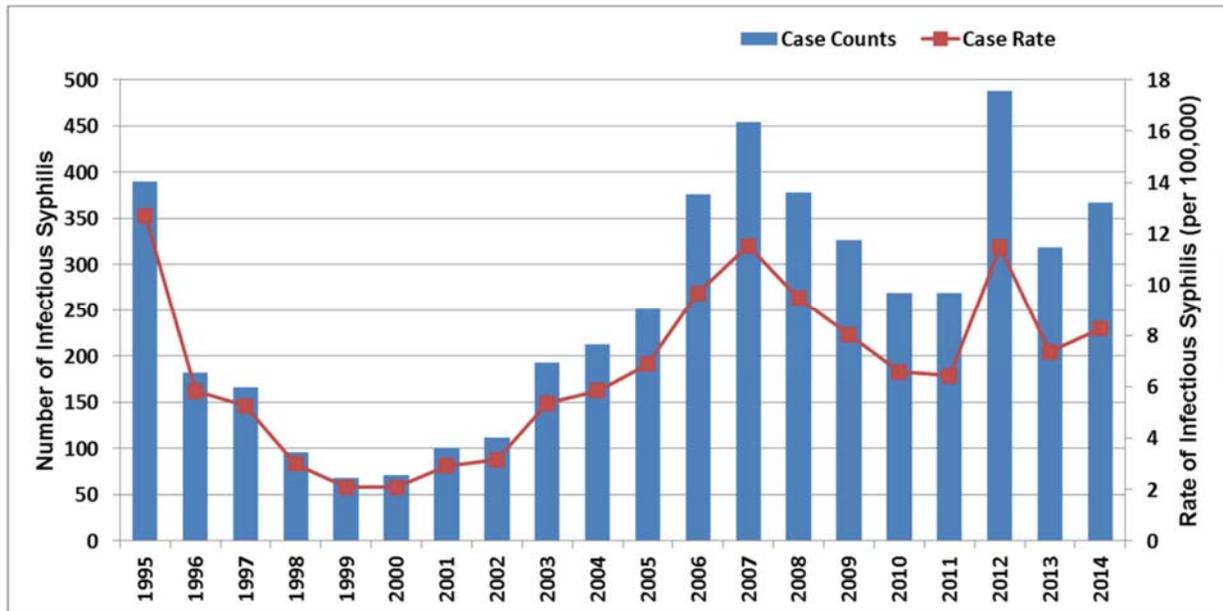
Sexually Transmitted Diseases

The occurrence of sexually transmitted diseases (STDs) such as chlamydia, gonorrhea and syphilis is an indicator of unprotected sexual contact, a primary risk factor for HIV infection. Further, CDC reports that inflammations associated with STDs can facilitate the transmission of HIV. Left untreated, STDs can result in infertility, adverse pregnancy outcomes and cancer.

According to CDC, Chlamydia is the most preventable STD in the U.S., as well as one of the most frequently reported notifiable conditions, with more than 1,441,789 infections reported in 2014.¹⁰ DSHS reports that in 2014, 24,234 cases of chlamydia were reported in Harris County, an infection rate of 545.6 cases per 100,000 persons and an increase of 36% from 2009.¹¹ In comparison, the 2014 State rate was 496.1 cases per 100,000 persons.

According to the CDC, gonorrhea is the second most reported notifiable condition in the U.S. While the U.S. rates of gonorrhea infection reached a historic low in 2009, there has been rise in the rates since then. In Harris County, 6,929 cases of gonorrhea were reported to DSHS in 2014, a rate of 156 cases per 100,000 persons.¹⁰

Syphilis has been shown to facilitate the transmission of HIV and to increase the likelihood of poor pregnancy outcomes. According to CDC, in 2014 rate of reported primary and secondary syphilis infections was 6.3 cases per 100,000 persons, the highest rate reported since 1994.¹² Harris County followed this national trend until 2010 when the infection rate decreased by 19% from 8.1 cases per 100,000 persons in 2009 to 6.6 cases per 100,000 in 2010.⁹



Source: HIV infection in Houston: An epidemiologic profile 2010-2014

Congenital syphilis is a life-threatening infection among infants. The infection is often spread from a pregnant mother who has syphilis through the placenta to her unborn infant. There were 25 cases of congenital syphilis among infants in Harris County in 2013.¹³

In 2013, Harris County had the highest number of congenital syphilis cases in Texas.¹³

Tuberculosis



Tuberculosis (TB) is a bacterial disease affecting the lungs that is spread from person to person through the air. It was once the leading cause of death in the U.S. Drug therapies developed in the twentieth century led to improved health outcomes and a decline in infection rates. According to DSHS, 320 new cases of TB were diagnosed in Harris County in 2014, a rate of 7.2 cases per 100,000 persons, representing a 13% decrease since 2010.¹⁴ The Harris County rate, however, is more than twice the national rate of 3.0 cases per 100,000 persons and 53% higher than the State rate of 4.7 cases per 100,000 persons.

Vector-Borne Diseases

Vector-borne diseases require an insect vector for transmission. West Nile Virus (WNV) and St. Louis Encephalitis (SLE) are sometimes-fatal viral diseases transmitted to humans primarily through the bite of an infected *Culex* mosquito. WNV was first identified in the U.S. in 1999 and quickly spread throughout the country. The first human cases of WNV in Harris County occurred in 2002, when there were 106 confirmed cases and 12 deaths. There were two human cases of SLE reported in Harris County in 2012.

Table 3: Number of Confirmed West Nile Virus Cases and Deaths, Harris County, 2010-2014

	2010	2011	2012	2013	2014
Cases	32	17	115	9	113
Deaths	1	0	4	0	1

HCPH Disease Control and Clinical Prevention

Data Sources:

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2. 25 Tex. Admin. Code Chapter 97.
3. Centers for Disease Control and Prevention (CDC). VPD Surveillance Manual, 5th Edition, 2011, Chapter 17, Varicella: 17-2.
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6. Texas Department of State Health Services (DSHS), Center for Health Statistics. <http://soupon.tdh.state.tx.us/death10.htm>, accessed March 2016.
7. Texas Department of State Health Services (DSHS), Center for Health Statistics. Texas BRFSS, <http://www.dshs.state.tx.us/chs/brfss/>, accessed March 2016.
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9. HIV Infection in Houston, An Epidemiological Profile 2010-2014. Houston Health Department, unpublished.
10. Sexually Transmitted Diseases, CDC. <http://www.cdc.gov/std/default.htm>, accessed March 2016.
11. DSHS, HIV/STD Program, 2014 Texas STD Surveillance Report, <http://www.dshs.state.tx.us/hivstd/reports/default.shtm>, accessed March 2016.
12. CDC, Division of STD Prevention. 2009 Sexually Transmitted Diseases Surveillance, <http://www.cdc.gov/std/stats14/syphilis.htm>, accessed March 2016.
13. Congenital Syphilis in Texas. <http://dshs.state.tx.us/hivstd/info/edmat/CongenitalSyphilis.pdf>, accessed March 2016.
14. DSHS, Infectious Disease Control Unit. Texas Morbidity TB Data, <http://www.dshs.state.tx.us/idcu/disease/tb/statistics/>, accessed March 2016.

Disease Reporting:

If you have questions or would like to report a notifiable condition in Harris County, you may contact an HCPH epidemiologist on duty at 713-439-6000. For a complete list of notifiable conditions in the state of Texas, visit <http://www.dshs.state.tx.us/idcu/investigation/conditions/>.