

Chapter 4 Infectious Disease

VARIABLES

Analysis	Data Source
 Rate of Reported Enteric Disease Cases by Zip Code per 100,000 Population Enteric Disease includes Campylobacteriosis, Cryptosporidiosis, Enterohemorrhagic E. coli 0157:H7, Enterohemorrhagic E.coli shiga toxin positive, Serogroup non-0157, Hepatitis A (anti-HAV IGM+), Listeriosis, Salmonellosis and Shigellosis. 	 Public Health Investigation and Disease Detection of Oklahoma (PHIDDO) Oklahoma City-County 2013-2015 Disease Surveillance Data MMWR Tables (NNDSS) Retrieved from: https:// wonder.cdc.gov/mmwr/mmwrmorb.asp?mmwr_ year=2015&mmwr_week=52
2. Rate of Reported Respiratory Disease Cases by Zip Code, per 100,000 population Respiratory Disease includes Brucellosis, Influenza associated hospitalizations, Haemophilus Influenza, Invasive Disease, Legionellosis, Pertussis, Meningococcal Invasive Disease, Streptococcus Pneumoniae, Invasive in children younger than 5 years, and Streptococcus, Group A, Invasive Disease.	Public Health Investigation and Disease Detection of Oklahoma (PHIDDO) Oklahoma City-County 2013-2015 Disease Surveillance Data
3. Vectorborne Disease Cases Vectorborne Disease includes West Nile Virus Fever, West Nile Virus Neuroinvasive and Zika virus.	Public Health Investigation and Disease Detection of Oklahoma (PHIDDO) Oklahoma City-County 2013-2015 Disease Surveillance Data
4. Average Rate of New Acute Hepatitis B Infections in Oklahoma City-County by Zip Code	Public Health Investigation and Disease Detection of Oklahoma (PHIDDO) Oklahoma City-County 2013-2015 Hepatitis Disease Surveillance Data
5. Average Rate of New Acute Hepatitis C Infections in Oklahoma City-County by Zip Code	Public Health Investigation and Disease Detection of Oklahoma (PHIDDO) Oklahoma City-County 2013-2015 Hepatitis Disease Surveillance Data
6. Rate of New Cases of HIV or AIDS by Zip Code, Ethnicity and Age per 100,000 Population	Oklahoma State Department of Health STD Surveillance Department, 2013-2015
7. Rate of New Cases of Chlamydia by Zip Code, Ethnicity and Age per 100,000 Population	Oklahoma State Department of Health STD Surveillance Department, 2013-2015
8. Rate of New Cases of Gonorrhea by Zip Code, Ethnicity and Age per 100,000 Population	Oklahoma State Department of Health STD Surveillance Department, 2013-2015
9. Rate of New Cases of Syphilis (all phases) by Zip Code, Ethnicity and Age per 100,000 Population	Oklahoma State Department of Health STD Surveillance Department, 2013-2015

Campylobacteriosis Rate, 2015

ENTERIC DISEASE

Enteric Disease includes Campylobacteriosis, Cryptosporidiosis, Enterohemorrhagic E. coli 0157:H7, Enterohemorrhagic E.coli shiga toxin positive, Serogroup non-0157, Hepatitis A (anti-HAV IGM+), Listeriosis, Salmonellosis and Shigellosis. It is presented as the rate of the reported Enteric Disease cases per 100,000 population, over the years 2013-2015.

Why is it important?

Enteric diseases cause symptoms such as upset stomach, diarrhea, vomiting, fever and nausea. Using data from foodborne illness rates in our community can be used to direct food safety policy and interventions (CDC). The local public health system in Oklahoma City-County collaborates to bring epidemiological investigations and consumer protection services to the community in order to address potential outbreak situations in a timely manner and prevent further spread of disease. Education services provide the opportunity to improve systems of practice for hand hygiene and food handling practices by engaging local community establishments and public health officials to advocate for programs, services and polices that aim to reduce the rate of Enteric Disease in our community.

How are we doing?

Of the 1,033 enteric illnesses confirmed in Oklahoma City-County in 2013-2015, 32.0 percent were caused by Shigellosis, 37.9 percent by Salmonellosis and 23.9 percent by Campylobacteriosis, for a combined total of 93.9 percent of enteric cases. It's estimated that every year the United States faces about 500,000 cases of Shigella (CDC).

When comparing Shigella, Salmonella and Campylobater infection rates to the state and national rates, Oklahoma City-County has a higher rate for Shigella than that of the state and a higher rate than the national rate; Oklahoma City-County has a lower rate of infection of Salmonella than the state and the national rates; and Oklahoma City-County has a lower rate of Campylobacter infection rate than both the state and nation.

The highest rates of enteric disease in Oklahoma City-County during 2013-2015 were in zip codes 73150, 73130 and 73008.

Data Source: MMWR Tables (NNDSS) Retrieved from: https://wonder.cdc.gov/mmwr/ mmwrmorb.asp?mmwr_year=2015&mmwr_week=52



Shigellosis Rate, 2013-2015



Salmonellosis Rate, 2013-2015





RESPIRATORY DISEASE

Respiratory Disease includes Brucellosis, Influenza-associated hospitalizations, Haemophilus influenzae, Invasive Disease, Legionellosis, Pertussis, Meningococcal Invasive Disease, Streptococcus pneumoniae, Invasive in children younger than five years, and Streptococcus, Group A, Invasive Disease. These can be spread from person to person through direct contact with respiratory droplets. There were 922 cases of respiratory disease reported in Oklahoma City-County during 2013-2015.

Why is it important?

With local public health efforts, such as epidemiological investigation, immunization and environmental protection services, providers have an opportunity to work with and assist in the identification of gaps in testing standards and prevention policies to inform decision making around infectious diseases. The combined public health efforts aim to prevent the spread and protect the community as a whole from these diseases. The community has the opportunity to improve systems of practice around appropriate infectious disease knowledge by engaging local community establishments and public health officials, and developing or advocating for programs, services, and policies that aim to reduce the rate of infectious diseases in our community.

How are we doing?

Oklahoma City-County had a lower rate of Influenza-related hospitalizations compared to the state but a higher rate than the United States. Oklahoma City-County rates of Pertussis and Streptococcus pneumoniae invasive disease were lower than the state and the United States. The Oklahoma City-County Haemophilus Influenza Invasive Disease rate was similar to the state rate but higher than the national rate. In Oklahoma City-County, the zip codes with the highest rate of Respiratory Disease were 73117, 73141 and 73111.

Haemophilus Influenzae, Invasive Disease Rate, 2013-2015



Streptococcus Pneumoniae Rate, Invasive in Children Less Than 5 years, 2013-2015



Pertussis Rate, 2013-2015



Influenza Associated Hospitalizations



Data Source: Public Health Investigation and Disease Detection of Oklahoma (PHIDDO) Oklahoma City-County 2013-2015 Disease Surveillance Data and MMWR tables(NNDSS), Retrieved from https://wonder.cdc.gov/mmwr/mmwrmorb.asp



VECTORBORNE DISEASE

The Oklahoma City-County Health Department, in coordination with municipal partnerships, implements a multilevel approach to prevention, surveillance and disease abatement of Vectorborne Diseases, including West Nile Virus (WNV).



Data Source: Public Health Investigation and Disease Detection of Oklahoma 2013-2015 Epidemiological Investigation Records and Centers for Disease Control and Prevention, ArboNET 2013-2015

Why is it important?

Vectorborne disease, such as West Nile Virus, is a potentially serious illness. Two mosquitoborne diseases that impact Oklahoma City-County are West Nile Virus and travel-related Zika Virus cases. During 2013-2015, there were no identified mosquitoes infected with Zika Virus in Oklahoma City-County. Zika Virus has impacted Oklahoma City-County due to community members traveling to countries with active transmission of the virus and returning to Oklahoma City-County. The heightened vector activity in the Oklahoma City-County area occurs April through September, and West Nile Virus human cases typically occurs in the warm summer months. Since West Nile Virus was introduced in 2002, Oklahoma has experienced three outbreak seasons: 2003, 2007 and 2012.

How are we doing?

There were 36 reported West Nile Virus disease cases in Oklahoma City-County during 2013-2015 - this included 8 West Nile Virus Fever and 28 West Nile Virus Neuroinvasive. During 2013-2015, there were a total of 191 West Nile Virus disease cases reported in Oklahoma (77 WNV Fever and 114 WNV Neuroinvasive), and 5,271 in the United States (2,780 WNV Fever and 4,069 WNV Neuroinvasive). ArboNET began collecting Zika outbreak data Jan. 1, 2015 and there were zero reported locally acquired cases in Oklahoma City-County and Oklahoma. The multilevel approach deployed in this city-county jurisdiction provides best practices for collaboration with partners and surrounding municipalities in order to reduce disease impact. This methodology includes media outreach, vector surveillance, environmental treatments, partnerships and human disease surveillance. As a single agency, this timely response would be impossible to achieve without partnerships with surrounding municipalities. Functioning as a cohesive unit, the local public health system is able to set, maintain, repair and collect traps at each site, disseminate surveillance reporting information, coordinate treatment applications and investigate harborage areas. Additionally, municipalities coordinate with habitat remediation efforts.

Vectorborne Disease Response Plan (VDRP)

Establish a **human surveillance** protocol, to include laboratory confirmation, case investigation, and habitat surveillance.

Conduct **vector surveillance** in your jurisdiction. Trapping for species of interest, location of traps, collection schedule, sort by species and gender, test for disease, and record results.





Communication Strategies

Communication strategies are vital to the success of the VDRP. Affecting behavior change of actions to protect against mosquito bites, education has an integral role. Consider multiple faucets in relaying a clear, timely, and consistent message within state and local jurisdictions. Prepare press briefs for each response phase to include the reason for the announcement, the risk to the jurisdiction, and how to reduce the risk. When reusing messaging, it is encouraged to personalize it to your jurisdiction.



Establishing and Implementing A Scalable Vectorborne Disease Response Plan

at the Local Level _____



Each Jurisdiction is unique. It should not be expected to create a Vectorborne Disease Response Plan (VDRP) overnight or without considerable assistance.

This guide is a reference, not a rule, and should be adjusted as needed for a phased response.



Vectorborne Disease Brochure Cover

BLOODBORNE DISEASE

This indicator represents the number of acute cases of Hepatitis B or Hepatitis C per 100,000 population. Hepatitis is a viral infection that can be acute, up to six months, or chronic, lifetime.

Why is it important?

The bloodborne pathogens of primary concern include Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV). HIV infection data for Oklahoma City-County is presented on pages 74 and 75.

Hepatitis **B**

It's estimated that up to 2.2-million people are living in the United States with chronic Hepatitis B and that more than 19,000 are newly infected each year (CDC). Hepatitis B enters the bloodstream and infects the liver. Long-term infection ("carrier") may result in chronic liver disease or liver cancer. Anyone can get Hepatitis B. However, the risk of transmission by blood or bodily fluids increases for injection drug users, babies of infected mothers, sexual partners of infected persons, medical and dental workers, and people living in a household with a "carrier". There is a vaccine to protect against Hepatitis B, and it is generally recommended for persons who are at high risk for infection and for all newborn babies.

Age-Adjusted HBV Mortality Rates, 2013-2015



How are we doing?

The average rate of new acute hepatitis infections during 2013-2015 in Oklahoma City-County is 1.3 (per 100,000) for Hepatitis B and 0.78 (per 100,000) for Hepatitis C, which is lower than the state rate of 1.5 and 1.2 for Hepatitis B and C, respectively. The United States rate of new infections was lower than the city-county at 0.9 new cases of Hepatitis B and 0.7 cases of Hepatitis C, per 100,000 population.

Age-Adjusted HCV Mortality Rates, 2013-2015

Oklahoma City-County 0.78

Oklahoma State 1.2

United States 0.7

Hepatitis C

It's estimated that there are approximately 4-million cases of chronic Hepatitis C in the United States and nearly 30,000 new cases of Hepatitis C each year (CDC). Hepatitis C is spread primarily by contact with the blood of an infected person. There is no vaccine for Hepatitis C and no treatment after an exposure that will prevent an infection. Most people infected with Hepatitis C do not have symptoms for years, even decades, following infection.

Data Source: Public Health Investigation and Disease Detection of Oklahoma (PHIDDO) Oklahoma City-County 2013-2015 Hepatitis Disease Surveillance Data and MMWR tables (NNDSS), retrieved from https://wonder.cdc.gov/mmwr/ mmwrmorb.asp



HIV/AIDS

This indicator represents the number of newly reported cases of Human Immunodeficiency Virus (HIV) infections or AIDS per 100,000 population. There were 399 new reports of HIV and 115 AIDS during 2013-2015 in Oklahoma City-County. The rate was 14.4 cases per 100,000 population during these three years.

Why is it important?

HIV weakens a person's immune system by destroying cells that fight disease and infection. Although no effective cure currently exists, proper medical care can control HIV, prevent it from developing into another stage and can reduce the risk of transmission to someone else. In the United States, approximately 1.2-million persons were living with HIV at the end of 2013, and 13 percent did not know they had it. Social and behavioral factors, including men who have sex with men (MSM) and injection drug use (IDU), increase risk of being infected with HIV/AIDS.



Kris Williams, BA

LGBTQ+ Service Coordinator, NorthCare

"Collaboration is key to a community's success and in my experience, working as an LGBTQ youth coordinator, Oklahoma City does a great job of working together. The work that I do is personal because it's about making my community healthier and safer for the next generations. If I teach you to see the value in yourself, it won't just benefit you."

Data Source: Oklahoma State Department of Health STD Surveillance Department, 2013-2015 and Centers for Disease Control and Prevention. HIV Surveillance Report, 2015; vol. 27. Retrieved from http:// www.cdc.gov/hiv/ library/reports/hivsurveillance.html.





How are we doing?

There was an average of 14.4 cases of HIV/AIDS, per 100,000 population, reported in Oklahoma City-County during 2013-2015. In Oklahoma City-County, 51 percent of HIV diagnoses and 56 percent of AIDS diagnoses, during 2013-2015, were men who have sex with men. African Americans had the highest rate of new HIV cases in the Oklahoma City-County metropolitan statistical area (MSA). When looking at most recent 2015 data, the rate of newly diagnosed HIV cases in Oklahoma City-County was higher than the state but lower than the national rate.

Risk Associated with ■ **HIV** ■ **AIDS Diagnosis** (Percent of Cases)





CHLAMYDIA

This indicator is presented as the number of newly reported cases of Chlamydia per 100,000 population. There were 15,958 new reports of Chlamydia during 2013-2015 in Oklahoma City-County. The average annual rate was 635.2 cases per 100,000 population.

Why is it important?

The most commonly investigated sexually transmitted disease (STD) in Oklahoma City-County is Chlamydia, and it is also the most frequently reported in the United States. Chlamydia is caused by the bacterium Chlamydia trachomatis. Chlamydia is believed to be underreported because the majority of people with Chlamydia are asymptomatic. If it is not treated, chlamydial infections can lead to serious health consequences, including pelvic inflammatory disease and preterm delivery (CDC).

How are we doing?

In 2013-2015, the rate of new Chlamydia cases reported in Oklahoma City-County was 635.2 cases per 100,000 population. The city-county rate was higher than both the 2015 rates for the state and the nation. The Oklahoma Chlamydia rate was 537.5 per 100,000, and in 2015, there were more than 1.5 million reported chlamydial infections in the United States, representing a rate of 478.8 cases per 100,000 population (CDC). The zip codes with the highest Chlamydia rates were 73104, 73105, 73111, 73117 and 73145.



Data Source: Oklahoma State Department of Health STD Surveillance Department, 2013-2015 and MMWR tables(NNDSS), retrieved from https://wonder.cdc.gov/mmwr/mmwrmorb.asp

OCCHD Chlamydia Cases by Race/Ethnicity, 2013-2015



Chlamydia Comparison, 2015 (Cases per 100,000 population)

> 635.2 Oklahoma City-County

> > 537.5 Oklahoma State

453.4 United States



GONORRHEA

This indicator is presented as the number of newly reported cases of Gonorrhea per 100,000 population. There were 5,888 new reports of Gonorrhea during 2013-2015 in Oklahoma City-County. The average annual rate was 246.2 cases per 100,000 population.

Why is it important?

Gonorrhea is the second most commonly reported notifiable disease in the United States (CDC). Gonorrhea is caused by the bacterium Neisseria gonorrhoeae. There has been an increase in the incidence rate of Gonorrhea throughout the United States. Resistance to antimicrobials that are used in the treatment of Gonorrhea has been observed, most recently with cefixime. The CDC has issued updated treatment guidelines resulting in dual therapy with ceftriaxone and azithromycin. Increased surveillance of Gonorrhea infections is ongoing to monitor resistance and collect additional information to understand the epidemiology of the disease. It's important for the community to understand the prevalence of this disease, as social determinate of health, sexual behaviors and community prevalence can increase the risk of becoming infected with Gonorrhea (CDC).

How are we doing?

There was an annual average of 246.2 cases of Gonorrhea per 100,000 population reported in Oklahoma City-County during 2013-2015. The Gonorrhea rate increased in all regions of the United States during 2014-2015. The incidence rates in Oklahoma City-County were higher than the rate in Oklahoma (167.3 cases per 100,000) and the United States (123.9 cases per 100,000). The zip codes with the highest rates of Gonorrhea were 73104, 73111, 73105, 73117 and 73114.



OCCHD Gonorrhea Cases by Age, 2013-2015

OCCHD Gonorrhea Cases by Race/Ethnicity, 2013-2015



Gonorrhea Comparison, 2015 (Cases per 100,000)

Oklahoma City-County **246.2**

Oklahoma State 167.3

United States 123.9

Data Source: Oklahoma State Department of Health STD Surveillance Department, 2013-2015 and MMWR tables(NNDSS), retrieved from https://wonder.cdc.gov/mmwr/mmwrmorb.asp



SYPHILIS

This indicator signifies the number of newly reported cases of Syphilis, all stages, per 100,000 population. There were 584 new reports of Syphilis during 2013-2015 in Oklahoma City-County. The rate was 21.5 cases per 100,000 population.

How are we doing?

There was an average of 21.5 cases of Syphilis per 100,000 population reported in Oklahoma City-County during 2013-2015. In 2015, the state rate was 13.1 cases of Syphilis (all stages) per 100,000 population. The United States rate was 8 cases of Syphilis per 100,000 population. The zip codes with the highest Syphilis rates were 73105, 73106, 73118, 73112 and 73107.

Average Case Number Rate Comparison



Why is it important?

Syphilis is a sexually transmitted disease (STD) caused by the bacterium Treponema pallidum. Syphilis can lead to significant complications without treatment and can increase risk of transmission of HIV. Symptoms are divided into primary, secondary, latent and late stage Syphilis. Sore(s) may be visible during the primary stage but can easily go unnoticed. It will last 3-to-6 weeks and will go away with or without treatment. It's important to receive treatment, so the disease doesn't progress to the secondary stage. The secondary stage then progresses with a rash and may be accompanied by a fever, sore throat, swollen lymph glands, hair loss, weight loss and fatigue. Again, without treatment, these symptoms will eventually go away but will progress into the latent and even late stage of Syphilis (CDC). The rate of primary and secondary Syphilis has been increasing in the United States since 2001. During 2014-2015, the national rate increased 19 percent, which was the highest in more than 20 years (CDC).



Data Source: Oklahoma State Department of Health STD Surveillance Department, 2013-2015 and MMWR tables(NNDSS), retrieved from https://wonder.cdc.gov/mmwr/mmwrmorb.asp

