

# South Central Region - Ohio Hepatitis A Outbreak Report and Analysis

### Table of Contents:

Introduction	2
Hepatitis A Outbreak Summary	3
Comparison of Regional Data to State Data	4
Data Analysis	5
Conclusions and Findings	11

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#### Introduction:

Local Health Districts from the South-Central Region of Ohio conducted an analysis of the recent Hepatitis A outbreak which began in the South Central Region of Ohio in January of 2018. Health Districts participating in the analysis include Jackson County Health Department, Pike County General Health District, Lawrence County Health District, Gallia County Health District, Hocking



County Health District, and Vinton County Health Department (*Figure 1 above includes health districts involved in the outbreak analysis*). The analysis was conducted to help the local public health agencies assess the contributing factors associated with the outbreak, the magnitude of the outbreak, identify geographic locations of the outbreak / cases, and to identify target populations involved in the outbreak and are a higher risk. This analysis will help the districts develop strategies and interventions to reduce the number of cases associated with the outbreak response.

#### **Data Analysis Process**

Using a descriptive analytical process, the regional team aggregated outbreak data and compared the data using multiple methods.

#### January 2018- May 2019 Hepatitis A Outbreak Overview:

In June of 2018, the Ohio Department of Health (ODH) declared a statewide community Hepatitis A outbreak after observing an increase in hepatitis A cases during the previous months in 2018. Counties located in the South-Central Region of Ohio began to see cases involved in the statewide outbreak early on, beginning in May of 2019. The outbreak continues into June of 2019, but many counties in South Central Ohio have seen a decline in cases compared to the earlier months of the outbreak during June of 2018 through December of 2018.

According to the Center for Disease Control and Prevention, hepatitis A is a vaccine-preventable, communicable disease of the liver caused by the hepatitis A virus (HAV). It is usually transmitted person-to-person through the

fecal-oral route or consumption of contaminated food or water. Hepatitis A is a self-limited disease that does not result in chronic infection. Most adults with hepatitis A have symptoms, including fatigue, low appetite, stomach pain, nausea, and jaundice, that usually resolve within 2 months of infection; most children less than 6 years of age do not have symptoms or have an unrecognized infection. Antibodies produced in response to hepatitis A infection last for life and protect against reinfection. The best way to prevent hepatitis A infection is to get vaccinated (CDC, June 2019).

In May 2019, the <u>Centers for Disease</u> <u>Control and Prevention (CDC)</u> provided an updated case definition resulting in an increase in the number of outbreak cases in Ohio. ODH and local health departments have continued to investigate reported hepatitis A cases in Ohio to determine if cases are part of the ongoing outbreak. (ODH, June 2019).

Hepatitis A Outbreak Cases by County, Ohio, 2018-2019



Data analyzed 06/24/19, Outbreak Response and Bioterrorism Investigation Team, Bureau of Infectious Diseases, Ohio Department of Health, 2019.

**Figure 1** above indicates the total number of Hepatitis A cases associated with the outbreak by county in Ohio (Provided by Ohio Department of health). The Ohio Department of Health has identified high-risk populations for the hepatitis A outbreak which includes:

- People who use drugs (injection or non-injection)
- People experiencing unstable housing or homelessness
- People who are currently or were recently incarcerated
- Men who have sex with men (MSM)
- People with chronic liver disease, including cirrhosis, hepatitis B, or hepatitis C

In this report, we will identify factors that contributed to the outbreak focusing on the cases that occurred in the South-Central Region of Ohio. The analysis will identify the trends of those included in the outbreak in the South-Central region of Ohio looking at the demographics of the cases, socio-economical factors, and environmental factors that may have contributed to the increased cases of Hepatitis A. The analysis will also compare local data to statewide numbers to help identify high risk populations in the South-Central Ohio region.

#### South Central Region of Ohio - Hepatitis A Outbreak Data Analysis

Data used for this analysis includes hepatitis A cases in the South-Central Region of Ohio dating from January 2018- May of 2019. Primary Data was pulled from several data sources such as the Ohio Disease Reporting System (ODRS) as well as hepatitis A case investigation data collected by local health district infectious disease nurses and epidemiologist. Secondary data was collected from Ohio Department of Health and Center for Disease Control and Prevention websites.

	South Central Ohio Region	Ohio
Illness onset range	4/22/18-6/7/19	1/5/18-6/24/19
Confirmed Cases	385	3108
Hospitalizations	48%	60%
Deaths	0	10
Age Range	1 - 84 years	1 - 89 Years
Gender	59% Male	61 % Male

 Table 1 below compares South Central Ohio Region outbreak data compared to Ohio's total Outbreak data.

**Figure 2** includes total number of new hepatitis A confirmed cases for the South-Central Ohio by county per month beginning in January 2018 to April 2019.



**Figure 3** includes the total number of hepatitis A vaccinations administered in South-Central Ohio by county per month beginning January 2018 to April 2019.



**Figure 4** includes the confirmed hepatitis A cases by zip code vs. median household income of the zip code. (American Community Survey, 2019)(Ohio Disease Reporting System, 2019)

## CONFIRMED HEPATITIS A CASES BY ZIP CODE AND MEDIAN HOUSEHOLD INCOME



**Figure 5** includes the confirmed hepatitis A cases by zip code vs. civilian population with public insurance coverage of the zip code. (American Community Survey, 2019)(Ohio Disease Reporting System, 2019)

#### CONFIRMED HEPATITIS A CASES BY ZIP CODE AND PERCENT OF CIVILIAN POPULATION WITH PUBLIC INSURANCE COVERAGE



**Figure 6** includes the confirmed hepatitis A cases by zip code vs. education level of the location. (American Community Survey, 2019)(Ohio Disease Reporting System, 2019)

#### CONFIRMED HEPATITIS A CASES BY ZIP CODE AND PERCENT HIGH SCHOOL GRADUATES AND HIGHER



**Figure 7** includes the confirmed hepatitis A cases by zip code vs. percent of renter occupied housing location. (American Community Survey, 2019)(Ohio Disease Reporting System, 2019)

#### CONFIRMED HEPATITIS A CASES BY ZIP CODE AND PERCENT RENTER OCCUPIED HOUSING



**Figure 8** includes the confirmed hepatitis A cases by zip code vs. labor force unemployed by zip code (American Community Survey, 2019)(Ohio Disease Reporting System, 2019)

#### CONFIRMED HEPATITIS A CASES BY ZIP CODE AND PERCENT OF LABOR FORCE UNEMPLOYED



#### Data Analysis Conclusions / Findings:

While it may seem easy to point a finger at one socioeconomic factor (SEF) for the increasing rate of cases for Hepatitis A (HAV) in the region, it seems there is not one single factor that stands out while looking at the maps shown above. In some of the zip codes, it seems as though the SEF ties into the higher rates of HAV but upon further examination the same SEFs can be found in zip codes with no reported cases. Because of this, there were no SEFs that were examined in this report that were identified as higher risk factors for contracting HAV.

Due to the nature of Hepatitis A, it is very hard to show the efficacy of the vaccinations. It seems as though Figure 3's vaccination numbers do not correlate with Figure 2's confirmed cases of HAV, but this can be misleading due to the fact that someone could have been infected with HAV before getting the vaccination and still ended up as a confirmed case. This is because HAV has an incubation period of up to 2 months in some individuals and the vaccine is only effective as prophylaxis within 2 weeks of exposure. In all reality, it is very probable that the vaccinations prevented an HAV infection in a large number of individuals that were identified through high-risk behaviors and targeted with vaccinations.

#### **Special Thanks**:

Athens City/County Health Department Gallia County Health Department Hocking County Health Department Jackson County Health Department Meigs County Health Department Pike County Health Department Ross County Health District Vinton County Health Department Ohio Department of Health

#### **Resources:**

American Community Survey

U.S. Census Quick Facts

Ohio Department of Health. 2019. Retrieved from: https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/Hepatitis-Surveillance-Program/Hepatitis-A-Statewide-Community-Outbreak/

Ohio Disease Reporting System. 2019. Generated by Mikie Strite.