Davis COUNTY HEALTH DEPARTMENT

2024 Annual Report

Division of Communicable Disease & Epidemiology

Mission

Promote and protect the health and well-being of the Davis County community.

Vision

Healthy Choices. Healthy People.

Healthy Communities.

Values

Collaboration and Partnership.

Communication. Health Equity.

Public Health Excellence. Quality Service.

Knowledgeable, Professional, and Friendly Employees.

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2024 Highlights

This report summarizes all communicable diseases reported in Davis County, Utah, during 2024. It provides an overview of the burden and trends of infectious disease in the county and highlights important events. The Division of Communicable Disease and Epidemiology (CD/Epi) within the Davis County Health Department (DCHD) was involved in several notable events during 2024. These are summarized below.

2024 Reportable Disease Overview

In accordance with the Utah Administrative Code (R386-70), there are over 80 communicable diseases or conditions that must be reported to public health. During 2024, there was a total of 2,363 cases that were reported. While all of these diseases must be reported, public health only intervenes with certain diseases, or when specific criteria are met. A total of 1,339 disease interviews and interventions were successfully completed.

Clinical Services

CD/Epi operates a clinic on the first floor of the Clearfield building, adjacent to the immunization clinic. Here, CD/Epi nurses attend to patients for screening, testing, treatment and education services related to sexually-transmitted infections (STIs) and tuberculosis (TB). In addition, baseline testing and vaccinations for emergency medical services (EMS) personnel are provided for bloodborne pathogens.

In 2024, CD/Epi saw patients for a total of 1,112 appointments. This included 540 (48.6%) STI appointments for testing and treatment; 417 (37.5%) TB appointments for testing and treatment follow-up; 115 (10.3%) EMS appointments for bloodborne pathogen screening and vaccinations; and 40 (3.6%) appointments for other communicable disease testing needs. In addition to these appointments, 30 individuals completed all EMS bloodborne pathogen screening and training requirements.

Mass Bat Exposure and Rabies Concerns

CD/Epi responded to a mass bat exposure event in 2024. A youth group from Davis County attended a camp in southeastern Idaho for multiple days. During their stay, numerous bats were observed inside the cabin where the group slept at night. News articles about the bats in the cabin involving a different group of campers elicited public concern about the risk of rabies exposure. These situations are concerning because it can be difficult to properly assess human exposure; additionally, when multiple bats are involved, rabies testing becomes essentially infeasible.

Due to the uncertainty of the group's exposure to the bats, and the unavailability of the bats for testing, CD/Epi recommended rabies post-exposure prophylaxis (PEP) for camp attendees. This was done out of an abundance of caution to prevent any human rabies infections. Public health response to these types of mass bat exposures can be a challenge. It involves balancing the high fatality of rabies, the expensive cost of rabies PEP, and contact tracing all individuals involved and assessing their exposure to the bats.[1]

The group had 42 people total exposed, of which CD/Epi was able to make contact with 34 of them. Of those 34 individuals, PEP was recommended to 33 of them based on the nature of their exposure to the bats. Of those 33 individuals, 30 individuals chose to receive PEP. Of the 30 who received PEP, 21 completed it through DCHD clinic services. All individuals who started PEP completed the regimen. Additional information on rabies may be found on page 47.

Disease Outbreak Response

CD/Epi responded to eight identified outbreaks in 2024, which affected 102 individuals in total. The list below provides a summary:

- Two at daycares involving Hand, Foot, and Mouth Disease and Shiga toxin-producing *E. coli*.
- Two at restaurants suspected to be norovirus and vibriosis.
- Four at long-term care facilities and other congregate living areas involving norovirus and scabies.

During these outbreaks, CD/Epi provided guidance on patient testing and treatment; infection control measures; and prevention methods. When appropriate, CD/Epi conducted site visits in partnership with the Environmental Health Division to evaluate kitchen, dining, and laundry areas, along with advising on best practices for cleaning.

Not all diseases implicated in these outbreaks are required to be reported (i.e. scabies and Hand, Foot, and Mouth Disease). Despite this, CD/Epi will always act in the best interest of Davis County residents to control and prevent the spread of disease when an outbreak is discovered.

New Patient Electronic Health Record System

In 2024, CD/Epi helped implement a new electronic health record (EHR) system at DCHD. For individuals who receive services at the DCHD clinic, the EHR system maintains key administrative and clinical data relevant to their health needs. It is a form of electronic recordkeeping that includes progress notes, medications, vital signs, laboratory data, immunizations, and contact information.

While there certainly has been a learning curve, this system provides many benefits to both Davis County residents and DCHD staff alike. For residents, it provides automatic appointment notifications, a personal online portal that allows patients to access their test results, and online scheduling. For DCHD staff, it provides digital check-in for appointments, digital charting, barcode scanning for prescriptions, inventory tracking, a letter repository, streamlined medical billing, and customer satisfaction surveys.

This new system helps modernize efforts to serve Davis County residents. It streamlines DCHD clinic services, saves time by reducing work duplication, and saves money by going paperless

Personal Responsibility Education Program Outreach

CD/Epi teaches teen and adolescent outreach courses, which are focused on reducing STI infections and unintended pregnancies. In 2024, there was a total of 822 students who participated. This is an 18.3% increase in the number of students who participated in 2023.

Feedback from participants showed the 24.2% said they would increase their intent to use condoms, and 21.4% said they would increase their intent to regularly get tested for STIs. These percentages are similar to years past.

In addition, CD/Epi began transferring responsibility of these education courses to the Division of Community Health. Department leadership determined that these courses would better fit under the mission of the community health educators in that division. Despite these changes, CD/Epi continues to provide support and training to the Division of Community Health as they accept this new responsibility.

Division Overview

Overview

The DCHD CD/Epi Division works in partnership with the medical community and neighboring health jurisdictions to control and prevent the occurrence and spread of communicable diseases in Davis County (see Appendix 1 for county demographics). This is accomplished through disease surveillance, disease investigation, coordination of prevention efforts, treatment, education, training, and policy development. The Division aims to:

- Interrupt and contain the spread of communicable diseases within the community;
- Conduct surveillance for over 80 communicable diseases and syndromes;
- Provide education to infected and exposed individuals;
- Facilitate appropriate treatment and preventive therapy;
- Enforce measures that protect the community (e.g. isolation); and
- Develop and advocate for policies to address priority health issues.

The CD/Epi Division is organized into seven main program areas: sexually-transmitted infections (STI)/human immunodeficiency virus (HIV), tuberculosis (TB) control, infectious disease, disease surveillance, health education, outbreak response, and EMS support.

Infectious Disease Program

Most communicable diseases reportable in the state of Utah, with the exception of STIs and TB, fall under this program. Once reported, the Infectious Disease program implements the following activities:

- Interview infected individuals to obtain a thorough history, attempt to determine the source of exposure, and identify exposed contacts;
- Review and interpret laboratory results;
- Implement necessary control measures to interrupt disease transmission (e.g. exclusion from work/school);
- Monitor the disease process, assessing for changes in expected manifestations;
- Facilitate appropriate treatment and prophylaxis for those infected or exposed;
- Provide education on the specific disease and important preventive measures; and
- Formalize findings and report to the Utah Department of Health and Human Services (DHHS).

The Infectious Disease Program has been further divided into the following categories:

- Enteric Diseases: bacterial, viral, and parasitic diseases involving the gastrointestinal tract
- Invasive Diseases: bacterial or viral infections of the blood stream, cerebral spinal fluid (e.g. meningitis, encephalitis) or other normally sterile sites (e.g. synovial, pleural, or pericardial fluid)
- Vaccine-Preventable Diseases: diseases that are preventable with vaccines

- Vector-borne/Zoonotic Diseases: diseases transmitted by insects, animals, or birds
- Other reportable diseases/conditions: diseases that do not fall under the above categories

STI/HIV Program

STIs affect men and women of all ages, backgrounds, and economic statuses. The United States (US) has made progress in identifying cases through better testing procedures, sexual partner testing and treatment, and risk-reduction education. The STI/HIV Program strives to ensure that infected individuals are interviewed by a trained communicable disease nurse or disease intervention specialist (DIS) to:

- Verify that appropriate treatment was prescribed and administered;
- Confidentially identify and notify contacts/partners of infected individuals who may have been exposed and facilitate testing and treatment; and
- Provide risk-reduction counseling and education.

TB Control Program

The Davis County TB Control Program is dedicated to the prevention, control, and elimination of TB disease and the identification and treatment of latent TB infection (LTBI). The successful control of TB in Davis County is largely due to the following program activities:

- Early identification, isolation, and appropriate treatment of individuals suspected of or diagnosed with TB disease;
- Effective contact investigation activities to identify individuals exposed to TB and completion of medication therapy for those diagnosed with LTBI; and
- Targeted testing for those who are at higher risk for developing TB following an exposure (e.g. people experiencing homelessness, foreign-born individuals, residents of correctional institutions, people who inject drugs).

EMS Support

The Occupational Safety and Health Administration (OSHA) mandates that all employees who are at risk for bloodborne pathogen exposure receive training and have annual updates.[2] In an effort to assist the Davis County Sheriff's Office and other EMS agencies within Davis County, CD/Epi provides baseline testing services for bloodborne pathogens to EMS employees and volunteers. This baseline testing includes HIV, hepatitis B, and hepatitis C. In addition, CD/Epi administers a bloodborne pathogen prevention training for EMS personnel.

Outbreak Response

An outbreak is generally defined as an increase of disease among a specific population in a geographic area during a specific period of time. An outbreak can occur anywhere: schools, the workplace, daycares, health facilities, and more.

In particular, long-term care facilities face a higher risk of outbreaks. These facilities provide a variety of services, both medical and personal care, to people who are unable to live independently. While these facilities provide important care, there is a higher risk of outbreaks and severe disease due to the typically high proportion of older or medically vulnerable individuals living in close proximity.

Regardless of where an outbreak occurs, CD/Epi remains ready to respond. Should one arise, CD/Epi's efforts include:

- Building rapport with facility staff,
- Maintaining open communication,
- Providing up-to-date guidance from the Centers for Disease Control and Prevention (CDC) on infection prevention and control recommendations, including assisting with Infection Control Assessment and Response (ICAR) tools,
- Following up on identified cases,
- Recommending testing based on exposure, and
- Assisting with reporting requirements.

Surveillance Program

The Surveillance Program is responsible for the systematic collection, analysis, and dissemination of data pertaining to infectious diseases of public health importance. The goal of the Surveillance Program is to provide statistics that prompt public health preventive action. Core functions of the Surveillance Program include:

- Providing medical professionals with access to disease reporting 24-hours a day/seven days a week;
- Maintaining a computerized system for efficient storage and access to data;
- Monitoring trends of infectious disease activity;
- Using a variety of data sources such as notifiable disease reports, syndromic data, school absenteeism, and sentinel physician reports; and
- Disseminating surveillance data to the public and medical professionals.

Communicable diseases are reported to the local health department for investigation in accordance with the Utah Administrative Code (R386-702). Prompt reporting of confirmed and suspect cases helps ensure necessary control and preventive actions. All reports required by rule are confidential and are not open to public inspection. Appendix 2 provides the list of all diseases that are required to be reported in Utah.

Entities required to report confirmed or suspected diseases are physicians, hospitals, healthcare facilities, laboratories, schools, long-term care facilities, skilled nursing facilities, and daycares. All case reports should include basic demographic information to initiate an investigation, if needed.

Disease surveillance data received from hospitals, clinics, and laboratories are used to complete case investigations and minimize the spread of infectious disease. These data are maintained in EpiTrax—a secure, online database that

allows epidemiologists, nurses, and DIS to access case information statewide. Figure 1 shows how data are exchanged in the National Notifiable Disease Surveillance System. In short, when someone has a laboratory test performed, it is reported to DCHD. These data are de-identified and reported to CDC, which then helps us understand disease patterns around the country.[3]

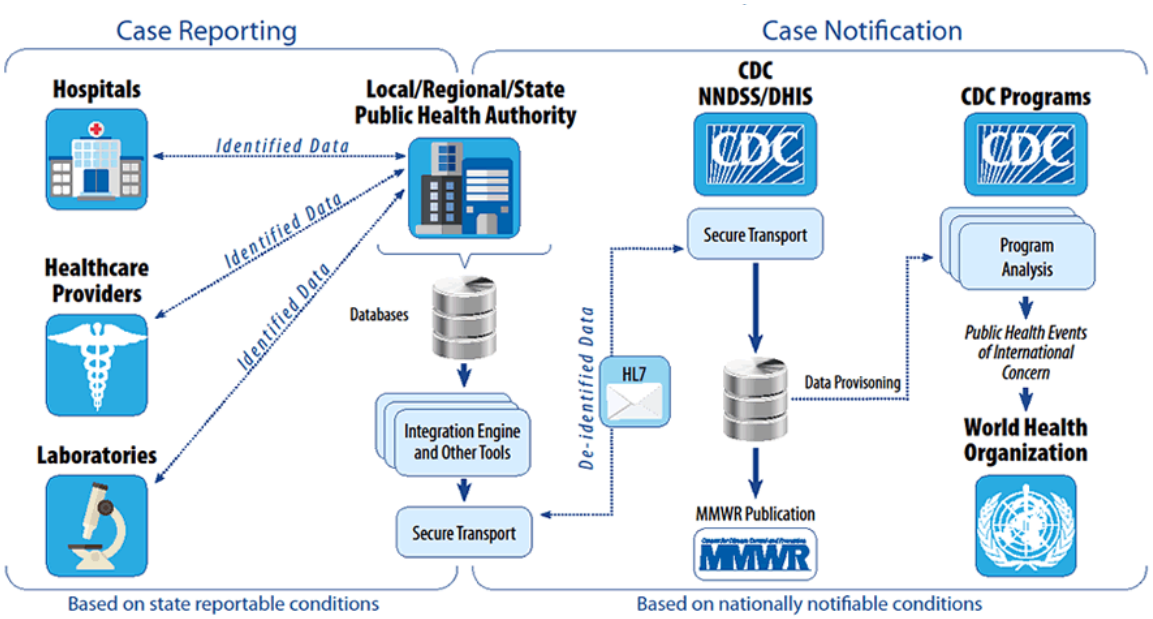
Personal Responsibility Education Program Outreach

CD/Epi staff teach multiple health education classes that are designed to help adolescents and young adults make informed choices about the lives they want to live.

Since 2019, CD/Epi has partnered with the Clearfield Job Corps Center (CJCC) to teach positive and safer-sex approaches to teen pregnancy and HIV/STI prevention. CD/Epi currently teaches a curriculum called Sexual Health and Adolescent Risk Prevention (SHARP) at CJCC. This program is focused on preventing HIV and STIs by deepening STI/HIV knowledge, improving correct condom use, reducing sexual risks and alcohol use, and setting long-term goals to utilize knowledge and skills learned from the curriculum.

In addition, CD/Epi holds a Teen Outreach Program (TOP) club. TOP is a 32-week curriculum that typically runs throughout the school year. It is a positive youth development program created to build educational success, life and leadership skills, healthy behaviors, and healthy relationships through curriculum and community service learning. The first TOP club was completed during the 2022-2023 school year at Mercy Housing. Another TOP club was added at Career Path High in the 2023-2024 school year, and both clubs have continued since then.

Figure 1. National Notifiable Disease Surveillance System Data Flow



Social Determinants of Health

Overview

Social determinants of health (SDOH) are the nonmedical factors that influence health outcomes. They are the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life.[4] These conditions can play an important role in the incidence and transmission of disease. When looking at population health, communities with higher income and education are healthier, as is the case in Davis County. When compared to Utah and the US, Davis County is above state and national averages for health outcomes and other related factors (such as health behaviors, clinical care, and social and economic measures).[5] However, this does not mean that these factors are distributed evenly across the county. To see how SDOH impact infectious disease, we must look at smaller areas like neighborhoods. To help with this, the DHHS partnered with the Public Health Alliance of Southern California to create the Utah Healthy Places Index (HPI).[6] The complete Utah HPI may be accessed at https://dhhs.utah.gov/utahhpi/.

Utah Healthy Places Index

In short, the Utah HPI tool evaluates the relationship between 22 identified key drivers of health and life expectancy at birth — which can vary dramatically by neighborhood. Based on that analysis, it produces a score ranking from 1 to 99 that shows the relative impact of conditions in a selected area compared to all other such places in the state. The Utah HPI scores and compares geographies across the state with the ability to view data neighborhood-by-neighborhood in order to provide a granular view of community well-being.[7] The 22 indicators can be organized into eight thematic groups: education, transportation, housing, social, clean environment, neighborhood, healthcare access, and economics.[6] In this report, we evaluated the HPI score ranking for each census tract in Davis County.

Methodology

Each census tract in Davis County was grouped into quartiles based on their HPI score and given a rank based on the community health conditions: least, less, moderately, and most healthy. Figure 2 presents a map of Davis County census tracts with the respective HPI ranking. City boundaries are included as a visual aid. Census tract rankings were only compared within Davis County and not the rest of the state. As such, a given census tract's overall ranking may differ than what is found on the official Utah HPI website. Census tracts were included if they had a population of 1,500 or greater and a group quarters population less than 50% of the total population. Given that, some census tracts were excluded from analysis. Table 1 shows the total population of each HPI rank area along with its percent of the total county population.[8]

All Davis County disease reports from 2024 were geocoded using the address where the patient lived when they were diagnosed. Records were geocoded using tools from the Utah Geospatial Resource Center. Records were then assigned to their respective census tract and corresponding HPI rank. There was a total of 2,363 disease reports in 2024. Of these, 2,340 records had sufficient address information to successfully geocode (99.0%).

Analysis

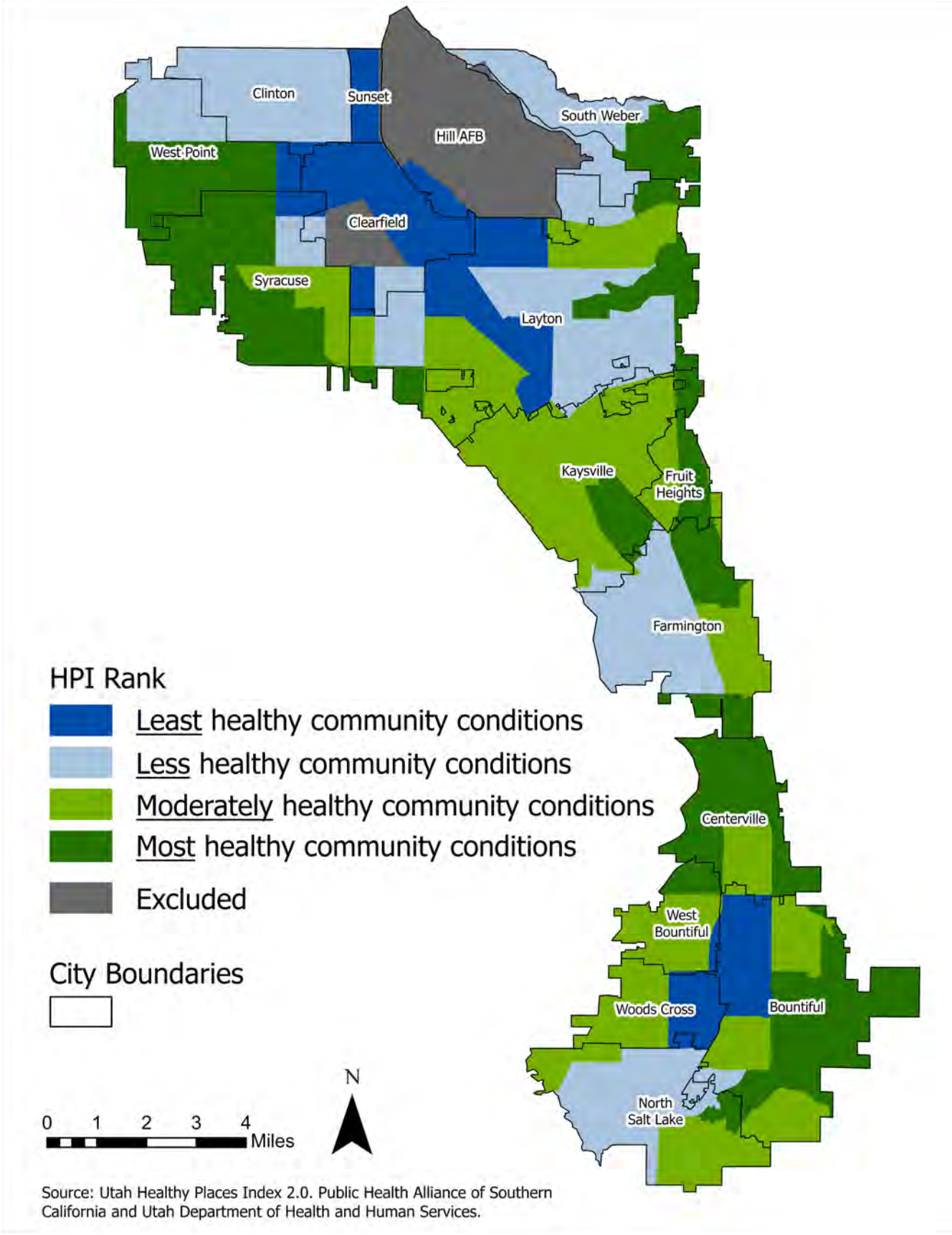
This 2024 annual report presents analyses using the HPI. Throughout this report, incidence rates of major disease categories will be stratified by the four HPI rank areas. Further uses of the HPI will be evaluated for future analyses as well.

Table 1. Population of HPI Rank Areas, Davis County, 2020*

HPI Rank	Population	Percent of County Population
Least healthy	77,020	21.3%
Less healthy	98,893	27.3%
Moderately healthy	103,629	28.6%
Most healthy	82,348	22.8%

* Population based on the 2020 Census population data.

Figure 2. Utah Healthy Places Index 2.0 Ranking of 2020 Census Tracts, Davis County



Reportable Disease Summary

This section presents an overview of this year's communicable disease reporting in Davis County. In 2024, there was a total of **2,363** reported illnesses. Due to the end of the COVID-19 public health emergency in 2023, COVID-19 case counts are no longer included in this report; only hospitalizations are reported now. Information on COVID-19 emergency department visits (ED) and hospitalizations is found on page 28.

Figure 3 displays the percentage of disease reports that fall into one of eight major categories. STIs constituted the largest proportion at 47.3% of all disease reports. This is a pattern that has been observed for many years.

Figure 4 shows the rate of disease reports by age and sex. The high rates observed in the 15 -24 age group are primarily driven by STIs. This is another pattern that has been observed for many years. A disparity is seen between males and females. While the exact reason is not known, one plausible explanation is that more STIs may be found among women due to regular female health checkups and prenatal exams. Given this, it is likely that disease reporting (particularly STIs) among males ages 15-24 is underreported.

The high rates observed in males age 85+ is primarily driven by respiratory illness hospitalizations and a relatively low population count.

Figure 3. Percent of All Diseases Reported, by Category, Davis County, 2024

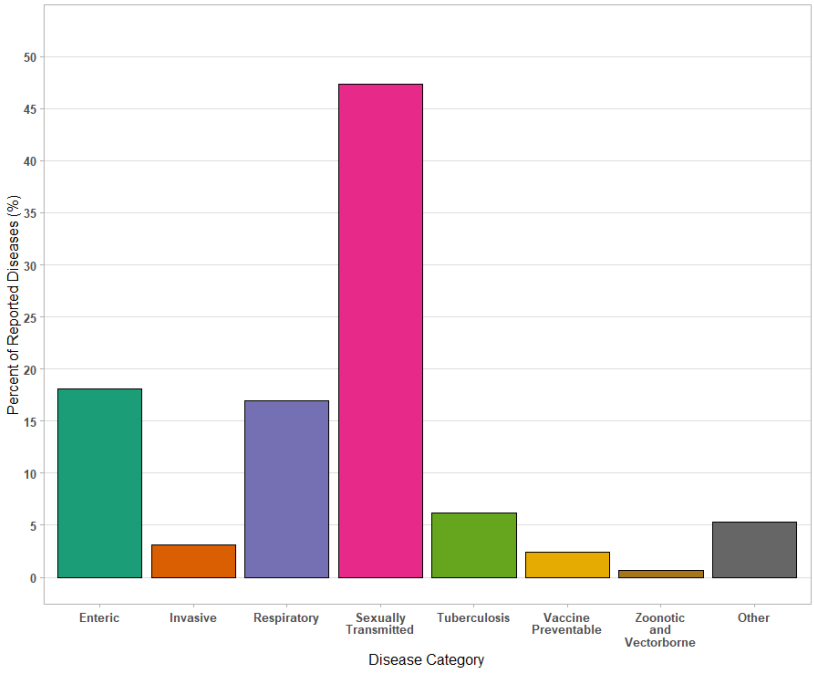


Figure 4. Rate of Disease Reports by Age Group and Sex, Davis County, 2024

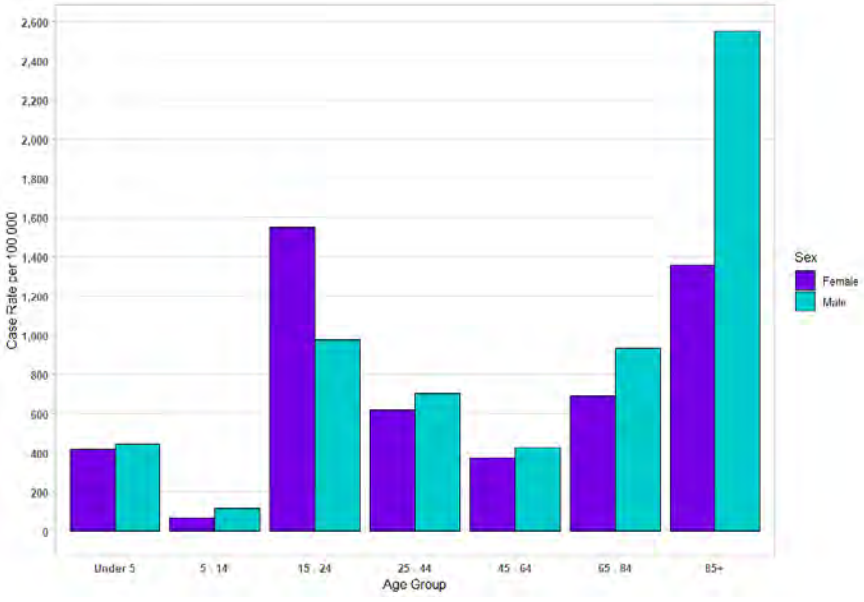


Figure 5. Rate of Disease Reports, by City, Davis County, 2024

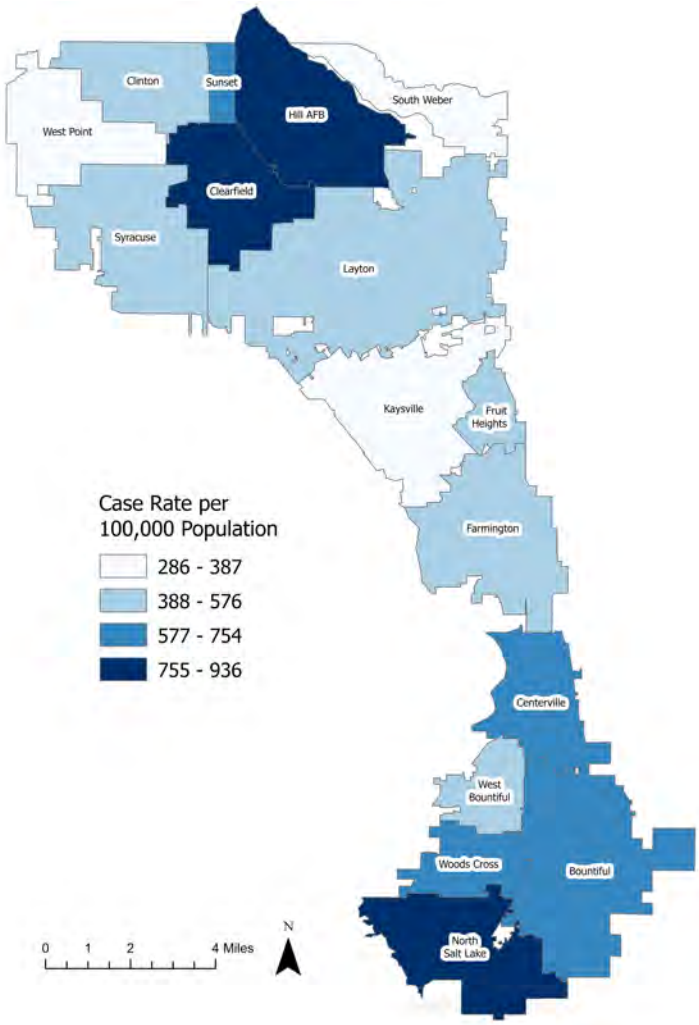


Figure 6. Rate of Disease Reports, by HPI Rank, Davis County, 2024

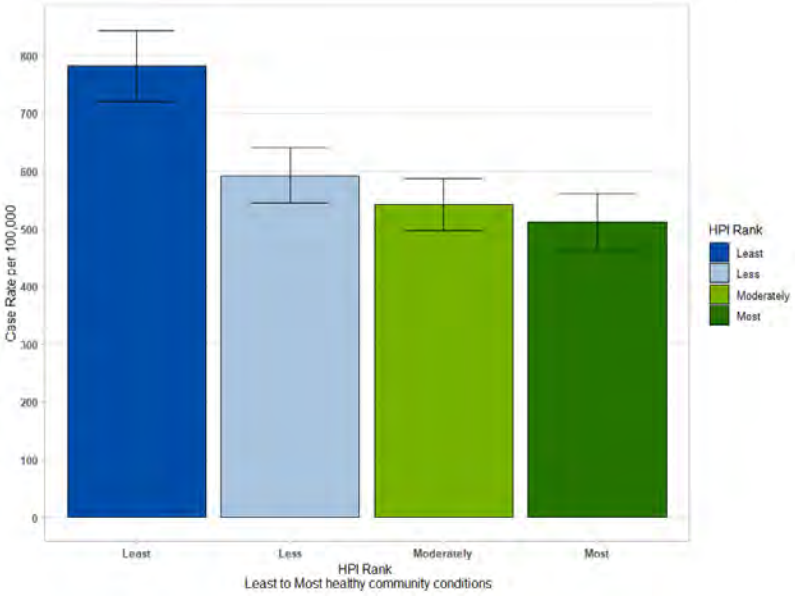


Figure 5 presents rates of disease reporting for each of the 15 cities in Davis County and Hill Air Force Base (Hill AFB). Disease rates by city are identified by the affected individual's address of residence at the time of their diagnosis. TB data are not included because most infections are acquired outside of Davis County.

Clearfield, Hill AFB, and North Salt Lake had the highest rates of reportable diseases, while Kaysville, South Weber, and West Point had the lowest rates.

These rates do not suggest that one city is better or worse than another, but simply describe the disease burden in each city. As described in the previous section ("Social Determinants of Health," page 7), many factors can influence the transmission and identification of disease.

Figure 6 shows the rate of reportable diseases by HPI rank. When the data are viewed this way, a pattern emerges: as healthy community conditions improve, disease rates decrease. In the least healthy area, the rate was 781.6 cases per 100,000 people. This is 42.0% higher compared to the rest of the county.

Conversely, the most healthy area had a rate of 511.2 cases per 100,000 people, which is 18.3% lower compared to the rest of the county. While this may seem intuitive, the Utah HPI helps to paint a clearer picture of infectious disease burden in Davis County.

Summary Tables

On the following pages, Table 2 shows case counts and incidence rates per 100,000 people of reportable disease in Davis County from 2019 to 2024.

Reportable Disease Summary

Table 2. Disease Report Summary, Counts and Rates per 100,000 People, by Year, Davis County, 2019 - 2024

Disease	2019 Count Rate	2020 Count Rate	2021 Count Rate	2022 Count Rate	2023 Count Rate	2024 Count Rate
African Tick Bite Fever	0 0.0	0 0.0	0 0.0	0 0.0	1 0.3	0 0.0
Botulism, infant	0 0.0	1 0.3	1 0.3	0 0.0	0 0.0	2 0.5
Botulism, wound	0 0.0	0 0.0	1 0.3	0 0.0	0 0.0	0 0.0
Brucellosis	1 0.3	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
COVID-19-associated hospitalization	0 0.0	539 148.6	1,042 283.7	428 115.7	278 74.5	234 62.7
Campylobacteriosis	50 14.1	46 12.7	48 13.1	52 14.1	69 18.5	68 18.2
Carbapenem-Resistant Organisms (CRO)	86 24.2	73 20.1	104 28.3	67 18.1	43 11.5	48 12.9
Chickenpox (Varicella)	13 3.7	9 2.5	9 2.5	17 4.6	12 3.2	8 2.1
Chlamydia	1,160 326.3	954 263.0	940 255.9	986 266.5	973 260.7	886 237.4
Coccidioidomycosis	15 4.2	6 1.7	10 2.7	8 2.2	10 2.7	13 3.5
Colorado Tick Fever	0 0.0	0 0.0	1 0.3	0 0.0	1 0.3	0 0.0
Creutzfeldt-Jakob Disease (CJD)	0 0.0	0 0.0	0 0.0	2 0.5	0 0.0	0 0.0
Cryptosporidiosis	15 4.2	14 3.9	20 5.4	21 5.7	117 31.3	12 3.2
Cyclosporiasis	2 0.6	1 0.3	1 0.3	1 0.3	4 1.1	5 1.3
Dengue Fever	1 0.3	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
E-cigarette or vaping use-associated lung injury (EVALI)	13 3.7	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
Ehrlichiosis	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 0.3
Encephalitis	1 0.3	3 0.8	0 0.0	0 0.0	0 0.0	0 0.0
Giardiasis	20 5.6	15 4.1	20 5.4	16 4.3	13 3.5	22 5.9
Gonorrhea	229 64.4	238 65.6	260 70.8	237 64.1	158 42.3	166 44.5
H. influenzae, invasive disease	7 2.0	4 1.1	3 0.8	4 1.1	6 1.6	4 1.1
Hansen's Disease (Leprosy)	0 0.0	0 0.0	1 0.3	1 0.3	1 0.3	0 0.0
Hepatitis A	1 0.3	0 0.0	1 0.3	1 0.3	0 0.0	2 0.5
Hepatitis B, acute and chronic	22 6.2	19 5.2	11 3.0	15 4.1	22 5.9	26 7.0
Hepatitis C virus infection, perinatal	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 0.3
Hepatitis C, acute and chronic	97 27.3	101 27.8	127 34.6	120 32.4	88 23.6	56 15.0
Hepatitis C, perinatal	0 0.0	0 0.0	1 0.3	0 0.0	0 0.0	0 0.0
Highly Pathogenic Avian Influenza	0 0.0	0 0.0	0 0.0	1 0.3	0 0.0	0 0.0

Table 2. Disease Report Summary, Counts and Rates per 100,000 People, by Year, Davis County, 2019 - 2024 (continued)

Disease	2019 Count	2019 Rate	2020 Count	2020 Rate	2021 Count	2021 Rate	2022 Count	2022 Rate	2023 Count	2023 Rate	2024 Count	2024 Rate
Human immunodeficiency virus (HIV)	11	3.1	8	2.2	12	3.3	13	3.5	9	2.4	9	2.4
Influenza-associated hospitalization	171	48.1	115	31.7	3	0.8	188	50.8	92	24.7	166	44.5
Legionellosis	3	0.8	3	0.8	1	0.3	7	1.9	5	1.3	5	1.3
Leptospirosis	1	0.3	0	0.0	0	0.0	0	0.0	0	0.0	2	0.5
Listeriosis	0	0.0	1	0.3	0	0.0	0	0.0	2	0.5	0	0.0
Lyme disease	7	2.0	3	0.8	0	0.0	3	0.8	7	1.9	6	1.6
Malaria	0	0.0	0	0.0	1	0.3	1	0.3	1	0.3	2	0.5
Meningitis, bacterial and other	6	1.7	1	0.3	3	0.8	5	1.4	1	0.3	0	0.0
Meningitis, viral (aseptic meningitis)	19	5.3	1	0.3	5	1.4	7	1.9	5	1.3	3	0.8
Mpox (Monkeypox)	0	0.0	0	0.0	0	0.0	17	4.6	0	0.0	1	0.3
Mumps	3	0.8	0	0.0	0	0.0	0	0.0	1	0.3	2	0.5
Norovirus	157	44.2	7	1.9	36	9.8	73	19.7	181	48.5	244	65.4
Pertussis	22	6.2	16	4.4	7	1.9	9	2.4	26	7.0	18	4.8
Q fever, acute and chronic	1	0.3	0	0.0	0	0.0	1	0.3	1	0.3	0	0.0
Salmonellosis	36	10.1	38	10.5	31	8.4	41	11.1	44	11.8	35	9.4
Shiga toxin-producing E. coli (STEC)	12	3.4	17	4.7	33	9.0	17	4.6	40	10.7	28	7.5
Shigellosis	7	2.0	3	0.8	6	1.6	2	0.5	14	3.8	10	2.7
Spotted Fever Rickettsiosis	1	0.3	1	0.3	0	0.0	1	0.3	0	0.0	1	0.3
Streptococcal disease, invasive	84	23.6	86	23.7	107	29.1	77	20.8	70	18.8	63	16.9
Syphilis (all stages)	42	11.8	24	6.6	36	9.8	44	11.9	40	10.7	57	15.3
Toxic-shock syndrome, Streptococcal	0	0.0	0	0.0	0	0.0	0	0.0	2	0.5	4	1.1
Tuberculosis, active	3	0.8	6	1.7	1	0.3	4	1.1	1	0.3	1	0.3
Tuberculosis, latent	91	25.6	51	14.1	74	20.1	104	28.1	127	34.0	145	38.9
Tularemia	0	0.0	0	0.0	0	0.0	1	0.3	0	0.0	0	0.0
Vibriosis	2	0.6	0	0.0	2	0.5	0	0.0	3	0.8	4	1.1
West Nile Virus disease	5	1.4	2	0.6	9	2.5	1	0.3	2	0.5	3	0.8
Zika virus	1	0.3	1	0.3	0	0.0	0	0.0	0	0.0	0	0.0

Enteric Diseases

Enteric infections enter the body through the mouth and intestinal tract and are usually spread through contaminated food and water or by contact with vomit or feces.

Figure 7. Percent of Enteric Diseases Reported, by Category, Davis County, 2024

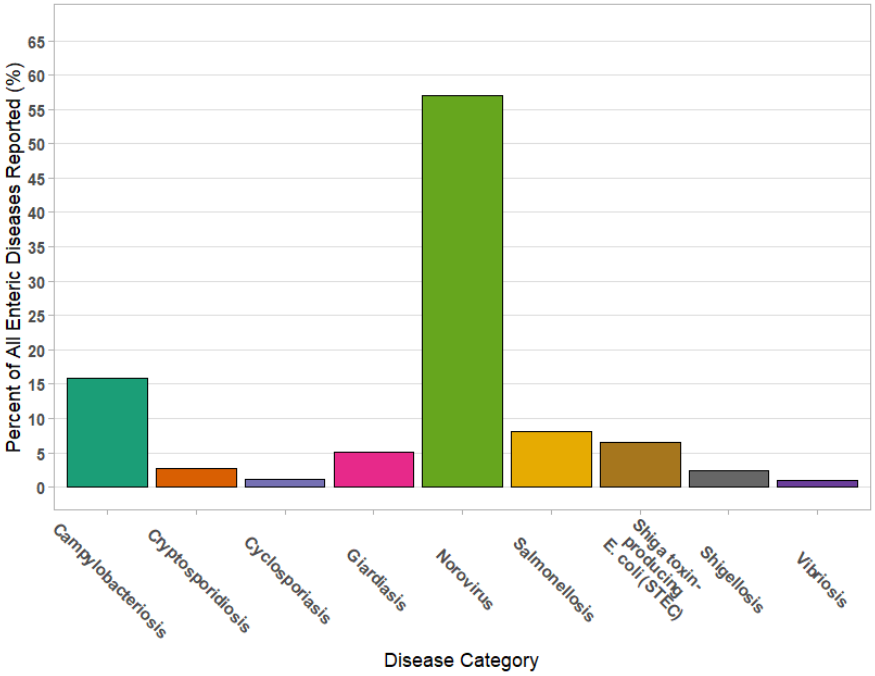
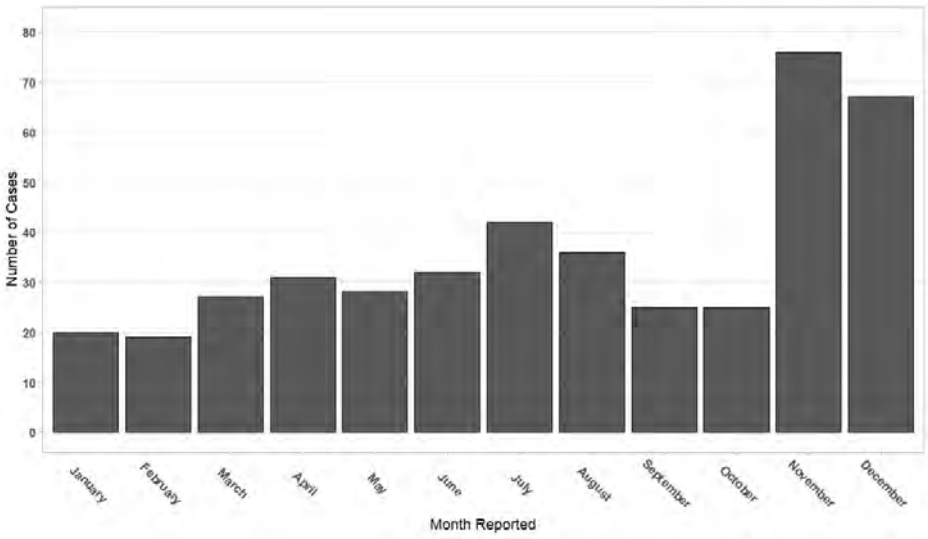


Figure 8. Number of Enteric Diseases Reported, by Month, Davis County, 2024

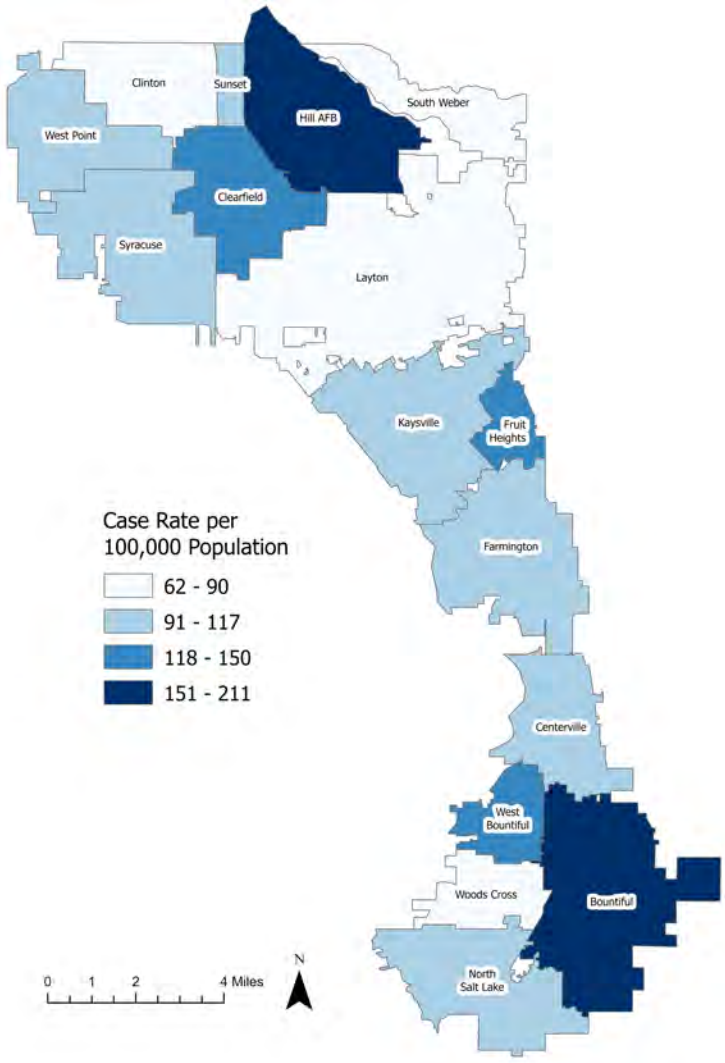


Enteric diseases are caused by bacterial, viral, or parasitic organisms that are shed in feces and can be spread person-to-person or through contaminated food and water. Enteric diseases are generally characterized by gastrointestinal symptoms such as nausea, vomiting, and diarrhea.

There were **428** enteric disease cases reported during 2024. Figure 7 presents the percentage of all enteric disease reports attributed to each specific disease. Norovirus was the most frequently reported enteric disease with **244** cases (57.0%), followed by campylobacteriosis with **68** cases (15.9%), salmonellosis with **35** cases (8.2%), Shiga-toxin producing *E. coli* (STEC) with **28** cases (6.5%), giardiasis with **22** cases (5.1%), cryptosporidiosis with **12** cases (2.8%), shigellosis with **10** cases (2.3%), cyclosporiasis with **5** cases (1.2%), and vibriosis with **4** cases (0.9%).

Enteric diseases are reported year-round, but higher rates usually occur in the summer months. However, the large increases seen this year in November and December were primarily driven by multiple norovirus outbreaks. Figure 8 presents the number of enteric diseases reported by month.

Figure 9. Rate of Enteric Diseases by City, Davis County, 2024



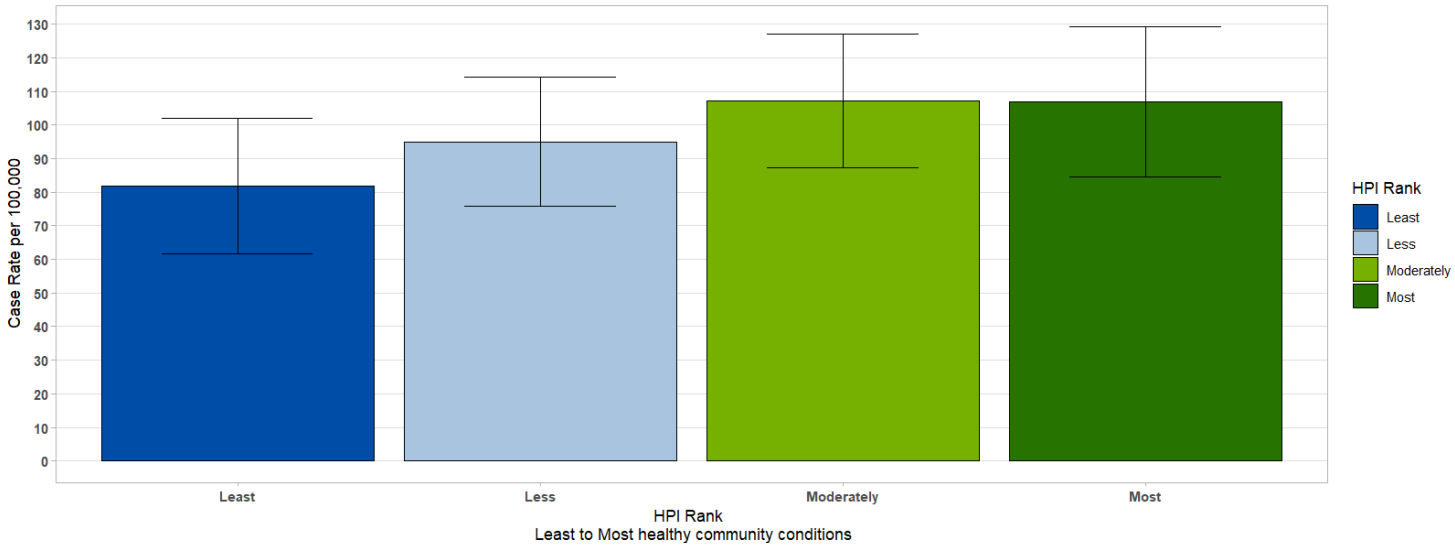
In 2024, enteric diseases were reported within every locality in Davis County. Figure 9 presents the incidence rate of enteric diseases reported by city per 100,000 people.

Bountiful and Hill AFB had the highest rates of enteric disease, while Clinton, Layton, South Weber, and Woods Cross had the lowest rates.

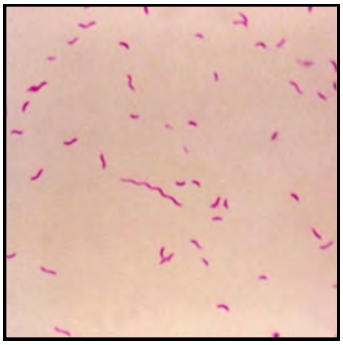
Figure 10 displays the rates of enteric disease stratified by HPI rank area. These data do not show a relationship between enteric disease rates and healthy community conditions. In fact, the lowest rates were observed in the least healthy community conditions area at 105.2 cases per 100,000 people. This is 24.8% lower compared to the rest of the county.

The exact reasons for this pattern is unknown, but there is likely a confluence of multiple interrelated factors. Possible explanations could include access to healthcare, healthcare seeking behavior, dietary choices, and travel (in particular, international travel). Also, the location of enteric disease outbreaks may result in certain HPI areas being overrepresented.

Figure 10. Rate of Enteric Diseases, by HPI Rank, Davis County, 2024



Campylobacteriosis



Campylobacter *is one of the most common bacterial causes of diarrheal illness in the US.*

Campylobacteriosis is an infectious disease caused by bacteria of the genus *Campylobacter*. The bacteria are transmitted via the fecal-oral route. Improperly cooked poultry, untreated water, and unpasteurized milk are the most common sources of infection. *Campylobacter* is one of the most common bacterial causes of diarrheal illness in the US.[9]

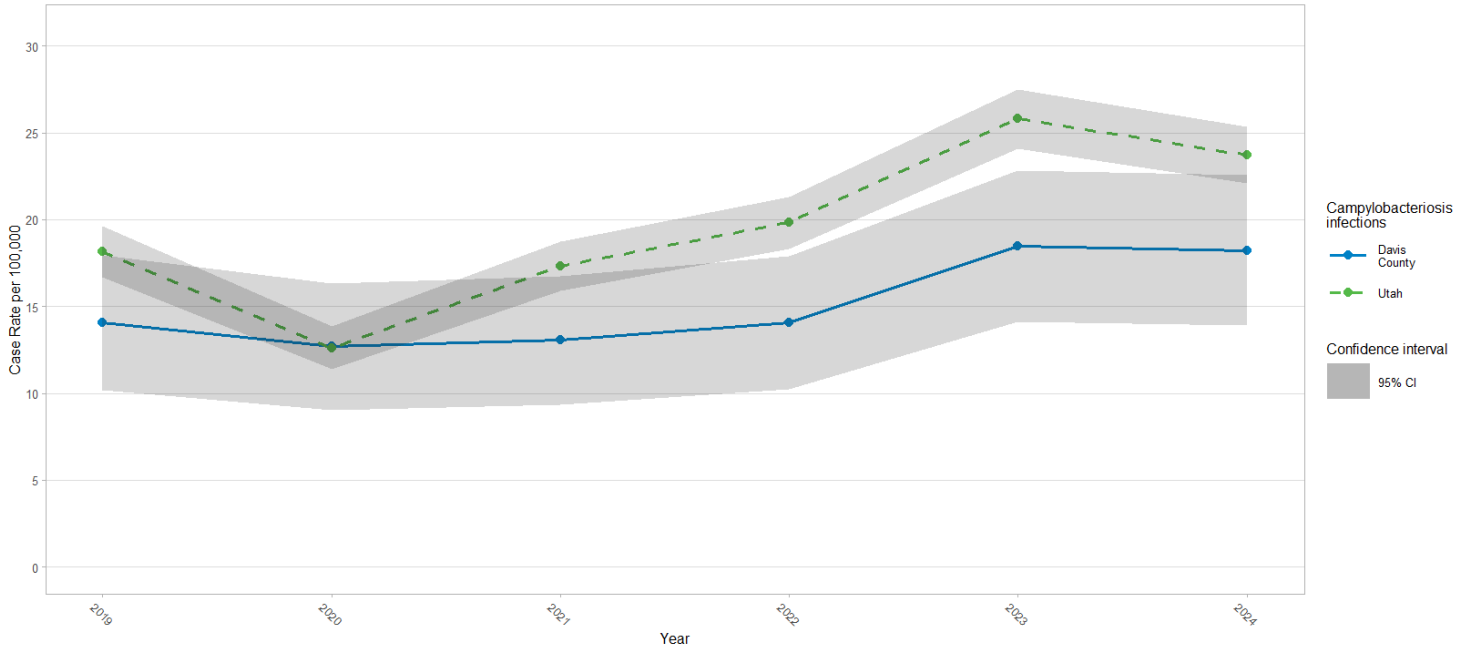
Virtually all cases occur as isolated or sporadic events and are not usually associated with an outbreak. Active surveillance through CDC indicates that about 20 cases are diagnosed each year per 100,000 people. Many more cases go undiagnosed or unreported. Campylobacteriosis is estimated to affect over 1.5 million people every year.[9]

People with *Campylobacter* infection usually have diarrhea (often bloody), fever, and stomach cramps. Nausea and vomiting may accompany the diarrhea. Symptoms usually start two to five days after infection and last about one week. While anybody can get a *Campylobacter* infection, some groups have an increased risk for infection or serious illness. This includes children younger than 5 years, adults 65 years and older, people with a weakened immune system, people who work with animals, and international travelers.[9]

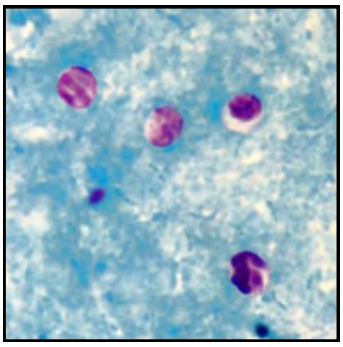
Occasionally, secondary infections occur from campylobacteriosis. One of these is Guillain-Barré Syndrome (GBS).[10] GBS occurs when an immune response is triggered by an infection. People with GBS often require intensive medical attention due to muscle weakness and sometimes paralysis that often lasts for weeks. While most people with GBS recover completely, some experience permanent nerve damage. CDC estimates that about one in every 1,000 people with *Campylobacter* infections in the US gets GBS.[10]

During 2024, there were **68** cases of campylobacteriosis reported in Davis County. Figure 11 presents the incidence rates per 100,000 people of campylobacteriosis in Davis County compared to the rest of Utah from 2019 to 2024. During this timeframe, Davis County's rate has generally remained lower than the rest of the state, but still followed the same trend.

Figure 11. Rate of Campylobacteriosis Infections, by Year, Davis County and Utah, 2019-2024



Cryptosporidiosis is an infection caused by the protozoan organism *Cryptosporidium parvum. Cryptosporidia* can infect a wide range of vertebrate hosts, including birds, reptiles, and mammals.[11] Infections mainly occur through ingesting fecally contaminated water or food, or following direct contact with infected animals or people. The parasite may be found in drinking water and recreational water in every region of the US and throughout the world.[11]



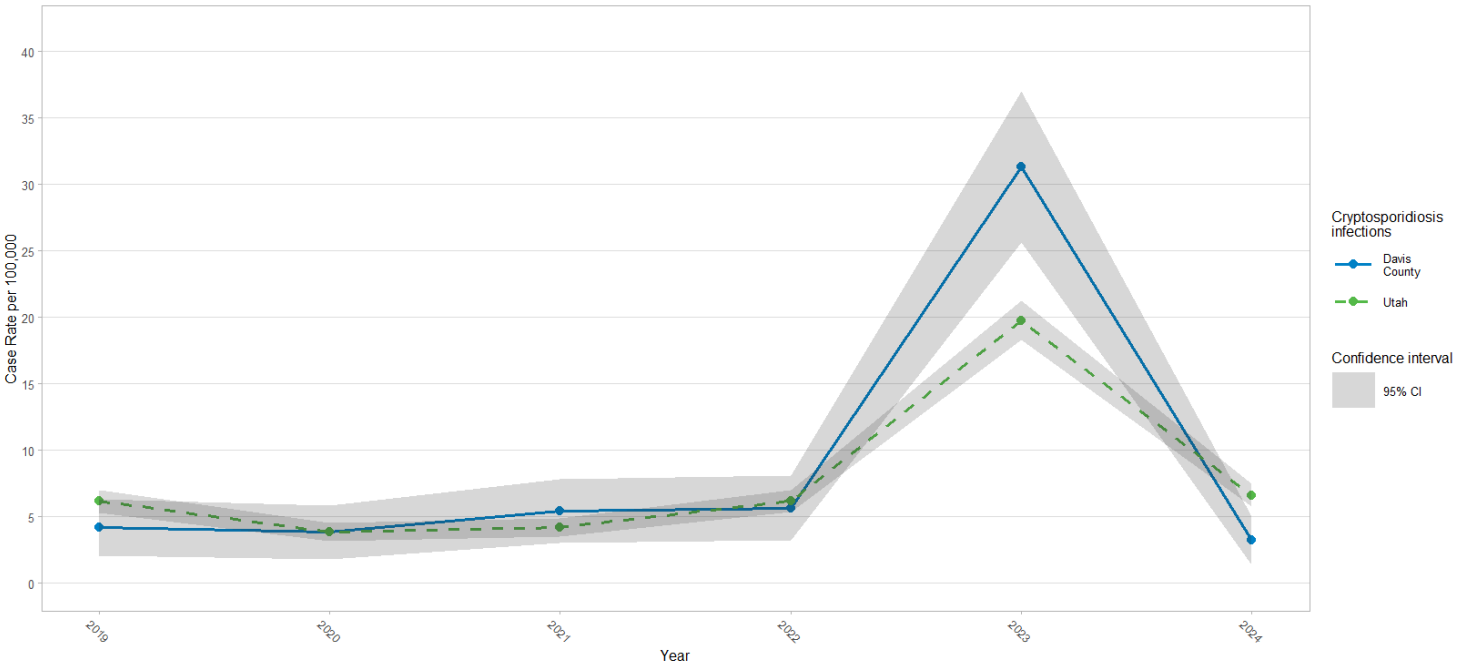
Cryptosporidium spp. oocysts stained with modified acid-fast.

Cryptosporidiosis parasites are shed in the host's feces. Cryptosporidiosis can be passed in a person's feces when their symptoms begin, and it can continue up to two weeks after their symptoms have ended. This means they can still pass the infection to others, even after their symptoms like diarrhea have stopped. Common ways that cryptosporidiosis is spread include swallowing contaminated water from recreational water sites, such as in pools or lakes; swallowing contaminated drinks (including water) or ice; eating contaminated food; and touching your mouth with contaminated hands.[12]

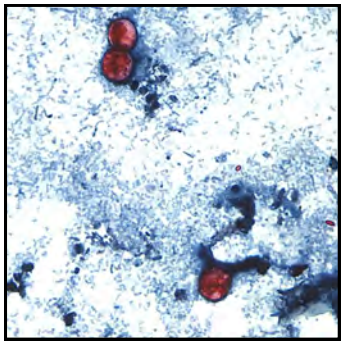
During 2024, there were **12** cases of cryptosporidiosis reported in Davis County. Figure 12 presents the incidence rates per 100,000 people of cryptosporidiosis in Davis County compared to the rest of Utah from 2019 to 2024. When compared to the rest of the state, rates in Davis County have been generally comparable.

A large cryptosporidiosis outbreak occurred throughout Utah in 2023 with 673 total cases. No single point source was identified as the cause of the outbreak. However, the majority of cases were associated with recreational water facilities such as pools, splash pads, and water parks. CD/Epi collaborated with the DCHD Division of Environmental Health when a case had an exposure at a permitted pool facility. The Division of Environmental Health worked closely with each of the pool operators to ensure that the pool was effectively treated before opening back up for public swimming. The last major cryptosporidiosis outbreak was in 2007 with 1,932 cases reported in Utah.

Figure 12. Rate of Cryptosporidiosis Infections, by Year, Davis County and Utah, 2019-2024



Cyclosporiasis



Three uniformly stained Cyclospora cayentanesis *oocysts from a fresh stool sample.*

Cyclosporiasis is a parasitic infection caused by the parasite *Cyclospora cayetanensis*. It is primarily associated with contaminated food and water. It occurs in many countries, but seems to be most common in tropical and subtropical regions. In the US, foodborne outbreaks of cyclosporiasis have been linked to various types of imported fresh produce.[13]

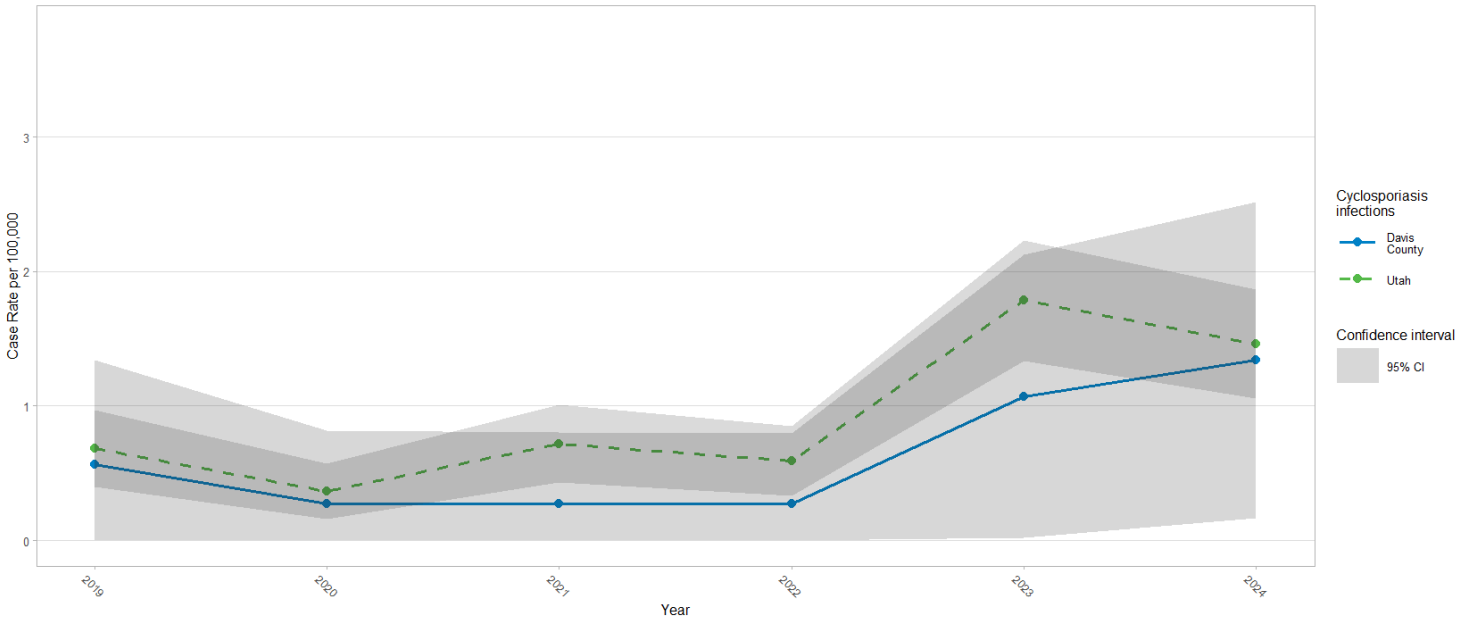
People who are infected with *Cyclospora* may or may not experience symptoms. *Cyclospora* infects the small intestine (bowel) and usually causes watery diarrhea with frequent and sometimes explosive bowel movements. If not treated, the illness may last from a few days to over a month. Symptoms may seem to go away and then return one or more times.[13]

People become infected with *Cyclospora* by ingesting sporulated oocysts, which are the infective form of the parasite. This most commonly occurs when food or water contaminated with feces is consumed. An infected person sheds unsporulated (immature, non-infective) *Cyclospora* oocysts in the feces. The oocysts are thought to require at least one to two weeks in favorable environmental conditions to sporulate and become infective. Therefore, direct person-to-person transmission is unlikely, as is transmission via ingestion of newly contaminated food or water.[13,14]

Cyclosporiasis illnesses are reported year-round in the US. However, during the spring and summer months there is often an increase in cyclosporiasis acquired in the US.[15]

During 2024, there were **five** cases of cyclosporiasis reported in Davis County. Figure 13 presents the incidence rates per 100,000 people of cyclosporiasis in Davis County compared to the rest of Utah from 2019 to 2024. During this timeframe, Davis County rates have been comparable to the rest of the state and followed similar trends.

Figure 13. Rate of Cyclosporiasis Infections, by Year, Davis County and Utah, 2019-2024



Giardiasis is caused by *Giardia duodenalis,* a microscopic parasite that causes diarrheal illness. *Giardia* is found on surfaces or in soil, food, or water that has been contaminated with fecal matter from infected humans or animals. Humans and other mammals are reservoirs and shed the organism in their feces.[16] Yet, the chances of being infected from a dog or a cat is small since the type of *Giardia* that infects humans is not the same type that infects dogs and cats.[17] Some types of *Giardia* can spread between people and animals like chinchillas, beavers, birds, opossums, and monkeys.[17]

Giardia *is a microscopic parasite that causes the diarrheal illness known as giardiasis.*

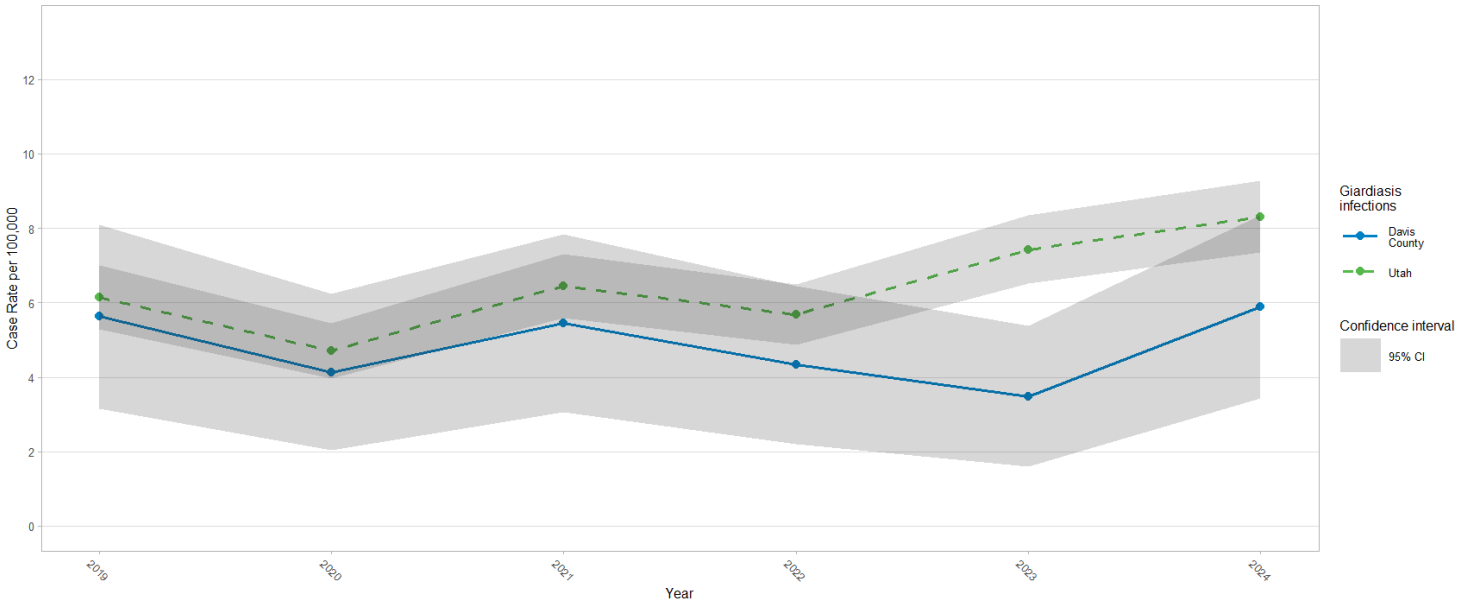
Giardiasis can cause a variety of intestinal symptoms, such as diarrhea, gas, stomach cramps or pain, upset stomach or nausea, and dehydration. Symptoms of giardiasis generally include having two to five loose stools per day and progressively increasing fatigue. Symptoms normally begin one to two weeks after becoming infected, and may last anywhere from two to six weeks.[16]

Giardia is hard to eliminate from the environment and can survive for several months in cold water or soil.[17] While the parasite can be spread in different ways, water (either drinking or recreational) is the most common mode of transmission.

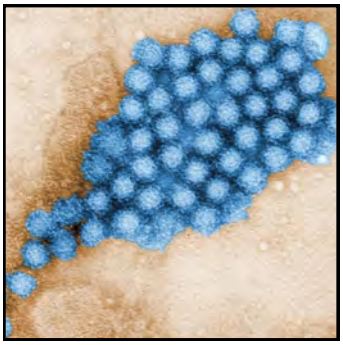
Some ways you can avoid getting giardiasis include washing your hands with soap and water; avoiding swallowing water while swimming; avoiding touching animal feces; cleaning and disinfecting areas where a person or pet recently had diarrhea; and boiling or filtering water from lakes, springs, or rivers before drinking or preparing food with it.[16]

During 2024, there were **22** cases of giardiasis reported in Davis County. Figure 14 presents the incidence rates per 100,000 people of giardiasis in Davis County compared to the rest of Utah from 2019 to 2024. Despite a continued decrease through 2023, Davis County rates of giardiasis increased in 2024 to end up more comparable to the rest of the state.

Figure 14. Rate of Giardiasis Infections, by Year, Davis County and Utah, 2019-2024



Norovirus



Norovirus is a very contagious virus. It can spread from an infected person, contaminated food or water, or by touching contaminated surfaces.

Noroviruses are named after the original strain "Norwalk virus," which caused an outbreak of gastroenteritis in a school in Norwalk, Ohio, in 1968.[18, 19] Noroviruses are classified into ten genogroups and 48 genotypes.[19]

Norovirus is very contagious and spreads very easily and quickly in different ways. It only takes a few norovirus particles to make you and other people sick. It can spread through contaminated food, water, and surfaces. People are most contagious with norovirus when they have symptoms (especially vomiting) and during the first few days after feeling better.[20] CDC estimates that 19-21 million cases of acute gastroenteritis due to norovirus infection occur each year. Norovirus is the leading cause of foodborne illness in the US, accounting for 58% of foodborne illness.[21]

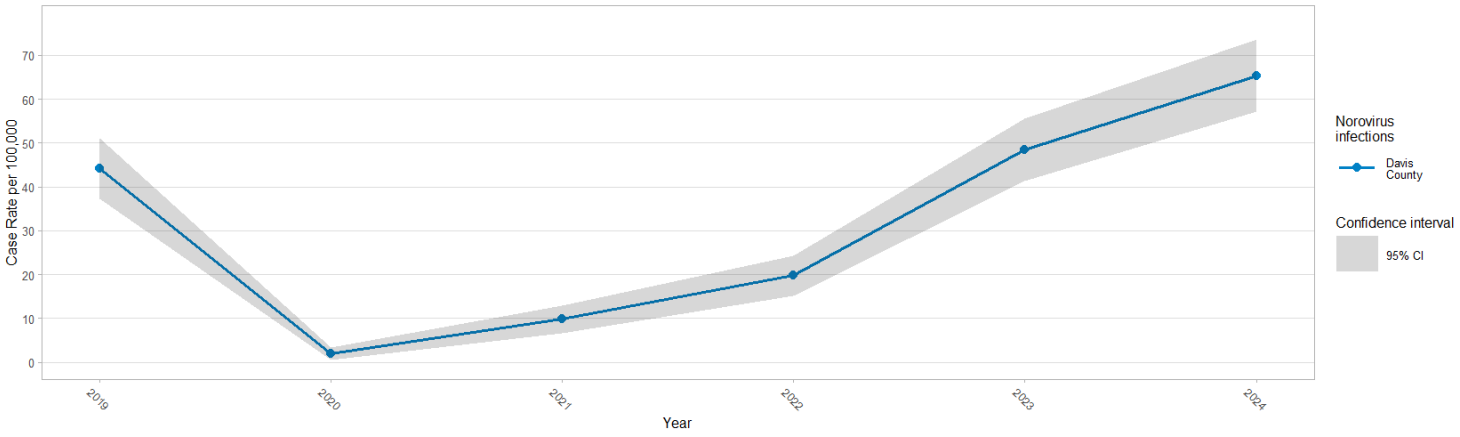
Norovirus is often confused for influenza, which is caused by a different virus. Due to the short duration of illness (typically 24 hours) and the self-limited, mild-to-moderate manifestation, people infected with norovirus often do not seek medical care. Norovirus is the leading cause of outbreaks from contaminated food in the US. About 50% of all outbreaks of food-related illness are caused by norovirus. Most of these outbreaks occur in food service settings like restaurants. Outbreaks are also known to occur in schools, childcare centers, and cruise ships.[22] In Utah, only norovirus outbreaks are required to be reported; individual cases are no longer reportable. When suspect cases are reported to the health department, they are often received after the patient has recovered or late into the illness, making it difficult to confirm a diagnosis.

Occasionally, some individuals encounter symptoms of extreme illness with diarrhea, vomiting, stomach pain and nausea. Dehydration is a common secondary condition, especially among children.[23]

During 2024, there were **244** cases of norovirus reported in Davis County residents. Figure 15 presents the incidence rates per 100,000 people of norovirus in Davis County from 2019 to 2024. During this timeframe, rates greatly decreased in 2020 (most likely due to the COVID-19 pandemic). Since then, rates have increased every year.

CD/Epi responded to four norovirus outbreaks in 2024, totaling 86 cases. One outbreak was at a restaurant and the remaining three were in long-term care facilities. During the outbreaks, CD/Epi provided guidance on infection control and prevention to the facility staff. In addition, CD/Epi conducted site visits in partnership with the Environmental Health Division. The facilities' kitchen, dining, and laundry areas were evaluated, along with advising on best practices for cleaning.

Figure 15. Rate of Norovirus Infections, by Year, Davis County, 2019-2024



Salmonellosis is an infection caused by the bacteria *Salmonella*, which lives in the intestines of people and animals. People can get salmonellosis from a variety of sources, including eating contaminated food or drinking contaminated water, and touching infected animals, their feces, or their environment.[24] Most people with salmonellosis have diarrhea, fever, and stomach cramps. Symptoms usually begin six hours to six days after infection and last four to seven days. However, some people do not develop symptoms for several weeks after infection and others experience symptoms for several weeks. Salmonella strains sometimes cause infection in urine, blood, bones, joints, or the nervous system (spinal fluid and brain), and can cause severe disease.[24,25]

Infections caused by Salmonella *result in more hospitalizations and deaths than any other foodborne illness in the US.*

CDC estimates that approximately 1.35 million cases of *Salmonella* infections occur in the US each year, causing 26,500 hospitalizations, and 420 deaths.[25] *Salmonella* cause far more illnesses than one might suspect. For every one confirmed *Salmonella* infection test, CDC estimates that there are as many as 30 cases that are not treated or tested because those individuals do not seek medical attention.[26]

When a *Salmonella* case is identified, it is critical to determine its serotype and whole genome sequencing (WGS) pattern to identify sources and epidemiological links among cases. Serotypes are conventionally named after the city where they were discovered (see Table 3). Private laboratories are required to submit *Salmonella* isolates to the Utah Public Health Laboratory (UPHL) for serotyping and WGS analysis. WGS patterns are then compared with Utah and US *Salmonella* isolates to identify possible clusters and suspect sources.

During 2024, there were **35** cases of salmonellosis reported in Davis County. Figure 16 presents the incidence rates per 100,000 people of salmonellosis in Davis County compared to the rest of Utah from 2019 to 2024. During this timeframe, the rate of salmonellosis in Davis County was comparable with the rest of the state.

Figure 16. Rate of Salmonellosis Infections, by Year, Davis County and Utah, 2019-2024

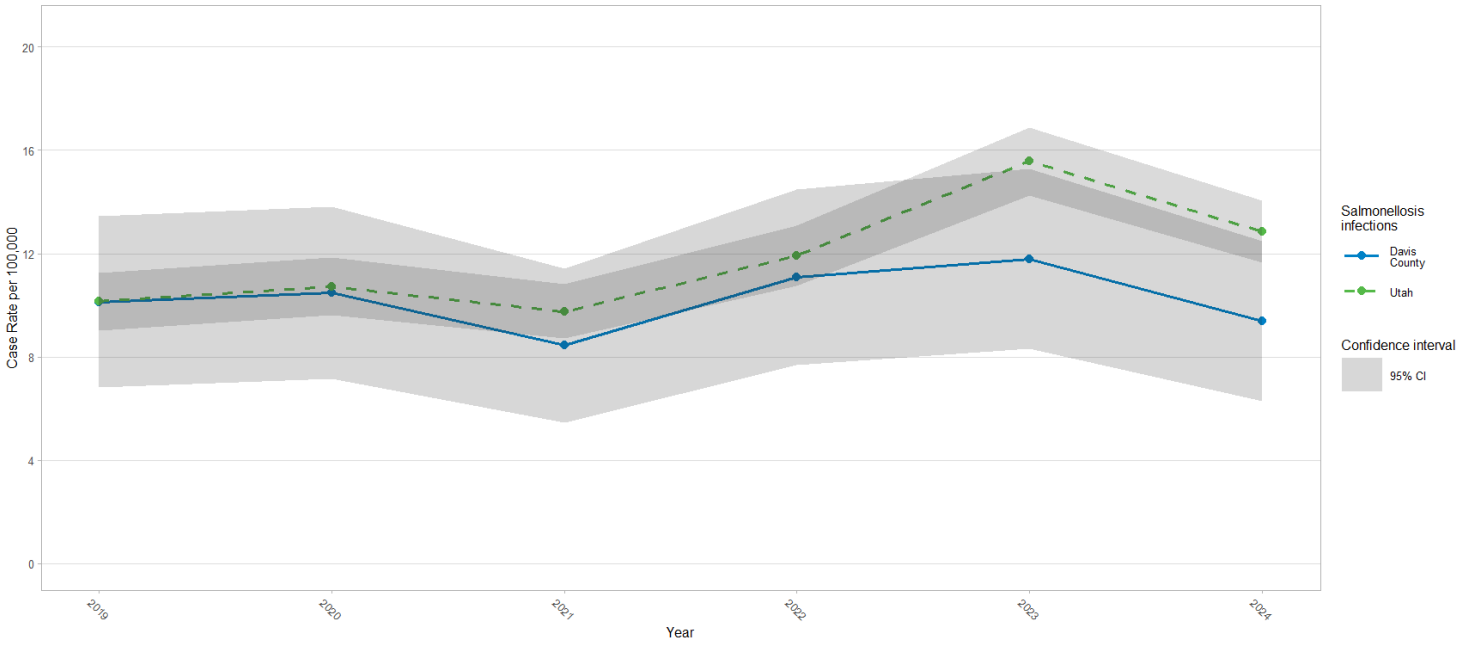
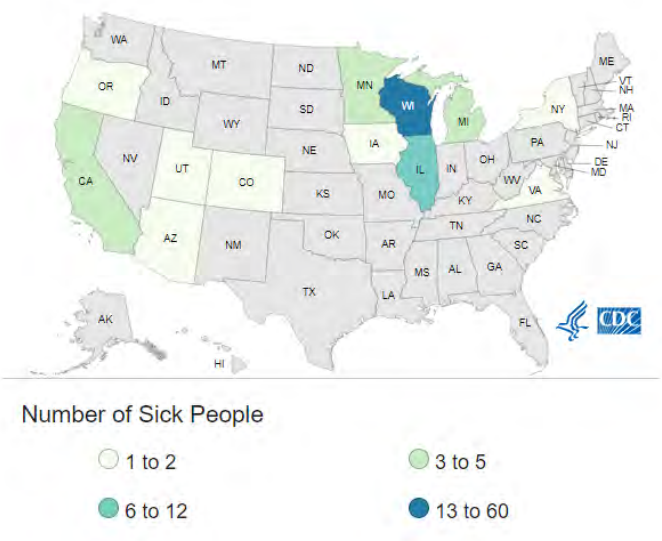


Table 3. *Salmonella* Serotypes Identified, Davis County, 2024

Serotype	Number of Cases (%)
Agona	1 (2.9%)
Anatum	1 (2.9%)
Bareilly	1 (2.9%)
Berta	1 (2.9%)
Dublin	1 (2.9%)
Enteritidis	9 (25.7%)
Florida	1 (2.9%)
I -:Y:E,N,X	1 (2.9%)
I 4,[5],12:I:-	2 (5.7%)
Infantis	2 (5.7%)
Javiana	1 (2.9%)
Kiambu	1 (2.9%)
Muenchen	1 (2.9%)
Newport	2 (5.7%)
Oranienburg	1 (2.9%)
Paratyphi A	3 (8.6%)
Poona	1 (2.9%)
Stanley	2 (5.7%)
Typhimurium	1 (2.9%)
Unknown	2 (5.7%)
Total	**35 (100%)**

Figure 17. *Salmonella* Cases Linked to Eggs, United States, 2024



Outbreaks

When two or more people get the same illness from the same contaminated food or drink, the event is called a foodborne disease outbreak. Outbreaks can also occur when individuals have contact with an animal or its environment. When this occurs, it is known as a zoonotic outbreak. Multiple nationwide *Salmonella* outbreaks occurred in 2024.

Salmonella outbreak linked to eggs

This outbreak resulted in 90 illnesses and 34 hospitalizations across 12 states.[27] Eggs from a specific farm in Wisconsin were implicated in the outbreak. Reports of illnesses ranged from May 23 through August 10, 2024. On September 6, 2024, the eggs were recalled, are no longer available for sale, and are outside their shelf life. Figure 17 displays a map of case counts linked to the eggs.[28]

Salmonella outbreak linked to cucumbers

This outbreak resulted in 551 illnesses and 155 hospitalizations across 34 states and the District of Columbia. The investigation identified multiple growers as likely sources of the outbreak, including one using untreated canal water in Florida. Cucumbers from both of these growers are no longer in season and products are no longer on shelves.[29]

Salmonella infections linked with backyard poultry

This outbreak resulted in 470 illnesses, 125 hospitalizations, and one death across 48 states.[30] Backyard poultry, like chickens and ducks, can carry *Salmonella* germs even if they look healthy and clean. These germs can easily spread to anything in the areas where the poultry live and roam. You can get sick from touching your backyard poultry or anything in their environment and then touching your mouth or food and swallowing *Salmonella* germs. Always wash your hands with soap and water immediately after touching backyard poultry, their eggs, or anything in the area where they live and roam.[30]

Shiga Toxin-Producing *Escherichia coli* Infection

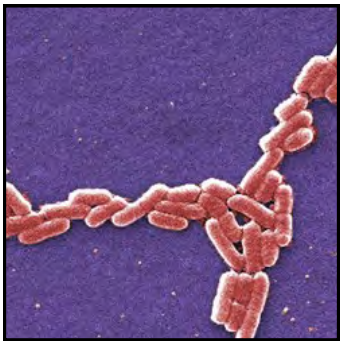
Escherichia coli (*E. coli*) bacteria normally live in the intestines of people and animals. Most *E. coli* are harmless and actually are an important part of a healthy human intestinal tract. However, some *E. coli* are pathogenic, meaning they can cause illness, either diarrhea or illness outside of the intestinal tract. The types of *E. coli* that can cause diarrhea can be transmitted through contaminated water or food, or through contact with animals or persons.[31]

Some kinds of *E. coli* cause disease by making a toxin called Shiga toxin. The bacteria that make these toxins are called "Shiga toxin-producing" *E. coli*, or STEC for short. A serious complication of a STEC infection is called hemolytic uremic syndrome (HUS), which is a type of kidney failure.[31]

Signs of HUS include little or no urination, losing pink color in cheeks and inside the lower eyelids, unexplained bruising or rash of tiny red spots, blood in the urine, feeling very tired or being irritable (cranky), and decreased awareness (alertness).[32]

During 2024, there were **28** cases of STEC infection reported in Davis County. None of these cases progressed to HUS. Figure 18 presents the incidence rates of STEC infections per 100,000 people in Davis County compared to the rest of Utah from 2019 to 2024. While the Davis County rates are comparable to the rest of the state, the last four years have shown a cyclical increase-then-decrease pattern.

Table 4 shows which serotype was identified in the Davis County cases. The most commonly identified STEC in North America is *E. coli* O157:H7 (often shortened to "O157"). Many other kinds of serogroups of STEC can cause disease too. However, there are limited public health surveillance data on the occurrence of other non-O157 STECs. Though as a whole, the non-O157 serogroups are less likely to cause severe illness.[31]

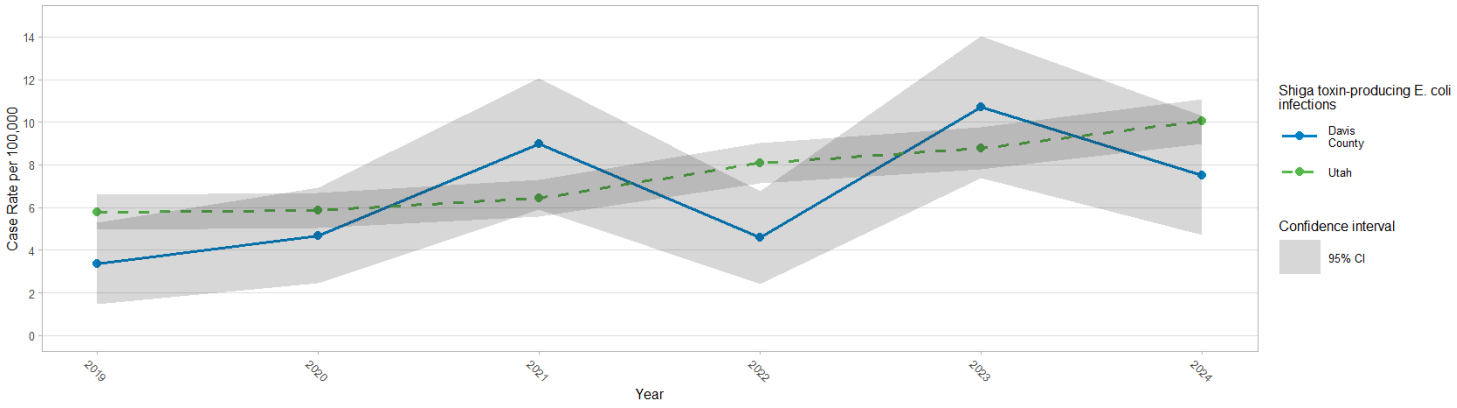


E. coli *bacteria normally live in the intestines of people and animals. Most* E. coli *are harmless and actually are an important part of a healthy human intestinal tract.*

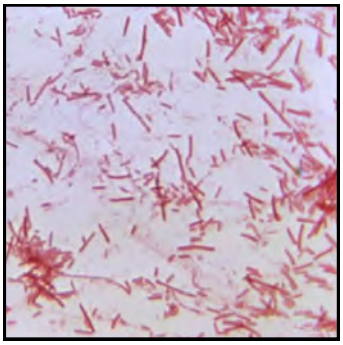
Table 4. Shiga Toxin-Producing *E. coli* Serotypes Identified, Davis County, 2024

Serotype	Number of Cases (%)
O103:H2	1 (3.6%)
O103:H25	1 (3.6%)
O111:H8	1 (3.6%)
O118/O151:H2	1 (3.6%)
O121:H19	2 (7.1%)
O157	9 (32.1%)
O26:H11	4 (14.3%)
O71	1 (3.6%)
Unknown	8 (28.6%)
Total	**28 (100%)**

Figure 18. Rate of STEC Infections, by Year, Davis County and Utah, 2019-2024



Shigellosis



Antimicrobial-resistant Shigella *is a growing concern. Such resistant* Shigella *infections have been rising since 2016 with an estimated 242,000 antimicrobial-resistant* Shigella *infections each year in the US.*

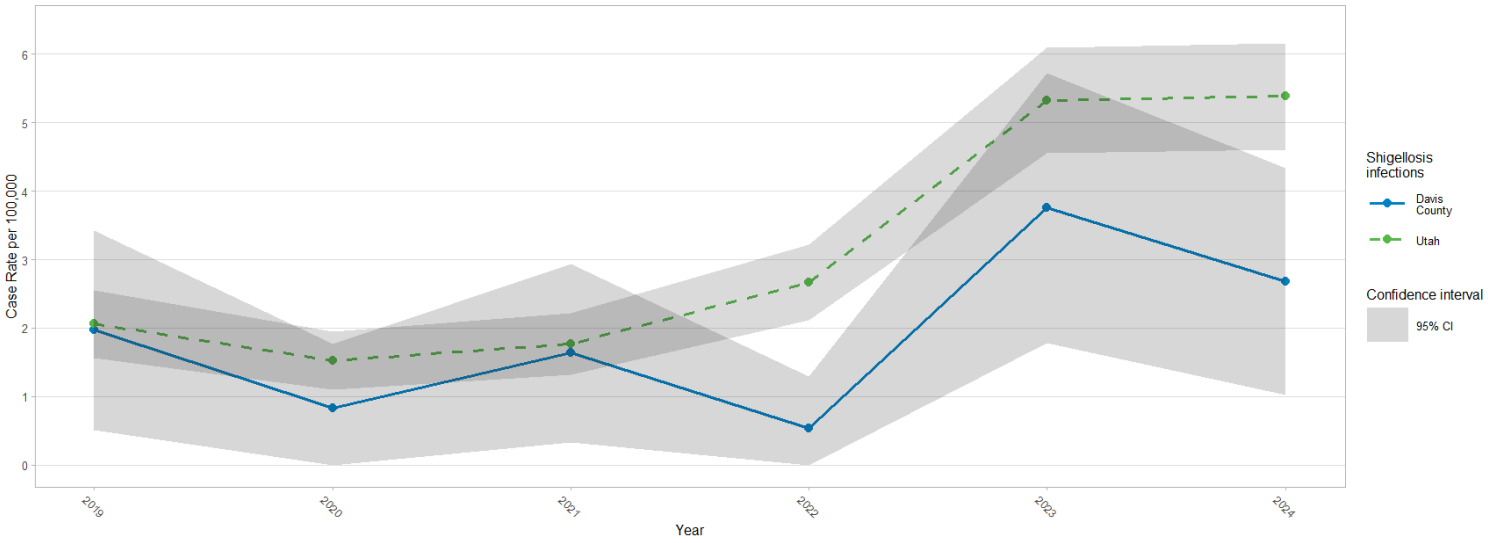
Shigella bacteria cause an infection called shigellosis. It can spread easily from one person to another—and it only takes a small amount of *Shigella* to cause illness. People get *Shigella* by swallowing it. People can get sick by getting *Shigella* germs on their hands, which may happen after changing diapers of children who are infected with the germ, touching people who are sick who might have the germ on their hands or bodies, eating food that was prepared by someone who is sick with the germ, swallowing recreational water (for example, lake or river water) while swimming or drinking water that was contaminated with feces containing *Shigella*, or having exposure to feces during sexual contact with someone who is sick.[33]

Shigellosis symptoms usually start one to two days after infection and last seven days. Symptoms include diarrhea that can be bloody or prolonged (lasting more than three days), fever, and stomach pain.[33] *Shigella* infections are best prevented by washing your hands carefully and frequently with soap and water, especially after using the bathroom. Other ways include not preparing food for others while sick, avoiding swimming while sick, staying home from childcare, school, and food service facilities while sick, and waiting to have sex for several weeks, even after recovery. This is because *Shigella* bacteria may be in the stool for several weeks.[33]

Antimicrobial-resistant *Shigella* infections have been rising since 2016. Anyone can get an antimicrobial-resistant *Shigella* infection, but some people have a greater chance of infection, such as international travelers, men who have sex with men (MSM), and people with weakened immune systems.[34] If *Shigella* bacteria are resistant, first-choice antibiotics recommended to treat these infections may not work. Healthcare providers might need to prescribe second- or third-choice drugs for treatment. However, these drugs might be less effective, may need to be taken through a vein instead of by mouth, may be more toxic, and may be more expensive.

During 2024, there were **10** cases of shigellosis reported in Davis County. Figure 19 presents the incidence rates per 100,000 people in Davis County compared to the rest of Utah from 2019 to 2024. During this timeframe, the rate of shigellosis in Davis County was comparable with the rest of the state, but decreases have been observed since 2022.

Figure 19. Rate of Shigellosis Infections, by Year, Davis County and Utah, 2019-2024



Vibrio bacteria naturally live in coastal waters and are present in higher concentrations between May and October when water temperatures are warmer. About a dozen *Vibrio* species can cause human illness, known as vibriosis.[35] Symptoms include watery diarrhea, abdominal cramping, nausea, vomiting, fever, and chills. Some types of *Vibrio* can also cause a skin infection. This section does not discuss cholera, which is caused by the species *V. cholerae.* Cholera is rare in the US and other industrialized nations.[36]

About a dozen Vibrio *species can cause human illness, known as vibriosis. The most common species that cause human illness in the US are* Vibrio parahaemolyticus, Vibrio vulnificus *(pictured), and* Vibrio alginolyticus.

Most people become infected with *Vibrio* by eating raw or undercooked shellfish, particularly oysters. Certain *Vibrio* species, such as *V. vulnificus*, are primarily transmitted through open-wound contact with salt water or brackish water. It is often found where rivers meet the sea.[37] Some *Vibrio* infections lead to necrotizing fasciitis, which is a severe infection in which the flesh around an open wound dies.[35]

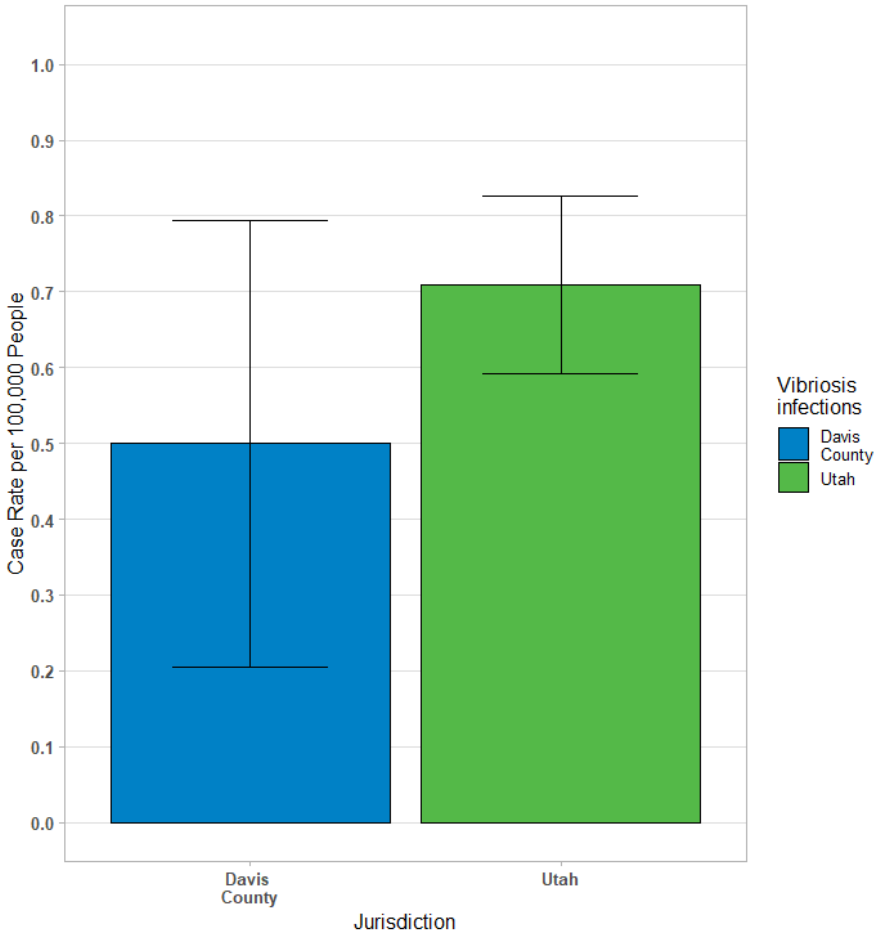
In the US, *V. vulnificus* infections have been most commonly reported by Gulf Coast states. However, *V. vulnificus* infections in the Eastern US has increased eightfold from 1988 to 2018, and the northern geographic range of infections has increased approximately 30 miles per year.[38]

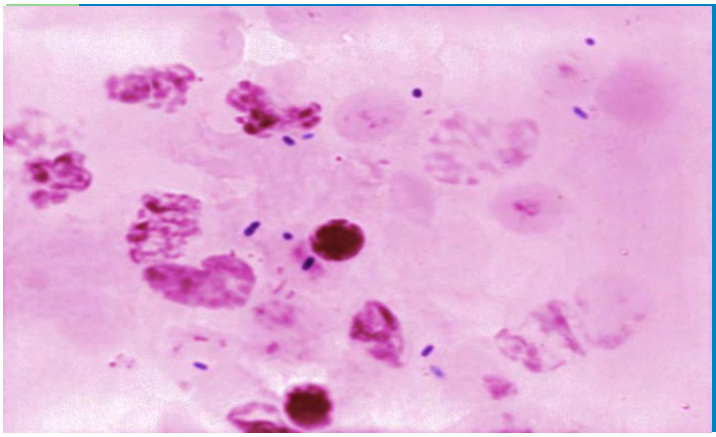
CDC estimates that vibriosis causes 80,000 illnesses each year in the US. About 52,000 of these illnesses are estimated to be the result of eating contaminated food.

The most commonly reported species, *V. parahaemolyticus*, is estimated to cause 45,000 of these illnesses each year. Most people with a mild case of vibriosis recover after about three days with no lasting effects. However, people with a *V. vulnificus* infection can get seriously ill and need intensive care or limb amputation. About one in five people with this type of infection die, sometimes within a day or two of becoming ill.[35]

During 2024, there were **four** cases of vibriosis reported in Davis County. Figure 20 presents the combined incidence rates per 100,000 people in Davis County compared to the rest of Utah from 2019 to 2024. Vibriosis cases are relatively rare in Utah, and as such, the rates are comparable.

Figure 20. Rate of Vibriosis Infections, by Year, Davis County and Utah, 2019-2024 Combined





Invasive Diseases

An invasive disease includes infections of the bloodstream, as well as meningitis and encephalitis.

Figure 21. Percent of Invasive Diseases Reported, by Category, Davis County, 2024

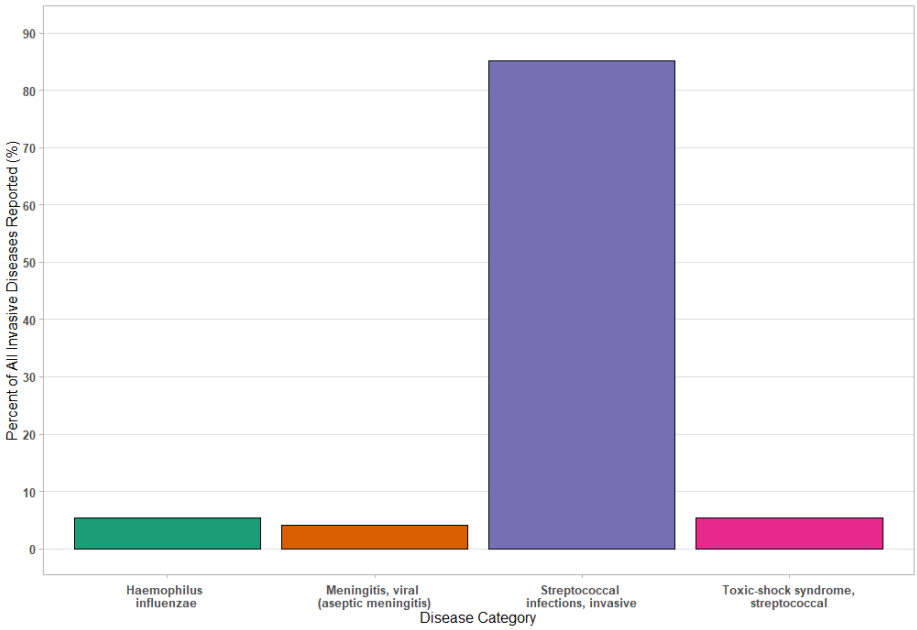
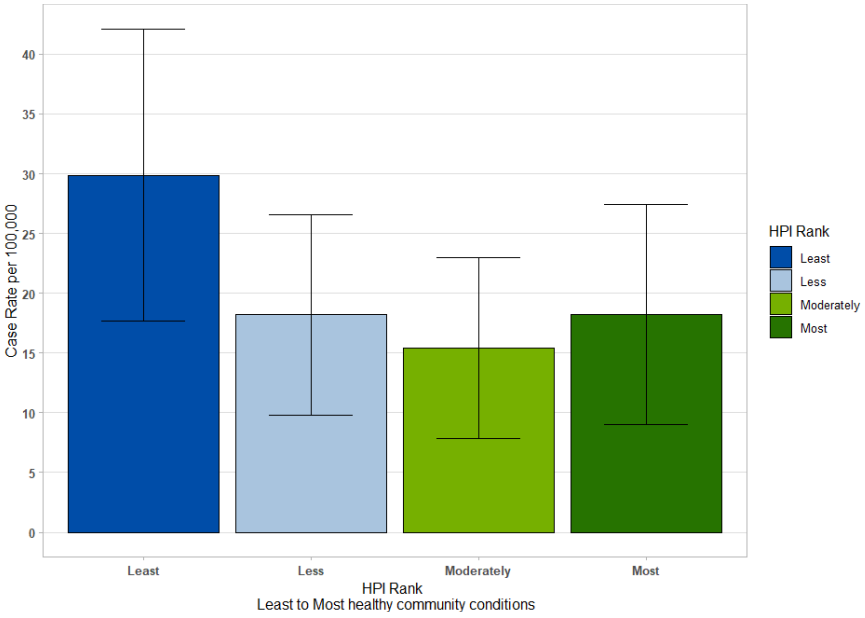


Figure 22. Rate of Invasive Diseases, by HPI Area, Davis County, 2024

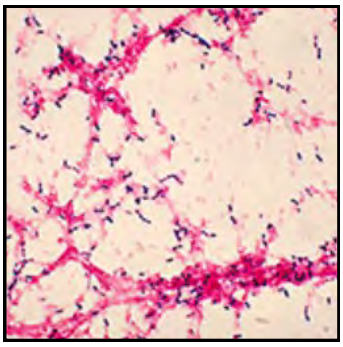


Invasive diseases include infections of the bloodstream, as well as meningitis and encephalitis. All cases of meningitis, encephalitis, and toxic shock syndrome are reportable to the health department, regardless of the causative organism. In addition, all cases of invasive streptococcal disease (isolation of *Streptococcus* from a normally sterile site) must be reported.

There were **74** invasive disease cases reported during 2024. Figure 21 presents the percentage of all invasive disease reports attributed to each specific disease. The most common invasive disease reported were invasive streptococcal infections with **63** (85.1%).

Others reported include *Haemophilus influenzae* and streptococcal toxic-shock syndrome (STSS) with **four** cases each (5.4%), and aseptic/viral meningitis with **three** cases (4.1%).

Figure 22 displays the rates of invasive disease stratified by HPI rank area. The highest rates of invasive disease were observed in the areas of least healthy community conditions. Rates in the less, moderately, and most healthy areas are comparable. In the least healthy area, the rates of invasive diseases was 29.9 cases per 100,000 people. Conversely, rates in the moderately healthy area were 15.4 cases per 100,000 people.



There are 100 known serotypes of Streptococcus pneumoniae*, the bacteria that cause pneumococcal disease.*

The primary invasive streptococcal diseases of public health concern are Group A, Group B, and *Streptococcus pneumoniae.* Each subheading in this section provides a brief overview of the major types of invasive streptococcal diseases that are tracked and investigated. Table 5 shows the types of streptococcal disease identified in Davis County.

Group A *Streptococcus* invasive disease manifests as necrotizing fasciitis, STSS, bacteremia, and pneumonia.[39] It is transmitted person-to-person by contact with infectious secretions. Asymptomatic pharyngeal carriage occurs among all age groups, but is most common among children between the age of five and 15 years.[40]

Group B *Streptococcus* invasive disease in neonates manifests as sepsis, pneumonia, and meningitis. Infection in the first week of life is called early-onset. In adults, sepsis and soft tissue infections are most common. Pregnancy-related infections include sepsis and amnionitis. Asymptomatic carriage in gastrointestinal and genital tracts is common and intrapartum transmission via ascending spread from vaginal and/or gastrointestinal colonization occurs. The mode of transmission in nonpregnant adults and older infants (greater than one week old) is unknown.[41]

Group C *Streptococcus* is typically a zoonotic illness and the organisms can be found as pathogens in domestic animals such as horses, cows, birds, rabbits, and guinea pigs. They can also be found as part of normal human flora. Laboratories may misidentify these organisms as Group A *Streptococcus*. Many people with Group C infections have underlying health problems, but more recent studies have implicated this disease as an emerging human pathogen.[42]

Group G *Streptococcus* is a normal human flora and individuals infected with this organism usually have underlying health problems, especially cancer.[42]

Streptococcus pneumoniae is a bacteria that can cause pneumococcal disease, an invasive disease that ranges from ear and sinus infections to pneumonia and bloodstream infections.[43] Within the *Streptococcus pneumoniae* family, there are 100 known serotypes that cause disease. However, only a minority of serotypes produce the majority of pneumococcal infections.[44] Not all *Streptococcus pneumoniae* serotypes are considered invasive.

Vaccination and Antibiotic Resistance

Pneumococcal disease is common in young children, but older adults are at greatest risk of serious illness and death. Pneumococcal vaccines help protect against pneumococcal infections, including invasive disease. CDC recommends vaccination for people based on their age or if they have certain risk conditions.[45] Invasive pneumococcal disease rates have dramatically declined in the US after the pneumococcal vaccines were introduced. From 1998 through 2021, rates among children under age 5 decreased by 95% overall. In addition, invasive pneumococcal disease rates in adults have decreased after the vaccines were used in children. Vaccine use among children provide herd immunity and decrease rates in adults later in life.[46] In addition, vaccination helps prevent antibiotic resistant pneumococcal infections. Today, *S. pneumoniae* is resistant to at least one antibiotic and causes more than 2 in 5 infections. New pneumococcal vaccines will be critical as the proportion of

Table 5. Types of Invasive *Streptococcus* Infections, Davis County, 2024

Type	Number of Cases (%)
Group A *Streptococcus*	21 (33.3%)
Group B *Streptococcus*	11 (17.5%)
Other *Streptococcus* (*anginosus*, *mitis*, *viridans* etc.)	13 (20.6%)
Streptococcus pneumoniae	18 (28.6%)
Total	**63 (100%)**

resistance to some important antibiotics continues to increase. Figure 23 shows trends in the percentage of invasive pneumococcal disease that are resistant to selected antibiotics.[47]

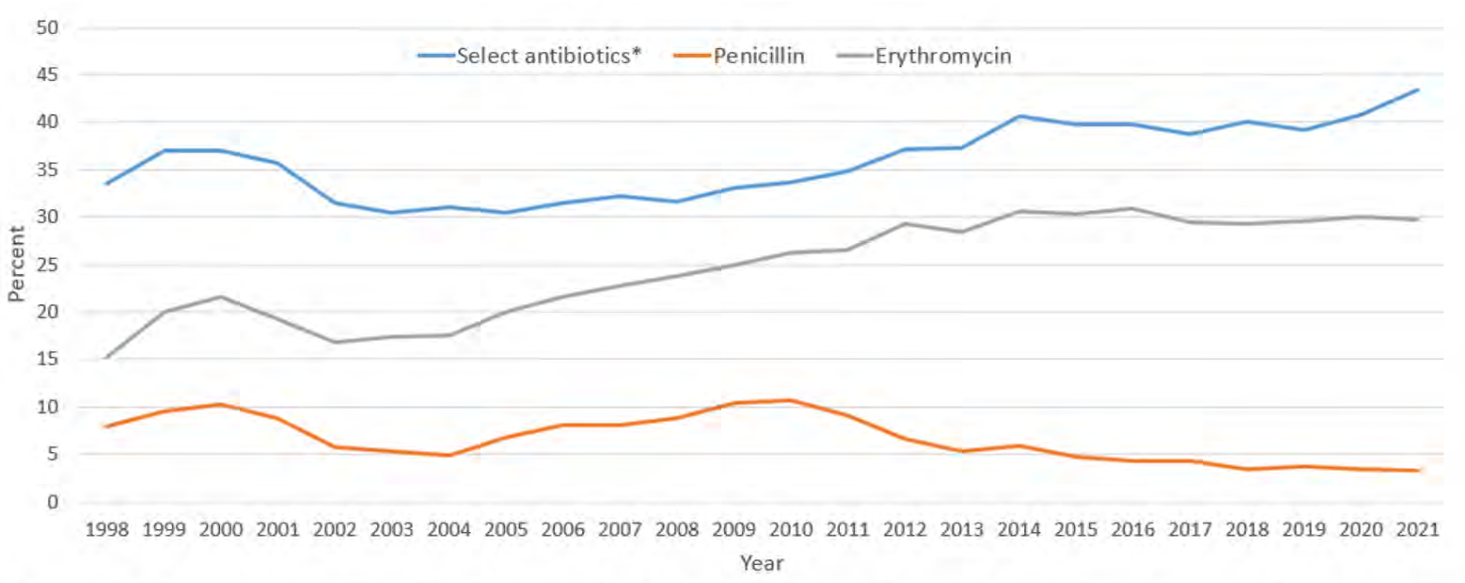
Streptococcal Toxic Shock Syndrome (STSS)

STSS is a serious and life threatening bacterial infection caused by the Group A *Streptococcus* bacteria.[48,49] STSS is rare and not commonly spread from person to person. However, Group A strep is very contagious and can easily develop into STSS if the bacteria spreads into the bloodstream. Other common sources of STSS infection occur when the bacteria enter the body through open sores, surgical wounds, or the mucous membranes, such as the mouth and nose.[48]

Indications of STSS include muscle aches and pain, fever and chills, and nausea and vomiting. Within 24 to 48 hours, the illness becomes much more severe as symptoms progress to low blood pressure, rapid breathing, and a fast heart beat. Other critical outward signs demonstrate organ failures, such as a lack of urine production, yellow skin or eyes, and easily bruising. STSS requires hospitalization. Standard treatment of shock and organ failure, such as fluid resuscitation, is imperative as the first step in treatment.[48,49] Any person showing signs of STSS should seek immediate medical attention. Treatment includes strong antibiotics, intravenous fluid, and possible surgery to remove the infection from the tissue. The complications of STSS are serious; as many as three out of 10 people die, even with medical treatment.[48]

While anyone can get STSS, people with increased risk include individuals who are 65 years and older, experience alcohol use disorder, are recovering from an infection with open sores, or who recently underwent surgery.[48] It is important for these individuals to adhere to preventative guidelines, such as washing hands often with soap and water; cleaning wounds with soap and water and wrapping them in fresh, dry bandages regularly; and avoid swimming in lakes, pools, or hot tubs with skin infections or open wounds or sores.[48] Other risk factors include having alcohol use disorder, diabetes, viral infections that cause open sores (like varicella), or other skin injuries.[49]

Figure 23. Percentage of Invasive Pneumococcal Disease Cases Not Susceptible to Select Antibiotics, All Ages, United States, 1998-2021



*Select antibiotics includes cases not susceptible to at least on of the following antibiotics: penicillin, amoxicillin, erythromycin, cefotaxime, ceftriaxone, cefuroxime, tetracycline, vancomycin, levofloxacin, clindamycin, trimethoprim/sulfamethoxazole, meropenem, or linezolid

Respiratory Diseases

Diseases that are primarily spread from person to person by respiratory secretions.

Respiratory viruses commonly cause illnesses such as influenza, COVID-19, and respiratory syncytial virus (RSV). These are primarily spread from person to person, especially in the fall and winter seasons. When people with the illness cough, sneeze, or talk, they expel particles that contain the virus.[50,51] These particles can then land in the mouths or noses of people who are nearby and possibly be inhaled into the respiratory tract. It is also possible that a person can get infected by touching another person, object, or surface that has the virus, and then touching their own mouth, nose, or eyes.[51]

Similarities and Differences

These diseases often have similar symptoms, such as fever, cough, sneezing, shortness of breath, runny nose, and sore throat.[51] Immunizations and good hygiene are part of core prevention strategies to prevent further spread.[52]

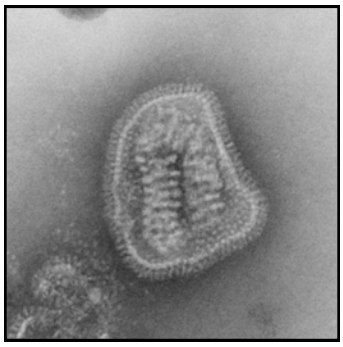
Despite these similarities, there are some important differences. A basic difference is that influenza, COVID-19, and RSV are caused by different viruses. Testing is needed to confirm the illness so that proper treatment can be received. It is not possible to determine which illness someone has based on symptoms alone.

It may be easy to consider COVID-19 and influenza as one and the same. Table 6 presents an outline of these differences.[51] In general, when compared to influenza, COVID-19 spreads more easily, can cause more severe illness, and people may be contagious for a longer period of time.

Table 6. Comparison of Select Characteristics of Influenza and COVID-19

How long does it take for symptoms to appear after being infected?	
Influenza	COVID-19
1 to 4 days after infection	2 to 5 days, and up to 14 days after infection
How long can someone spread the virus?	
Influenza	COVID-19
People are contagious for about 1 day before symptoms begin After symptoms begin, older children and adults appear to be most contagious during the first 3 to 4 days of illness. This may be longer for infants and people with weakened immune systems.	People are contagious for about 2 to 3 days before symptoms begin After symptoms begin, people are generally considered to be contagious for about 8 days.
How is the virus spread?	
Influenza	COVID-19
It is believed that influenza is spread mainly by people who are symptomatic (people who show influenza symptoms).	Can be spread before people begin showing symptoms, those with very mild symptoms, and those who never experience symptoms (asymptomatic people). In addition, COVID-19 has been observed to have more superspreading events than influenza.
How severe can it get?	
Influenza	COVID-19
Both COVID-19 and flu illness can result in severe illness and complications.	Both COVID-19 and flu illness can result in severe illness and complications. Overall, COVID-19 seems to cause more severe illness in some people. Severe COVID-19 illness resulting in hospitalization and death can occur even in healthy people. Some people that had COVID-19 can go on to develop post-COVID conditions or multisystem inflammatory syndrome.

The way each disease manifests and who is at risk for severe disease may also vary. For example, infants and older adults are more likely to develop severe RSV and need hospitalization.[53] Also, RSV is the leading cause of infant hospitalization in the US.[54] On the other hand, older adults, infants, children, pregnant women, and people with certain underlying medical conditions all have an increased risk of complications from COVID-19 and influenza.[51]

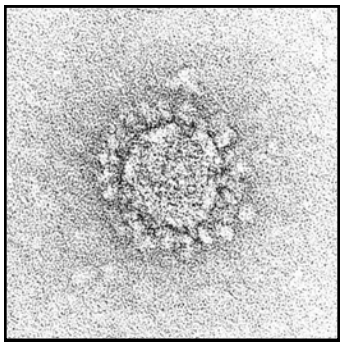


There are two main types of human influenza viruses: types A and B. These two types are routinely spread in people and are responsible for seasonal influenza epidemics each year.

Respiratory Disease Surveillance

Respiratory diseases are very common, and the number of people infected each season can only be estimated because not everyone will seek medical care or get tested.[55] Instead, these diseases are monitored using a variety of methods. These methods approximate the burden of disease and provide insight on trends and severity.

One method is syndromic surveillance. When people seek treatment in a medical facility, the facility sends de-identified data about the visit, including chief complaint, diagnosis codes, and patient characteristics, to state and local health departments. These data are called "syndromic surveillance" because it tracks the symptoms and diseases people are experiencing. CD/Epi currently uses syndromic surveillance data to track outpatient visits due to influenza-like illness (ILI) and ED visits associated with common respiratory diseases.



COVID-19 most often causes respiratory symptoms that can feel much like a cold, the flu, or pneumonia. While COVID-19 primarily attacks the lungs and respiratory system, other parts of the body may be affected by the disease too.

Another method is to monitor hospitalizations and deaths that are associated with respiratory diseases. Medical providers, hospitals, and laboratories report hospitalized cases and deaths to the local health departments. These are important measures to help CD/Epi assess the severity of the current respiratory disease season.

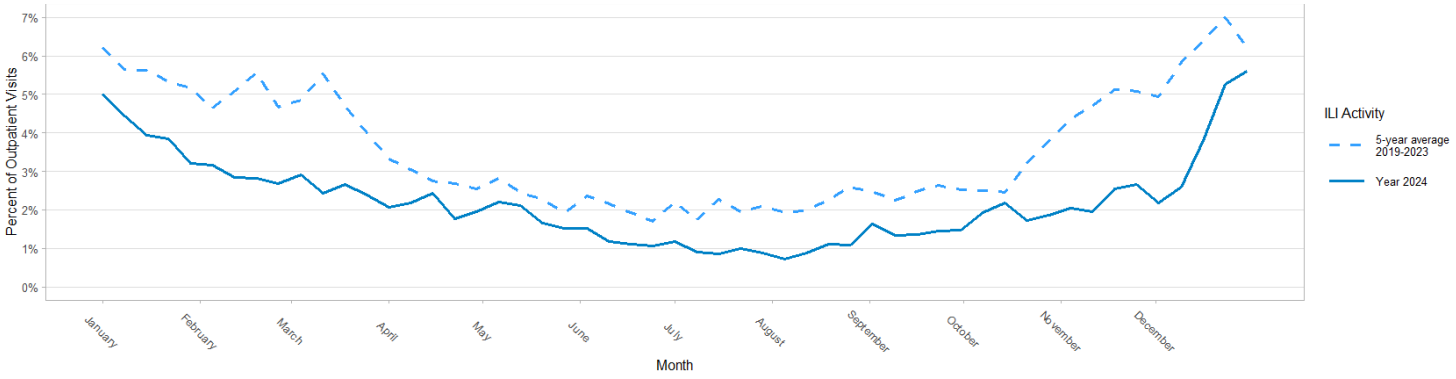
Finally, hospitals and other clinics submit viral specimens for testing and typing to the UPHL so that circulating strains can be identified. These methods of respiratory disease surveillance should all be evaluated in the context of other data to obtain a complete and accurate picture of respiratory disease.

RSV is a common respiratory virus that usually causes mild, cold-like symptoms. While most people recover in a week or two, RSV can be serious.

Influenza-like Illness (ILI)

As previously mentioned, ILI is a syndromic surveillance measure that helps track the number of outpatient visits due to certain symptoms. If someone presents to the doctor and has a fever and a cough and/or a sore throat, it is considered an ILI visit.[56] Figure 24 displays the weekly percentage of all outpatient visits that were due to ILI. For comparison, the dashed line shows the previous five-year average from 2019 to 2023. The 2024 trend of ILI visits was lower than the five-year average. The percent of ILI outpatient visits peaked at 5.6% during the final week of 2024.

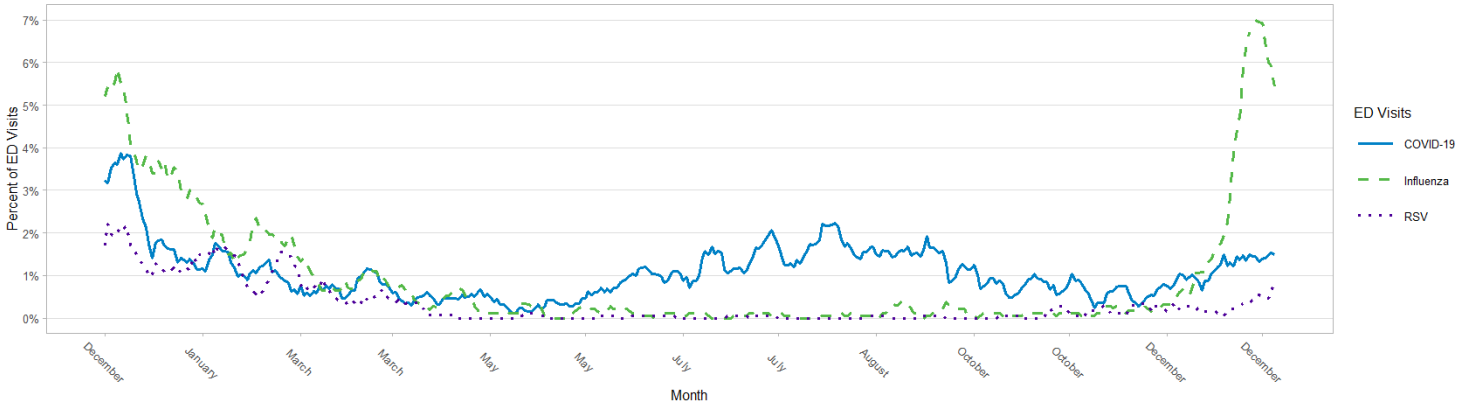
Figure 24. Percent of Outpatient Visits due to ILI, Davis County, 2024 and 5-Year Average (2019-2023)



Emergency Department (ED) Visits

In a similar manner, CD/Epi uses syndromic surveillance to track ED visits due to respiratory diseases. These are based on the discharge diagnosis code. Figure 25 presents the rolling seven-day average of the percentage of all ED visits due to influenza, COVID-19, and RSV. During the first week of 2024, the rolling 7-day average percentage of COVID-19 and RSV ED visits peaked at 3.9% and 2.2%, respectively; influenza ED visits peaked at 7.1% during the last week of 2024. The peaks for these three diseases were all higher than the peaks during 2023. Even though influenza had the highest ED visit peaks in 2024, there were overall more COVID-19 ED visits than influenza ED visits. Out of all ED visits in Davis County, COVID-19 had 1.1% whereas influenza had 0.9%.

Figure 25. Percent of Emergency Department Visits due to COVID-19, Influenza, and RSV, Rolling 7-Day Average, Davis County, 2024



Hospitalizations

Finally, CD/Epi monitors hospitalizations that are associated with respiratory disease. During 2024, there were **166** influenza-associated hospitalizations and **234** COVID-19-associated hospitalizations. At this time RSV-associated hospitalizations are not tracked. Figure 26 shows the rate per 100,000 people of influenza- and COVID-19-associated hospitalizations by age group. The highest rates are seen in people age 85 and over, at 1,062 hospitalizations per 100,000 people for COVID-19, and 435.7 hospitalizations per 100,000 people for influenza. The lowest COVID-19 rates are seen in children age 5-14 at 7.8 hospitalizations per 100,000 people. The lowest influenza rates are seen in people age 15-24 at 21 hospitalizations per 100,000 people.

Figure 26. Rate of Influenza- and COVID-19-Associated Hospitalizations, by Age Group, Davis County, 2024

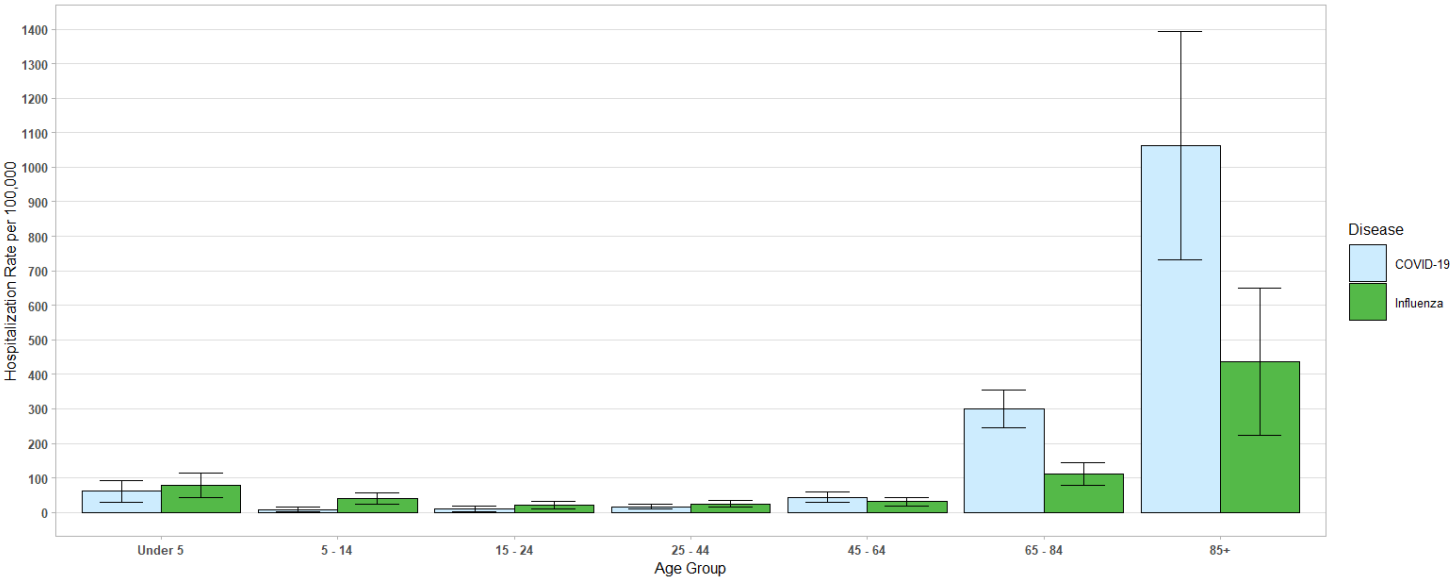
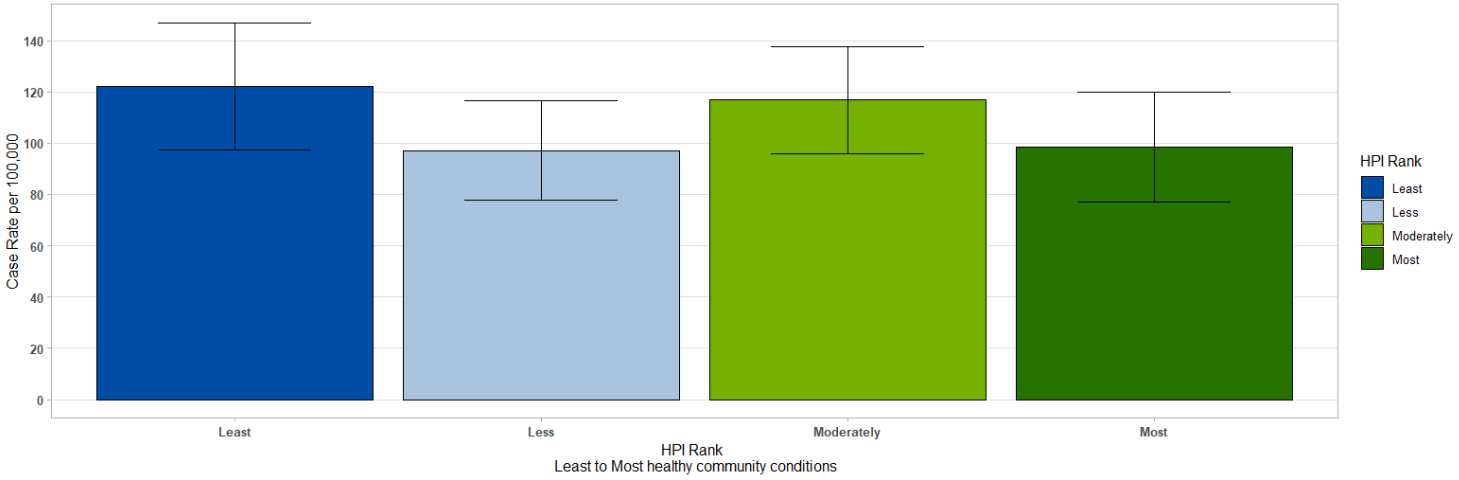


Figure 27 displays the rates of influenza- and COVID-19-associated hospitalizations stratified by HPI rank area. In 2024, hospitalization rates were not significantly different across the HPI areas, and no clear pattern emerged. The highest rates were observed in the least healthy community area at 122 hospitalizations per 100,000 people. However, the lowest rates were observed in the less healthy community area at 97 hospitalizations per 100,000 people.

Figure 27. Rate of Influenza- and COVID-19-Associated Hospitalizations, by HPI, Davis County, 2024



Reporting

During the respiratory disease season, CD/Epi releases a report called the Respiratory Illness Report (RIR). The RIR is a weekly publication that aims to provide the most up-to-date information on these diseases in Davis County. The report follows trends of ED visits, hospitalizations, school absenteeism, and ILI visits. Each report also includes brief summaries of important updates or information pertinent to respiratory diseases. The report can be found in the Newsletter section of the DCHD website at https://www.daviscountyutah.gov/health.

Sexually-Transmitted Infections

Diseases that are caused by bacteria, viruses, and other organisms transmitted from one person to another through sexual activity.

Sexually-transmitted infections (STIs) are caused by bacteria, viruses, and other organisms transmitted from one person to another through sexual activity. Bacterial STIs, such as chlamydia, gonorrhea, and syphilis, are curable by using appropriate antibiotic therapy. However, permanent damage may occur (e.g. pelvic inflammatory disease, sterility, organ damage, meningitis) especially if treatment is delayed. Viral STIs such as herpes simplex virus and HIV are not curable, but treatment can slow disease progression by reducing viral load (contagiousness) and improving quality of life. Complications from STIs range from mild/moderate illness to infertility, chronic pain, cancer, and even death. Less invasive testing techniques (e.g. urine testing, self-collected oral/rectal testing) have made chlamydia and gonorrhea testing more practical and convenient.

There were **1,118** STIs reported in 2024. Figure 28 presents the percentage of all STI reports attributed to each specific disease. Chlamydia was the most commonly reported STI with **886** (79.2%) cases, followed by gonorrhea with **166** (14.8%) cases, all stages of syphilis with **57** (5.1%) cases, and HIV with **9** (0.8%) cases.

Figure 28. Percent of STIs Reported, by Category, Davis County, 2024

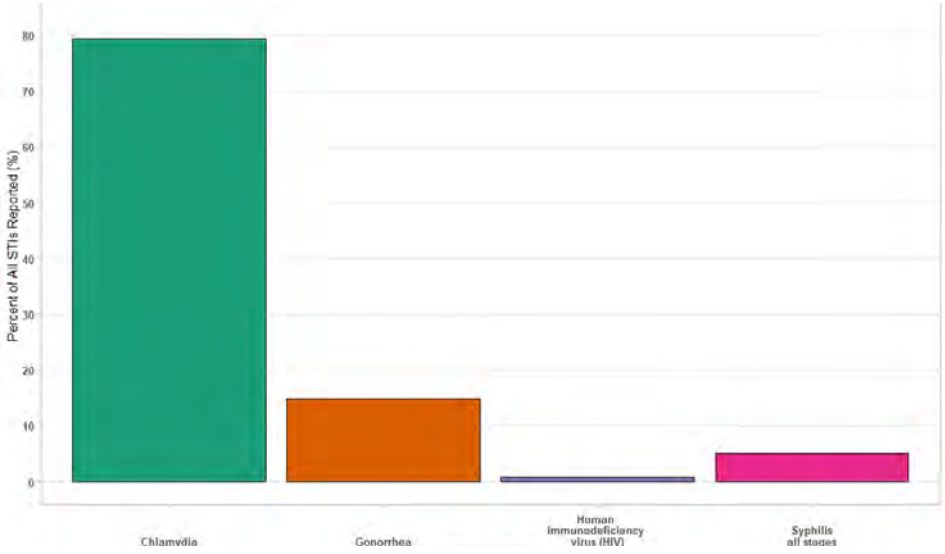
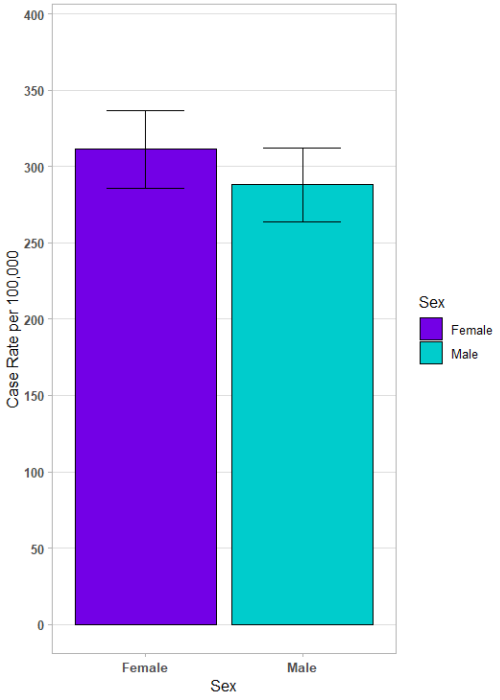
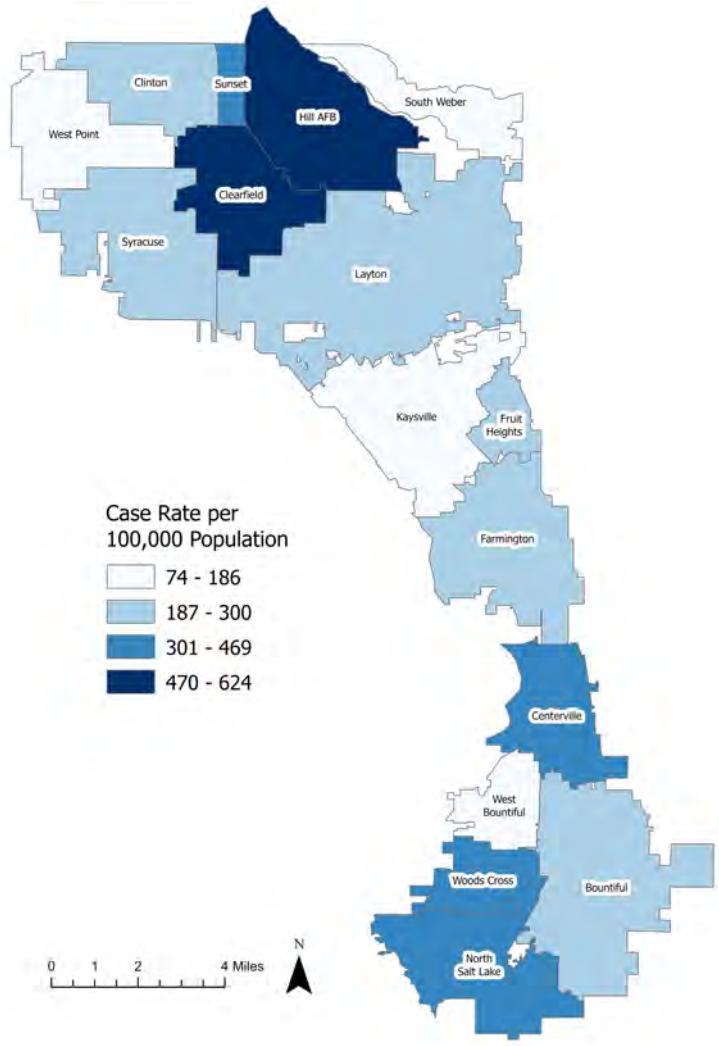


Figure 29. Rates of STIs, by Sex, Davis County, 2024



STIs are reported more frequently in females than in males. Figure 29 shows the rate of STI reporting among males and females. As previously discussed, females are often diagnosed during routine medical visits; males are typically diagnosed following contact investigations or if they become symptomatic. It is DCHD's goal to locate all partners, offer low-cost testing and treatment, provide disease education, and assist in developing a risk reduction plan. Contact investigations not only limit the

Figure 30. Rate of STIs, by City, Davis County, 2024



spread of infection to other individuals, but also decrease the likelihood of reinfection. Reinfections can occur when appropriately-treated individuals engage in sexual activity with their untreated partners or resume sexual activity before the infection is cleared.

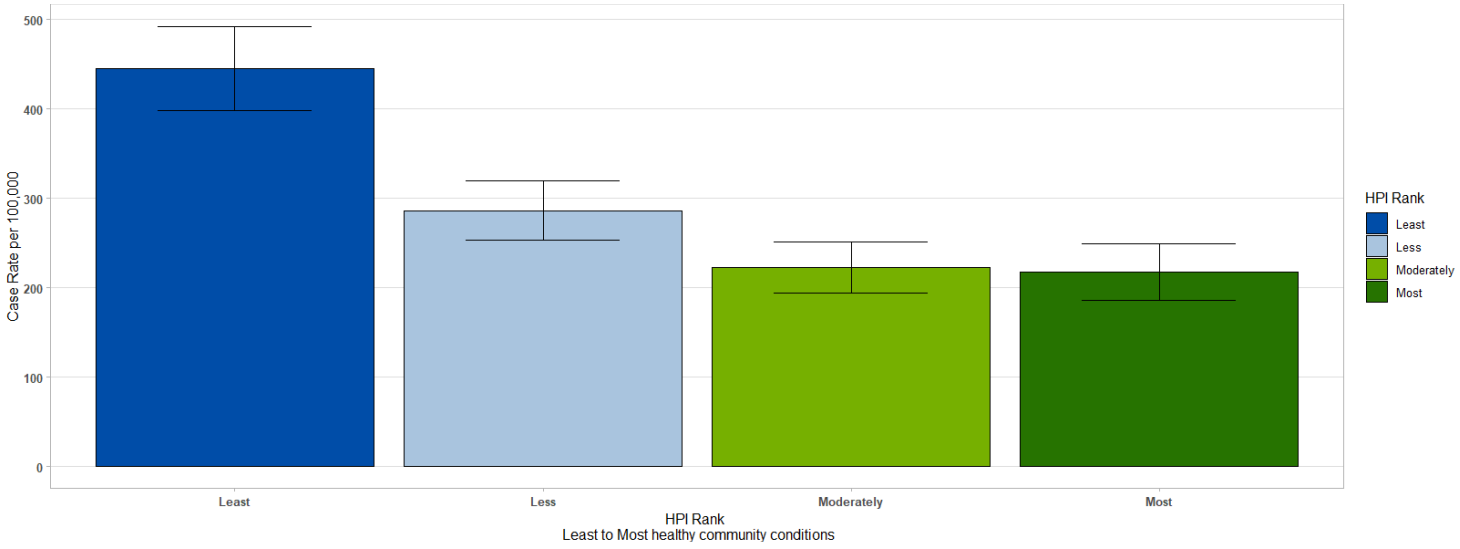
In 2024, STIs were reported within every locality in Davis County. Figure 30 presents the incidence rate of STIs reported by city per 100,000 people.

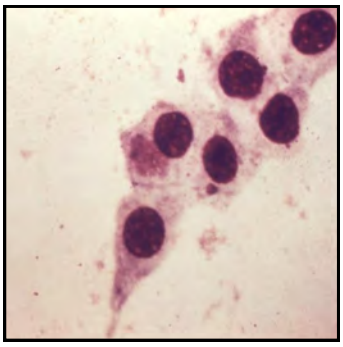
Clearfield and Hill AFB had the highest rates of STIs, while Kaysville, South Weber, West Bountiful, and West Point had the lowest rates.

Figure 31 displays the rates of STIs stratified by HPI rank area. The familiar trend of rates decreasing as healthy community conditions improve is seen.

In the least healthy area, the rate of STIs was 445.3 cases per 100,000 people. This is 83.1% higher compared to the rest of the county. Conversely, the most healthy area had a rate of 217.4 cases per 100,000 people, which is 29.1% lower compared to the rest of the county.

Figure 31. Rate of STIs, by HPI Area, Davis County, 2024



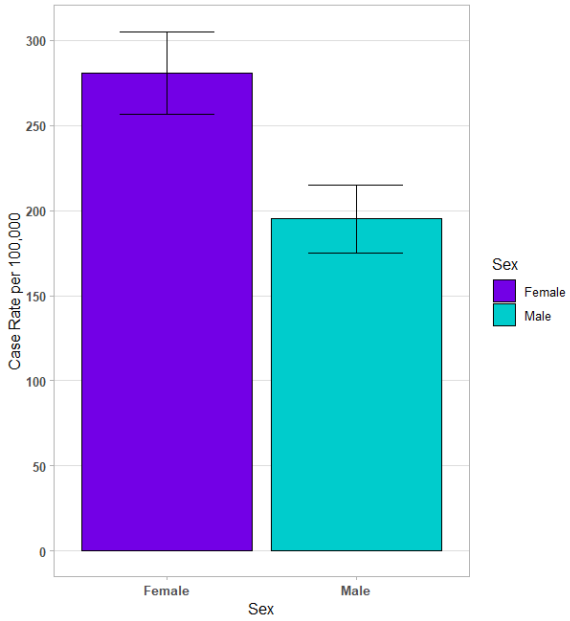


Chlamydia is the most commonly reported STI in the US.

Chlamydia is an STI caused by the bacteria *Chlamydia trachomatis.* It is the most commonly reported STI in the US. Chlamydia often has no symptoms, but it can cause serious health problems, even without symptoms. If symptoms occur, they may not appear until several weeks after having sex with a partner who has chlamydia. Women with symptoms may notice an abnormal vaginal discharge or a burning sensation when urinating. Men with symptoms may notice penis discharge, a burning sensation when urinating, and pain or swelling in one or both of the testicles.[57]

The only way to completely avoid chlamydia (and any other STI) is to not have vaginal, anal, or oral sex. If you are sexually active, the following things can lower your chances of getting chlamydia: (1) Being in a long-term mutually monogamous relationship with a partner who has been tested and does not have chlamydia; or (2) using condoms the right way every time you have sex. If you are pregnant and have chlamydia, you can give the infection to your baby during delivery. This can cause serious health problems for your baby. If you are pregnant, talk to your healthcare provider about getting the correct examination, testing, and treatment.

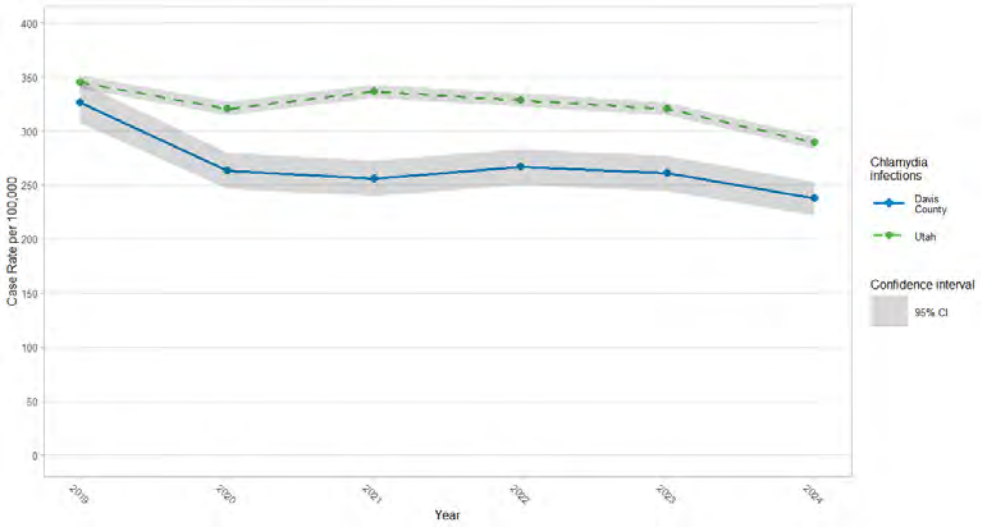
Figure 32. Chlamydia by Sex, Davis County, 2024



Chlamydia continues to account for the single largest disease-specific burden in Davis County at 37.5%. Figure 32 shows the rate per 100,000 people of chlamydia among men and women for Davis County in 2024. The rate among women is 43.6% higher when compared to men (280.0 and 195.0 cases per 100,000 people, respectively). Reasons for differences in STI reporting are discussed on page 32.

In addition, the female reproductive system is more susceptible to bacteria growth. Women are less likely to have symptoms than men. If the symptoms do occur, they may go away, but the infection can remain. If left untreated, chlamydia may cause permanent damage to the reproductive system.[57]

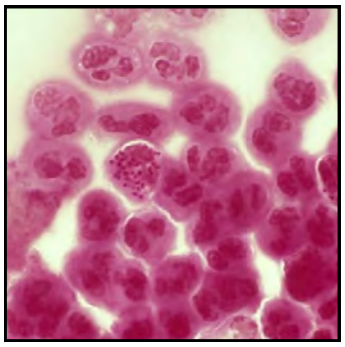
Figure 33. Rate of Chlamydia Infections, by Year, Davis County and Utah, 2019-2024



During 2024, there were **886** cases of chlamydia reported in Davis County. Figure 33 presents the incidence rates of chlamydia infections per 100,000 people in Davis County compared to the rest of Utah from 2019 to 2024. During this time, chlamydia rates have been decreasing in Utah. In addition, rates in Davis County have consistently been lower than the statewide average.

Gonorrhea

Gonorrhea is an STI caused by the bacteria *Neisseria gonorrhoeae* and is one of the most common notifiable STIs in the US.[58] Gonorrhea infections are often asymptomatic in women and are becoming increasingly so in men. If left untreated, gonorrhea may result in serious complications. For women, this includes pelvic inflammatory disease, which can lead to internal abscesses, chronic pain, infertility, and an increased risk of ectopic pregnancy.[58] In men, it may lead to epididymitis and infertility.[58]



Gonorrhea has progressively developed resistance to several antibiotics used to treat it.

A urine sample can be used to screen for both gonorrhea and chlamydia.[59] This testing process is less invasive, more appealing to patients, and may encourage sexually-active individuals to seek testing. When patients are participating in rectal or oral intercourse, however, some STIs may be missed if exclusively using the conventional urine test.

Gonorrhea has progressively developed resistance to the antibiotic drugs prescribed to treat it. Following the spread of gonococcal fluoroquinolone resistance, the cephalosporin antibiotics have been the foundation of recommended treatment for gonorrhea. The emergence of cephalosporin -resistant gonorrhea would significantly complicate the ability of providers to treat gonorrhea successfully, since we have few antibiotic options left that are simple, well-studied, well-tolerated and highly effective. It is critical to continuously monitor resistance and encourage research and development of new treatment regimens.[60]

Figure 34 shows the rate of gonorrhea infections among males and females. Unlike chlamydia, gonorrhea infections in Davis County were more frequent in males. The rate among men is 187.3% higher when compared to women (65.5 and 22.8 cases per 100,000 people, respectively).

During 2024, there were **166** cases of gonorrhea reported in Davis County. Figure 35 presents the incidence rates of gonorrhea infections per 100,000 people in Davis County compared to the rest of Utah from 2019 to 2024. During this timeframe, Davis County rates of gonorrhea have consistently been lower than the rest of the state.

Figure 34. Gonorrhea by Sex, Davis County, 2024

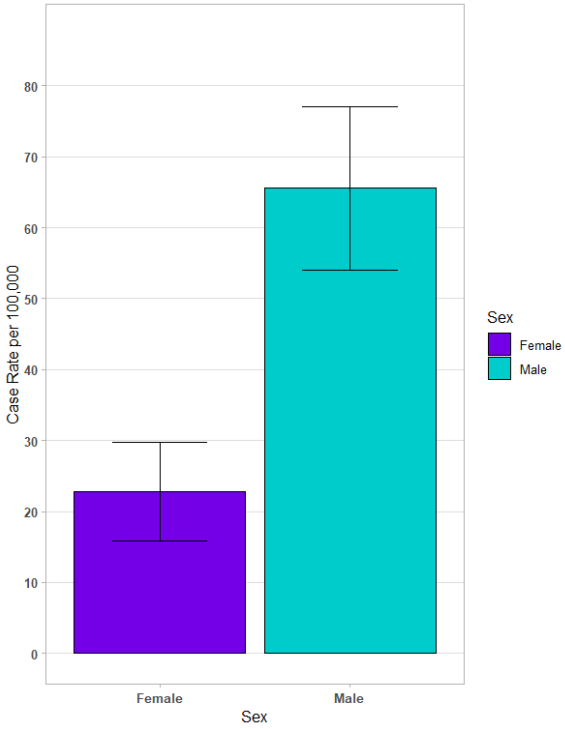
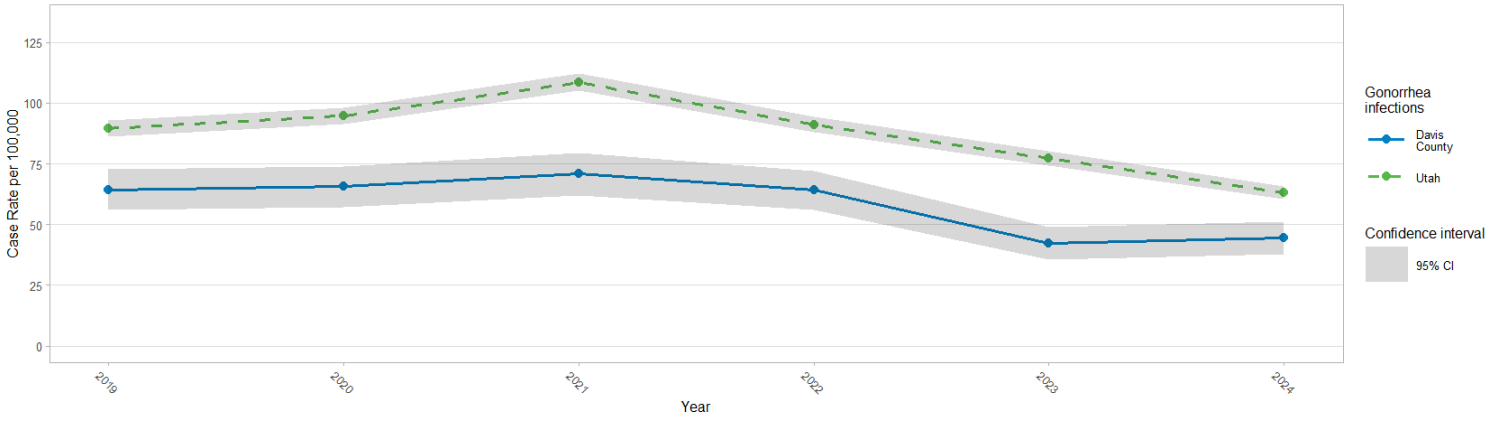
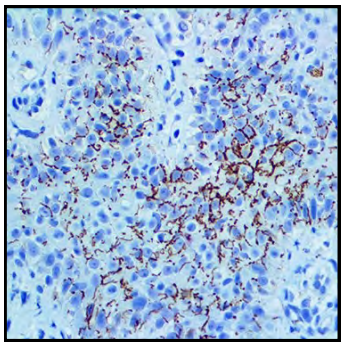


Figure 35. Rate of Gonorrhea Infections, by Year, Davis County and Utah, 2019-2024





Syphilis can cause long-term complications if not treated correctly.

Syphilis is an STI caused by the bacterial spirochete *Treponema pallidum*.[61] There are four stages of syphilis, each with different signs and symptoms.[62] The staging of syphilis requires obtaining a thorough history (including past test results), risk factors, previous treatment regimens, and evaluation of symptoms. Partners' disease status also helps in the staging process.

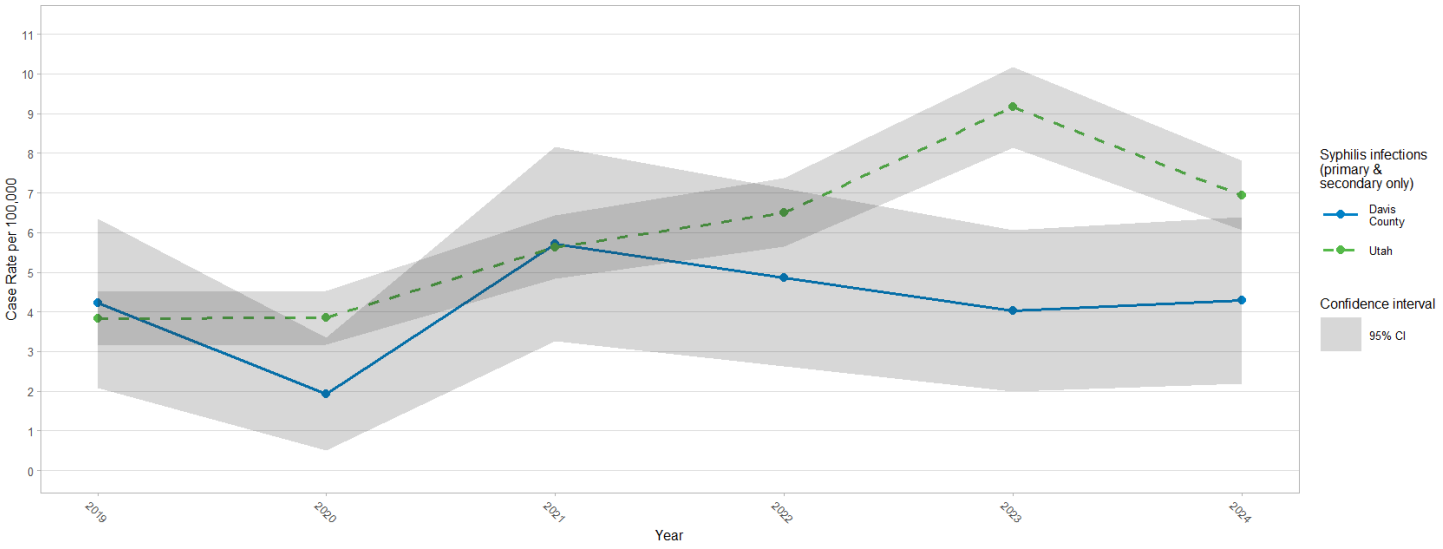
Syphilis is usually transmitted from person-to-person by direct contact with a syphilitic sore, known as a chancre, during sexual contact. Syphilis is not transmitted by casual contact with objects, such as doorknobs or toilet seats.[62] The painless sore that appears initially when a person is first infected can be confused as a pimple or other seemingly harmless lesion. However, many of these syphilitic sores develop in the rectum or vagina and are difficult to notice.[62] Thus, most transmission is from people who are unaware of their infection. Regular testing for syphilis is recommended for people who have HIV, are taking pre-exposure prophylaxis (PrEP) for HIV prevention, have partner(s) who have tested positive for syphilis, or are a man who has sex with other men (MSM).[62]

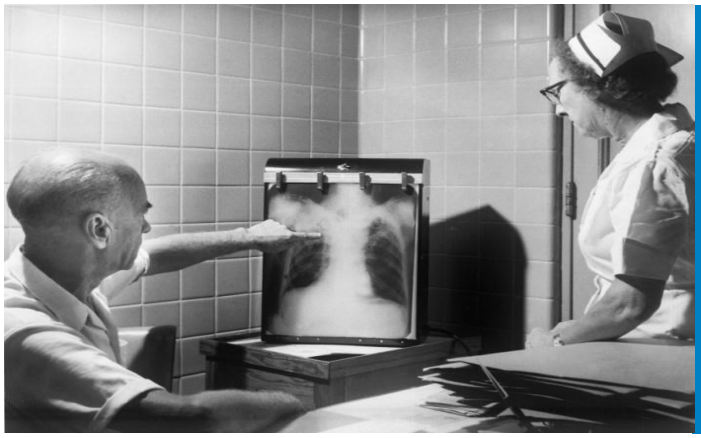
During 2024, there were **57** cases of syphilis across all stages reported in Davis County. Table 7 shows the distribution of syphilis stage categories that were reported. Figure 36 presents the incidence rates of primary and secondary syphilis infections per 100,000 people in Davis County compared to the rest of Utah from 2019 to 2024. Despite a statewide increase in 2023, Davis County rates have been generally comparable to the rest of the state.

Table 7. Stage of Reported Syphilis Cases, Davis County, 2024

Syphilis Stage Category	Number of Cases (%)
Congenital	1 (1.8%)
Early non-primary, non-secondary	6 (10.5%)
Primary	9 (15.8%)
Secondary	7 (12.3%)
Late or unknown duration	34 (59.7%)
Total	**57 (100%)**

Figure 36. Rate of Primary and Secondary Syphilis Infections, by Year, Davis County and Utah, 2019-2024





Tuberculosis

Tuberculosis is a disease caused by bacteria that are spread from person to person through the air. It usually affects the lungs, but can also affect other parts of the body, such as the brain, kidneys, or spine.

TB is caused by a type of bacteria called *Mycobacterium tuberculosis.* The bacteria usually attacks the lungs, but may attack any part of the body. It is spread through the air when a person with TB coughs, speaks, or sings. People nearby may breathe in these particles and become infected.[63] Not everyone infected with TB bacteria becomes sick.

As a result, two TB conditions exist: active TB disease (ATBD) and latent TB infection (LTBI). Up to 13 million people in the US live with LTBI. Without treatment, 5%-10% of people with LTBI will get ATBD, which can spread to others and be deadly.[64]

TB is a serious health threat, especially for people living with HIV. People living with HIV are more likely than others to become sick with TB. Worldwide, TB is one of the leading causes of death among people living with HIV.[65]

In most cases, TB is treatable and curable. However, people with TB can die if they do not get proper treatment. Sometimes drug-resistant TB occurs when bacteria become resistant to the drugs used to treat TB. This means that the drug can no longer kill the TB bacteria.[66]

In 2024, there was **one** ATBD case and **145** newly identified LTBI cases reported in Davis County. Figure 37 presents the rate of ATBD cases in Davis County and Utah. From 2019 to 2024, the rate of ATBD cases in Davis County has been comparable to the rest of the state. Figure 38 shows the incidence rate per 100,000 people for identified LTBI in Davis County from 2019 to 2024.

Figure 37. Rate of Active TB Cases, by Year, Davis County and Utah, 2019-2024 Combined

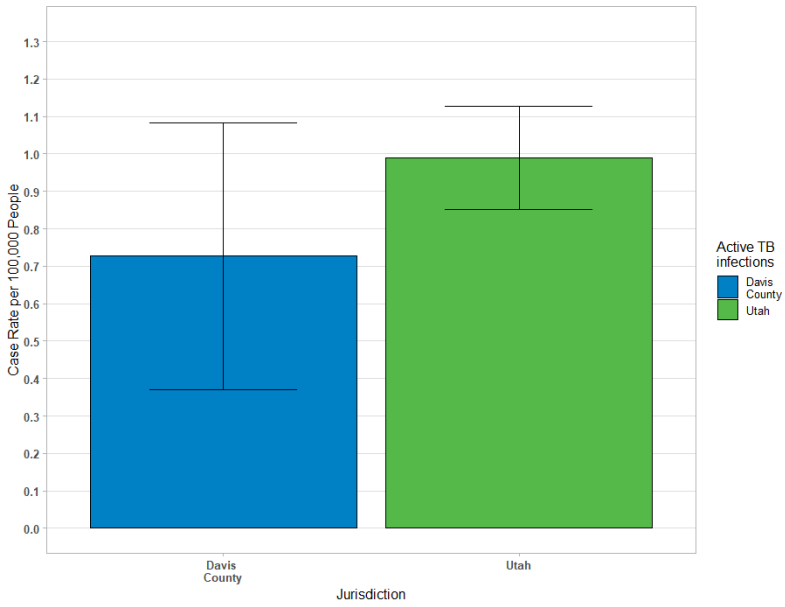
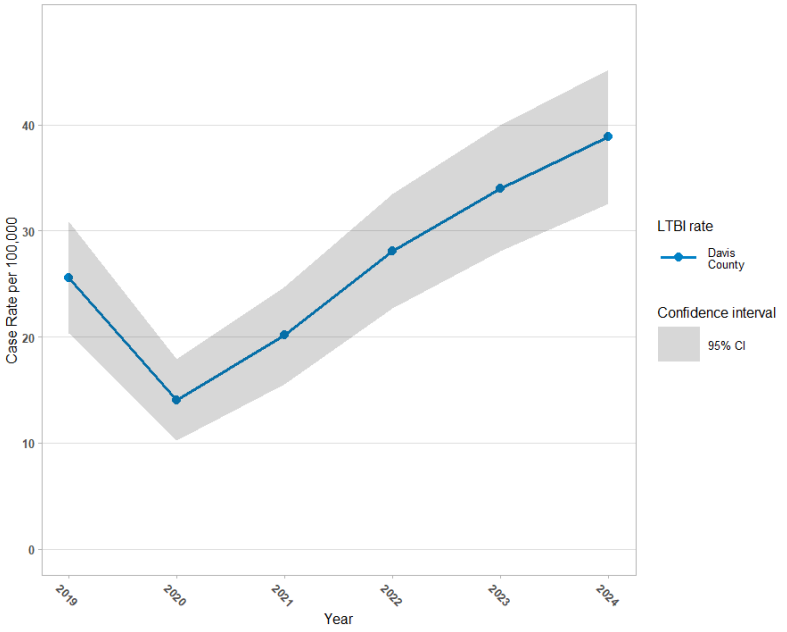


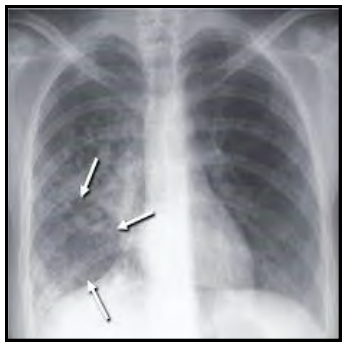
Figure 38. Rate of LTBI, by Year, Davis County, 2019-2024



TB bacteria become active if the immune system cannot stop the bacteria from growing. When TB bacteria begin to multiply in the body, ATBD is the result.[67] When ATBD manifests in the lungs, it is known as pulmonary TB. Whereas when it manifests in other parts of the body, it is classified as extrapulmonary TB.[67]

In 2023, the US reported 9,633 TB cases (2.9 cases per 100,000 persons), representing a 15.6% increase since 2022.[68] Despite these increases, the US continues to maintain one of the lowest TB incidence rates in the world.

Prior to the COVID-19 pandemic, TB case counts and rates had been steadily declining in the US since 1992. During 2020, the first year of the COVID-19 pandemic, TB cases decreased by 19.4% and the incidence rate decreased by 20.2%. TB case counts and incidence rates subsequently increased in 2021 and 2022. In 2023, the TB case count and incidence rate rose to above pre-pandemic levels.[68]



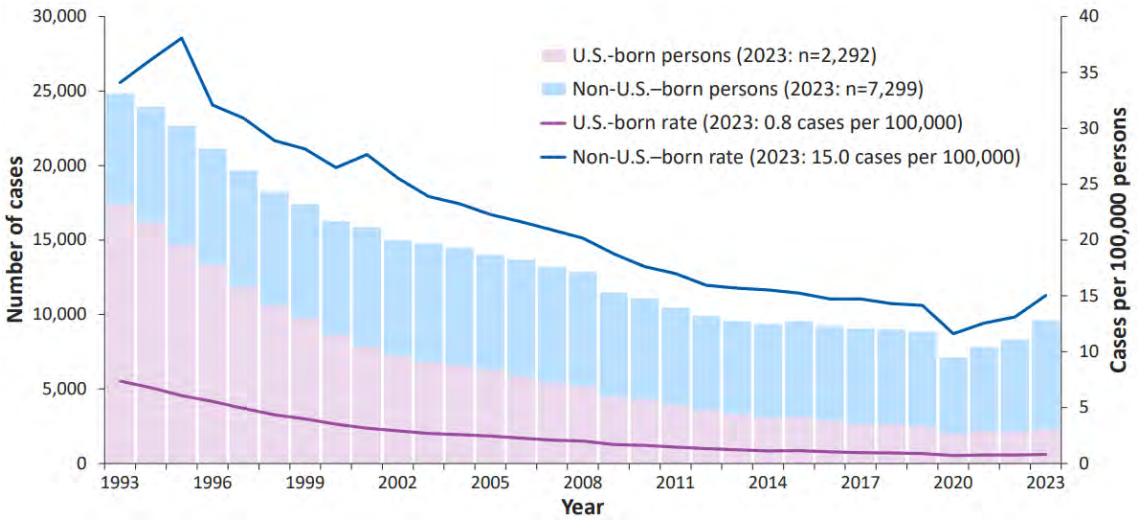
Tuberculosis is a disease caused by Mycobacterium tuberculosis*. This bacteria usually attack the lungs, but can attack any part of the body, such as the kidney, spine, and brain.*

Origin is a prominent risk factor for TB in the US because of the substantially greater risk of exposure to TB outside of the US. In 2023, most TB cases (75.8%) occurred among non-US-born persons. Compared with 2022, the incidence rate in 2023 among non-US-born persons increased from 13.1 to 15.0 cases per 100,000 persons, a 14.6% increase, while the rate for US-born persons increased by 7.5%. Figure 39 compares case counts and incidence rates of TB in the US by origin of birth.[69,70]

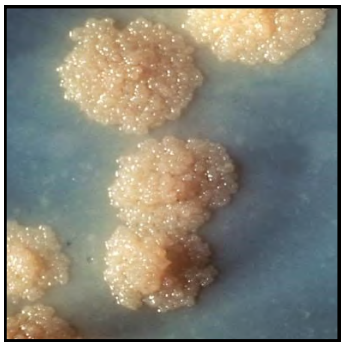
In 2024, Utah had 47 cases of ATBD, only **one** of which was in Davis County. Management of ATBD cases requires close collaboration between several agencies including DCHD, medical providers, DHHS, UPHL, and commitment from the infected individual. Both pulmonary and extra-pulmonary TB typically require six months of treatment. Complicated cases of TB can require treatment to be extended up to two years (e.g. meningeal infections, multidrug resistant/ extensively-drug resistant infections).

Patients with infectious pulmonary TB is of most concern for public health. These individuals are isolated until sputum sample tests indicate the individual is no longer infectious. To ensure compliance to treatment, medication is administered under directly observed therapy (DOT).[71] Because DOT can seem personally invasive to the patient, CD/Epi seeks to implement multiple strategies to promote a less intrusive and more flexible schedule, where possible. This includes bi-/tri-weekly treatments, home visits, and video conferencing.

Figure 39. TB Cases and Incidence Rates by Origin of Birth, United States, 1993-2023



Latent Tuberculosis Infection



People with LTBI do not feel sick and do not have any symptoms. They are infected with M. tuberculosis*, but do not have active tuberculosis disease.*

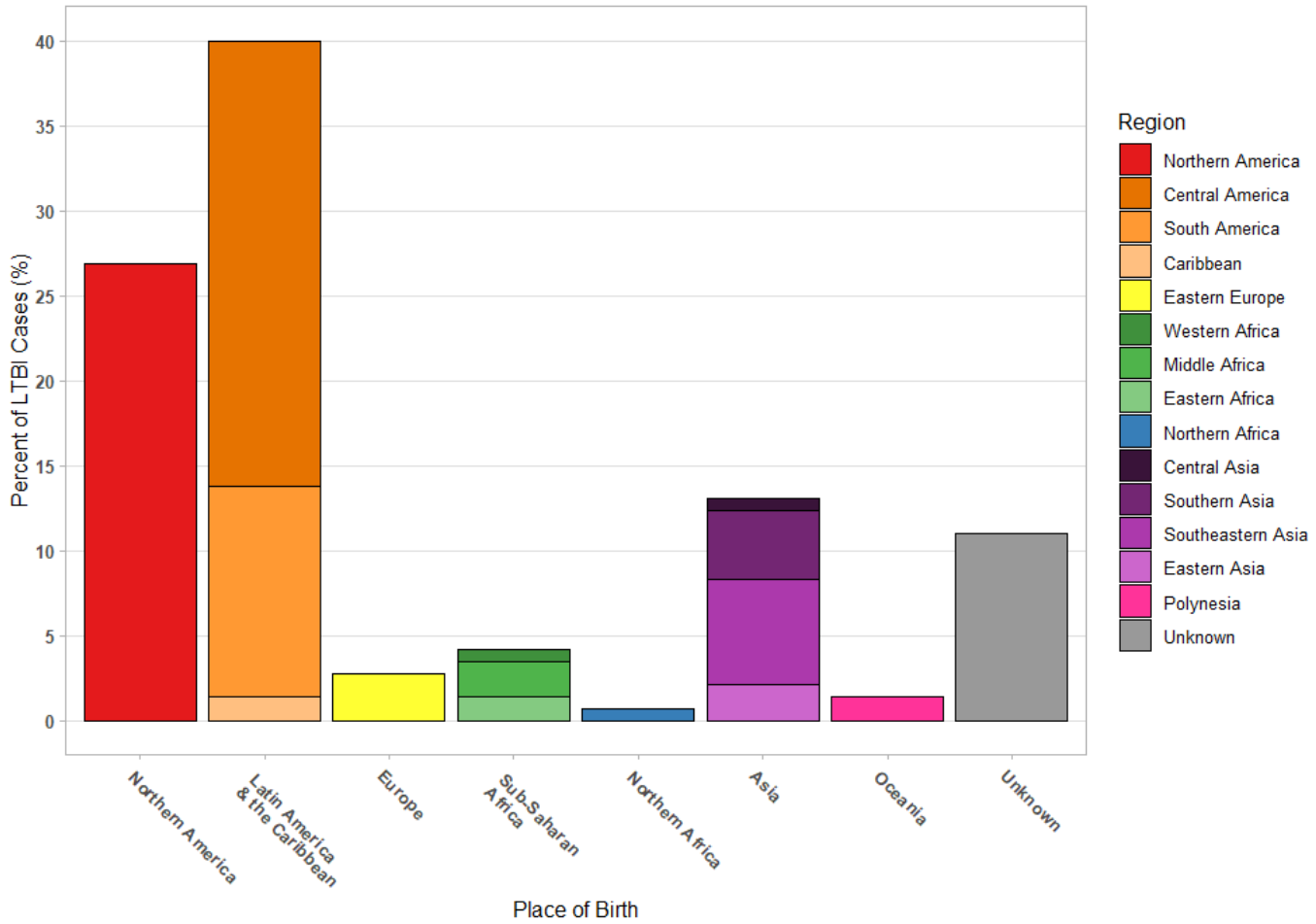
LTBI is a condition in which TB bacteria are alive, but inactive in the body. People with LTBI have no symptoms, cannot spread TB to others, and usually have a positive skin test reaction or interferon gamma-release assay blood test. Development into active disease occurs in about 10% of those who do not receive treatment for LTBI.

Approximately 200 clients are referred to DCHD annually for TB evaluation. These evaluations can include interviews, repeat skin testing or blood screening tests, chest x-rays, sputum testing, and physical exams in order to provide an accurate diagnosis.

With the low incidence of ATBD in Davis County and Utah as a whole, the largest disease burden for TB falls under LTBI. Treatment reduces the risk that LTBI will progress to ATBD and is essential to the control and elimination of TB disease. Case management of LTBI includes initial testing to rule out ATBD and ensuring appropriate treatment.

Because of the substantially greater risk of exposure to TB outside of the US, origin of birth is a prominent risk factor for TB in the US.[68] As such, the majority of individuals who receive LTBI treatment in Davis County are born outside of the US. Figure 40 presents the place of birth for the LTBI cases identified during 2024 in Davis County.

Figure 40. Percent of LTBI, by Place of Birth and Region, Davis County, 2024



Typically, treatment for LTBI consists of daily antibiotic therapy for three to nine months.[71] Individuals are monitored throughout therapy, but DOT is not necessary. There are several treatment options available. CD/Epi nurses help patients choose the regimen that best fits their personal circumstances.

All treatment must be modified if the patient is a contact of an individual with drug-resistant TB disease. Clinicians should choose the appropriate treatment regimen based on drug susceptibility results of the presumed source case (if known), coexisting medical conditions (e.g., HIV), and potential for drug-drug interactions.[71]

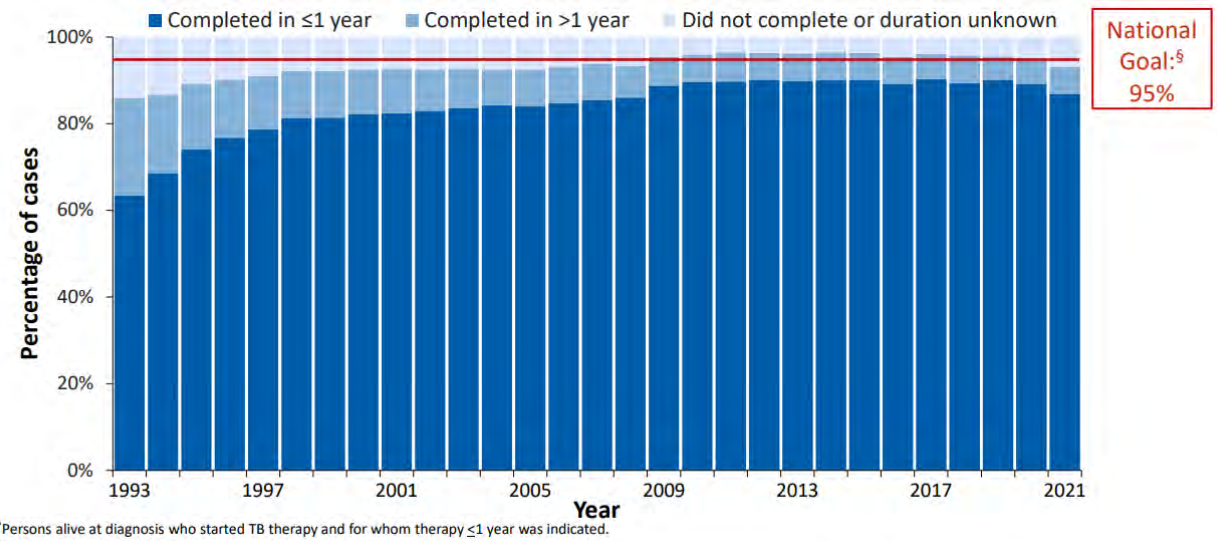
Table 8. Reasons Why Identified LTBI Cases Were Initially Screened for TB, Davis County, 2024

Reason for TB Screening	Number of Cases (%)
Contact to active tuberculosis	2 (1.4%)
Immunocompromised	2 (1.4%)
Incoming immigrant/refugee	56 (38.6%)
Job or school requirement	38 (26.2%)
Pre– or post–mission requirement	3 (2.1%)
Other	24 (16.6%)
Unknown	20 (13.8%)
Total	**145 (100%)**

The national goal is for 95% of patients to complete treatment within 12 months (if indicated). Although the percentage of eligible patients completing therapy within 1 year has risen from 63.4% in 1993 to 86.8% in 2021, the US is still short of the 95% goal. Figure 41 shows the percentage of TB cases in the US that completed treatment from 1993 through 2021.[70]

Referrals are sent to DCHD for suspect ATBD and LTBI follow-up from various medical facilities and providers not only in Davis County, but throughout the state. Screening tests for TB consist of a tuberculin skin test or blood test (e.g. QuantiFERON Gold). People who receive positive test results are often referred to DCHD for evaluation and treatment. There are many reasons why someone receives a TB screening test. Since people with LTBI do not have symptoms, they may be unaware that they are infected with TB. Sometimes these people learn that they have LTBI due to being screened for some other reason. The most frequent screening reasons that resulted in CD/Epi identifying an LTBI case were incoming immigrants or refugees and job or school requirements. Table 8 shows the reasons why each of the 145 Davis County LTBI cases in 2024 were initially screened.

Figure 41. Percentage of TB Cases* by Completion of TB Therapy, United States, 1993-2021†



*Persons alive at diagnosis who started TB therapy and for whom therapy ≤1 year was indicated.
†Most recent year for which data are complete.
§National goal: for 95% of patients with newly diagnosed TB disease for whom ≤12 months of treatment is indicated to complete treatment within 12 months.

Vaccine-Preventable Diseases

Vaccine-preventable diseases are infectious diseases for which an effective preventive vaccine exists.

Figure 42. Percent of VPDs Reported, by Category, Davis County, 2024

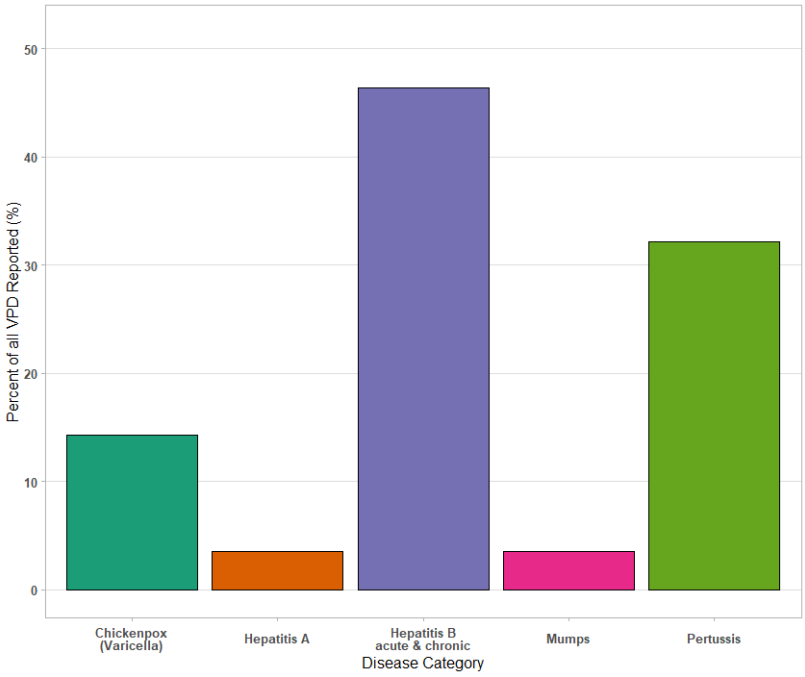
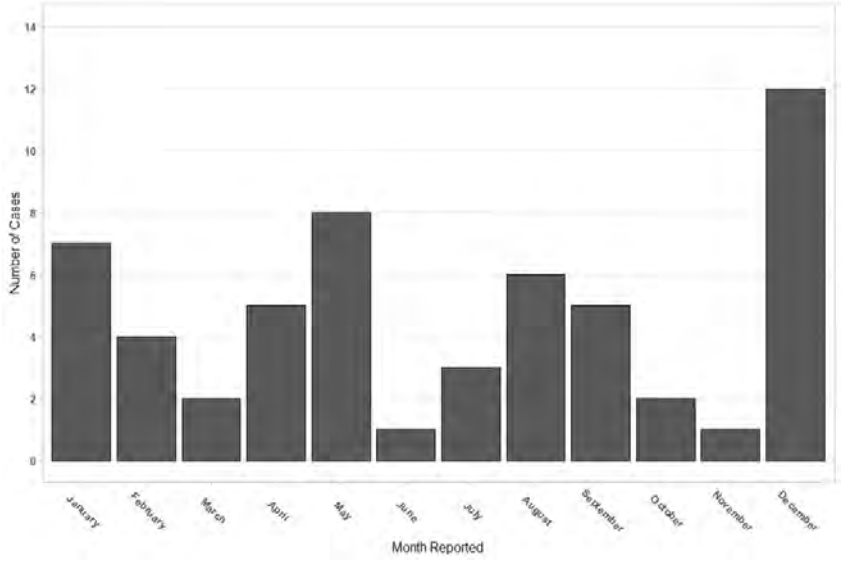


Figure 43. Number of VPDs Reported, by Month, Davis County, 2024



Vaccine-preventable diseases (VPDs) are diseases that are preventable through the use of immunizations. Historically, children had high rates of morbidity and mortality from VPDs. Rates of VPDs have dramatically declined in large part because of immunizations. However, these diseases can still occur due to importation, vaccine failure, disease breakthrough, and inadequate or no vaccine coverage.

When a VPD is diagnosed, it is important that public health measures be quickly implemented to contain the spread. These measures include the administration of prophylactic medications and vaccines, isolation of the infected individual, quarantine of exposed individuals, and education.

There were **56** VPDs reported in 2024. Figure 42 presents the percentage of all VPD reports attributed to each specific disease. Hepatitis B (acute and chronic) was the most frequently reported with **26** cases (46.4%). Others include pertussis with **18** cases (32.1%), chickenpox (varicella) with **8** cases (14.3%), and hepatitis A and mumps with **two** cases (3.6%) each.

Figure 43 presents the count of VPDs by month. The highest counts in December were primarily due to chickenpox and pertussis cases that exposed multiple people and resulted in multiple new cases.

Figure 44. Rate of VPDs, by City, Davis County, 2024

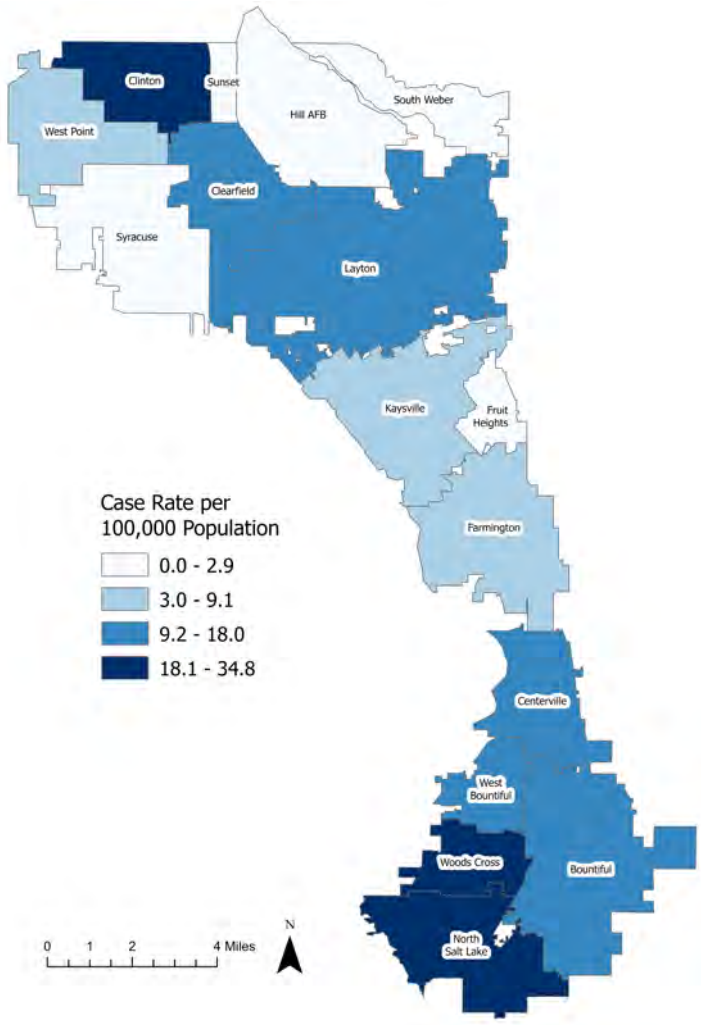


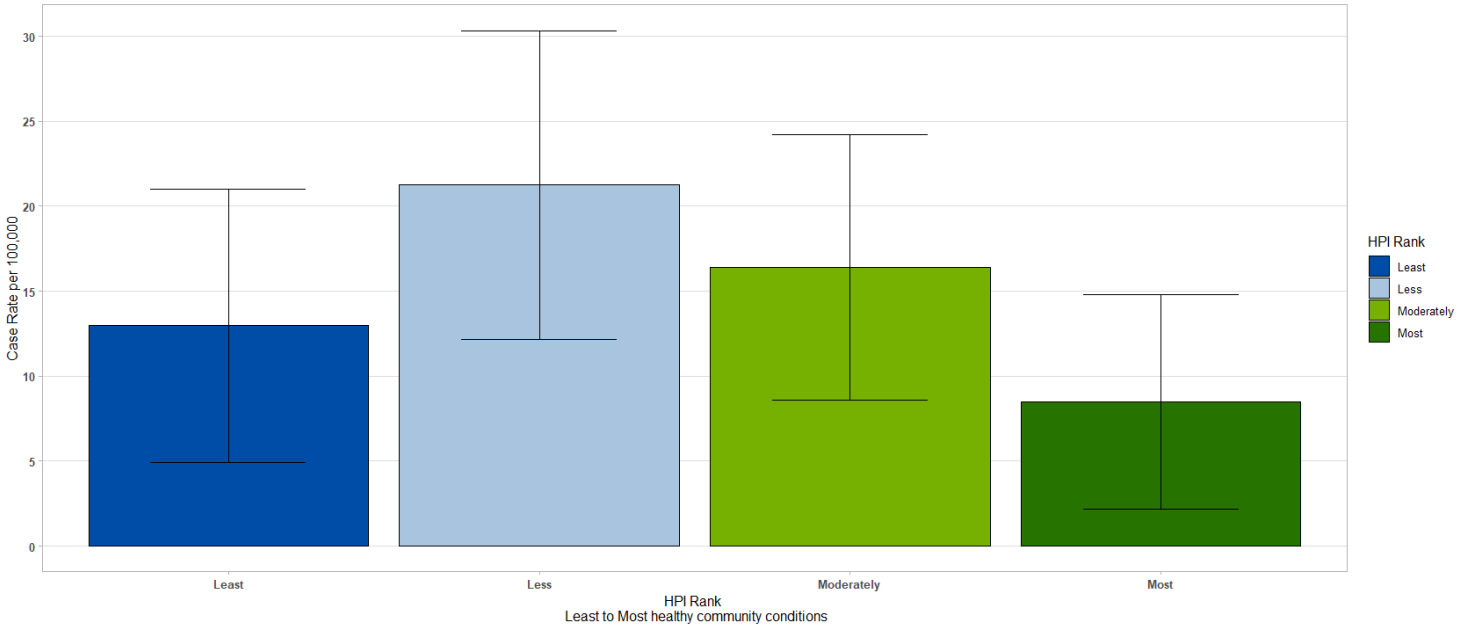
Figure 44 presents the incidence rate of VPDs reported by city per 100,000 population in 2024. Clinton, North Salt Lake, and Woods Cross had the highest VPD rates, while Fruit Heights, Hill AFB, Sunset, South Weber, and Syracuse had the lowest.

Figure 45 shows the rates of VPDs stratified by HPI rank area in 2024. VPD rates decreased in the least healthy area below that of the less and moderately healthy areas. In fact, the rate of VPDs in the least healthy area decreased by 44.9% from 2023 to 2024. This is a departure from patterns observed in previous years where the least healthy area had the highest rates of VPDs.

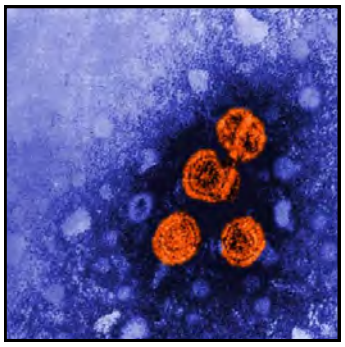
In the less healthy area, there were 21.2 cases of VPDs per 100,000 people, which is 64.7% higher compared to the rest of the county.

Conversely, in the most healthy area there were 8.5 cases of VPDs per 100,000 people, which is 49.5% lower compared to the rest of the county.

Figure 45. Rate of VPDs, by HPI, Davis County, 2024



Hepatitis B

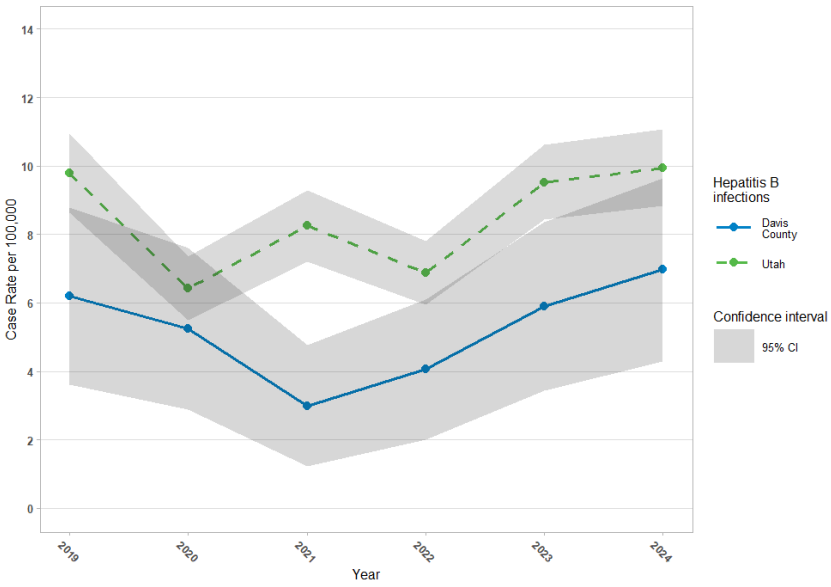


The mission of the Perinatal Hepatitis B Prevention Program is to increase identification and treatment of women, their infants, and household contacts that are positive for the hepatitis B virus.

Hepatitis B is caused by the hepatitis B virus (HBV). It is transmitted through blood or body fluids, and is more infectious than any other blood-borne pathogen (such as hepatitis C or HIV), and is more durable in the environment.[72] Common modes of transmission include percutaneous and permucosal exposure to infectious body fluids, sharing needles or syringes, sexual contact with an infected person, and perinatal exposure from an infected mother. In the US, about 640,000 people are estimated to be living with chronic, long-term hepatitis B.[73]

HBV infection in a pregnant woman poses a serious risk to her infant at birth. Without PEP, as many as 90% of infants born to HBV-infected mothers in the US will become infected with HBV. Subsequently, 90% of those infants develop chronic HBV infection and approximately one-fourth of these infants eventually will die from liver-related complications. A vaccine for hepatitis B is available, and, during the last 30 years, vaccination has prevented more than half a million US children from acquiring the disease. Although the hepatitis B vaccine successfully prevents infection, women who have had the vaccine for hepatitis B should still get screened during every pregnancy.[74]

Figure 46. Rate of Acute and Chronic Hepatitis B Infections, by Year, Davis County and Utah, 2019-2024



During 2024, there were **26** cases of hepatitis B reported in Davis County. All of these cases were chronic infections. Figure 46 presents the incidence rates of hepatitis B infections per 100,000 people in Davis County compared to the rest of Utah from 2019 to 2024. During this timeframe, the data suggest that rates in Davis County are lower than the state.

Perinatal Hepatitis B Prevention Program

The Perinatal Hepatitis B Prevention Program is responsible for evaluating, monitoring, testing, and treating all reported cases of hepatitis B among pregnant women in Davis County. Prior to the baby's birth, arrangements are made with the delivering hospital to administer hepatitis B immune globulin and the first dose of hepatitis B vaccine to the newborn within 12 hours of delivery. This is done to help prevent the newborn from acquiring the virus. The newborn is monitored until all three doses of vaccine have been administered. After vaccination, serology testing is conducted to ensure antibody protection. If the infant is a non-responder to the vaccine, a second series is given. Testing is repeated at completion of the second series.

Women who are prenatally tested and determined to be chronic hepatitis B carriers are interviewed to identify close contacts. Identified contacts (sexual partners, household contacts, and children) are recommended to have testing to determine their infection status. If serology testing is negative, the hepatitis B vaccination series is encouraged. The case management of women in this program can range from eight to 18 months. In 2024, **four** new women were referred to the DCHD Perinatal Hepatitis B Prevention Program.

Pertussis (also known as whooping cough) is a very contagious respiratory illness caused by the bacteria *Bordetella pertussis.*[75] This disease is of particular concern in infants because of higher rates of hospitalization, pneumonia, and death, when compared with older children and adults.[76] *Bordetella pertussis* spreads easily from person to person through the air. When a person who has whooping cough sneezes or coughs, they can release small particles with the bacteria in them. Other people then breathe in the bacteria. It also spreads when people spend a lot of time together or share breathing space, like when holding a newborn on your chest.[75]

Pertussis is a respiratory illness commonly known as "whooping cough" due to the gasping sound a patient makes when they suck in air after a coughing fit.

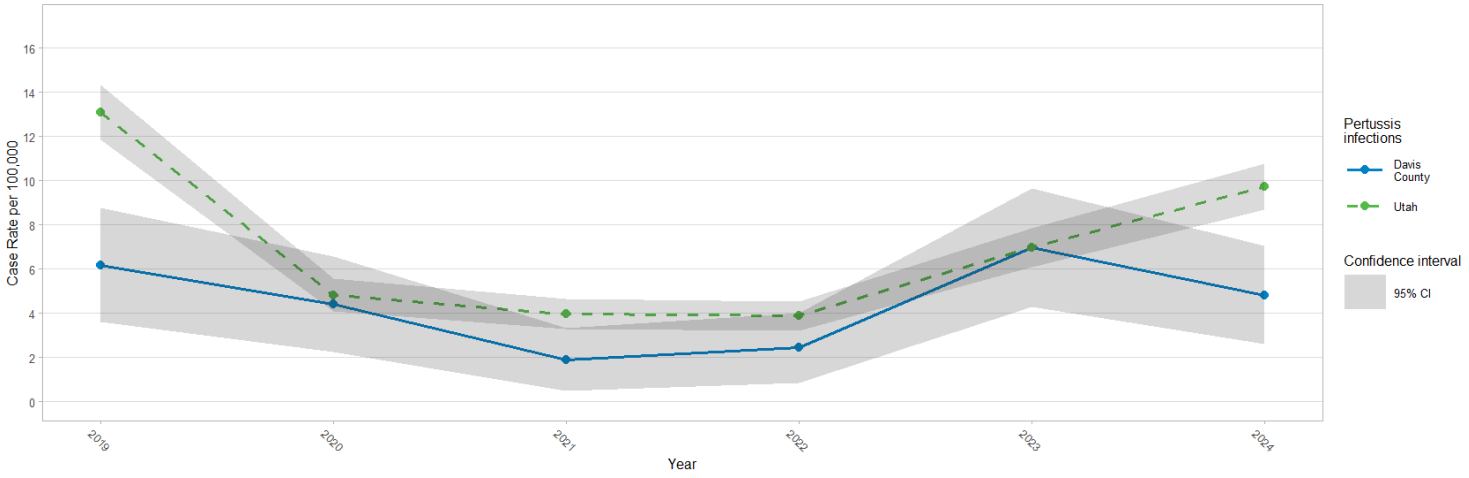
People can spread the bacteria from the start of the very first symptoms and for at least 2 weeks after coughing begins. Some people have mild symptoms and do not know they have whooping cough, but they can still spread the bacteria to others.[75]

Vaccination is a key tool in preventing pertussis infections. Babies need 3 shots of the DTaP vaccine to build up high levels of protection against diphtheria, tetanus, and whooping cough. Then, young children need 2 booster shots to maintain that protection through early childhood. Preteens should get one shot of Tdap between the ages of 11 and 12 years to boost their immunity. Teens who didn't get Tdap as a preteen should get one shot the next time they visit their doctor. All adults who have never received one should get a Tdap shot. This can be given at any time, regardless of when they last got Td. This should be followed by either a Td or Tdap shot every 10 years. Women should get Tdap during the early part of the 3rd trimester of every pregnancy. By doing so, she helps protect her baby from whooping cough in the first few months of life.[77]

The population most often affected by pertussis are those who are under-vaccinated, including infants/children under five years (because they have not yet completed the full vaccination series). Although cases are also common in older children and adults due to waning immunity and vaccine exemptions, illness in these age groups is usually milder and the diagnosis is often delayed or missed.

During 2024, there were **18** cases of pertussis reported in Davis County. Figure 47 presents the incidence rates of pertussis infections per 100,000 people in Davis County compared to the rest of Utah from 2019 to 2024. During this timeframe, rates decreased both within Davis County and in the rest of Utah. Since 2020, rates in Davis County and the rest of the state have become more comparable. However, Davis County rates decreased again in 2024.

Figure 47. Rate of Pertussis Infections, by Year, Davis County and Utah, 2019-2024



Zoonotic & Vector-borne Disease

Zoonotic or vector-borne diseases are passed from animals or insects to humans.

Figure 48. Percent of ZVBDs Reported, by Category, Davis County, 2024

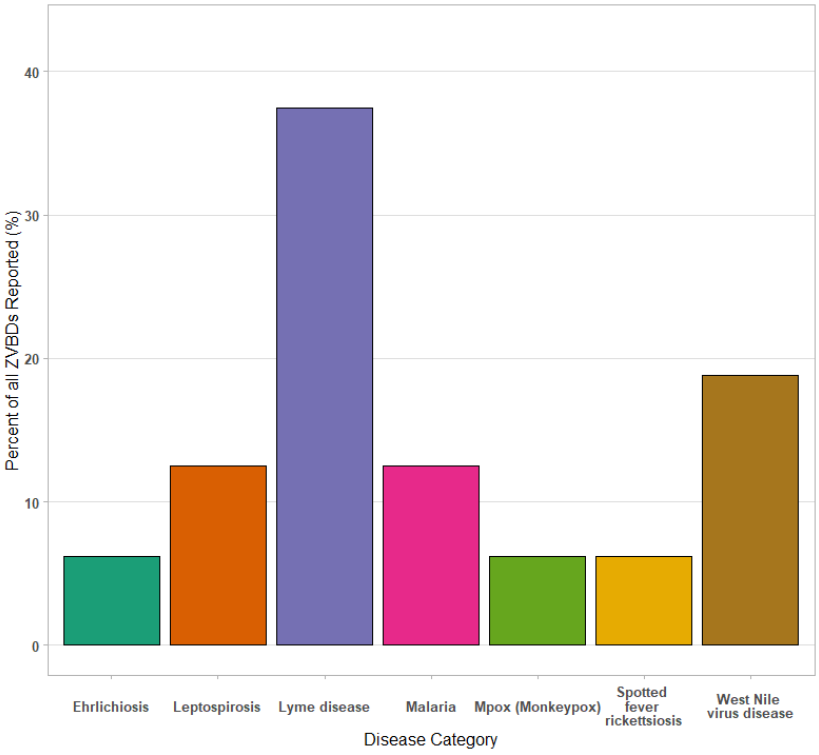
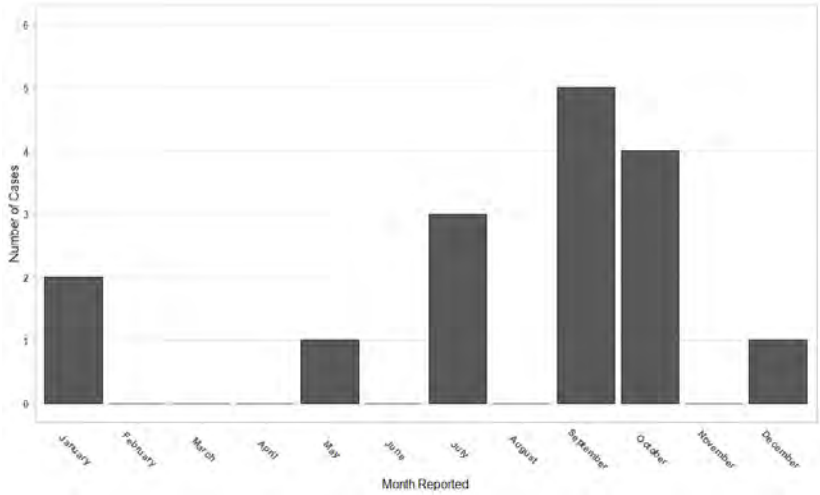


Figure 49. Number of ZVBDs Reported, by Month, Davis County, 2024



Zoonotic and vector-borne diseases (ZVBDs) are diseases that are transmitted by an animal or insect. Zoonotic (sometimes called "zoonoses") refers to diseases that are spread from animals to humans. Vector-borne diseases are spread to humans by insects or arthropods. The most common ways are through bites, or contact with animals and their feces.

While ZVBDs do not occur often in Davis County, there is still a risk of disease from viruses and bacteria spread by vectors. These diseases are typically contracted during out-of-state or international travel.

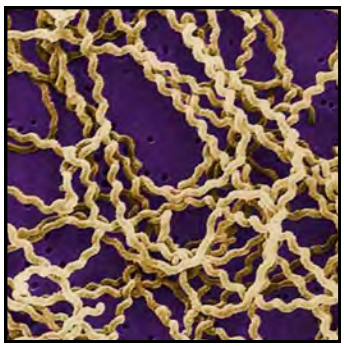
There were **16** cases of ZVBD reported in 2024. Figure 48 presents the percentage of all ZVBD reports attributed to each specific disease. Lyme disease was the most frequently reported with **six** cases (37.5%).

Others include West Nile virus disease with **three** cases (18.8%), leptospirosis and malaria with **two** cases each (12.5%), and ehrlichiosis, mpox, and spotted fever rickettsiosis with **one** case each (6.2%).

Figure 49 shows the number of ZVBD cases by month. The majority of cases occur during the summer and fall months when people are most likely to engage in outdoor activities.

Rates of ZVBDs are not displayed by city nor analyzed by HPI rank area due to low case counts.

Leptospirosis is a disease that can affect people and animals, including your pets and farm animals, as well as wild animals like wild pigs and marine mammals. It is caused by the bacterium *Leptospira* and is spread through the urine of infected animals. It can be found in contaminated water or soil, where it can survive for weeks to months. Just like people, animals can become infected through contact with contaminated urine or other body fluids in water or soil. Signs and symptoms in infected animals can vary widely, and some animals don't show symptoms at all.[78,79]



Leptospira *spp., the causative agent of leptospirosis, are obligate aerobic, gram-negative spirochete bacteria.*

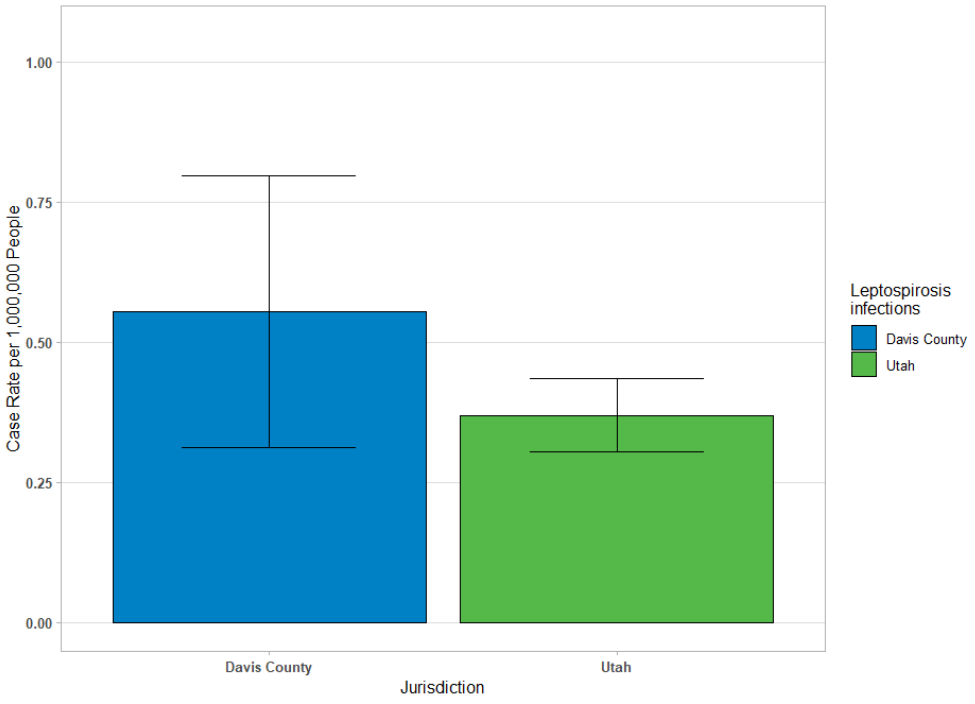
Leptospira are transmitted through abrasions or cuts in the skin, or through the conjunctiva and mucous membranes. Macerated skin resulting from prolonged water exposure is another suspected route of infection. Infection rarely occurs through animal bites or human-to-human contact. Outbreaks can occur after heavy rainfall or flooding in endemic areas, especially in urban areas of low- and middle-income countries, where housing conditions and sanitation are poor and rodent infestation is common.[80]

In people, leptospirosis can cause a wide range of symptoms, including fever, headache, chills, body aches, vomiting, yellowed skin or eyes (jaundice), and diarrhea. Many of these symptoms can be mistaken for other diseases. Some people have no symptoms. It is estimated that up to 90% of human cases are mild or have no symptoms at all.[81] It generally takes 2-30 days to get sick after having contact with the bacteria that cause leptospirosis.[78]

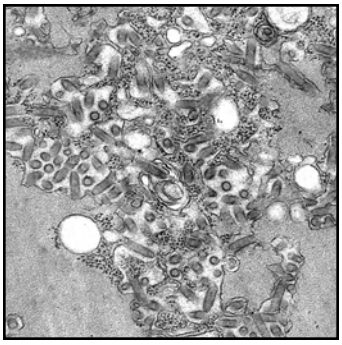
There are many ways to lower your risk of getting leptospirosis: do not swim or wade in water that might be contaminated with animal urine, especially after hurricanes, floods, or heavy rainfall; avoid contact with animals that may be infected; cover cuts or scratches with waterproof bandages; and wear waterproof protective clothing, shoes, or boots near floodwater or other water or soil that may be contaminated with animal urine.[78,79]

During 2024, there were **two** cases of leptospirosis reported in Davis County. This disease is very uncommon in Utah, with approximately one case reported each year during the past 10 years. Figure 50 presents the incidence rate of leptospirosis infections per 1,000,000 people in Davis County compared to the rest of Utah. From 2015 to 2024, less that one case was reported per one million people. Leptospirosis infection rates in Davis County are comparable to the rest of the state. Even though the Davis County rate appears higher, this is most likely just a function of small case counts rather than any higher risk that Davis County residents would face.

Figure 50. Rate of Leptospirosis, Davis County and Utah, 2015-2024 Combined



Rabies



The rabies virus, Lyssavirus rabies*, has a distinctive "bullet" shape. It is mainly transmitted by the bite of a rabid animal.*

Rabies is a fatal but preventable viral disease, which can spread to people and pets through bites and scratches from an infected animal. It is spread when an infected animal, usually wild, bites or scratches other animals or people. The virus is usually carried in saliva or mucus and spreads through broken skin.[82]

Although all mammals are susceptible to rabies virus infection, only a few species are important for maintaining the disease in nature. In the US, raccoons, skunks, foxes, and coyotes are the major reservoirs in ground animals. Bats are the major non-ground animal reservoir. Dogs are still carriers of rabies in many other countries, particularly developing nations. In Utah, bats are the most common reservoir of rabies.[82,83]

Rabies can cause severe disease and death if urgent medical care is not sought after a rabies exposure. The first symptoms of rabies may be like the flu, including weakness or discomfort, fever, or headache. There also may be discomfort, prickling, or an itching sensation at the site of the bite. Usually, severe disease appears within two weeks of the first symptoms, when the rabies virus causes brain dysfunction. Common signs include anxiety, confusion, agitation, and hallucinations. Once clinical signs appear, rabies is nearly always fatal, and treatment is typically supportive.[82]

Rabies Vaccine

The virus is fatal if rabies-related medical care, called postexposure prophylaxis (PEP), is not started before symptoms begin to show. Rabies PEP consists of wound washing, a dose of human rabies immune globulin (HRIG) and rabies vaccine given at the first medical visit. An additional three doses of vaccine are given again on days 3, 7, and 14 after the first dose. PEP is nearly 100% effective if administered promptly and properly. Even though rabies is rare in people in the US, about 60,000 Americans every year receive PEP following an exposure.[82,84]

Over the past century, the number of human deaths attributed to rabies in the US has declined from 100 or more each year to an average of 1 to 3 each year. The decline is due to pet vaccination and animal control programs, begun in the 1940s, that have essentially eliminated the domestic dog as a reservoir of rabies, and to the development of an effective human rabies vaccine and immune globulin. The most recent rabies death in Utah was in 2018. Prior to that, the last rabies death in Utah was in 1944.[85]

Public Health Response

When somebody is bitten by an animal, the first effort is to locate the animal. Rabies PEP is expensive and requires at least four separate medical appointments to receive all the vaccines. The preferred course of action is to rule out exposure to the rabies virus before recommending PEP.

If the person was bitten by a wild animal (e.g. bat, raccoon, skunk), it will be tested for rabies. If it was a domesticated animal with an owner (e.g. dog or cat), Animal Care and Control of Davis County places the animal on quarantine to watch for rabies symptoms. Quarantine is the preferred method for rabies watch, but in some cases, domesticated animals are euthanized for rabies testing. If the animal tests negative for rabies or passes quarantine, PEP is not recommended. However, if the animal tests positive or shows signs of rabies during quarantine, then PEP is recommended. If the animal cannot be located, PEP is recommended out of an abundance of caution.

In addition, a bat bite or scratch may be so small that it goes unnoticed. Persons who awaken to find a bat in their room and others who are unable to provide clear details of whether an exposure occurred, such as young children or

people with disabilities, who are found alone with a bat in a room, may require PEP.[83] When CD/Epi has recommended PEP, 93% of Davis County residents chose to receive it when a wild animal was involved, compared to 36% when a domesticated animal was involved. This reflects the higher risk of rabies exposure from wild animals than domesticated animals.

In 2024, CD/Epi recommended PEP to 110 individuals in Davis County. Figure 51 displays the number of PEP recommendations since 2019, broken down by the animal that was involved. PEP recommendations began increasing in 2023 and continued into 2024. Reasons for this increase could be a combination of improved reporting due to educational efforts; better collaboration with animal control services; increased public awareness; and, improved data collection methods.

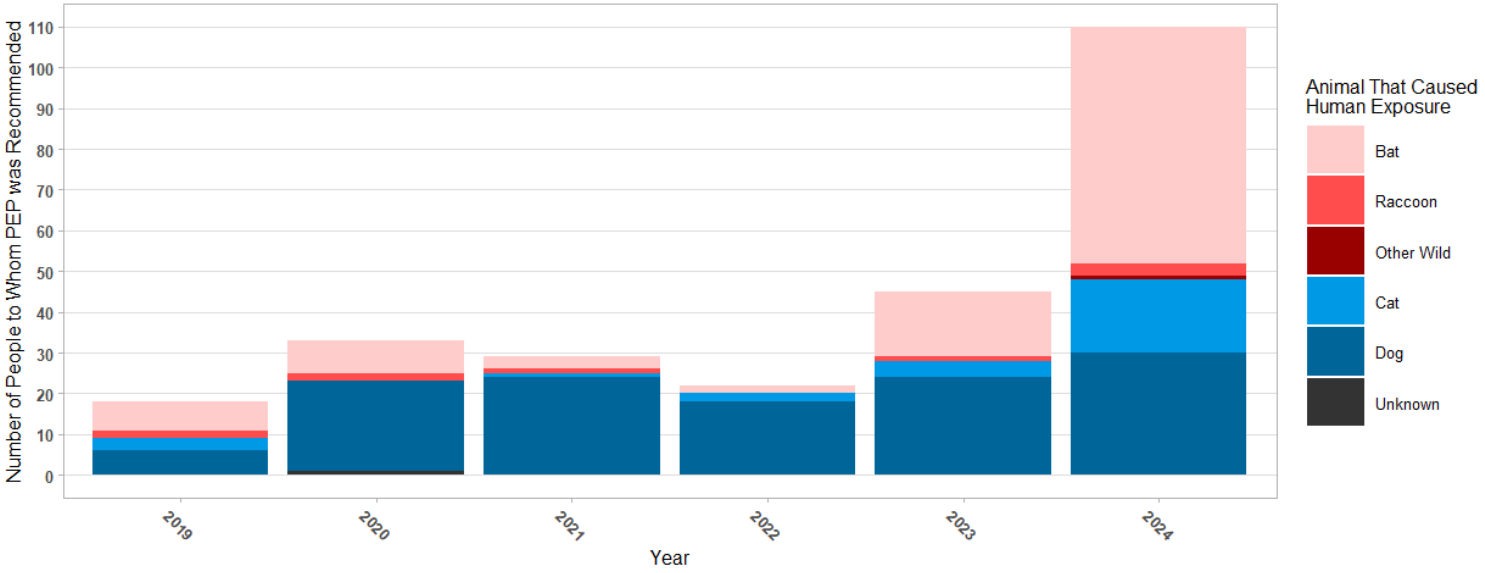
CD/Epi responded to a mass bat exposure event in 2024. A youth group from Davis County attended a camp in southeastern Idaho for multiple days. During their stay, numerous bats were observed inside the cabin where the group slept at night. News articles about the bats in the cabin involving a different group of campers elicited public concern about the risk of rabies exposure. These situations are concerning because it can be difficult to properly assess human exposure; additionally, when multiple bats are involved, rabies testing becomes essentially infeasible.

Due to the uncertainty of the group's exposure to the bats and the unavailability of the bats for testing, CD/Epi recommended rabies PEP for camp attendees. Responding to a mass bat exposure can be a challenge. It involves balancing the high fatality of rabies, the expensive cost of rabies PEP, and contact tracing all individuals involved and assessing their exposure to the bats.[1]

The group had 42 people total exposed, of which CD/Epi was able to make contact with 34 of them. Of those 34 individuals, PEP was recommended to 33 of them based on the nature of their exposure to the bats. Of those 33 individuals, 30 individuals chose to receive PEP. Of the 30 who received PEP, 21 completed it through DCHD clinic services. All individuals who started PEP completed the regimen.

From 2019 to 2023, there was an average of 13 bat exposures reported to CD/Epi each year. In 2024, this increased to 61. Even if the reports from the aforementioned mass bat exposure are not included, CD/Epi still received almost three times as many bat exposure reports in 2024 compared to the previous five years.

Figure 51. Number of People to Whom Rabies PEP was Recommended, by Animal Exposure Type, Davis County, 2019-2024



Tickborne Diseases

This is an Ixodes pacificus*—known vector for the zoonotic spirochetal bacteria,* Borrelia burgdorferi*, which is the pathogen responsible for causing Lyme disease.*

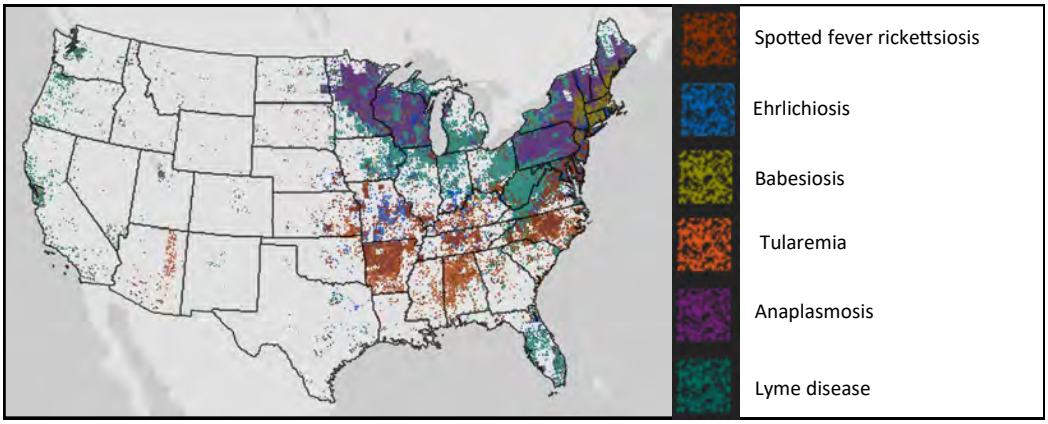
Ticks are related to spiders, but they do not spin webs or eat insects. Instead, they feed on the blood of a host, like mammals, birds, reptiles, and amphibians. After tick eggs hatch, the ticks must have a blood meal at every stage of life to survive. Most prefer to have a different host animal at each stage of their life.[86,87]

Ticks live in places where there is a lot of tall grass, shrubs, and leaves, where they wait for a host to pass by. When a tick successfully attaches to a host, it will suck the blood slowly for several days. If the host animal has an infection, the tick will ingest the pathogens with the blood. After feeding, most ticks will drop off and prepare for the next life stage. At its next feeding, the tick can then transmit an acquired disease to the new host. These feeding practices make ticks an important vector for disease transmission.[86]

Not all tick species bite people. Of those that do, different species will transmit different pathogens.[88] Figure 52 displays a dot density map of selected tickborne diseases in the contiguous US.[89] This map shows regional differences in which tickborne diseases are transmitted to humans.

In 2024, Davis County saw **six** cases of Lyme disease, **one** case of spotted fever rickettsiosis, and **one** case of ehrlichiosis. These three diseases share a few similar symptoms, such as fever, headache, myalgia, and rashes. All are also rarely life threatening. However, there are some key differences.

Figure 52. Reported Cases of Selected Tickborne Diseases, by County of Residence*, United States, 2019-2022



* Cases are reported from the patient's county of residence, not necessarily the place where they were infected by or exposed to ticks.

Lyme Disease

Lyme disease is the most common vector-borne disease in the US. It is caused by the bacterium *Borrelia burgdorferi.* Its characteristic symptom is the bullseye-shaped skin rash called erythema migrans. If left untreated, the infection can spread to joints, the heart, and the nervous system.[90,91]

Spotted Fever Rickettsiosis

Spotted fever rickettsioses (spotted fevers) are a group of diseases caused by closely related bacteria, spotted fever group *Rickettsia*. These bacteria are spread to people through the bite of infected mites and ticks. Symptoms can include a dark scab at the site of the tick or mite bite, fever, headache, rash, and muscle aches.[92] The most serious spotted fever in the US is Rocky Mountain Spotted Fever, which can be rapidly fatal if not treated within the first five days of symptoms.[92]

Ehrlichiosis

Ehrlichiosis is the general name used to describe a group of diseases. Tick bites from the lone star tick and the blacklegged tick species spread the disease. People with ehrlichiosis will often have fever, chills, headache, muscle aches, and sometimes upset stomach.[93]

A close-up view of an Aedes aegypti *mosquito. This species is one of the known vectors for West Nile virus.*

West Nile virus (WNV) is the leading cause of mosquito-borne disease in the continental US. It is most commonly spread to people by the bite of an infected mosquito. Mosquitoes become infected when they feed on infected birds. Infected mosquitoes then spread WNV to people and other animals by biting them. In a very small number of cases, WNV has been spread through exposure in a laboratory setting, blood transfusion and organ transplant, or mother to baby during pregnancy, delivery, or breastfeeding.[94,95]

Most people (about 80%) who get infected with WNV do not develop any symptoms. About 20% of people infected with WNV will develop a fever and other symptoms such as headache, body aches, joint paints, vomiting, diarrhea, and rash. Most people with WNV disease recover completely, but fatigue and weakness can last for weeks or months.[96]

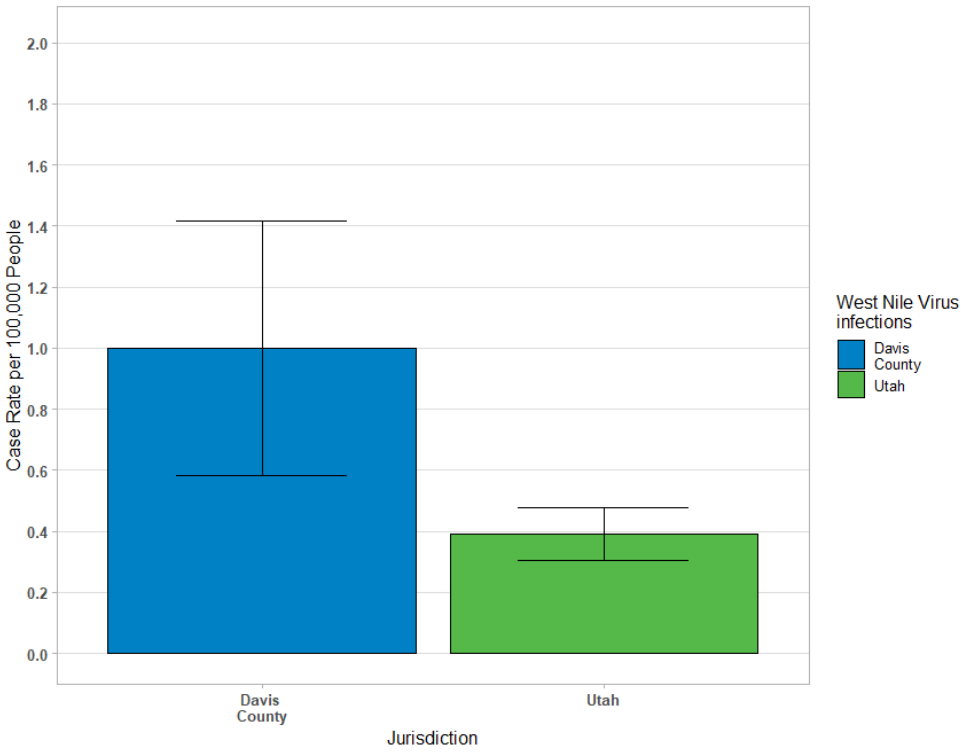
In rare cases, less than 1% of people infected with WNV will develop severe illness that affects the central nervous system. This can result in complications such as encephalitis (inflammation of the brain) or meningitis (inflammation of the membranes that surround the brain and spinal cord). Other symptoms include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness, and paralysis. Recovery from severe illness might take several weeks or months. Some effects to the central nervous system might be permanent. About one out of 10 people who develop severe illness affecting the central nervous system die.[96]

Most people infected with WNV are believed to have lifelong immunity or protection from getting the disease again. Some people who have weakened immune systems from certain conditions or medications might not have a strong immune response to the initial infection or their immunity may wane over time. However, most people are protected from getting WNV again once they have had it.[96]

There are no vaccines or medicines to prevent WNV, and antibiotics do not treat viruses. The best way to prevent WNV is to protect yourself from mosquito bites. Use insect repellent, wear long-sleeved shirts and pants, treat clothing and gear, and take steps to control mosquitoes indoors and outdoors.[97]

During 2024, there were **three** cases of WNV reported in Davis County. Figure 53 presents counts of WNV in Davis County compared to the rest of Utah from 2019 to 2024 combined. During this timeframe, WNV infections were higher in Davis County compared to the rest of the state.

Figure 53. Rate of WNV Infections, Davis County and Utah, 2019-2024 Combined



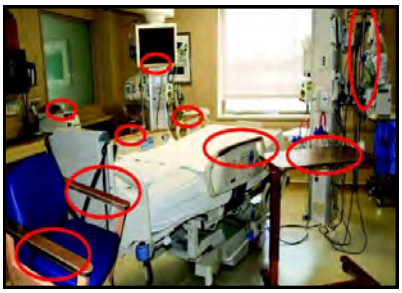
Other Diseases

Diseases that do not fall under a specific category.

Diseases that do not fall under a specific category will be discussed in this section. In 2024, hepatitis C (acute and chronic) infections constituted the majority of this category with **56** cases. Table 9 shows the count of all diseases in this category.

Table 9. Number of Cases of Other Reported Diseases, Davis County, 2024

Disease	Number of Cases
Carbapenem-Resistant Organisms	48
Coccidioidomycosis	13
Hepatitis C, acute & chronic	56
Legionellosis	5
Total	**122**

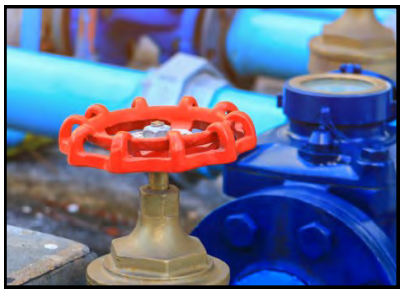


Carbapenem–Resistant Organisms

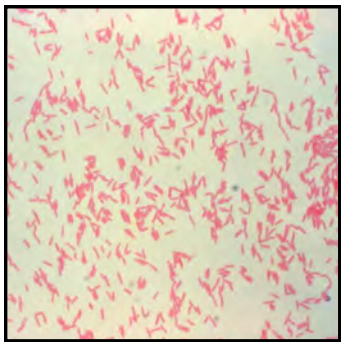
Coccidioidomycosis

Hepatitis C

Legionellosis



The public health problem of antibiotic resistance is not new. Since the creation of antibiotic medicines, bacteria continue to evolve to find ways to kill the antibiotics created to stop their spread. Due to the overuse of antibiotics in humans and animals, the problem is increasing in magnitude and new multidrug-resistant organisms are emerging. Antibiotic resistance occurs when the germs no longer respond to the antibiotics designed to kill them. Bacteria are constantly finding new ways to avoid the effects of the antibiotics used to treat the infections they cause.[98]



Pseudomonas *is a type of bacteria that is found commonly in soil and water. Of the many different types of* Pseudomonas*, the one that most often causes infections in humans is* Pseudomonas aeruginosa*, which can cause infections in the blood, lungs, or other parts of the body.*

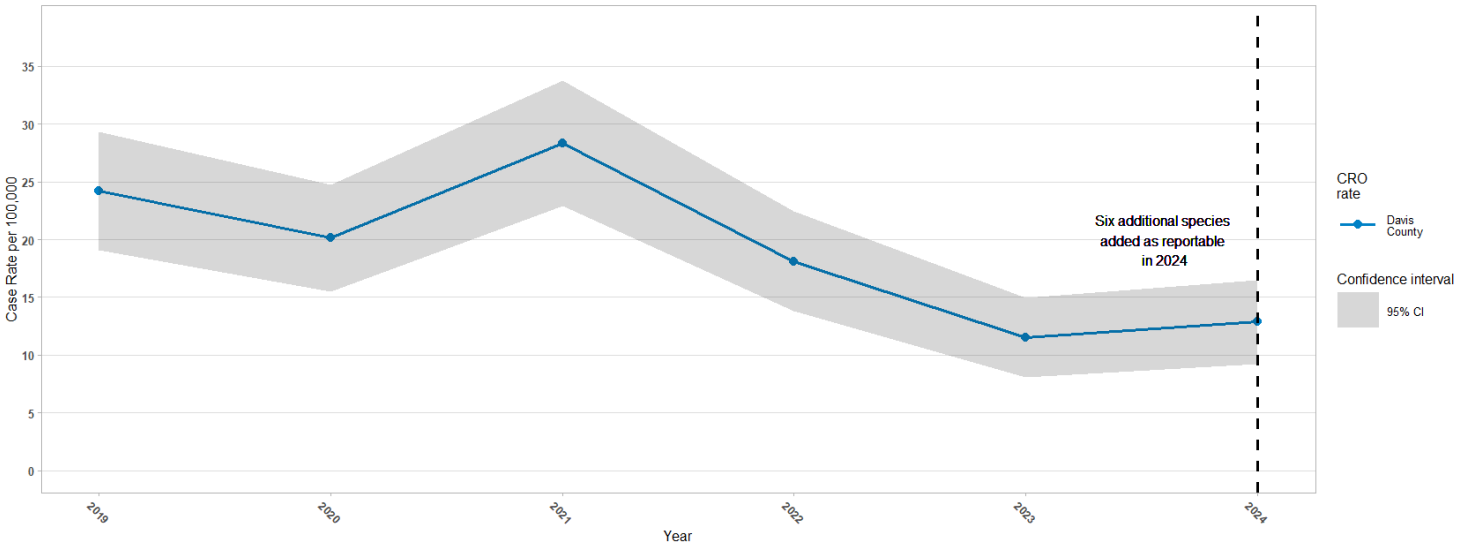
Carbapenem-resistant organisms (CROs) are a major concern for patients in healthcare settings because they are resistant to carbapenem antibiotics, which are considered the last line of defense to treat multidrug-resistant bacterial infections. High levels of antibiotic resistance leave treatment options that are more toxic and less effective.[99]

Utah laboratories and healthcare facilities are required to report the following bacterial species if they are found to have any resistance to carbapenem drugs: *Acinetobacter* species, *Enterobacter* species, *Escherichia coli*, *Klebsiella* species, and *Pseudomonas aeruginosa*. In 2024, an additional six genera in the Enterobacteriaceae family of bacteria are now being regularly reported to public health:

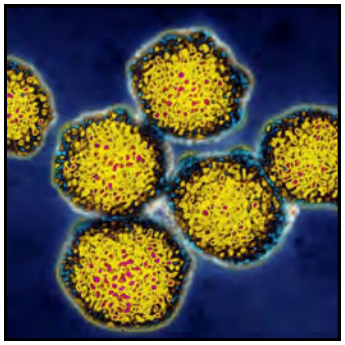
- *Citrobacter* species
- *Hafnia* species
- *Morganella* species
- *Proteus* species
- *Providencia* species
- *Serratia* species

During 2024, there were **48** cases of CROs reported in Davis County. Figure 54 presents the incidence rate of CRO infections per 100,000 people in Davis County from 2019 to 2024. The addition of the aforementioned six Enterobacteriaceae genera likely contributed to any increases of reported cases from 2023 to 2024.

Figure 54. Rate of CRO Infections, by Year, Davis County, 2019-2024



Hepatitis C



Hepatitis C is a bloodborne virus. Today, most people become infected by sharing needles or other equipment to inject drugs.

Hepatitis C is a liver infection caused by the hepatitis C virus (HCV). Hepatitis C is spread through contact with blood from an infected person. Today, most people become infected with the HCV by sharing needles or other equipment used to prepare and inject drugs.[100]

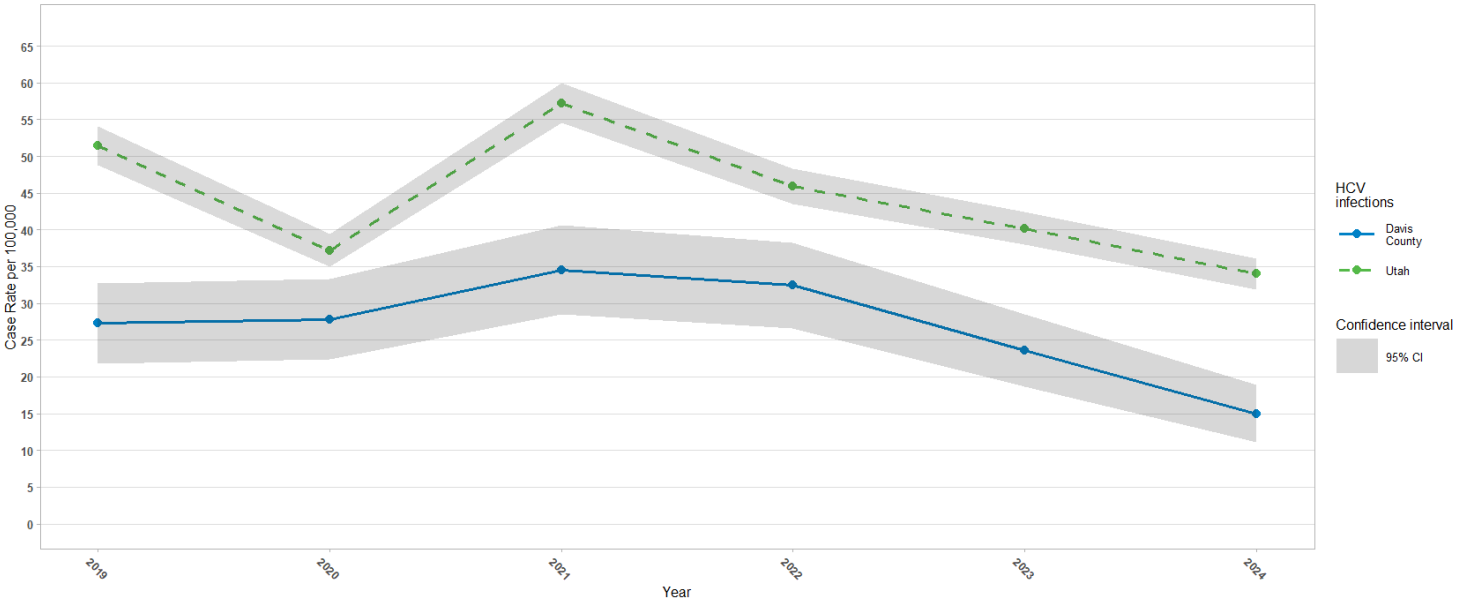
For some people, hepatitis C is a short-term illness, but for more than half of people who become infected with HCV, it becomes a long-term, chronic infection. Chronic hepatitis C can result in serious, even life-threatening health problems like cirrhosis and liver cancer. People with chronic hepatitis C can often have no symptoms and do not feel sick. When symptoms appear, they often are a sign of advanced liver disease.[100]

There is no vaccine for hepatitis C. The best way to prevent hepatitis C is by avoiding behaviors that can spread the disease, especially injecting drugs. Getting tested for hepatitis C is important, because treatments can cure most people with hepatitis C in 8 to 12 weeks.[100] In addition, prior infection with HCV does not protect against later infection with the same or different genotypes of the virus.[101]

Approximately 5%-25% of people with chronic hepatitis C will develop cirrhosis over 10-20 years and people with hepatitis C and cirrhosis have a 1%-4% annual risk for hepatocellular carcinoma.[101]

During 2024, there were **56** cases of HCV reported in Davis County. Of these 56 cases, **45** of them were chronic infections and **11** were determined to be new acute infections. Figure 55 presents the incidence rate of HCV infections (both acute and chronic) per 100,000 people in Davis County compared to the rest of Utah from 2019 to 2024. During this timeframe, rates in Davis County have consistently been lower than the state.

Figure 55. Rate of Hepatitis C Infections (Acute and Chronic), by Year, Davis County and Utah, 2019-2024



Legionella bacteria are found naturally in freshwater environments, like lakes and streams. The bacteria can become a health concern when they grow and spread in human-made building water systems like showerheads and sink faucets, cooling towers, hot tubs, decorative fountains and water features, hot water tanks and heaters, and large, complex plumbing systems.[102]

Legionellosis is a bacterial infection that may cause mild respiratory illness or pneumonia. It is associated with two distinct illnesses: Legionnaires' disease and Pontiac fever.

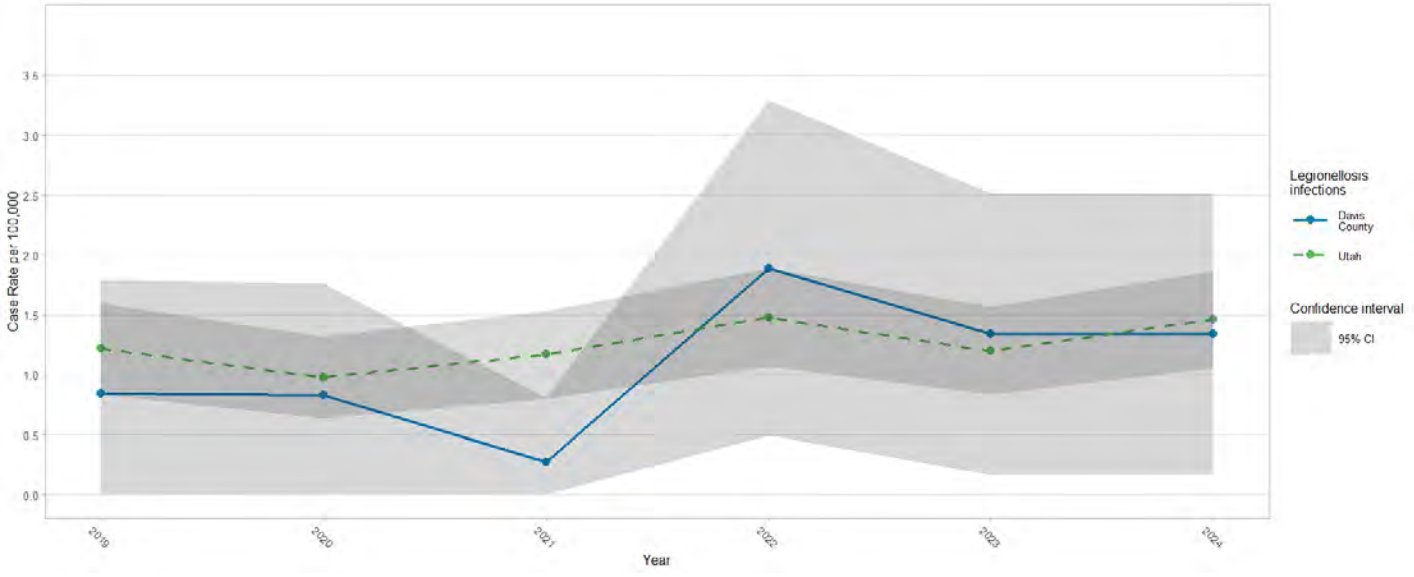
After *Legionella* grows and multiplies in a building water system, water containing *Legionella* can spread in droplets small enough for people to breathe in. The *Legionella* bacteria can cause Legionnaire's disease and Pontiac fever, collectively known as legionellosis. Symptoms include cough, shortness of breath, fever, muscle aches, and headaches.[102, 103]

Less commonly, people can get sick by aspiration of drinking water containing *Legionella*. This happens when water accidently goes into the lungs while drinking. People at increased risk of aspiration include those with swallowing difficulties.[102]

Most healthy people exposed to *Legionella* do not get sick. People at increased risk of getting sick are people 50 years or older, current or former smokers, people with a chronic lung disease (like chronic obstructive pulmonary disease or emphysema), people with weak immune systems or who take drugs that weaken the immune system (like after a transplant operation or chemotherapy), people with cancer, and people with underlying illnesses such as diabetes, kidney failure, or liver failure.[102] About one in 10 people who get sick from Legionnaire's disease will die. In general, people do not spread Legionnaires' disease to other people. However, this may be possible under rare circumstances.[102, 103]

In 2024, Davis County had **five** cases of legionellosis. Figure 56 presents the incidence rate of legionellosis infections per 100,000 people in Davis County compared to the rest of Utah from 2019 to 2024. During this timeframe, these data suggest that Davis County rates are comparable to the rest of the state.

Figure 56. Rate of Legionellosis Infections, by Year, Davis County and Utah, 2019-2024



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Appendices

Appendix 1 — Davis County Demographics (2023)

Table 10. Davis County and Utah Population, Count and Percent, by Age Group, 2023

Age Group	Davis County Population	Utah Population
Under 5	24,253 6.5%	229,881 6.7%
5-14	64,259 17.2%	529,276 15.5%
15-24	57,125 15.3%	573,558 16.8%
25-44	107,346 28.8%	974,784 28.5%
45-64	77,599 20.8%	694,486 20.3%
65-84	38,953 10.4%	374,145 10.9%
85+	3,672 1.0%	41,604 1.2%
Total	**373,207 100%**	**3,417,734 100%**

Table 11. Davis County and Utah Population, Count and Percent, by Race, 2023

Race	Davis County Population	Utah Population
White alone	309,493 82.9%	2,685,747 78.6%
Black or African-American alone	4,670 1.3%	38,380 1.1%
American Indian or Alaskan Native alone	1,865 0.5%	36,787 1.1%
Asian alone	9,340 2.5%	84,729 2.5%
Native Hawaiian or Pacific Islander alone	3,611 1.0%	33,925 1.0%
Some other race alone	6,984 1.9%	212,123 6.2%
Two or more races	37,244 10.0%	326,043 9.5%
Total	**373,207 100%**	**3,417,734 100%**

Table 12. Davis County and Utah Population, Count and Percent, by Gender, 2023

Sex	Davis County Population	Utah Population
Male	189,209 50.7%	1,731,747 50.7%
Female	183,998 49.3%	1,685,987 49.3%
Total	**373,207 100%**	**3,417,734 100%**

Table 13. Davis County and Utah Population, County and Percent, by Ethnicity, 2023

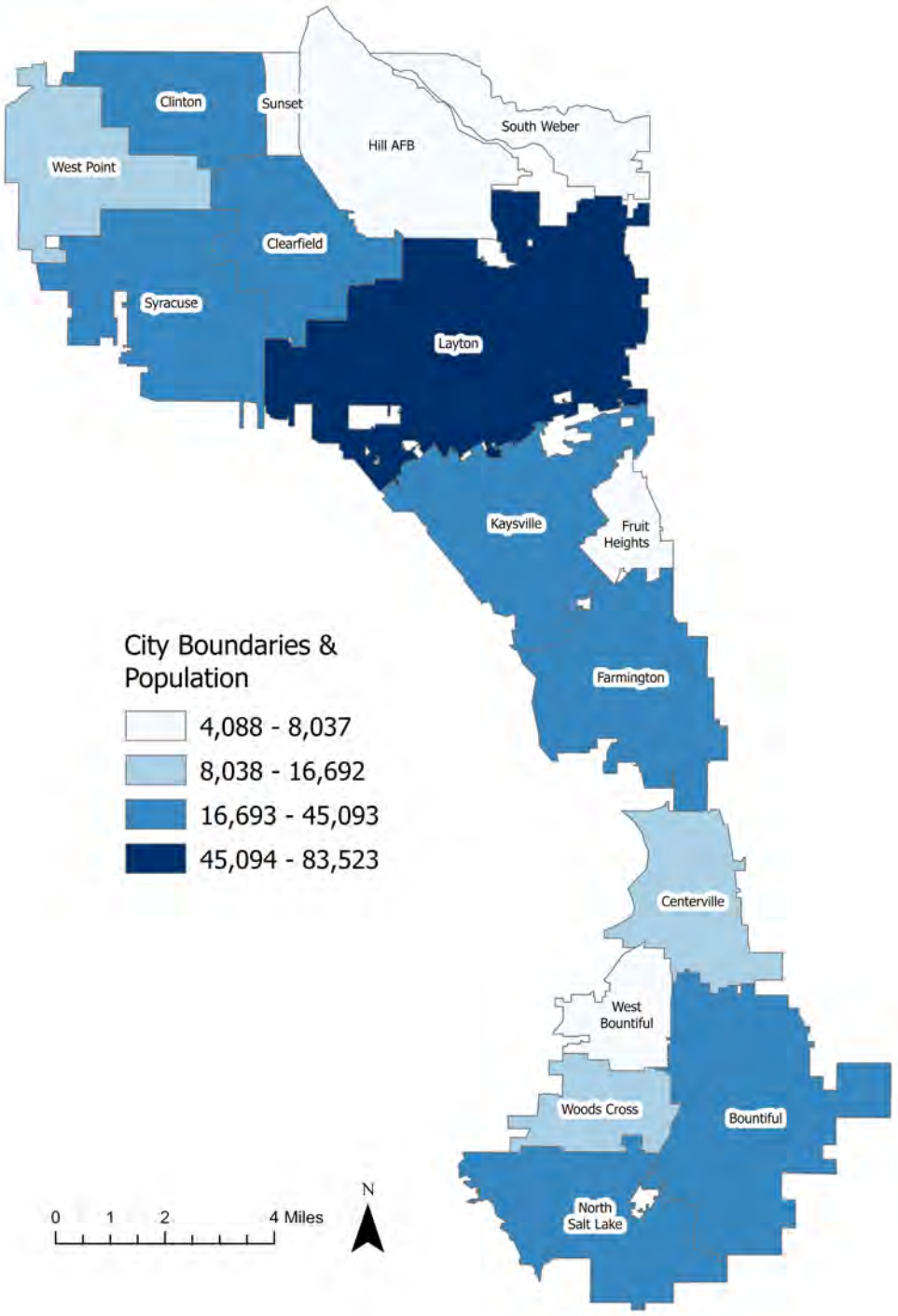
Ethnicity	Davis County Population	Utah Population
Hispanic or Latino (of any race)	44,721 12.0%	546,948 16.0%
Not Hispanic or Latino	328,486 88.0%	2,870,786 84.0%
Total	**373,207 100%**	**3,417,734 100%**

Source: US Census Bureau. 2023 American Community Survey. https://data.census.gov/. Accessed on February 21, 2025.

Table 14. Davis County Population, by City, 2023

City	Population
Bountiful	45,093
Centerville	16,692
Clearfield	32,895
Clinton	23,492
Farmington	24,934
Fruit Heights	6,036
Hill Air Force Base	4,088
Kaysville	32,861
Layton	83,523
North Salt Lake	23,239
South Weber	8,037
Sunset	5,567
Syracuse	34,009
West Bountiful	5,920
West Point	11,559
Woods Cross	11,490

Figure 57. Davis County City Boundaries & Population, 2023



Source: US Census Bureau. 2023 American Community Survey. https://data.census.gov/. Accessed on February 21, 2025.

Appendix 2 — Utah Reportable Diseases

UTAH REPORTABLE DISEASES

Davis County Health Department Disease Reporting Line
Phone: (801) 525-5220
Fax: (801) 525-5210

DISEASE REPORTING RULE

Utah law requires prompt disease reporting under the Communicable Disease Rule R386-702, adopted under the authority of Sections 26-1-30, 26-6-3, and 26-23b to interrupt disease transmission, locate and provide prophylaxis or treatment to exposed contacts, identify and contain outbreaks, ensure effective treatment and follow-up of cases, and alert the medical community. All reports required by rule are confidential and are not open to public inspection. Nothing in this rule, however, precludes the discussion of case information with the attending physician or public health workers. A release of information is not required to provide public health workers with patient information.

Diseases that require **immediate** reporting should be telephoned to the Disease Reporting Line at **(801) 525-5220**. The disease reporting line is available 24/7.

Non-urgent disease reports may be telephoned to the disease reporting line or faxed to **(801) 525-5210.**

For questions about disease reporting, please contact dchdepi@co.davis.ut.us or call (801) 525-5200.

Davis COUNTY HEALTH DEPARTMENT

Davis County Health Department
Communicable Disease & Epidemiology Division

22 South State Street
Clearfield, UT 84015

Disease Reporting Line
Phone: (801) 525-5220
Fax: (801) 525-5210

Revised July 2023

*Laboratories shall submit clinical material to the Utah Public Health Laboratory for all cases identified with these organisms, or any organism implicated in an outbreak when instructed by authorized local or state health department staff.

†Full panel susceptibility results, including minimum inhibitory concentration and results suppressed to the ordering clinician, are reportable when performed on the following organisms.

REPORT IMMEDIATELY

- **Anthrax*** (*Bacillus anthracis*)
- **Botulism*** (*Clostridium botulinum*)
- **Cholera** (*Vibrio cholerae*)
- **Coronavirus**, novel – including MERS and SARS
- **Diphtheria*** (*Corynebacterium diphtheriae*)
- ***Haemophilus influenzae*,*** invasive disease
- **Hepatitis A**
- **Influenza infection, non-seasonal strain***
- **Measles*** (Rubeola virus)
- **Meningococcal disease*** (*Neisseria meningitidis*)
- **Plague*** (*Yersinia pestis*)
- **Poliomyelitis,** paralytic and non-paralytic
- **Rabies,** human and animal
- **Rubella,** excluding congenital syndrome
- **Smallpox** (Variola virus)
- ***Staphylococcus aureus*†,** with resistance to vancomycin (VRSA) isolated from any site
- **Transmissible spongiform encephalopathies (prion diseases), including Creutzfeldt-Jakob disease**
- **Tuberculosis*†** (*Mycobacterium tuberculosis*)
- **Tularemia*** (*Francisella tularensis*)
- **Typhoid*†** (*Salmonella typhi*), cases and carriers
- **Viral hemorrhagic fevers,** including Ebola, Lassa, and Marburg virus-related illnesses
- **Yellow Fever**
- **Any unusual diseases or outbreaks of any kind and any exposure/infection that may indicate a bioterrorism event**

REPORT WITHIN THREE (3) DAYS

- **Acute flaccid myelitis (AFM)**
- **Adverse event resulting from smallpox vaccination** (Vaccinia virus)
- **Anaplasmosis** (*Anaplasma phagocytophilum*)
- **Arbovirus infection,** including Chikungunya, West Nile virus*, and Zika virus*
- **Babesiosis** (*Babesia*)
- **Botulism, infant*** (*Clostridium botulinum*)
- **Brucellosis*** (*Brucella*)
- **Campylobacteriosis*** (*Campylobacter*)
- ***Candida auris* or *haemulonil*** from any body site*†
- **Carbapenem-resistant or carbapenemase-producing *Acinetobacter* species, *Enterobacter* species, *Escherichia coli*, *Klebsiella* species, any other Enterbacteriaceae species, or *Pseudomonas aeruginosa**†**
- **Chagas disease**
- **Chancroid** (*Haemophilus ducreyi*)
- **Chickenpox** (Varicella-zoster virus)
- ***Chlamydia trachomatis* infection**
- **Coccidioidomycosis** (*Coccidioides*)
- **Colorado tick fever**
- **COVID-19 (SARS-CoV-2) detected by NAAT***
- **Cryptosporidiosis** (*Cryptosporidium*)
- **Cyclosporiasis** (*Cyclospora*)
- **Dengue fever**
- **Ehrlichiosis** (*Ehrlichia*)
- **Encephalitis,** bacterial, fungal, parasitic, protozoan, and viral
- **Giardiasis** (*Giardia lamblia*)
- **Gonorrhea** (*Neisseria gonorrhoeae*), sexually transmitted & ophthalmia neonatorum†
- **Hantavirus infection** (Sin Nombre virus)
- **Hemolytic Uremic Syndrome,** post-diarrheal
- **Hepatitis, viral,** including hepatitis B (acute, chronic, and perinatal), C (acute, chronic, perinatal), D, and E
- **Human immunodeficiency virus (HIV) infection,** including perinatal and AIDS
- **Influenza-associated hospitalization***
- **Influenza-associated death in a person less than 18 years of age**
- **Legionellosis*** (*Legionella*)
- **Leprosy** (*Mycobacterium leprae*), Hansen's Disease
- **Leptospirosis** (*Leptospira*)
- **Listeriosis*** (*Listeria*)
- **Lyme disease** (*Borrelia burgdorferi* and *mayonii*)
- **Malaria** (*Plasmodium*)
- **Meningitis,** bacterial, fungal, parasitic, protozoan, and viral
- **Mumps**
- **Mycobacterial infections other than tuberculosis**
- **Pertussis** (*Bordetella pertussis*)
- **Pregnancy associated with a Hepatitis B, Hepatitis C, HIV, *Listeria*, Rubella, Syphilis, or Zika virus infection**
- **Psittacosis** (*Chlamydophila psittaci*)
- **Q Fever** (*Coxiella burnetii*)
- **Relapsing fever** (*Borrelia*), tick-borne and louse-borne
- **Rubella,** congenital syndrome
- **Salmonellosis*†** (*Salmonella*)
- **Shiga toxin-producing *Escherichia coli* (STEC) infection***
- **Shigellosis*†** (*Shigella*)
- **Spotted fever rickettsioses, including Rocky Mountain spotted fever** (*Rickettsia*)
- **Streptococcal disease, invasive,** due to *Streptococcus pneumoniae*†, and Groups A and B
- **Syphilis,** all stages, congenital and syphilitic stillbirths
- **Tetanus** (*Clostridium tetani*)
- **Toxic-Shock Syndrome,** staphylococcal or streptococcal
- **Trichinellosis** (*Trichinella*)
- **Vibriosis*** (*Vibrio*)

ELECTRONIC LABORATORY REPORTING (ELR)

Entities reporting via ELR have additional reporting requirements not listed on this document. Those requirements can be found under the "Information for Reporters" tab at https://epi.health.utah.gov/disease-reporting/ or by contacting the Utah Department of Health and Human Services at edx@utah.gov.

Appendix 3 — Acronyms

ATBD	Active tuberculosis disease
CD/Epi	Communicable Disease and Epidemiology Division
CDC	Centers for Disease Control and Prevention
CJCC	Clearfield Job Corps Center
CRO	Carbapenem-resistant organism
DCHD	Davis County Health Department
DHHS	Utah Department of Health and Human Services
DIS	Disease intervention specialist
DOT	Directly observed therapy
EHR	Electronic health record
E.coli	*Escherichia coli*
ED	Emergency department
EMS	Emergency medical services
GBS	Guillain-Barré Syndrome
HBV	Hepatitis B virus
HCV	Hepatitis C virus
Hill AFB	Hill Air Force Base
HIV	Human immunodeficiency virus
HPI	Utah Healthy Places Index
HUS	Hemolytic uremic syndrome
ICAR	Infection Control Assessment and Response
ILI	Influenza-like illness
LTBI	Latent tuberculosis infection
MSM	Men who have sex with men
OSHA	US Occupational Safety and Health Administration
PEP	Post-exposure prophylaxis
PrEP	Pre-exposure prophylaxis
RIR	Respiratory Illness Report
RSV	Respiratory syncytial virus
SDOH	Social determinants of health
SHARP	Sexual Health and Adolescent Risk Prevention
STEC	Shiga-toxin producing *E. coli*
STI	Sexually transmitted infection
STSS	Streptococcal toxic shock syndrome
TB	Tuberculosis
TOP	Teen Outreach Program
UPHL	Utah Public Health Laboratory
US	United States
VPD	Vaccine-preventable disease
WGS	Whole genome sequencing
WNV	West Nile Virus
ZVBD	Zoonotic and vector-borne disease