city of CINCINNATI HEALTH DEPARTMENT

Five Year Communicable Disease Surveillance Summary, 2017-2021

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Executive Summary

Key Findings

- Rates of the following reportable diseases **increased** from 2017 to 2021: E. Coli, Yersinosis, Malaria, *S. Pneumoniae*- Antibiotic (abx) resistant, Carbapenemase-Producing Carbapenem-Resistant Enterobacteriaceae (CP-CRE), *SARS-CoV-2* (COVID-19*), Candida Auris*, Coccidioidomycosis, Multisystem inflammatory Syndrome in Children (MIS-C) associated with COVID-19.

- Average rates for the following diseases have a **lower** five-year average rate in Cincinnati, than the five-year average rate for the state of Ohio: Amebiasis, Campylobacteriosis, Cryptosporidiosis, Legionellosis, Salmonellosis, Yersinosis, Dengue Fever, Lyme Disease, Spotted Fever Rickettsiosis, Meningococcal Disease (*N, Meningitis*), Mumps, Pertussis, Varicella, Hepatitis B (acute),

- Over the last five years, Cincinnati health department (CHD) has conducted **457** communicable disease outbreak investigations. Of all investigations, **374** were outbreak investigations linked to COVID-19. Other diseases outbreak investigations included but not limited to, Candida Auris, Norovirus, Shigellosis, and Influenza.

How Communicable Diseases get Reported in Ohio.

Who Reports Communicable Diseases?

Healthcare providers, laboratorians, and health individuals with knowledge of a case or suspected case of a reportable communicable disease are required to report to the Ohio Department of Health (ODH). They must report communicable disease outbreaks that are linked to congregate settings such as schools, daycares, and long-term care facilities.

What Diseases are Reported?

All communicable diseases listed on the Ohio ABC List (class A, B, C disease) need to be reported. Examples of these diseases are mentioned in the below data table. Along with the disease the name, diagnosis, birth date, sex, phone number, address and other supplementary disease specific data is all reported to the ODH by phone, they submit the information into the Ohio Disease Reporting System (ODRS), online. Full list of reportable diseases in Ohio can be found in section 1 of the Infectious Disease Control Manual at:https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/infectious-disease-control-manual/section1/abcs-guide-to-reportable-infectious-diseases-in-ohio

When are Communicable Diseases Reported?

Diseases are reported depending on what class they are; the following are the reporting deadlines for Ohio health departments and health jurisdictions. **Class A**: immediately by phone, **Class B**: by the end of the next business day, **Class C:** the end of the next business day. More information on these time frames can be found in section 1 of the Infectious Disease Control Manual at: https://odh.ohio.gov/know-our-programs/infectious-disease-control-manual/section1/section-1-reporting

Where are Reports made?

Communicable diseases must be reported to the local health authority that corresponds with the residence of the case or suspected case. If this information is not known, then the report can be made to the local health authority of the lab or health provider reporting the communicable disease case. More information on reporting can be found in section 1 of the Infectious Disease Control Manual at: https://odh.ohio.gov/know-our-programs/infectious-disease-control-manual/section1/section-1-reporting

Why are Communicable Diseases Reported?

By reporting cases of communicable diseases, local, state, federal health agencies, and partners, researchers are better able to see trends in the spread of disease. It is important to be able to identify outbreaks when they occur so the local health authorities can take the appropriate measures to stop, slow and prevent the spread or creation of more outbreaks. More information on this can be found in section 1 of the Infectious Disease Control Manual at: https://odh.ohio.gov/know-our-programs/infectious-disease-control-manual/section1/section-1-reporting **OR** for information on prevention of specific reportable diseases can be found in section 3 of the Infectious Disease Control Manual at: https://odh.ohio.gov/know-our-programs/infectious-disease-control-manual/section3/

When are Reports Final?

All the data within this report is provisional and subject to change. These changes can occur as data is updated, jurisdictions are changed, or more cases are confirmed.

Know Your ABCs: A Quick Guide to Reportable Infectious Diseases in Ohio

From the Ohio Administrative Code Chapter 3701-3; Effective August 1, 2019

Class A:

Diseases of major public health concern because of the severity of disease or potential for epidemic spread – report immediately via telephone upon recognition that a case, a suspected case, or a positive laboratory result exists.

- Anthrax
- Botulism, foodborne
- Cholera
- Diphtheria
- Influenza A – novel virus infection
- Measles
- Meningococcal disease
- Middle East Respiratory Syndrome (MERS)
- Plague
- Rabies, human
- Rubella (not congenital)
- Severe acute respiratory syndrome (SARS)
- Smallpox
- Tularemia
- Viral hemorrhagic fever (VHF), including Ebola virus disease, Lassa fever, Marburg hemorrhagic fever, and Crimean-Congo hemorrhagic fever

Any unexpected pattern of cases, suspected cases, deaths or increased incidence of any other disease of major public health concern, because of the severity of disease or potential for epidemic spread, which may indicate a newly recognized infectious agent, outbreak, epidemic, related public health hazard or act of bioterrorism.

Class B:

Disease of public health concern needing timely response because of potential for epidemic spread – report by the end of the next business day after the existence of a case, a suspected case, or a positive laboratory result is known.

- Amebiasis
- Arboviral neuroinvasive and non-neuroinvasive disease:
  - Chikungunya virus infection
  - Eastern equine encephalitis virus disease
  - LaCrosse virus disease (other California serogroup virus disease)
  - Powassan virus disease
  - St. Louis encephalitis virus disease
  - West Nile virus infection
  - Western equine encephalitis virus disease
  - Yellow fever
  - Zika virus infection
  - Other arthropod-borne diseases
- Babesiosis
- Botulism
  - infant
  - wound
- Brucellosis
- Campylobacteriosis
- *Candida auris*
- Carbapenemase-producing carbapenem-resistant Enterobacteriaceae (CP-CRE)
  - CP-CRE *Enterobacter* spp.
  - CP-CRE *Escherichia coli*
  - CP-CRE *Klebsiella* spp.
  - CP-CRE other
- Chancroid
- *Chlamydia trachomatis* infections
- Coccidioidomycosis
- Creutzfeldt-Jakob disease (CJD)
- Cryptosporidiosis
- Cyclosporiasis
- Dengue
- *E. coli* O157:H7 and Shiga toxin-producing *E. coli* (STEC)
- Ehrlichiosis/anaplasmosis
- Giardiasis
- Gonorrhea *(Neisseria gonorrhoeae)*
- *Haemophilus influenzae* (invasive disease)
- Hantavirus
- Hemolytic uremic syndrome (HUS)
- Hepatitis A
- Hepatitis B (non-perinatal)
- Hepatitis B (perinatal)
- Hepatitis C (non-perinatal)
- Hepatitis C (perinatal)
- Hepatitis D (delta hepatitis)
- Hepatitis E
- Influenza-associated hospitalization
- Influenza-associated pediatric mortality
- Legionnaires' disease
- Leprosy (Hansen disease)
- Leptospirosis
- Listeriosis
- Lyme disease
- Malaria
- Meningitis:
  - Aseptic (viral)
  - Bacterial
- Mumps
- Pertussis
- Poliomyelitis (including vaccine-associated cases)
- Psittacosis
- Q fever
- Rubella (congenital)
- *Salmonella* Paratyphi infection
- *Salmonella* Typhi infection (typhoid fever)
- Salmonellosis
- Shigellosis
- Spotted Fever Rickettsiosis, including Rocky Mountain spotted fever (RMSF)
- *Staphylococcus aureus*, with resistance or intermediate resistance to vancomycin (VRSA, VISA)
- Streptococcal disease, group A, invasive (IGAS)
- Streptococcal disease, group B, in newborn
- Streptococcal toxic shock syndrome (STSS)
- *Streptococcus pneumoniae*, invasive disease (ISP)
- Syphilis
- Tetanus
- Toxic shock syndrome (TSS)
- Trichinellosis
- Tuberculosis (TB), including multi-drug resistant tuberculosis (MDR-TB)
- Varicella
- Vibriosis
- Yersiniosis

Class C:

Report an outbreak, unusual incident or epidemic of other diseases (e.g. histoplasmosis, pediculosis, scabies, staphylococcal infections) by the end of the next business day.

Outbreaks:

- Community
- Foodborne
- Healthcare-associated
- Institutional
- Waterborne
- Zoonotic

NOTE:

Cases of AIDS (acquired immune deficiency syndrome), AIDS-related conditions, HIV (human immunodeficiency virus) infection, perinatal exposure to HIV, all CD4 T-lymphocyte counts and all tests used to diagnose HIV must be reported on forms and in a manner prescribed by the Director.

Ohio Department of Health

Table 1:	2017 Case # (Case Rate)	2018 Case # (Case Rate)	2019 Case # (Case Rate)	2020 Case # (Case Rate)	2021 Case # (Case Rate)	5-Year Average Rate
Food- or Waterborne	**149 (49.44)**	**326 (108.16)**	**252 (83.61)**	**103 (34.17)**	**109 (36.16)**	**62.31**
Amebiasis	0.00	0.00	0.00	1 (0.33)	0	0.066
Brucellosis	0.00	1 (0.33)	0.00	0.00	0	0.066
Campylobacteriosis	28 (9.29)	39(12.94)	43 (14.27)	29 (9.22)	26 (8.63)	10.95
Cryptosporidiosis	16 (5.31)	13 (4.31)	14 (4.64)	4 (1.33)	5 (1.66)	3.45
Cyclosporiasis	0.00	2 (0.66)	10 (3.32)	1 (0.33)	0	1.30
E. coli, Shiga Toxin Producing O157:H7	4 (1.33)	10 (3.32)	14 (4.64)	3 (0.99)	14 (4.64)	2.99
Giardiasis	15 (4.98)	31 (10.28)	19 (6.30)	10(3.32)	17 (5.64)	6.1
Hepatitis A *(also vaccine-preventable)*	0.00	94 (31.19)	39 (12.94)	3 (0.99)	1 (0.33)	11.36
Legionellosis	16 (5.31)	23 (7.63)	18 (5.97)	10 (3.32)	10 (3.32)	5.11
Listeriosis	0.00	0.00	2 (0.66)	2 (0.66)	3 (.99)	0.46
Salmonellosis	37 (12.28)	39 (12.94)	41 (13.60)	31 (10.28)	22 (7.30)	11.28
Shigellosis	31 (10.28)	70 (32.22)	48 (15.92)	7 (2.32)	10 (3.32)	11.01
Vibriosis (not cholera)	0.00	2 (0.66)	2 (0.66)	0.00	1 (0.33)	0.33
Typhoid Fever**(also vaccine preventable)*	2 (0.66)	0.00	0.00	0.00	0	0.13
Yersiniosis	0.00	2 (0.66)	2 (0.66)	2 (0.66)	1 (0.33)	0.46
Vector borne	**14 (4.64)**	**7 (2.32)**	**13 (4.31)**	**4 (1.33)**	**12 (3.98)**	**3.52**
Chikungunya Virus Disease*	0.00	0.00	2 (0.66)	0.00	0	0.13
Dengue Fever	0.00	0.00	1 (0.33)	0.00	0	0.066
Lyme disease	6(1.99)	3 (0.99)	6 (1.99)	2 (0.66)	5 (1.66)	1.46
Malaria*	4 (1.33)	4 (1.33)	4 (1.32)	0.00	6 (1.99)	1.19
Spotted Fever Rickettsiosis	2 (0.66)	0.00	0.00	1 (0.33)	1 (0.33)	0.26
Ehrlichiosis-Ehrlichia chaffeensis	1 (0.33)	0.00	0.00	1(0.33)	0	0.13
Zika Virus Infection	1(0.33)	0.00	0.00	0.00	0	0.066

1) Case rates use the 2019 5-year U.S Census estimates and are per 100,000 residents
2) Confirmed and probable cases reported by health care providers and laboratories among residents of the City of Cincinnati by date of event (most frequently, the date of event is the date id illness onset).
3) List includes only reportable conditions for which at least one case was reported in either year; the full list of reportable conditions on Ohio can be found at https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/infectious-disease-control-manual.
4) All data was provided through the Ohio Disease Reporting System – All data is provisional and subject to change.
5) No sexually transmitted diseases or infections are included on this report, all data regarding that is provided by Hamilton County Public Health: https://www.hamiltoncountyhealth.org/services/for-residents/programs/std-and-sti-prevention-and-services/

*Acquired through international travel

^ CP-CRE (Carbapenemase- Producing Carbapenem-Resistant Enterobacteriaceae) is a multi-drug resistant condition newly reportable as of March 2018

Table 1:	2017 Case # (Case Rate)	2018 Case # (Case Rate)	2019 Case # (Case Rate)	2020 Case # (Case Rate)	2021 Case # (Case Rate)	5-Year Average Rate
Vaccine-Preventable	**314 (104.18)**	**493 (163.57)**	**456 (151.30)**	**369 (122.43)**	**48 (15.93)**	**111.482**
Haemophilus influenzae, invasive disease	10 (3.32)	17 (5.64)	11 (3.65)	7 (2.32)	5(1.66)	3.32
Influenza-associated hospitalization	260 (86.27)	402 (133.38)	337 (111.81)	327 (108.50)	18 (5.97)	89.19
Meningococcal Disease *(N. meningitidis)*	1 (0.33)	0.00	0.00	0.00	0.00	0.066
Mumps	2 (0.66)	8 (2.65)	1 (0.33)	0.00	0.00	0.60
Pertussis	7 (2.32)	8 (2.65)	38 (12.61)	5 (1.66)	0.00	4.81
S. pneumoniae, invasive (abx susceptible/unknown)	16 (5.31)	28 (9.29)	37 (12.28)	15(4.98)	20 (6.64)	7.70
S. pneumoniae, invasive (abx resistant)	13 (4.31)	23 (7.63)	14 (4.64)	15(4.98)	3 (0.99)	4.51
Varicella (chickenpox)	5 (1.66)	7(2.32)	18 (5.97)	0.00	2 (0.66)	2.17
Viral Hepatitis	**1,033 (342.74)**	**1,035 (343.40)**	**753 (249.84)**	**551 (182.82)**	**534 (177.18)**	**259.20**
Hepatitis B, acute *(also vaccine-preventable)*	11(3.65)	12 (3.98)	14 (4.64)	0.00	4 (1.33)	2.72
Hepatitis B, chronic, newly identified *(also vaccine-preventable)*	124 (41.14)	97 (32.18)	98 (32.51)	64 (21.23)	80(26.54)	30.72
Hepatitis B, perinatal	0.00	0.00	1 (0.33)	0.00	0.00	0.066
Hepatitis C, acute	7 (2.32)	17 (5.64)	14 (4.64)	11 (3.65)	4 (1.33)	3.52
Hepatitis C, perinatal	0.00	5(1.66)	3 (0.99)	2 (0.66)	1(0.33)	0.91
Hepatitis C, chronic, newly identified	891 (295.63)	904 (299.94)	623 (206.71)	474 (157.27)	445 (147.65)	221.44

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Table 1:	***2017 Case # (Case Rate)***	***2018 Case # (Case Rate)***	***2019 Case # (Case Rate)***	***2020 Case # (Case Rate)***	***2021 Case # (Case Rate)***	***5-Year Average Rate***
Other Conditions	**74 (24.55)**	**74 (24.55)**	**78 (25.88)**	**18,166 (6027.33)**	**30,538 (10,132.25)**	**8075.46**
Carbapenemase-Producing Carbapenem-Resistant Enterobacteriaceae (CP-CRE) ^	Not Reportable	4(1.33)	9 (2.99)	3 (0.99)	9(2.99)	1.66
Candida Auris	0.00	0.00	0.00	2 (0.66)	75 (24.88)	5.11
SARS CoV-2 (COVID-19)	Not Reportable	Not Reportable	Not Reportable	18,108 (6,008.08)	30,401 (10,086.80)	8,047.60
Coccidioidomycosis	0.00	0.00	1 (0.33)	1 (0.33)	2 (0.66)	0.26
Creutzfeldt-Jakob Disease	1 (0.33)	0.00	0.00	1 (0.33)	0.00	0.13
Hemolytic uremic syndrome (HUS)	0.00	1 (0.33)	0.00	0.00	0.00	0.066
Meningitis, aseptic	29 (9.62)	36 (11.94)	32 (10.62)	7 (2.32)	10 (3.32)	7.56
Meningitis, bacterial (not *N. meningitidis*)	8 (2.65)	7 (2.32)	13 (4.31)	7 (3.32)	6 (1.99)	2.72
Multisystem Inflammatory Syndrome in Children (MIS-C) associated with COVID-19	Not Reportable	Not Reportable	Not Reportable	6 (1.99)	10 (3.32)	1.06
Staphylococcal aureus - intermediate resistance to vancomycin (VISA)	2 (0.66)	0.00	0.00	0.00	1 (0.33)	0.20
Streptococcal, Group A, invasive	30 (9.95)	23 (7.63)	20 (6.64)	28 (9.29)	22 (7.30)	8.16
Streptococcal, Group B, newborn	4 (1.33)	3 (0.99)	1 (0.33)	3 (0.99)	1 (0.33)	0.80
Toxic Shock Syndrome (TSS)	0.00	0.00	2 (0.66)	0.00	0.00	0.13
Typhus Fever	0.00	0.00	0.00	0.00	1 (0.33)	0.066
TOTAL CONFIRMED & PROBABLE CASES	**1,584**	**1,935**	**1,552**	**19,193**	**31,241**	

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Outbreaks: Investigation started or continuing	**2017** Case Investigations	**2018** Case Investigations	**2019** Case Investigations	**2020** Case Investigations	**2021** Case Investigations	**5-Year Average**
Dermatologic	9	10	2	0	2	4.60
Gastrointestinal	4	5	9	2	1	4.20
Respiratory	1	1	18	167	201	77.60
Other	1	2	1	0	1	5.00
Total Outbreak Investigations	**15**	**18**	**30**	**169**	**205**	**87.40**

- A disease outbreak is the occurrence of a disease at a rate higher than is expected for a certain time or location. The number of cases varies according to the disease, as well as the location at which the outbreak occurred.

- Outbreak investigations are conducted by the Cincinnati Health Department's Communicable Disease Unit of nurses (CDU). Outbreaks are identified when either the CDU recognizes several cases reported linked to a single place or activity, or if the outbreak is reported directly by a healthcare facility, school, daycare, or local business. In all cases, the CDU fills out investigation forms for the outbreak and conducts interviews with patients and if needed, visit the location or facility involved in the outbreak. Guidance on the next steps for the patient or facility is given by the CDU. Finally, all this information is then complied and reported to the Ohio Department of Health, and in some cases, the Ohio Department of Health will investigate as well.

- Respiratory outbreak investigations included **164** COVID-19 investigations in 2020, and **197** COVID-19 investigations in 2021. The remaining respiratory outbreaks were linked to Influenza. Outbreaks are still being closed out and finalized this number may be underreported at this time.

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Creating a 5-Year Baseline

In the right most column in the about communicable disease surveillance summary data table the 5-year average rate is calculated. This average rate shows the average number of cases per 100,000 people for the 5 years given. This rate can better help CHD and partners to evaluate disease trends over the years and compare current rates to the city's average rate. Each year the average rate will adjust to represent the most accurate and up to date communicable disease data.

Table 2: Disease Name	ODH 5-Year Average (2015-2019)	Cincinnati 5-Year Average (2017-2021)	Difference Between ODH & Cincinnati Average Rates
Food- or Waterborne	**12.32**	**62.31**	**49.99**
Amebiasis	0.10	0.066	0.034
Brucellosis	< 0.001	0.066	-
Campylobacteriosis	18	10.95	7.50
Cryptosporidiosis	7.5	3.45	4.05
Cyclosporiasis	0.5	1.3	0.80
E. coli, Shiga Toxin O157:H7	0.7	2.99	2.29
Giardiasis	3.7	6.1	2.4
Hepatitis A	6.1	11.36	5.26
Legionellosis	5.9	5.11	0.79
Listeriosis	0.3	0.46	0.16
Salmonellosis	12.7	11.28	1.42
Shigellosis	5.8	11.01	5.21
Vibriosis (not cholera)	0.3	0.33	0.03
Typhoid Fever	< 0.001	0.13	-
Yersiniosis	0.6	0.46	0.14
Vector borne	**0.6**	**3.52**	**2.92**
Chikungunya Virus Disease	< 0.001	0.13	-
Dengue Fever	0.1	0.066	.034
Lyme disease	2.3	1.46	0.84
Malaria	0.5	1.19	0.69
Spotted Fever Rickettsiosis	0.30	0.26	.04
Ehrlichiosis-Ehrlichia chaffeensis	0.1	0.13	0.03
Zika Virus Infection	-	0.066	-

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Table 2: Disease Name	ODH 5-Year Average (2015-2019)	Cincinnati 5-Year Average (2017-2021)	Difference Between ODH & Cincinnati Average Rates
Vaccine-Preventable	**91.00**	**111.48**	**20.48**
Hemophilus influenzae, invasive disease	2.1	3.32	1.22
Influenza-associated hospitalization	77.3	89.19	11.89
Meningococcal Disease *(N. meningitidis)*	0.1	0.066	0.034
Mumps	0.4	0.6	0.2
Pertussis	7.2	4.81	2.39
S. pneumoniae, invasive (abx susceptible/unknown)	-	7.7	-
S. pneumoniae, invasive (abx resistant)	-	4.51	-
Varicella (chickenpox)	3.9	2.17	1.73
Viral Hepatitis	**193.12**	**259.20**	**66.08**
Hepatitis B, acute *(also vaccine-preventable)*	2.8	2.72	.08
Hepatitis B, chronic, newly identified	20.62	30.72	10.10
Hepatitis B, perinatal	< 0.001	0.066	-
Hepatitis C, acute	2.68	3.52	0.84
Hepatitis C, perinatal	< 0.001	0.91	-
Hepatitis C, chronic, newly identified	167.02	221.44	54.42
Other Conditions	**2.34**	**27.94** (No COVID-19)	**25.60**
Carbapenemase-Producing Carbapenem-Resistant Enterobacteriaceae (CP-CRE) ^	Not yet Reportable	1.66	-
Candida Auris	<0.001	5.11	5.11
Coccidioidomycosis	0.2	0.26	0.06
Creutzfeldt-Jakob Disease	0.1	0.13	0.03
Hemolytic uremic syndrome (HUS)	< 0.001	0.066	-
Meningitis, aseptic	5.4	7.56	2.16
Meningitis, bacterial (not *N. meningitidis*)	1.1	2.72	1.62
Staphylococcal aureus - intermediate resistance to vancomycin (VISA)	0.1	0.2	0.10
Streptococcal, Group A, invasive	4.8	8.16	3.36
Streptococcal, Group B, newborn	-	0.8	-
Toxic Shock Syndrome (TSS)	< 0.001	0.13	-
Typhus Fever	-	0.066	-

*Any dash (-) indicates there was no available data at the time this report was published due to either lack of cases in the last 10 years, or age restrictions when calculating rates with population.

*Averages marked in red are to show diseases that have a higher rate in Cincinnati than reported in Ohio.

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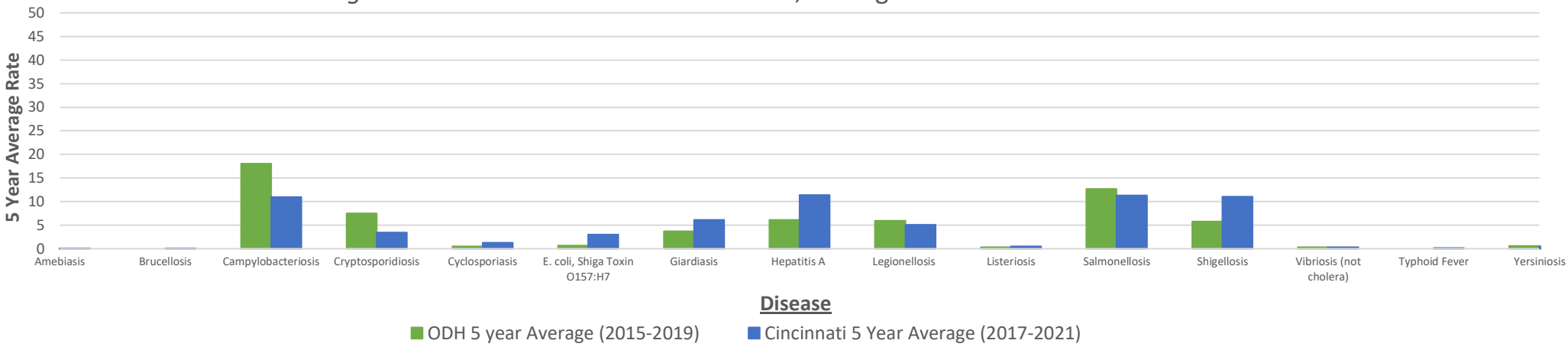
*Acquired through international travel

^ CP-CRE (Carbapenemase- Producing Carbapenem-Resistant Enterobacteriaceae) is a multi-drug resistant condition newly reportable as of March 2018

Figure 1: Food and Waterborne Diseases, Average Rates for Ohio and Cincinnati



Data Sourced from Ohio Disease Reporting System Extracted February 2022

Figure 2: Vector Borne Diseases, Average Rates for Ohio and Cincinnati

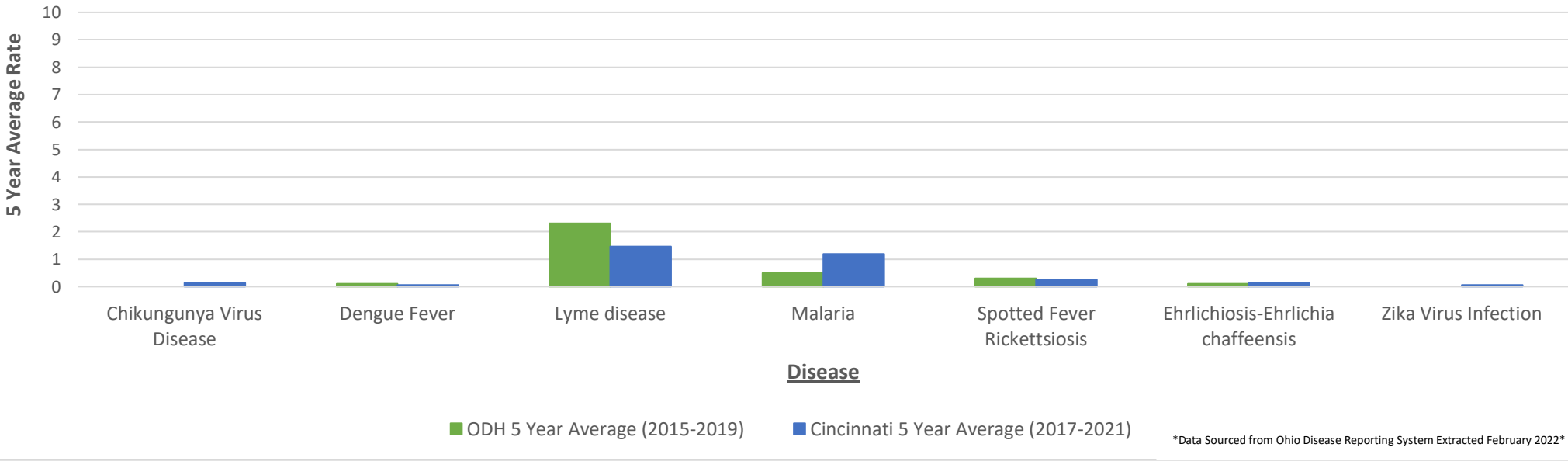


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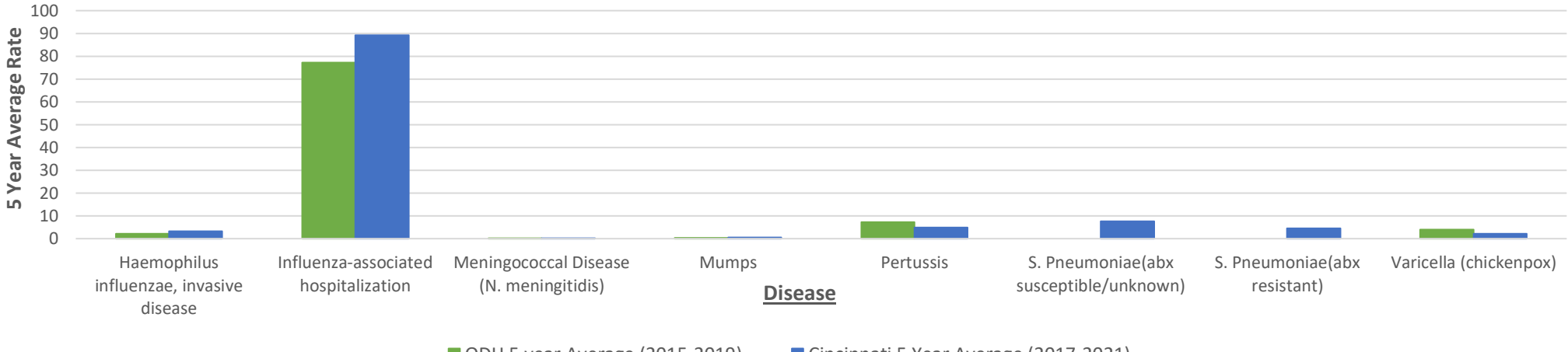
Figure 3: Vaccine Preventable Average Rates for Ohio and Cincinnati



Data Sourced from Ohio Disease Reporting System Extracted February 2022

Figure 4: Viral Hepatitis Diseases, Average Rates for Ohio and Cincinnati

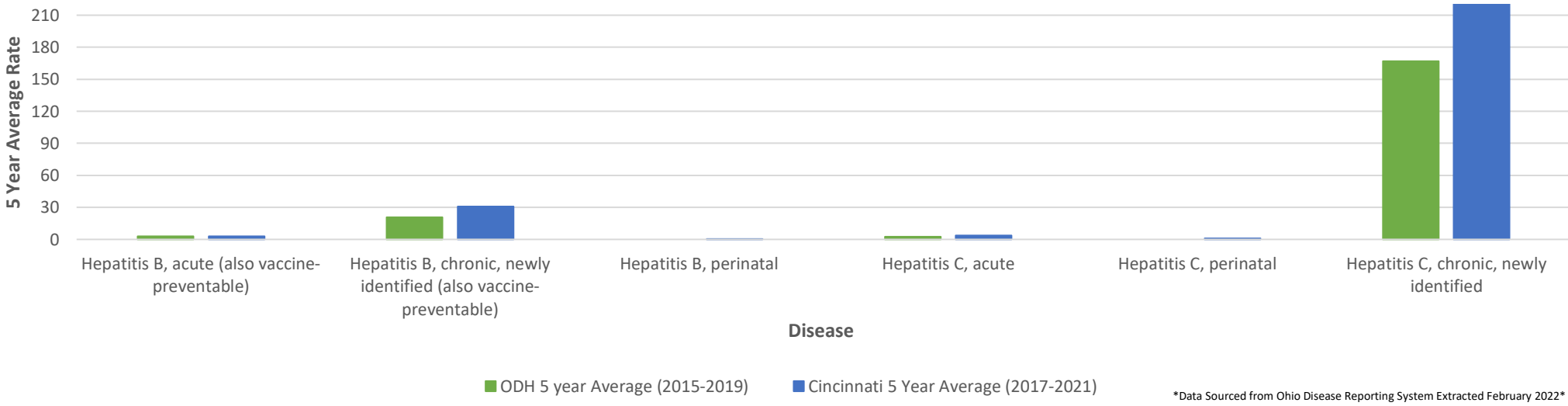


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Figure 5: Other Reported Communicable Diseases Average Rates for Ohio and Cincinnati

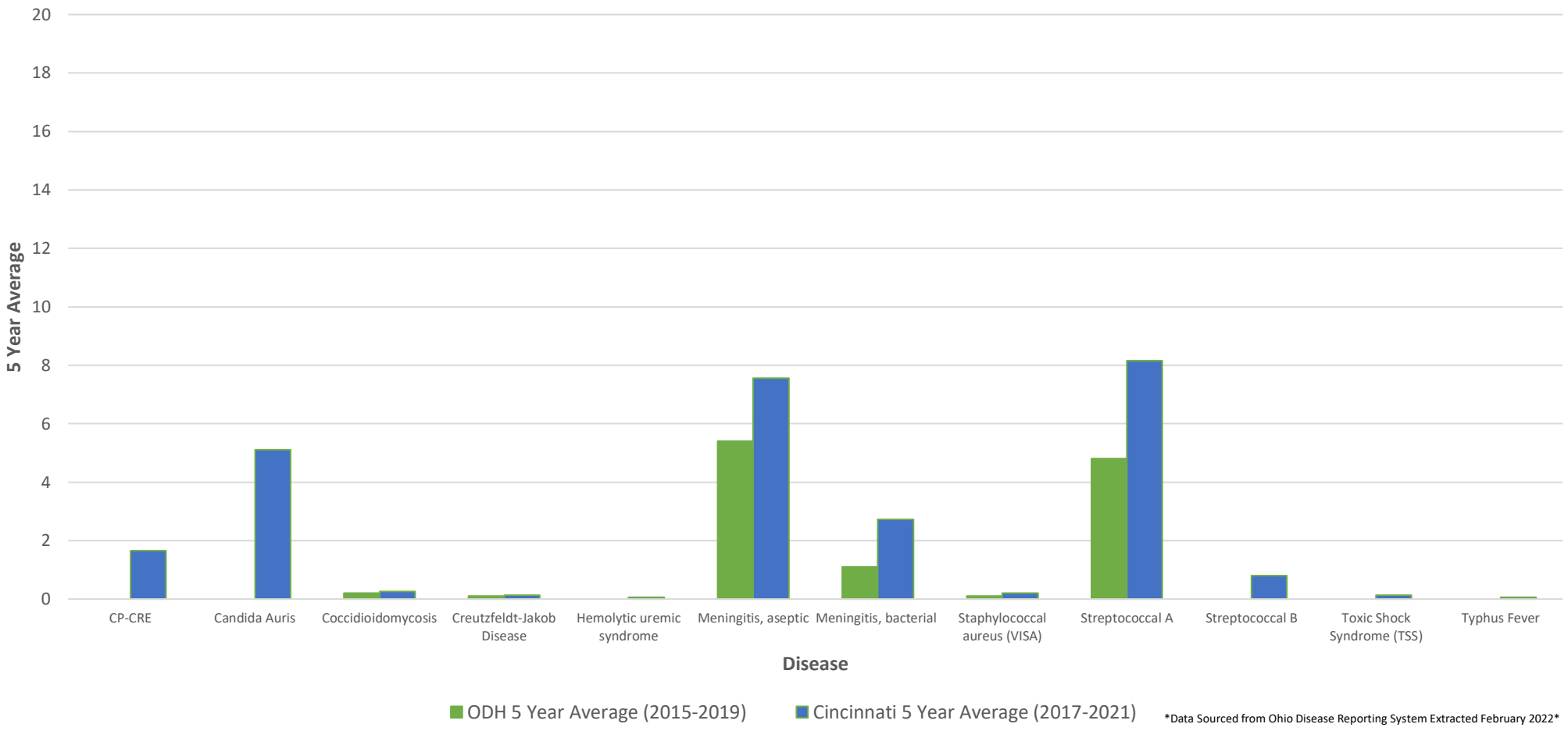

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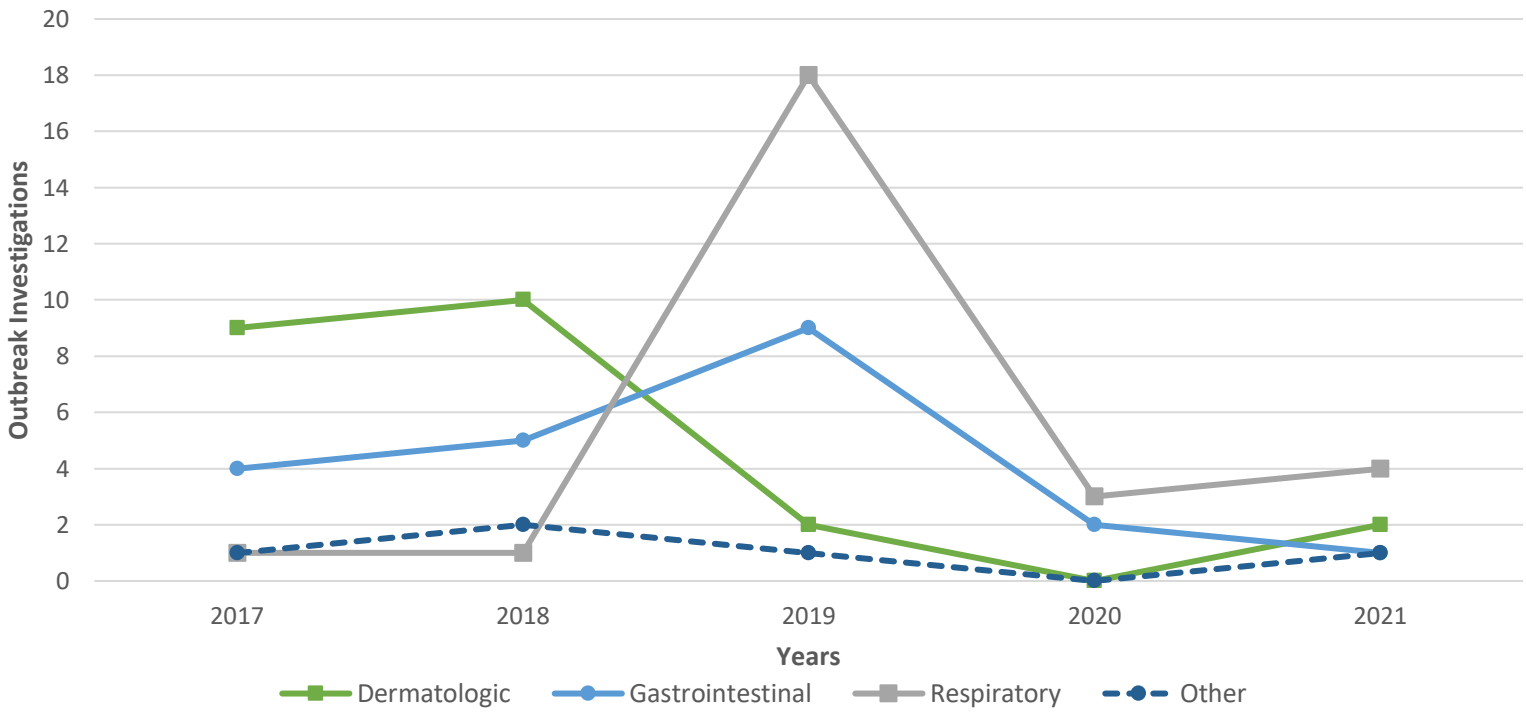
Figure 6: Total Outbreak Investigations, 2017-2021 (Excluding COVID-19)



Data Sourced from Ohio Disease Reporting System Extracted February 2022

- COVID-19 outbreak investigations were not included in this graph. The increase in respiratory illness in 2019, is due to several outbreaks of the seasonal Influenza, in several different school settings. Other Respiratory outbreak investigated were Pertussis
- Investigations for Dermatologic outbreaks were for diseases such as Scabies, Hand, Foot and Mouth and E. coli.
- Investigations for Gastrointestinal outbreaks were for diseases such as Shigellosis and Norovirus.
- Other Outbreak investigations that were investigated over the last five years were for diseases such as Candida Auris and Streptococcus Group B.

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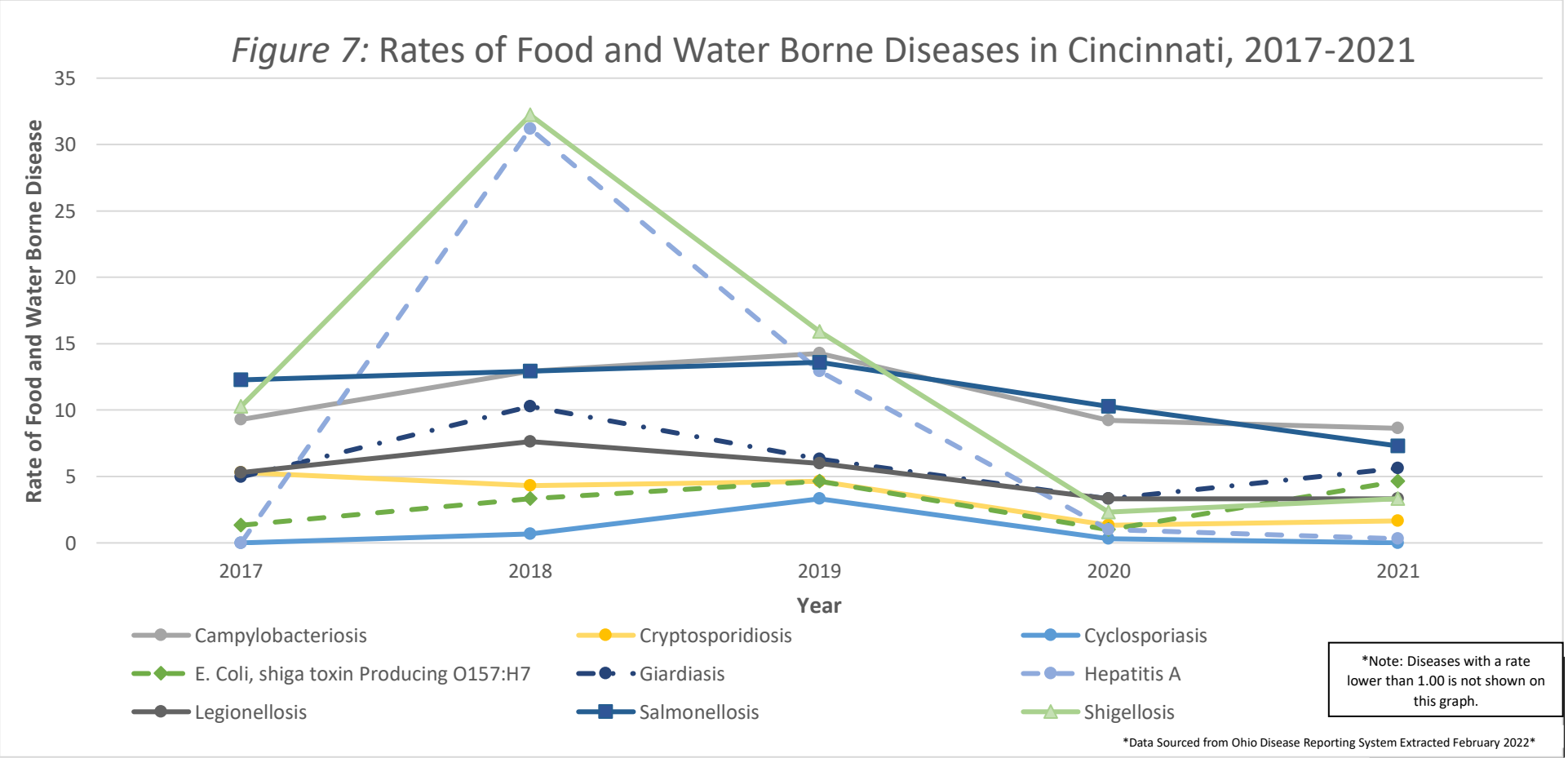

Figure 7: Rates of Food and Water Borne Diseases in Cincinnati, 2017-2021

- The significant increase in both **Hepatitis A** and **Shigellosis** rates in 2018 are due to outbreaks. This Hepatitis A outbreak is discussed in detail on page 26 of this report.
- The rise in **Shigellosis** cases in 2018 were due to outbreaks were linked to several different daycare settings, they were investigated by the communicable disease unit at Cincinnati Health Department.

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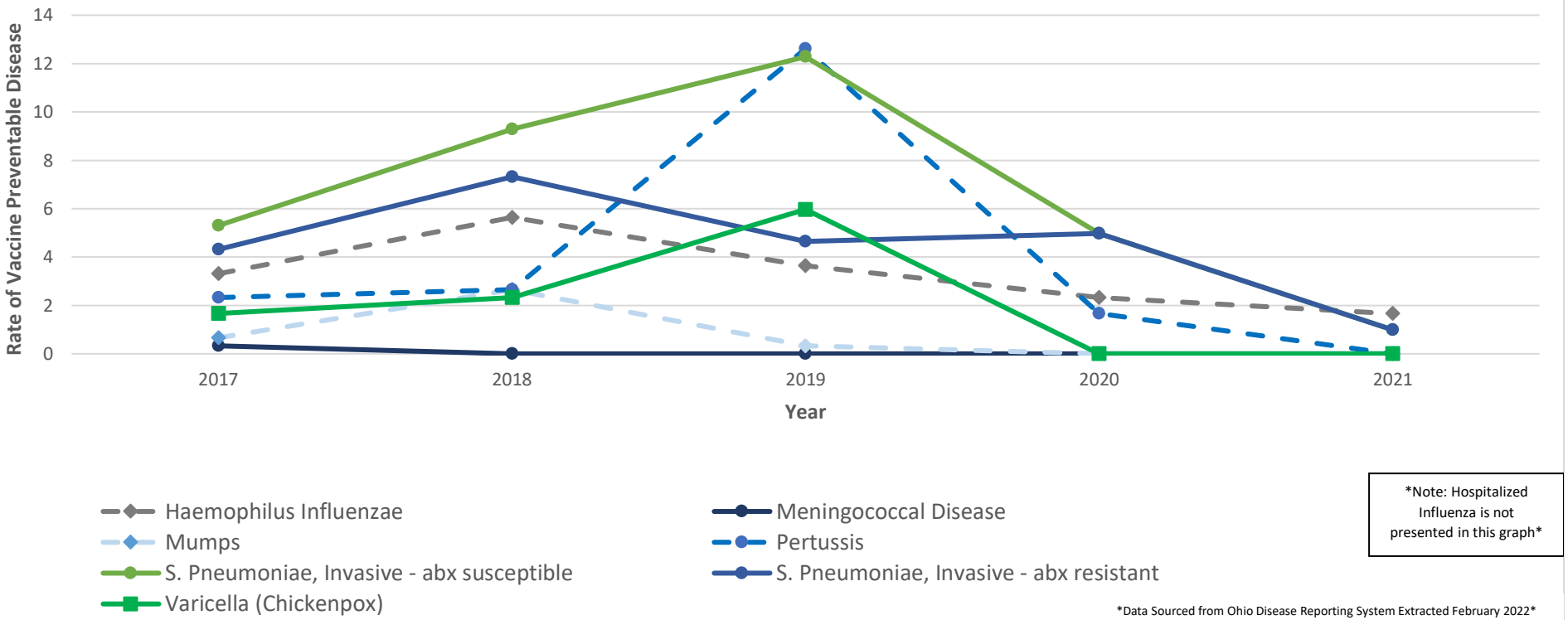
Figure 8: Rates of Vaccine Preventable Disease in Cincinnati, 2017-2021



Note: Hospitalized Influenza is not presented in this graph

Data Sourced from Ohio Disease Reporting System Extracted February 2022

- The current graph does not include the cases of hospitalized flu, and can be seem on *figure 6*
- The notable increase in **Pertussis** infections in 2019 can be partially attributed to several outbreaks that occurred from elementary through college aged students.

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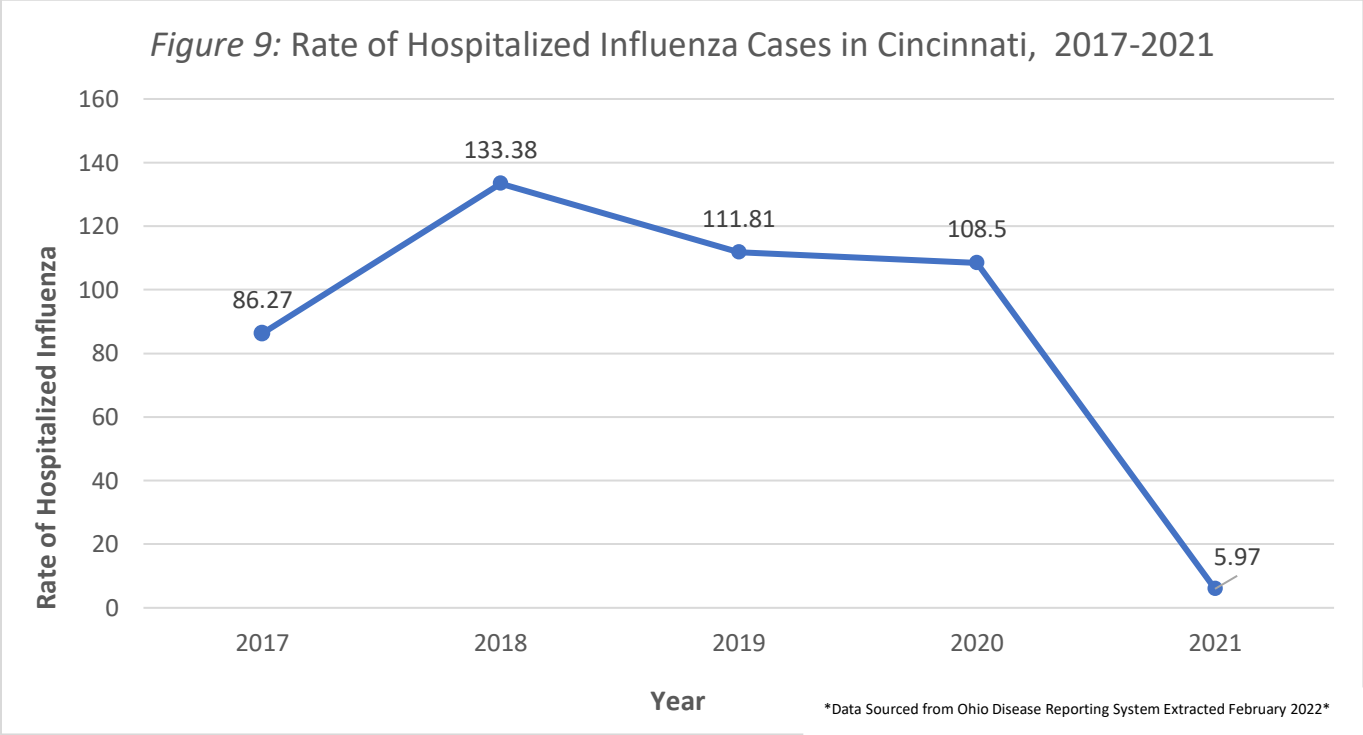

- There is a significant decrease in hospitalized flu cases during the fall and winter months of 2021. CHD can infer this decrease in hospitalized Influenza is the influence of COVID-19 masking mandates, remote work, as well as the overall social distancing measures taken by the City of Cincinnati.
- Cases also could be under reported, due to a variety of factors including stress on the healthcare system. Many cases of hospitalized Influenza may have not been reported, or people with serious influenza were not comfortable going to the hospital or doctor, due to the overwhelming cases of COVID-19 during the fall and winter months (Delta, and Omicron Surge).

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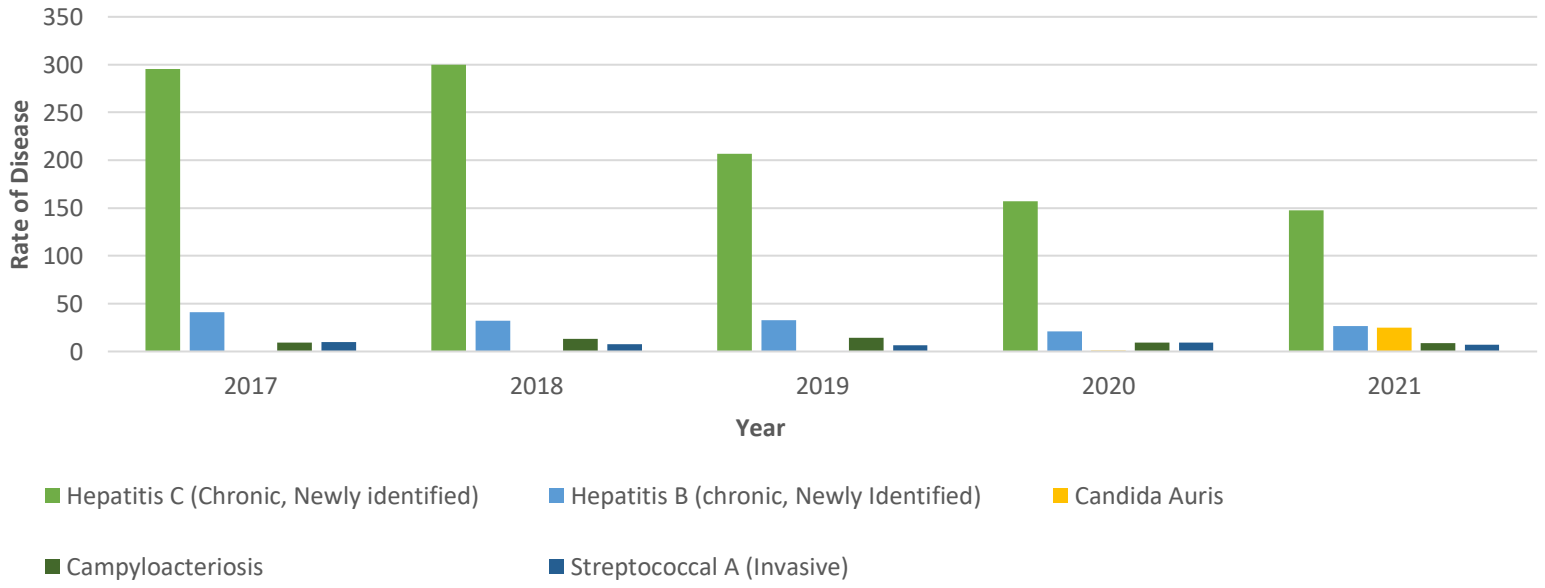
Table 3: Top Five Most Reportable Communicable Diseases in 2021 (excluding COVID-19)

Disease Name	Case	Case Rate
Hepatitis C (chronic, newly identified)	445 (147.65)	147.65
Hepatitis B (chronic, newly identified)	80 (26.54)	26.54
Candida Auris	75 (24.88)	24.88
Campylobacteriosis	26 (8.63)	8.63
Streptococcal A (Invasive)	22 (7.30)	7.30
All Other Reportable Communicable Diseases	*840 (278.70)*	*278.70*

Figure 10: Rates of the 2021 Top Reported Diseases in Cincinnati, for 2017-2021



Data Sourced from Ohio Disease Reporting System Extracted February 2022

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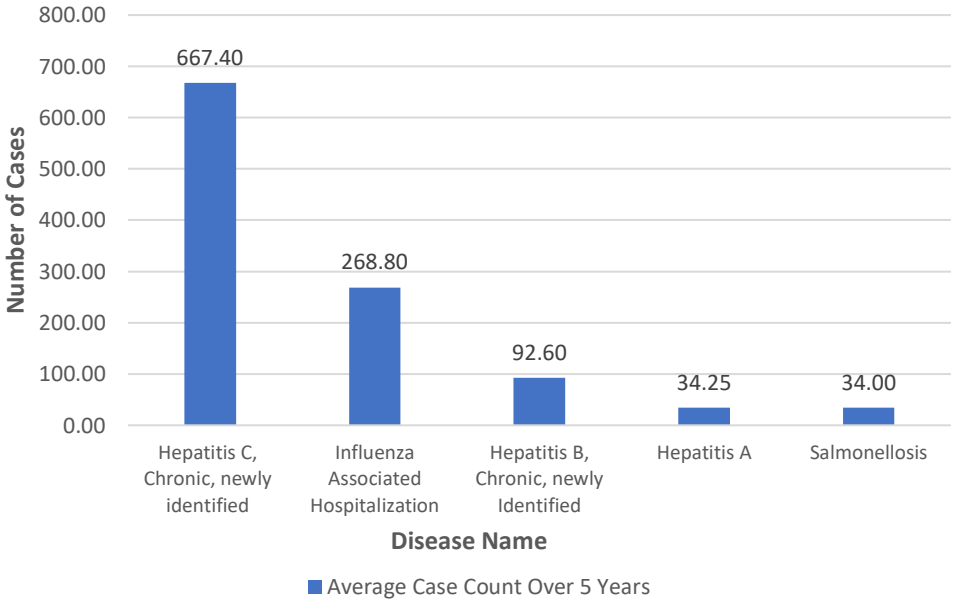
Table 4: Top Five Most Reportable Communicable Diseases for 2017-2021 (not including COVID-19)

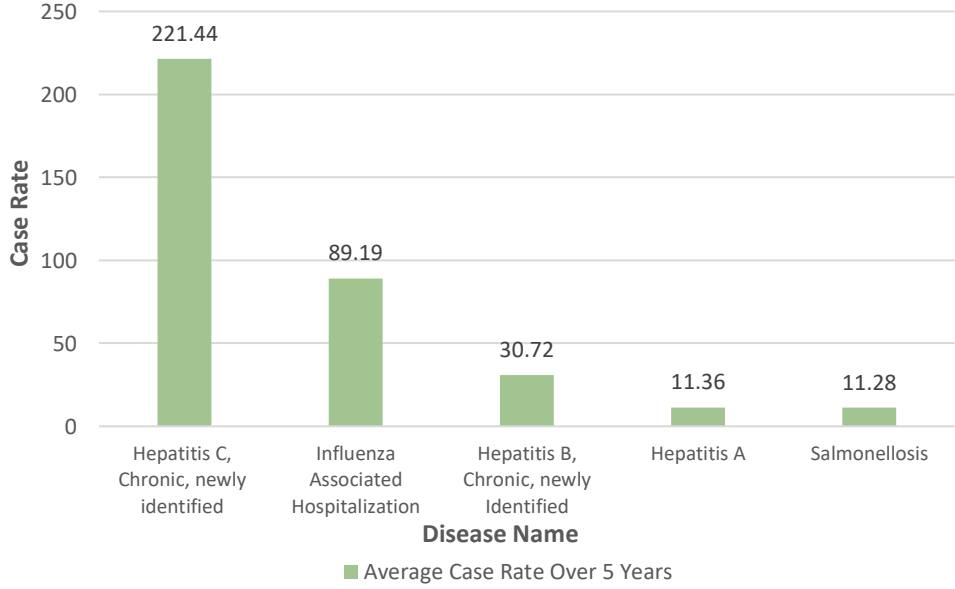
Disease	Average Case Count, 2017-2021	Average Case Rate, 2017-2021
Hepatitis C, Chronic, newly identified	667.40	221.44
Influenza Associated Hospitalization	268.80	89.19
Hepatitis B, Chronic, newly Identified	92.60	30.72
Hepatitis A	34.25	11.36
Salmonellosis	34.00	11.28

Figure 11: Average Case Count for Most Reported Communicable Diseases in Cincinnati, 2017-2021



Data Sourced from Ohio Disease Reporting System Extracted February 2022

Figure 12: Average Case Rate for Most Reported Communicable Diseases in Cincinnati, 2017-2021



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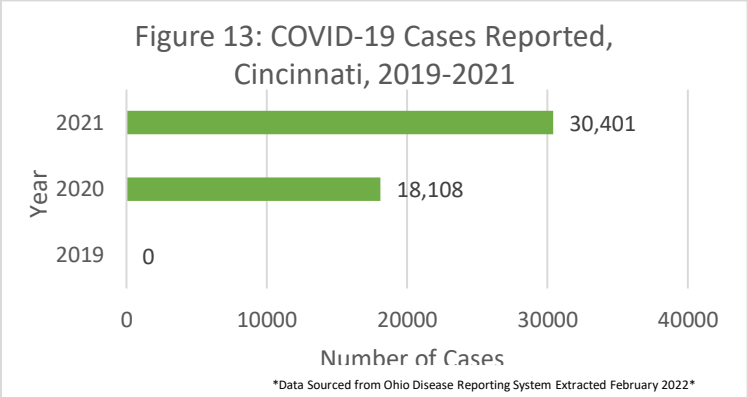
Disease Spotlight: SARS-CoV-2 (COVID-19)

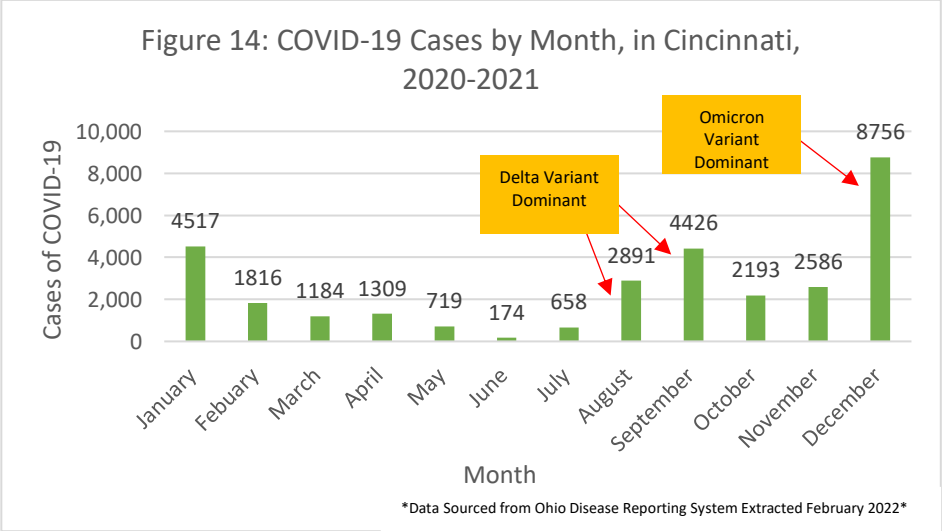
COVID-19[2] is a disease caused by the virus SARS-CoV-2, a novel species of the *Coronaviridae* virus family. It was first discovered in December 2019 in Wuhan, China; the virus has since spread quickly throughout the entire world. It often causes respiratory illness and symptoms can feel like a cold, flu, or pneumonia. This disease was spotlighted due to its local and global impact over the last two years.



COVID-19 Variants: Viruses continue to change as they spread, and these changes result in mutations of the original virus, called variants. As variants spread, their symptoms or severity can change with each mutation of the virus. From June 2021 to May 2022, the CDC has identified two main variants of concerns for the U.S, Delta (B.1.617.2) and the Omicron (B. 1.1.529) variants. [2,9]

Reporting Protocol: COVID-19 is a Class A reportable disease with special reporting requirements: Confirmed and probable cases upon detection, or positive test result should be reported within 24 hours to the local health district.

Case Definition: Refer to the Ohio Infectious Disease Control Manual, found at: https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/infectious-disease-control-manual/welcome



Mode of Transmission: COVID-19 is spread from person to person via droplets. People who are in close contact with each other (within 6 feet), can spread COVID-19 through respiratory droplets produced when an infected person coughs, sneezes, talks or breathes. It is possible to spread through airborne transmission, but this is not as common. [2]

Incubation Period: The incubation period of COVID-19 is 2-14 days, on average 5 days after exposure. An individual is usually considered infectious 2 days before they are symptomatic and should remain in isolation for at least 5 days after their positive COVID-19 test. [2]

Symptoms: Symptoms of COVID-19 can range from no symptoms (asymptomatic) to severe pneumonia and death. Approximately 80% of individuals with COVID-19 experience mild to moderate illness including, fever, chills, headache, nausea, sore throat, or fatigue. It is estimated that about 15% of individuals experience severe illness requiring supplemental oxygen and about 5% of individuals require critical illness resulting in mechanical ventilation. [2]

Treatment: Current treatment includes infection prevention, supportive care such as supplemental oxygen, and mechanical ventilatory support. As of 5/17/22 the Food and Drug Administration (FDA) has fully approved two drugs remdesivir[3] and Olumiant[4], for the treatment of COVID-19 in certain situations. There are several novel therapeutics currently under Emergency Use Authorization (EUA) such as several types of monoclonal antibody[5] treatments and antiviral drugs. The monitoring and evaluation of these treatments and their effectiveness is ongoing.

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[2] This SARS-CoV-2 data is reported as of July 2022, data and guidance is subject to change.

[3] An antiviral drug under EUA for the treatment of COVID-19 in mild to moderately symptomatic non hospitalized, and high risk, in individuals over 12 years old.

[4] Approved for the treatment of COVID-19 in hospitalized adults requiring supplemental oxygen, noninvasive or invasive mechanical ventilation.

[5] Laboratory produced molecules that can act as a substitute to restore or enhance the body's immune response to COVID-19, can be used in patients at risk for serious COVID-19 and have tested positive or been exposed to COVID-19.

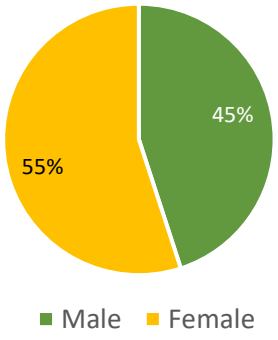
Prevention: As of May 2022, there are three widely available FDA EUA vaccines and vaccine boosters available to help prevent COVID-19 and severe symptoms from COVID-19. Avoid contact with those who are infected or have been recently exposed to COVID-19. Cover your mouth and nose with a well-fitting mask and socially distance when possible. Wash your hand and avoid touching your mouth, face, or eyes, with unwashed hands. Clean and disinfect frequently used surfaces daily. [2]

Quarantine: Quarantine is a strategy used to prevent transmission of COVID-19 by making sure those who have been in close contact with someone with COVID-19, stay apart from exposed individuals to minimize any spread of COVID-19. As of January 27th, 2022, the CDC recommends those who are up to date with their COVID-19 vaccines do not need to quarantine after a COVID-19 exposure. Those who have been positive for COVID-19 within the last 90 days do not need to quarantine if exposed. It is recommended you wear a well-fitting mask in public spaces for at least 10 days after your exposure and get tested at least 5 days after the exposure and monitor for symptoms. Those who are not up to date or unvaccinated should stay at home and away from public spaces for at least 5 days after exposure, monitor for symptoms and get tested at least 5 days after your exposure. [2,3]

Isolation: Isolation is used to separate people with confirmed or suspected COVID-19 from those without COVID-19. Someone who has tested positive should stay away from people and public spaces for at least 5 days and should wear a well-fitting masking for 5 additional days. Make sure to continue to monitor symptoms and if you have several and non-improving symptoms, do not return to work and talk to a health care provider. [2,3]

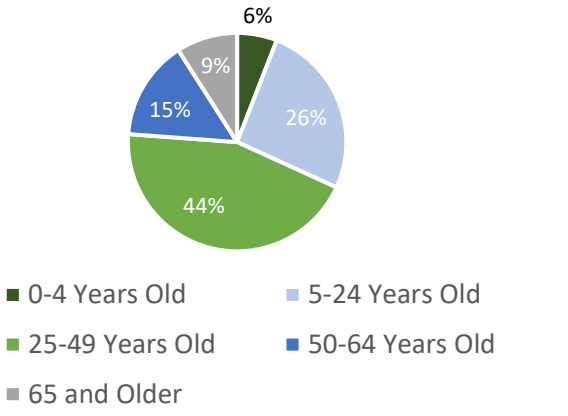
For more information regarding quarantine and isolation please visit: https://www.cdc.gov/coronavirus/2019-ncov/your-health/quarantine-isolation.html#quarantine

Figure 15: Sex Breakdown of COVID-19, in Cincinnati, 2020-2021



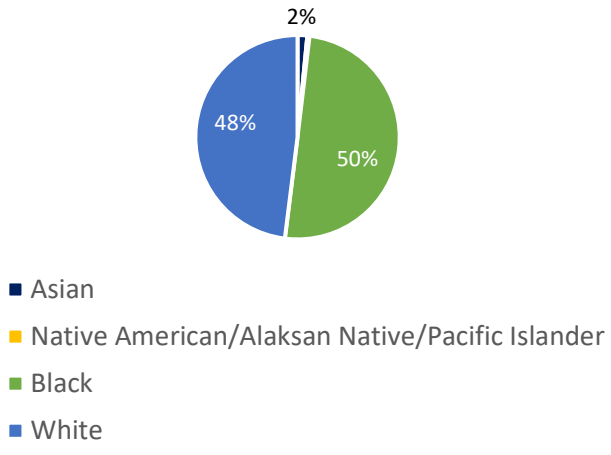
Data Sourced from Ohio Disease Reporting System Extracted February 2022

Figure 16: Age Breakdown of COVID-19, in Cincinnati, 2020-2021



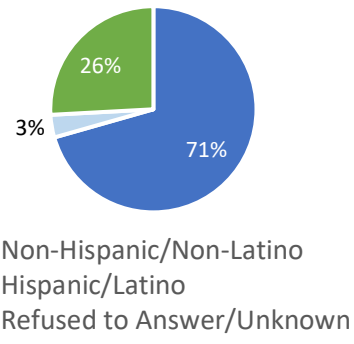
Data Sourced from Ohio Disease Reporting System Extracted February 2022

Figure 17: Race Breakdown of COVID-19, in Cincinnati, 2020-2021



Data Sourced from Ohio Disease Reporting System Extracted February 2022

Figure 18: Ethnicity Breakdown of COVID-19, in Cincinnati, 2020-2021



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Disease Spotlight: Candida Auris

Candida Auris (C. Auris) **is a species of ascomycetous fungus, of the candida genus, which grows yeast. It was first isolated in 1998 and described in 2009. There are at least four major types of *C. Auris* based on geographic location. This disease was spotlighted due to its sudden emergence in 2021.**

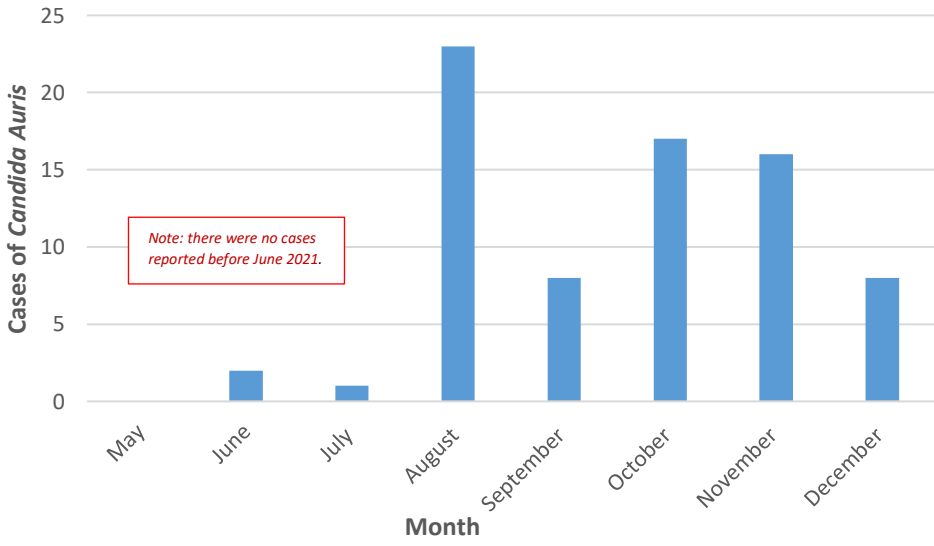
Reporting protocol: *C. Auris* is a class B reportable disease; therefore, every reported case, suspected case or positive laboratory result should be reported to the local health department by close of the next business day.

Case Definition: Refer to the Ohio Infectious Disease Control Manual, found at: https://odh.ohio.gov/know-our-programs/infectious-disease-control-manual/section3/section-3-candida-auris

Mode of Transmission: *C. Auris* is transmitted person to person through direct contact with infected bodily tissues or fluid. It can cause infections when it enters the body, often it enters through medical devices such as ventilators, intravenous catheters, or wounds from surgery. *C. Auris* can live on surfaces for at least 14 days in healthcare setting such as highly touched surfaces in patients' rooms, or medical equipment moved in and out of rooms. [4]

Incubation Period: The incubation period is not well defined, partly due to the ability of *C. Auris* colonize an individual for an extended period. A person can transmit *C. Auris* at any time if the organism is present in the individuals' bodily tissues or fluids. [4]

Figure 19: *Candida Auris* Cases by Month, in Cincinnati, 2021



Data Sourced from Ohio Disease Reporting System Extracted February 2022

Symptoms: Symptoms vary depending on the part of the body that is affected. *C. Auris* can cause several types of infection such as blood, wound, or ear infections. Symptoms sometimes are not noticeable because patients with *C. Auris* are often receiving care for another serious condition or illness and are in a hospital or long-term care unit. A laboratory test needs to be conducted to determine whether a patient has *C. Auris*. Patients who are colonized with this fungus are often asymptomatic and do not show additional signs of infection. However, roughly 5-10% of individuals who are colonized with *C. Auris* develop some type of infection within one year. [4]

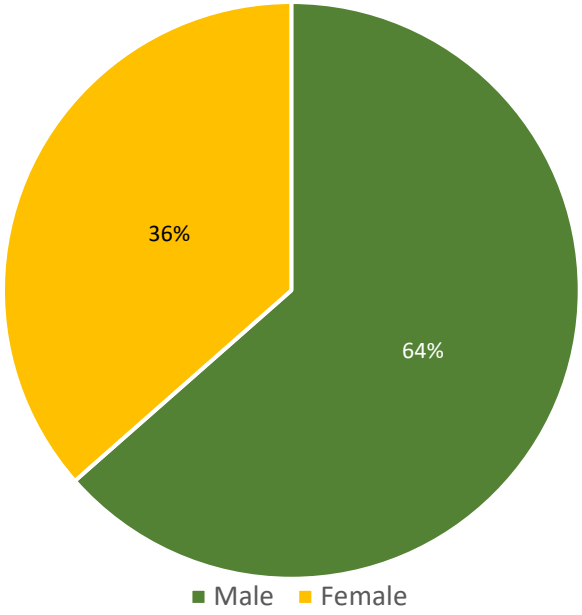
Treatment: Consultation with an infectious disease specialist is recommended when treating patients with *C. Auris.* Treatment is given only if a clinical disease is present, for example, a patient that has an infection cause by *C. Auris*. In cases of clinical infection, an echinocandin drug[6] is recommended for initial treatment. Treatment should be carefully monitored as *C. Auris* can develop resistance to medications quickly. [4]

Prevention: Prompt identification and implementation of the recommended infection control measures is the best way to prevent additional patients from being infected or colonized. Healthcare settings can help prevent the spread of *C. Auris* by cleaning medical equipment properly, following all PPE (Personal Protective Equipment) and hand washing procedures, as well as proper surgical sterilization produces and antibiotic stewardship[7] practices. Additionally, those patients who test positive in a healthcare setting should be put under contact precautions. In facilities with existing cases of *C. Auris*, screening tests when admitting new patients is recommended. [4,10]

[6] A type of antifungal drugs that target a fungus' cell wall.

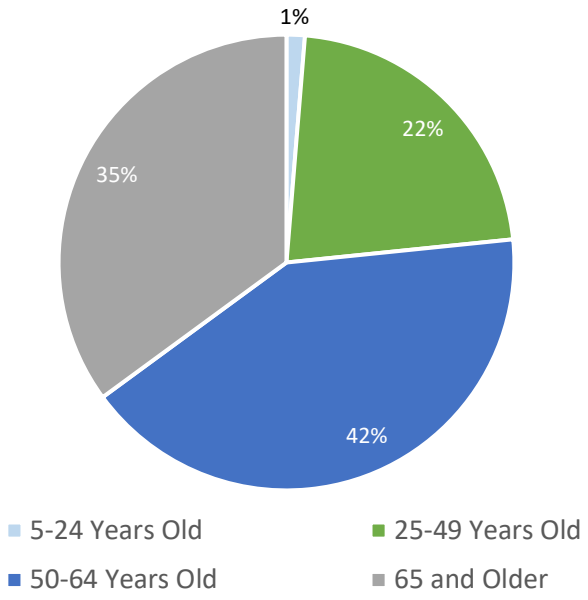
[7] A systematic effort to educate and persuader prescribers of antibiotics to follow evidence-based prescribing, to prevent overuse of antibiotics, more on this subject is discussed on page **25** of this report.

Figure 20: Sex Breakdown of *Candida Auris* Cases, in Cincinnati, 2021



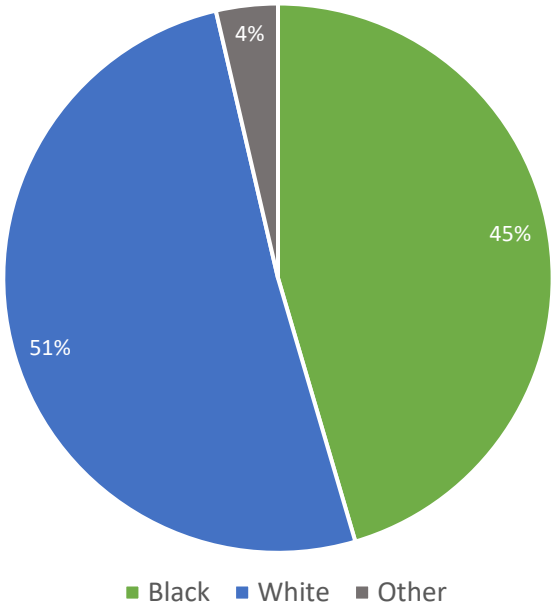
Data Sourced from Ohio Disease Reporting System Extracted February 2022

Figure 21: Ages Range Breakdown for *Candida Auris* Cases, in Cincinnati, 2021



Data Sourced from Ohio Disease Reporting System Extracted February 2022

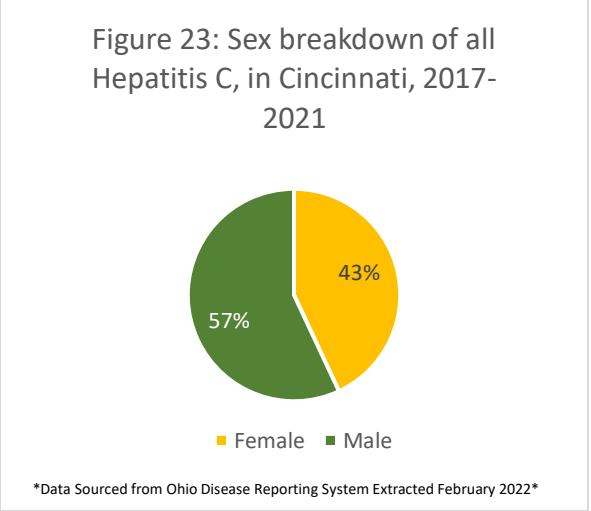
Figure 22: Race Breakdown of *Candida Auris* Cases, in Cincinnati, 2021



Data Sourced from Ohio Disease Reporting System Extracted February 2022

Disease Spotlight: Hepatitis C

Hepatitis C is a liver infection caused by the Hepatitis C Virus (HCV). When someone is infected, they have mild to no symptoms. Chronic cases take decades to develop liver disease and cirrhosis. This disease was spotlighted due to its significant rate in Cincinnati.

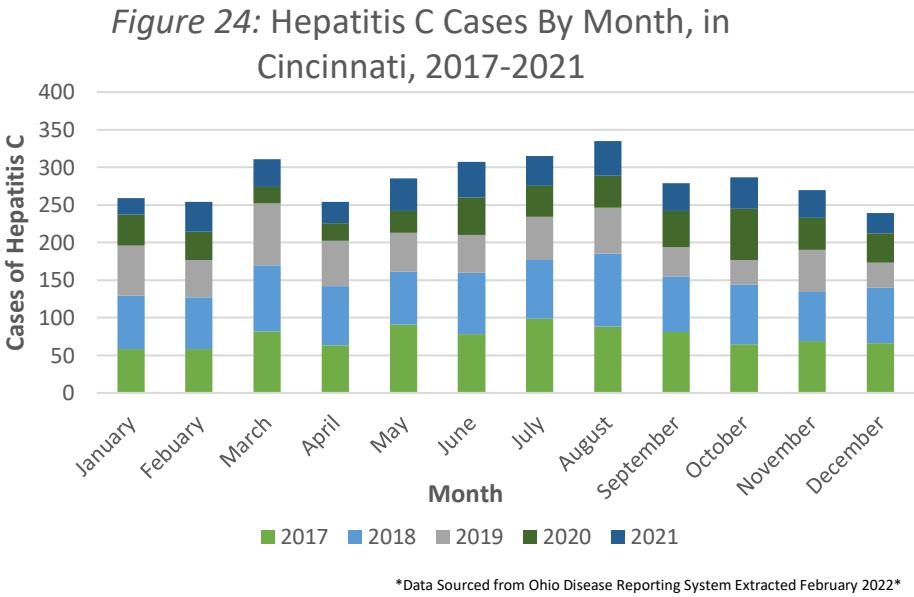


Reporting protocol: Hepatitis C is a class B reportable disease; therefore, every reported case, suspected case, or positive laboratory result should be reported to the local health department by close of the next business day.

Case Definition: Refer to the Ohio Infectious Disease Control Manual, found at: https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/infectious-disease-control-manual/section3/section-3-hepatitis-c

Mode of Transmission: Hepatitis C is transmitted through exposure to infectious blood or body fluids that contain blood. Currently, the most common mode of transmission in the U.S is due to injection drug use. This occurs due to the transfer of infected blood through needles, syringes, and other drug paraphernalia. Hepatitis C is rarely transmitted by blood transfusion, or organ transplant. In healthcare settings hepatitis can be spread through needle stick injuries. It can also be spread to a birthed infant from a Hepatitis C infected mother. [5,11]

Incubation Period: The incubation period averages six to nine weeks with a range of two to six months. The time from exposure to the development of the virus in the blood is one to three weeks. [5]



Symptoms: Chronic infection develops in about 75-80% of those infected. Out of those diagnosed with chronic Hepatitis C, 60%-70% develop chronic liver disease, accompanied by persistent and fluctuating alanine transaminase levels[8]. The progression of the disease is usually slow without many signs or symptoms during the first 20 or more years. Cirrhosis[9] developing in 5% - 20% of chronic patients usually 20-30 years after contracting HCV. [5]

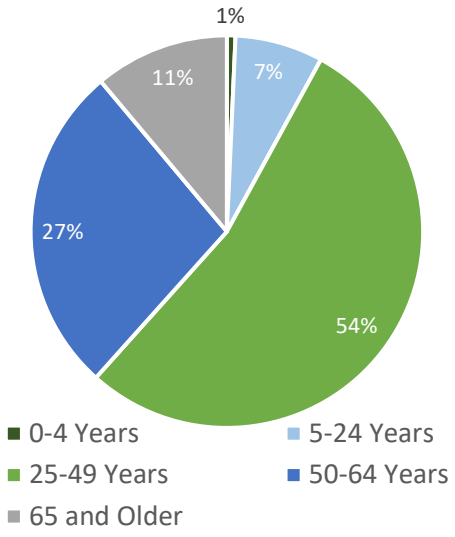
Treatment: The goal of treatment for the HCV is a sustained Virologic Response (SVR) which means that 12 weeks after the stop of treatment, there is no HCV in the blood. This can be considered a cure and is expected to help all chronically infected persons. In the past treatment for Hepatitis C has been very expensive, but in recent years costs have gone down, and many private insurances along with Medicaid and Medicare programs can cover some the cost of treatment. All persons with HCV should be vaccinated for both Hepatitis A and B, to prevent the occurrence of coinfection. [5,11]

Prevention: There is no vaccine, and there has not been strong evidence to suggest a postexposure prophylaxis[10] as an effective treatment in preventing a Hepatitis C infection. The best way to prevent HCV is to avoid any exposures such as injection drug use

[8] Higher levels of alanine transaminase are a sign of liver damage, and a test of these levels are used to access the health of a patient's liver.
[9] A chronic disease in the liver marked by the degradation of cells, inflammation and thickening of the liver tissue.
[10] Medications used when an exposure to a disease has already occurred.

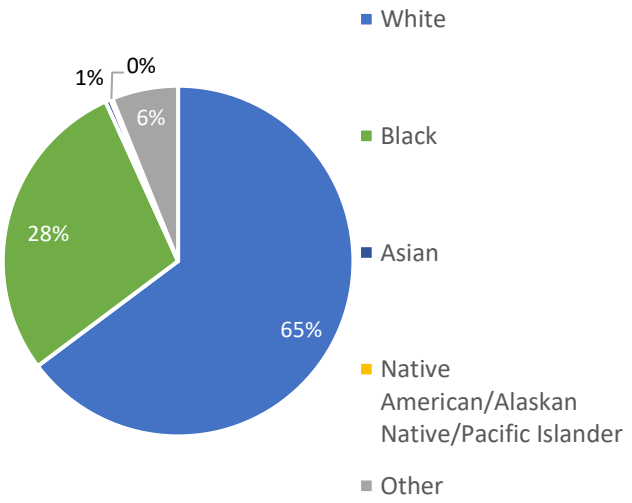
and the sharing of needles. If you are in a health care setting use precautions when working with needles and patients, and always wear the recommended PPE[11]. [5,11]

Figure 25: Age Breakdown of all Hepatitis C Cases, in Cincinnati, 2017-2021



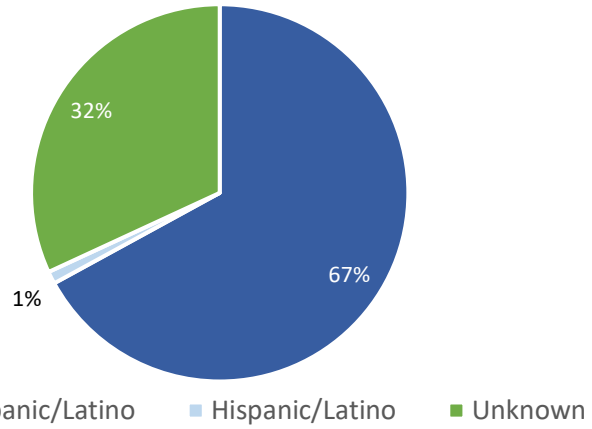
Data Sourced from Ohio Disease Reporting System Extracted February 2022

Figure 26: Race Breakdown of all Hepatitis C, in Cincinnati, 2017-2021



Data Sourced from Ohio Disease Reporting System Extracted February 2022

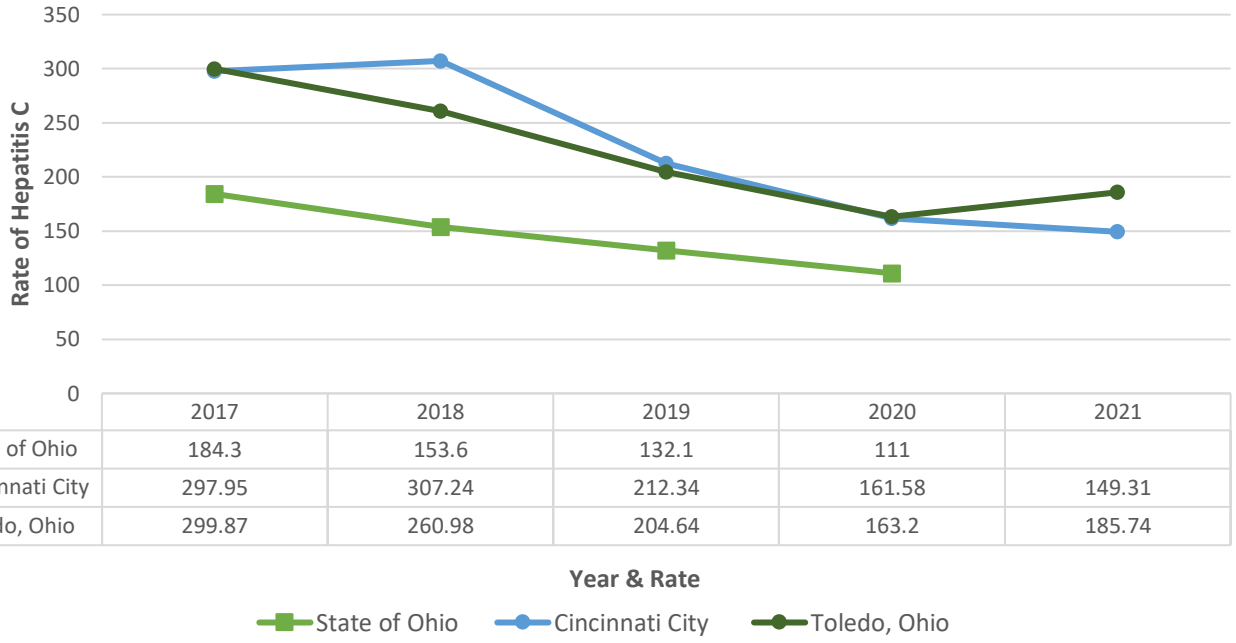
Figure 27: Ethnicity Breakdown of all Hepatitis C, in Cincinnati, 2017-2021



Data Sourced from Ohio Disease Reporting System Extracted February 2022

[11] Personal Protective Equipment, such as masks, gloves, gowns, and eye safety glasses.

Figure 29: Hepatitis C Rates for Ohio, Cincinnati City, and Toledo/Lucas County, 2017-2021



	2017	2018	2019	2020	2021
State of Ohio	184.3	153.6	132.1	111	
Cincinnati City	297.95	307.24	212.34	161.58	149.31
Toledo, Ohio	299.87	260.98	204.64	163.2	185.74

Year & Rate

State of Ohio Cincinnati City Toledo, Ohio

Data Sourced from Ohio Disease Reporting System Extracted February 2022

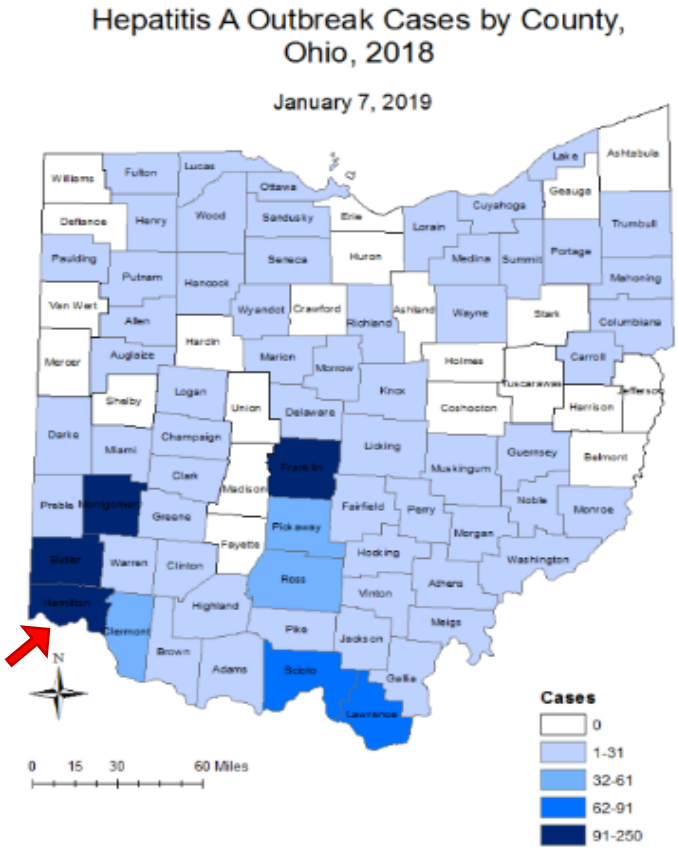
- Cincinnati City, consistently has a higher rate of Hepatitis C, compared to the rate reported by Ohio Department of Health. In Cincinnati City Hepatitis C case rates spiked higher than Toledo/Lucas County, a comparable city in population size, in 2017.

- In 2021 rates in Cincinnati decreased, as rates of Hepatitis C increased in Toledo/Lucas County.

- Note that the data reported by ODH for the state of Ohio for 2021 has not been reported.

Outbreak Highlight: Hepatitis A

Hepatitis A is a highly contagious liver infection caused by the Hepatitis A Virus (HAV).



Reporting protocol: Hepatitis A is a class B reportable disease; therefore, every reported case, suspected case or positive laboratory result should be reported to the local health department by close of the next business day.

Case definition: More information on Hepatitis a can be found in Section 3 of the Infectious Disease Manual, or at, https://odh.ohio.gov/know-our-programs/infectious-disease-control-manual/section3/section-3-hepatitis-a

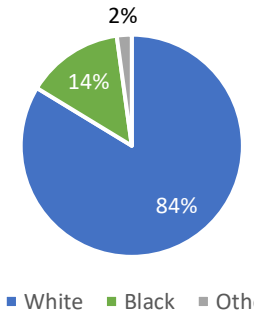
Mode of Transmission: This disease is vaccine preventable and is spread mostly through food and water that has been contaminated with human fecal matter. Hepatitis A can also be spread through contaminated blood, for example this can occur through needles, syringes, and other drug paraphernalia. [6]

Symptoms: Symptoms can include fatigue, nausea, abdominal pain, loss of appetite, dark urine, clay colored stool and fever. Infected children are often asymptomatic. Illness can last from a few to several months. The fatality rate is below .1%. [6]

Prevention: The Hepatitis A vaccine is available and licensed in the United States for use in people 12 months of age and older. After receiving the vaccine, it has been shown to be effective within 14 to 21 days after a single dose. The vaccine is recommended for all who are at increased risk of infection, such as:

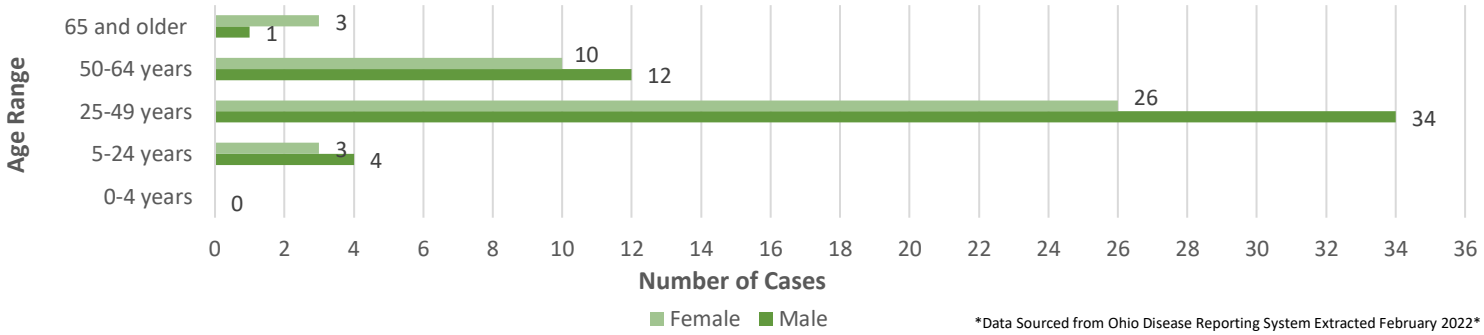
- All children over 12 months old
- Person in direct contact with persons with Hepatitis A
- Persons who use drugs (injection or non-injection)
- Persons with chronic liver disease or Hep C, Hep B
- Person experiencing unstable housing or homelessness
- Men who have sex with men
- Persons with blood clotting disorders
- International travelers (countries with high HAV infection)
- Persons working with primates
- Anyone wanting long term protection from Hepatitis A

Figure 30: Race Brekadown of Hepatitis A Outbreak Cases, in Cincinnati, 2018



Data Sourced from Ohio Disease Reporting System Extracted February 2022

Figure 31: Sex and Age Breakdown of Hepatitis A Outbreak, in Cincinnati, 2018



Data Sourced from Ohio Disease Reporting System Extracted February 2022

Cincinnati City Outbreak in 2018[12]:

- **168** cases reported to Cincinnati Health department for investigation
- **94** of those cases were confirmed cases by the CHD
- **65** of those cases were directly linked to an outbreak.

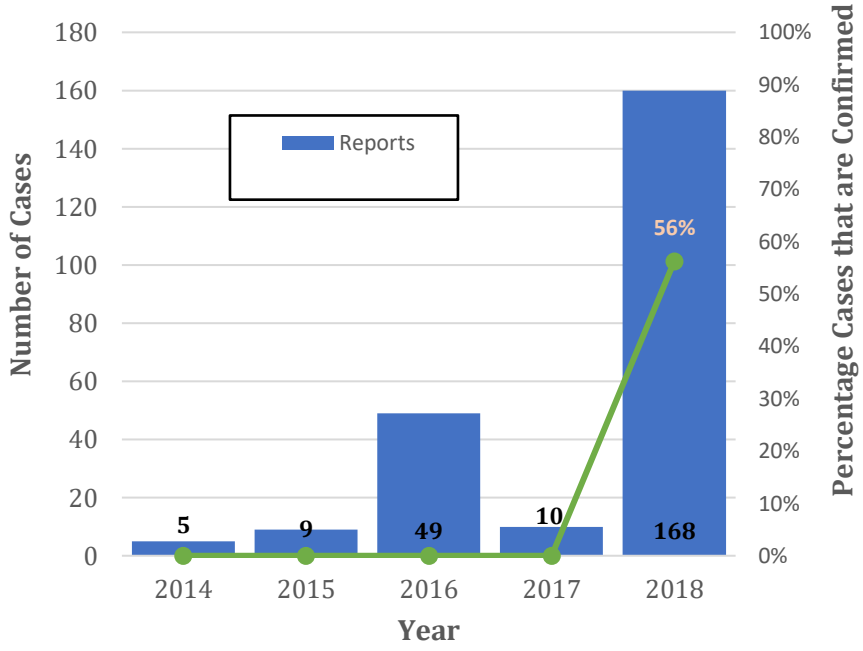
Cincinnati City Cases in 2014-2017:

- 5-49 probable cases[13] reported per year
- 0 confirmed[14] by the CHD
- 0 were linked to an outbreak

Outcomes:

- 71% cases hospitalized
- 62% cases coinfected with hepatitis B or C
- 0 deaths

Figure 32: **Number of Hepatitis A Cases Reported to CHD by Year and % of the Reports that were Confirmed Cases, in Cincinnati**

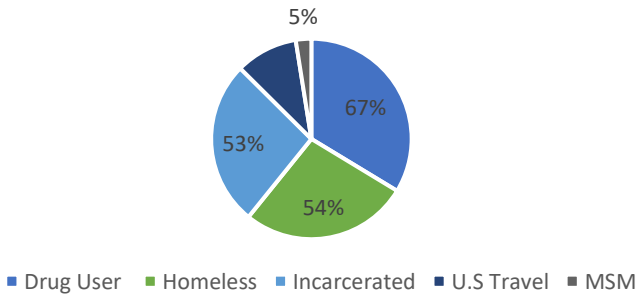


*Data Sourced from Cincinnati Health Department Report, Extracted 2019

Cincinnati health Department Response to Outbreak:

- Special vaccine clinics held at homeless shelters, soup kitchens, parks, faith-based organizations, substance abuse facilities and correctional facilities.
- Hosted syringe exchange program, to reduce the use of old needles or sharing needles.
- Conducted education training for homeless shelter workers on Hepatitis A.
- CHD identified and attempted to contact over 500 individuals of a possible Hepatitis A exposure.

Figure 33: Risk Factor Breakdown of Hepatitis A Outbreak, in Cincinnati, 2018



*Data Sourced from Cincinnati Health Department Report, Extracted 2019

NOTE: AN INDIVIDUAL CAN IDENTIFY WITH MORE THAN ONE RISK FACTER.

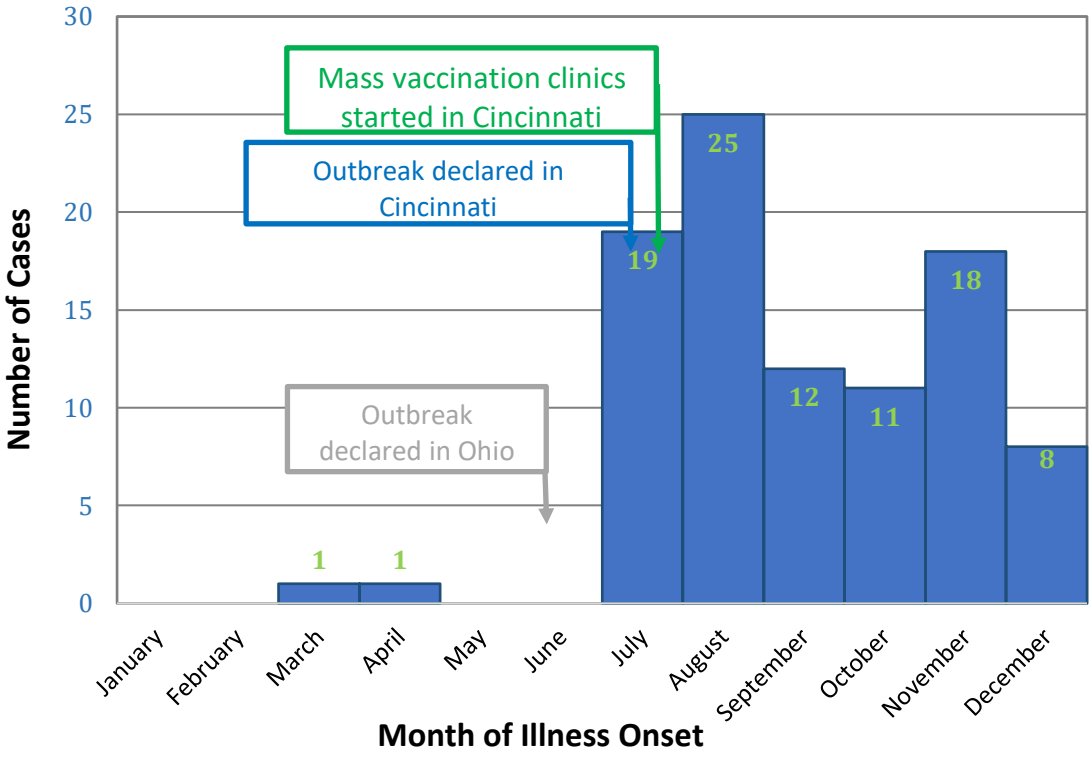
[12] All graphs and data regarding this outbreak were Provided by the Cincinnati Health Department' Communicable Disease Unit.

[13] A probable case does not fully meet the clinical case definition but is IgM laboratory confirmed, or a case that does not fully meet either the clinical or the IgM laboratory components of the case definition.

[14] A case that meets the clinical criteria and is IgM anti-HAV positive**, OR a case that has hepatitis A virus RNA detected by NAAT (such as PCR or genotyping). Or a case that meets the clinical criteria and occurs in a person who had contact (e.g., household or sexual) with a laboratory-confirmed hepatitis A case 15 to 50 days prior to the onset of symptoms.

Timeline of events during Hepatitis A Outbreak in 2018

Figure 34: Confirmed Hepatitis A Reports by Month of Illness Onset in Cincinnati, 2018



Note: *Cases are usually not reported for several days to weeks after the beginning of the illness.*
**All confirmed reports of hepatitis A in residents of Cincinnati between 1/1/2018 and 12/31/2018. Note that three cases were missing onset dates.*

*Data Sourced from Cincinnati Health Department Report, Extracted 2019

Table 5: Special Vaccine Clinic Successes

Clinic Model	Number of Clinics	Vaccines Administered
Post- Exposure	26	293
Pre-Exposure	27	347
Total	**52**	**640**

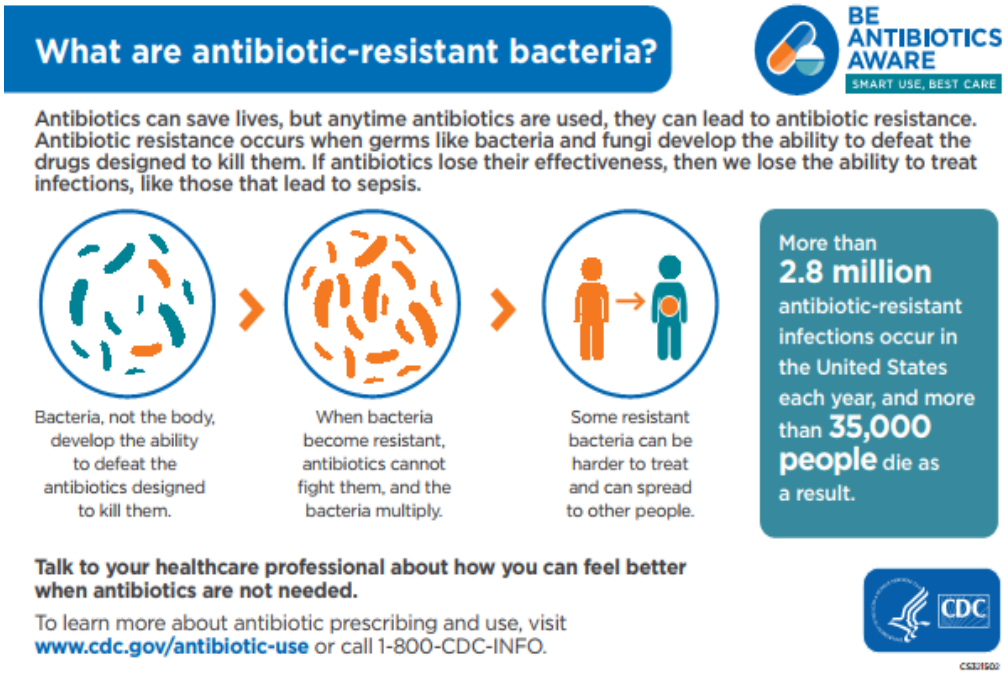
- By organizing and holding special vaccine clinics across the city in a variety of locations and utilizing several different community partners, CHD was nurses were able to meet citizens where they were.

- Those who were at risk, or already exposed had to opportunity to be vaccinated and learn about reducing their risks of contracting Hepatitis A.

Emerging Threat of Multi-Drug Resistant Diseases

What Are Bacteria? Bacteria and fungi are germs that are found inside and outside the human body. Most germs are harmless, and some can be helpful to humans, however some germs can cause infections. [12]

What are antibiotics? Antibiotics are tools that are used in preventing and treating infections caused by specific bacteria in humans, animals, and plants. In the healthcare setting, antibiotics are one of the most powerful drugs for treating life threatening bacterial infections. [12]



What are Multi-Drug Resistant Diseases? These are diseases that are incredibly difficult to treat, due to bacteria and fungi's ability to adapt and defeat antibiotics designed to kill them. Antibiotic resistance can occur when antibiotics are overprescribed or not properly administered to patients when prescribed by doctors. The diseases can become resistance to the medications. When this happens, doctors have a hard time treating patients, and it may result in an extended hospital stay, additional treatments and possibly more expensive and invasive alternative treatments. **All these examples below are diseases that are considered an "Urgent Threat" by the CDC and require aggressive action to address their impacts nationwide.** [12]

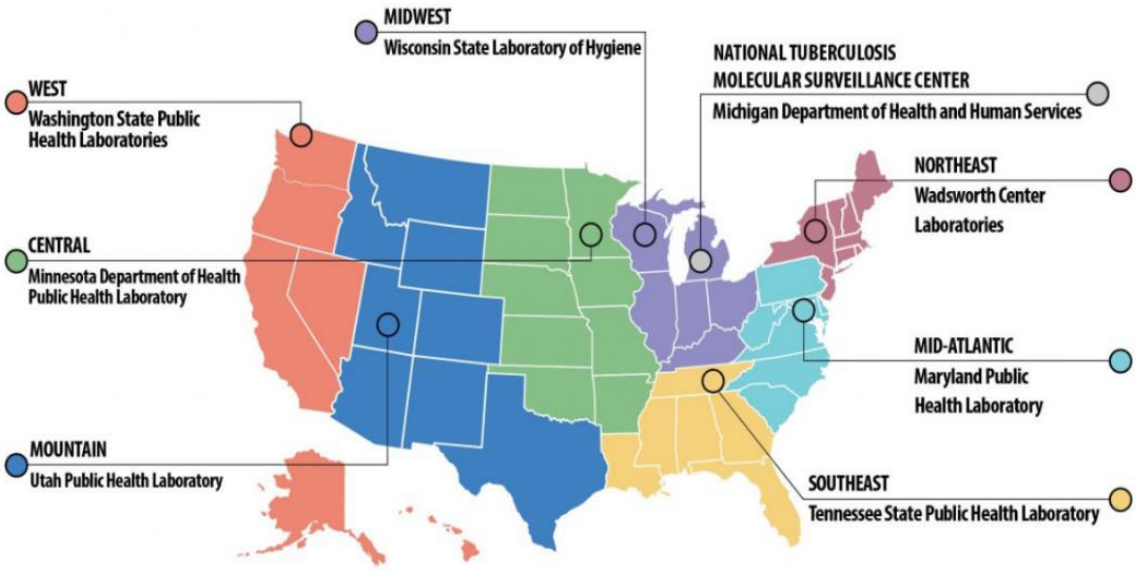
Examples of These Diseases:

Candida Auris is a fungus that can cause serious infections, and death in those who become colonized with *C. Auris*. It is often resistant to medication and treatment. There have been reported cases of *C. Auris* that has been resistant to all three types of antifungal medications. *C. Auris* is hard to diagnose, and many times is misdiagnosed and has led patients to receive the wrong treatment. *C. Auris* has caused outbreaks in healthcare facilities and can spread quickly through contact with infected patients, equipment, or other contaminated surfaces. Hand washing and disinfecting of all surfaces is extremely important because *C. Auris* can live on surfaces for several weeks. *C. Auris* only emerged in 2009, so scientists are still researching how it occurs, why it is so resistant to treatment as well as its origin. [12] *C. Auris* has recently emerged in Cincinnati, in 2021 *C. Auris* had one of the highest communicable disease rates reported in the city. For more information the emergence of *Candida Auris* please visit, https://www.cdc.gov/fungal/candida-auris/c-auris-drug-resistant.html

Acinetobacter is a group of bacteria that are commonly found in environments such as soil and water, however it is commonly spread to humans through healthcare settings. This bacterium can cause infections in the blood, urinary tract, and lung, like *Candida Auris* it can colonize and live in patients, then can be spread from person to person, or can contaminate equipment. Patients with open wounds, on ventilators, or have catheters are most at risk for infections. Disinfection of equipment and hands is important to reduce and prevent the spread of *Acinetobacter*. These bacteria are known to be antibiotic resistant and therefore difficult to treat. [12] For more information the emergence of *Acinetobacter* please visit, https://www.cdc.gov/hai/organisms/acinetobacter.html

Carbapenem-Resistant Enterobacterales (CRE) Enterobacterales are a type of bacterium, such as *Escherichia coli (E. Coli).* CRE infections can be invasive and noninvasive, symptoms can vary according to the organism or location. CRE infections are usually spread in healthcare setting, affecting those with chronic medical conditions such as diabetes, obesity, and compromised immune system. A CRE infection can cause pneumonia, bloodstream, or urinary tract infections. Patients that have a colonized CRE infection can easily spread it to other patients and source of a healthcare outbreak. Person to person transmission occurs when a person has contact with an infected person's wounds or stool. The bacteria can also be spread by healthcare workers who have had direct contact with contaminated surfaces such as bed rails, computer keyboards, or reusable equipment such a catheter or ventilators. CRE is a multi-antibiotic drug resistant bacterium, it is very hard and usually unsuccessfully treated with antibiotics. [12] For more information the emergence of CRE please visit, https://www.cdc.gov/hai/organisms/cre/cre-patients.html

What are Local Health Departments doing to address antibiotic resistance? Laboratories are connected and in communication with CDC's Antibiotic Resistance Lab Network to ensure when outbreaks occur, information is shared and discussed with both federal, state, and local health partners. Local health departments need to work closely with local hospitals and other healthcare facilities to track and prevent the occurrence of healthcare associated, foodborne, or other community infections caused by antibiotic resistant diseases. The responsible use and prescribing of antibiotics are a very important factor in reducing the emergence of multidrug resistant diseases. Education to both care providers and patients should be present in all healthcare and pharmaceutical environments. If antibiotics are continuously over prescribed or misused, they will no longer be affective on the diseases they are needed to treat.[12]



The current CDC Antibiotic Resistance Lab Network – each region sends their lab sample to their corresponding State lab for testing.

For example, Cincinnati will send all samples of *Candida Auris* taken from patients to the Wisconsin State Laboratory of Hygiene.

Conclusions:

This report serves to describe the communicable disease data trends in Cincinnati from 2017-2021. This report will be used to further drive the efforts of Cincinnati Health Department disease investigations, planning for future resources, developing, and improving programs and to continue outreach and education in our community.

This report also serves to education the community on the diseases on the rise in Cincinnati and gives an insight into the emerging threat of multidrug resistant diseases. For example, Candida Auris has only emerged in Cincinnati in 2021, however, it already has one of the highest rates of disease in 2021. Proving to be a unique addition to the landscape of reportable communicable diseases in Cincinnati.

COVID-19 also proved to be a unique and new addition to the reportable diseases in Cincinnati, emerging within the city in 2020, took over as the most reported disease in 2020 and 2021. COVID-19 drastically increased the number of outbreak investigations conducted by the Cincinnati Health Department's Communicable Disease Unit. The presence of COVID-19 has impacted the trends of other respiratory diseases such as Influenza, due to the increase in masking and social distancing, the rate of Influenza dramatically dropped in 2021.

Acknowledgements and thanks for this report go to the Cincinnati Health Department's Epidemiology and Communicable Disease teams.

For any questions, reach out to the Cincinnati Health Department at the main line: 513-357-7200

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