Davis County Health Department

Communicable Disease & Epidemiology Division

Communicable Diseases Davis County 2010

Communicable Diseases
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Executive Summary

This annual Communicable Disease Surveillance & Control report summarizes all communicable diseases that were reported in Davis County in 2010. It provides a baseline picture of the disease burden in Davis County. It describes trends and highlights those diseases that had the greatest impact on the health and well being of our community.

The most notable disease in 2010 was the increase of invasive streptococcal infections. Davis County typically receives reports of invasive strep throughout the year. However, during the Spring of 2010, 12 cases of invasive strep were reported. Five of the 12 cases resulted in death and those cases occurred in a younger than expected population. These investigations also revealed illness manifestations that were more severe in nature than observed in past years. Davis County Health Department thoroughly investigated this odd occurrence and no significant commonalities were identified. The medical community was provided information and updates to help facilitate early detection and rapid notification. Surveillance efforts were enhanced to identify additional cases in the community. The reporting of invasive streptococcal infection returned to normal and no other clustering was noted. Recent studies have implicated groups G & C as emerging human pathogens.

Other communicable disease areas of concern/interest for 2010 are summarized below:

- In 2010, efforts were continued to vaccinate the population of Davis County against the circulating H1N1 novel influenza virus. Clinics were set up in elementary schools, as well as other community venues, to reach at-risk populations and the surrounding community. As a result of the state-wide efforts to control the spread of H1N1, the case counts dropped in late December 2009 and the last detected case for the 2009-2010 season was in April 2010. The seasonal influenza vaccine for 2010-2011 now contains the H1N1 strain, as well as the circulating seasonal strains for type A and type B.
- Sexually Transmitted Diseases (STD) continue to be the largest disease burden in Davis County, with chlamydia accounting for 92 % (702) of STD cases reported in 2010. This disease burden follows the national trend. Gonorrhea slightly increased from 35 cases in 2009 to 38 in 2010. However, most chlamydia & gonorrhea cases go undiagnosed, making it extremely difficult to describe the true burden in our community. The most affected age groups were the 20-29 year olds, followed by the 15-19 year old age group. Syphilis, another reportable STD, increased from five cases in 2009 to 19 in 2010. This elevation was largely due to a cluster of infections in an at-risk population, which resulted in the diagnosis of two new primary cases and one early latent case.
- Latent Tuberculosis Infection (LTBI) is the second most reported disease for 2010 and continues to occupy a large percentage of the disease burden in Davis County. The majority of cases are foreign-born or returning LDS missionaries. Davis County Health Department partners with Midtown Community Health

Center – Davis to provide all new LTBI clients a physical exam prior to the start of treatment. Davis County is one of the only health departments to offer this service, which helps ensure that LTBI clients have a baseline evaluation to compare to throughout treatment.

- Nine cases of HIV/AIDS were reported in 2010 in Davis County. The most identifiable risk factor reported during the investigation was men having sex with men (MSM). The majority of the cases were identified through visits to private medical physicians, rather than anonymous testing sites.
- The investigation of several campylobacter cases in Utah were linked to the ingestion of raw milk. Utah legislation voted to allow the distribution of un-pasteurized milk "under certain conditions" (R70-330). Since this rule was enacted (December 2007), Davis County has seen several cases of campylobacter where the use of raw milk was implicated. A cluster of campylobacter in 2010 was traced back to a dairy farm in Weber County. The Department of Agriculture and Foods performed testing, and as a result, the facility was ordered to forgo any further sale of raw milk until required standards were met. The facility was able to begin the resale of un-pasteurized milk and the clustering of cases resolved. New cases have recently been reported that once again are associated with the consumption of raw milk.
- Davis County experienced more pertussis cases than expected in 2010. 28 cases of pertussis were reported, as compared to the 18 reported in 2009. The majority of cases occurred in school-aged adolescents (ages 10-18), which is likely due to the waning effect of the DTaP vaccine given between the ages of 4-5. Investigations often reveal adult contacts that are symptomatic prior to the onset of illness in the diagnosed adolescent. Therefore, Tdap vaccination in the adult population continues to be of great importance.
- Hepatitis A was diagnosed in an employee at an assisted living facility in 2010. As a result, all identified exposed residents were given prophylaxis and employees were vaccinated against Hepatitis A. Enhanced surveillance was implemented and no additional cases were noted.
- Gastrointestinal infections continued to be reported in 2010, with the most notable being an outbreak of *E.coli* in a home daycare and norovirus associated with a restaurant. In both circumstances, control measures were rapidly implemented and the spread of disease was contained. Davis County also had gastrointestinal infections linked to some of the national enteric disease outbreaks.
- A new emerging disease of some significance was the drug-resistant bacteria Acinetobacter *baumannii*. Multidrug-resistant A. *baumannii* is a common problem in many hospitals in the US. Utah has implemented enhanced surveillance of this nosocomial infection to better understand multi-drug resistant bacteria. Although this infection is not a reportable condition, Davis County investigated 12 lab-confirmed cases in 2010. Most of the cases had resided in a medical facility and/or hospital.

Introduction

The Davis County Health Department Communicable Disease and Epidemiology Division works in partnership with the medical community and neighboring health districts to control and prevent the occurrence and spread of communicable diseases through disease surveillance, disease investigation, coordination of prevention and treatment, education, training, and policy development. The program aims to:

- Interrupt and/or contain the spread of communicable diseases within the community
- Conduct surveillance for 75+ communicable diseases and disease syndromes
- Provide education to infected/exposed citizens
- Facilitate appropriate treatment and preventive therapy
- Enforce measures that will protect the community (i.e. isolation)
- Develop policies to address priority health issues

The Communicable Disease and Epidemiology Division is organized into four main program areas: STD/HIV, Tuberculosis Control, Infectious Disease, and Disease Surveillance. A program area description follows:

STD/HIV program:

Sexually Transmitted Diseases (STDs) affect men and women of all ages, backgrounds, and economic status. Even though the United States has made progress in decreasing the number of cases through better testing procedures, sexual partner testing/treatment, and risk-reduction education, there are still an estimated 19 million new cases of STDs reported each year. HIV/AIDS, chlamydia, gonorrhea, pelvic inflammatory disease (PID), syphilis, and chancroid are the STDs reportable by law in the state of Utah. Hospitals, laboratories, physicians, and clinics are mandated to report these diseases to the local health department.

The STD/HIV program strives to ensure that all reported infected individuals have an interview with a skilled communicable disease nurse to:

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

Tuberculosis Control program:

The Davis County Tuberculosis (TB) Control program is dedicated to the prevention, control, and elimination of TB disease and the identification and treatment of latent TB infection.

The successful control of tuberculosis in Davis County is largely due to the following program activities:

- Early identification, isolation, and appropriate treatment of individuals suspected of or diagnosed with tuberculosis disease
- Effective contact investigation activities to identify individuals exposed to TB and the completion of medication therapy for those diagnosed with latent TB infection
- Targeted skin testing for those who are at a higher risk for developing TB disease following an exposure (i.e. homeless, foreign-born, residents of correctional institutions, substance abusers)

Infectious Disease program:

Communicable diseases reportable in the state of Utah, with the exception of STDs and tuberculosis, fall under this program. Once reported, the Infectious Disease program implements the following activities:

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

The infectious disease program has been further divided into the following categories:

- **Enteric Diseases** (Food and/or Waterborne)
    - Bacterial, viral, and parasitic diseases involving the gastrointestinal tract

- **Vaccine-Preventable Diseases**
    - Diseases that are preventable with vaccines

- **Vector/Zoonotic Diseases**
    - Diseases transmitted by insects, animals, or birds

- **Other reportable diseases/conditions**
    - Diseases that do not fall under the above categories

Disease 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
- Incorporating a variety of data sources including:
    - Notifiable disease reports
    - School absenteeism
    - Sentinel physician reports
    - Syndromic data
- Monitoring the occurrence and distribution of infectious disease activity
- Disseminating surveillance data to the public and medical professionals

Communicable diseases are reported to the local health departments for investigation in accordance with the Utah State Health Code (R38-702). Prompt reporting of suspect and confirmed cases helps ensure necessary control and prevention actions.

Entities required to report confirmed or suspected diseases are physicians, hospitals, healthcare facilities, laboratories, schools, and daycares. All case reports should include:

- Disease
- Patient's name
- Address
- Telephone number
- Date of birth
- Pertinent clinical information.

All reports required by rule are confidential and are not open to public inspection.

The following pages summarize the reportable diseases in Utah:

REPORTABLE DISEASES

UTAH LAW REQUIRES THAT THE FOLLOWING CONFRIMED AND SUSPECTED DISEASES BE REPORTED TO YOUR LOCAL HEALTH DEPARTMENT OR THE UTAH DEPARTMENT OF HEALTH IMMEDIATELY BY TELEPHONE

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

- **Anthrax**
- **Botulism**
- **Cholera**
- **Diphtheria**
- ***Haemophilus influenzae* (invasive)**
- **Hepatitis A**
- **Measles (Rubeola)**
- **Meningococcal disease**
- **Plague**
- **Poliomyelitis (paralytic)**
- **Rabies (human and animal)**
- **Rubella**
- **Severe Acute Respiratory Syndrome (SARS)**
- **Smallpox**
- ***Staphyloccus aureus* with resistance (VRSA) or intermediate resistance (VISA) to vancomycin, isolated from any site**
- **Syphilis (primary and secondary)**
- **Tuberculosis**
- **Tularemia**
- **Typhoid (cases and carriers)**
- **Viral hemorrhagic fever**
- **Yellow Fever**
- **Unusual Diseases or Outbreaks of any kind**

UTAH LAW REQUIRES THAT THE FOLLOWING DISEASES BE REPORTED TO YOUR LOCAL HEALTH DEPARTMENT OR THE UTAH DEPARTMENT OF HEALTH WITHIN 3 WORKING DAYS AFTER IDENTIFICATION.

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

Or FAX (801) 525-5210

- Acquired Immunodeficiency Syndrome (AIDS)
- Adverse event resulting after smallpox vaccination
- Amebiasis
- Arbovirus infection, including Saint Louis encephalitis and West Nile virus infection
- Brucellosis
- Campylobacteriosis
- Chancroid
- Chickenpox
- *Chlamydia trachomatis* infection
- Coccidioidomycosis
- Colorado tick fever
- Creutzfeldt-Jakob disease and other transmissible human spongiform encephalopathies
- Cryptosporidiosis
- *Cyclospora* infection
- Dengue fever
- Echinococcosis
- Ehrlichiosis (human granulocytic, human monocytic, or unspecified)
- Encephalitis
- Giardiasis
- Gonorrhea (sexually transmitted and ophthalmia neonatorum)
- Hansen disease (leprosy)
- Hantavirus infection and pulmonary syndrome
- Hemolytic Uremic Syndrome (post-diarrheal)
- Hepatitis B (cases and carriers)
- Hepatitis C (acute and chronic infection)
- Hepatitis (other viral)
- Human Immunodeficiency Virus (HIV) infection
- Influenza-associated hospitalization
- Influenza-associated death in a person less than 18 years of age
- Legionellosis
- Listeriosis
- Lyme disease
- Malaria
- Meningitis
- Mumps
- Norovirus (formerly called Norwalk-like virus) infection
- Pelvic inflammatory disease (PID)
- Pertussis
- Poliovirus infection (nonparalytic)
- Psittacosis
- Q Fever
- Relapsing fever (tick-borne or louse-borne)
- Rocky Mountain spotted fever
- Rubella (congenital syndrome)
- Salmonellosis
- Shiga toxin producing *Escherichia coli* (STEC) infection
- Shigellosis
- Streptococcal disease (invasive, isolated from a normally sterile site)
- Syphilis (early latent, latent, and congenital)
- Tetanus
- Toxic-Shock Syndrome (staphylococcal or streptococcal)
- Trichinosis
- Vibriosis

Davis County Health Department - October 2010

Davis County Demographics - 2010

Population: 312,918

Age Group	
Less than 1 year	6,220
1 – 14 years	77,016
15 – 24 years	45,568
25 – 44 years	94,357
45 – 64 years	63,774
65 – 84 years	23,578
More than 85 years	2,405

Gender	
Male	157,855
Female	155,063

Race*	
White	287,251
Black	6,052
American Indian or Alaskan Native	3,097
Asian	8,218
Native Hawaiian or Pacific Islander	2,065

*Race/ethnicity data is only available for 2009 – 306,683

Ethnicity	
Hispanic or Latino (of any race)	24,164

*Race/ethnicity data is only available for 2009 – 306,683

Population by City*	
Unincorporated County	1,371
Bountiful	42,573
Centerville	15,703
Clearfield	28,901
Clinton	24,806
Farmington	15,799
Fruit Heights	4,906
Hill Air Force Base	4,500
Kaysville	25,205
Layton	68,283
North Salt Lake	14,370
South Weber	8,189
Sunset	4,938
Syracuse	25,817
West Bountiful	5,476
West Point	12,203
Woods Cross	9,879

*City population data is estimated using totals from the Utah Department of Health (IBIS) and distributions from the Utah Governor's Office of Planning and Budget 2010 Population Projections: www.governor.utah.gov/dea/demographics. Hill Air Force Base estimate provided by Hill Air Force Base.

Additional Information

Davis County is the smallest in land area and third most populous county in the State.

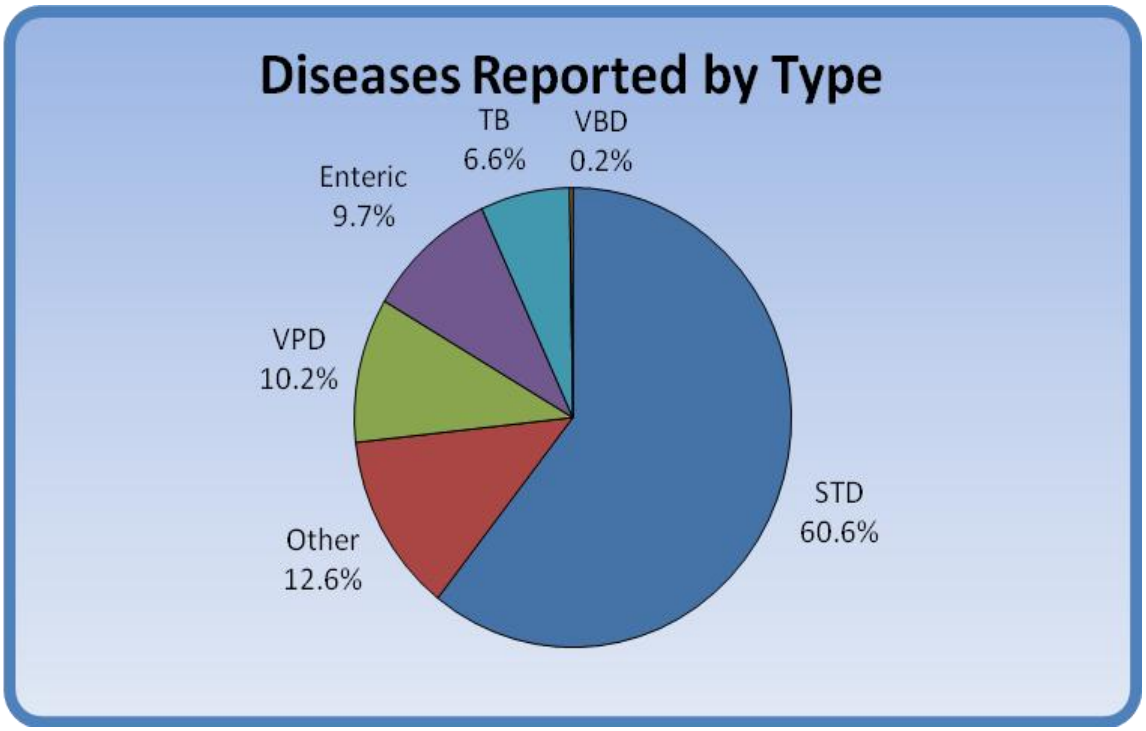
Davis County has 11% of Utah's population.

Reportable Disease Summary

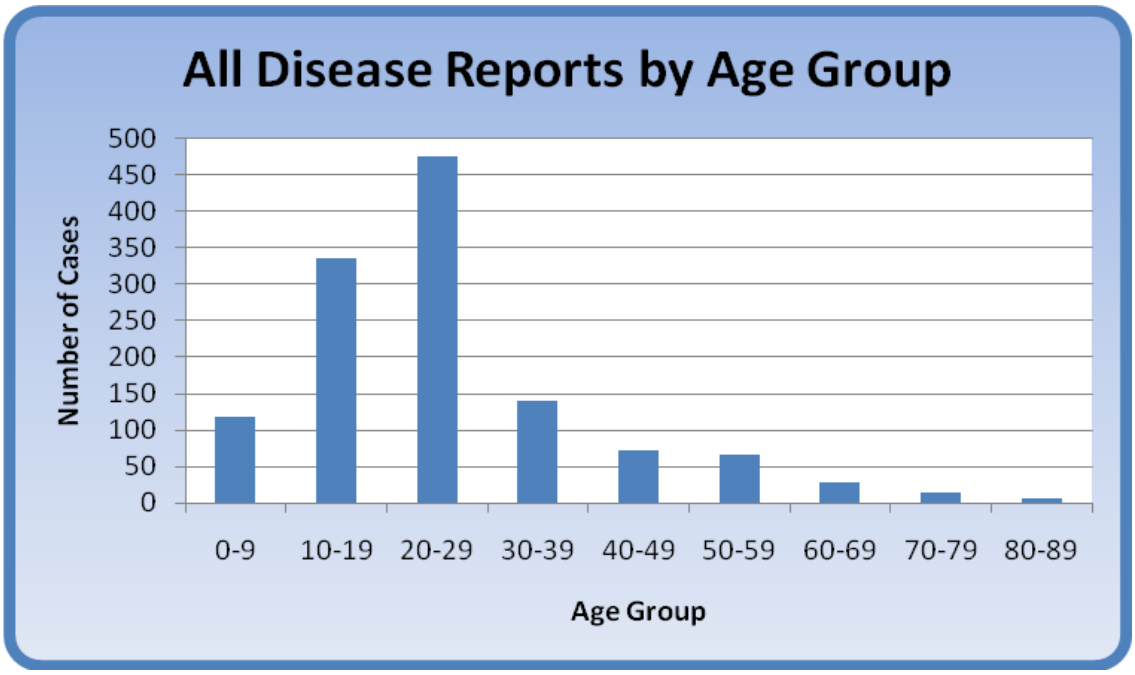
Disease morbidity and mortality have decreased over the past century, partly due to the partnership between private and public health care. Unfortunately, new emerging diseases are surfacing, requiring additional efforts from both the medical community and public health. Existing pathogens are also increasing as our population increases. Disease affects all races, ethnicities, ages and genders.

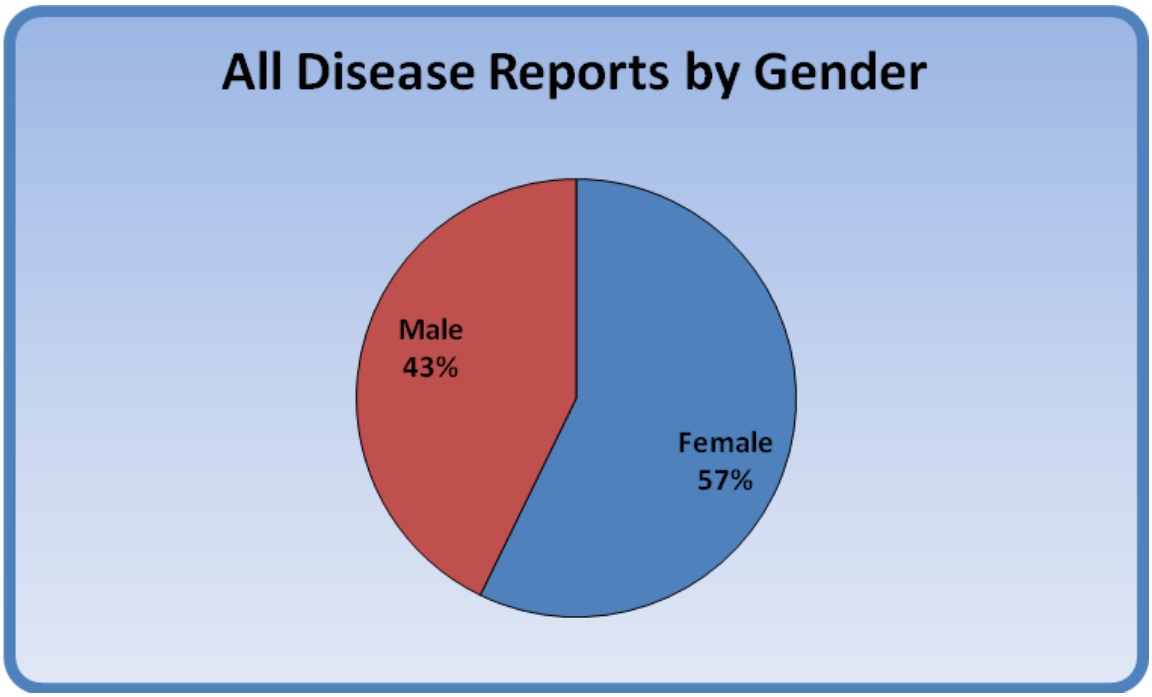
What: Davis County Health Department received a total of 1,257 disease reports during 2010. This constituted a 17% decrease from the 1,517 disease reports received in 2009. The decrease was mainly a result of decreased influenza cases in 2010.

The majority **60.6%** of the diseases reported were sexually transmitted diseases (STD), followed by other diseases **12.6%**, vaccine preventable diseases (VPD) **10.2%**, enteric diseases **9.7%**, tuberculosis infections (TB) **6.6%**, and vectorborne/zoonotic diseases (VBD) **<1%**.

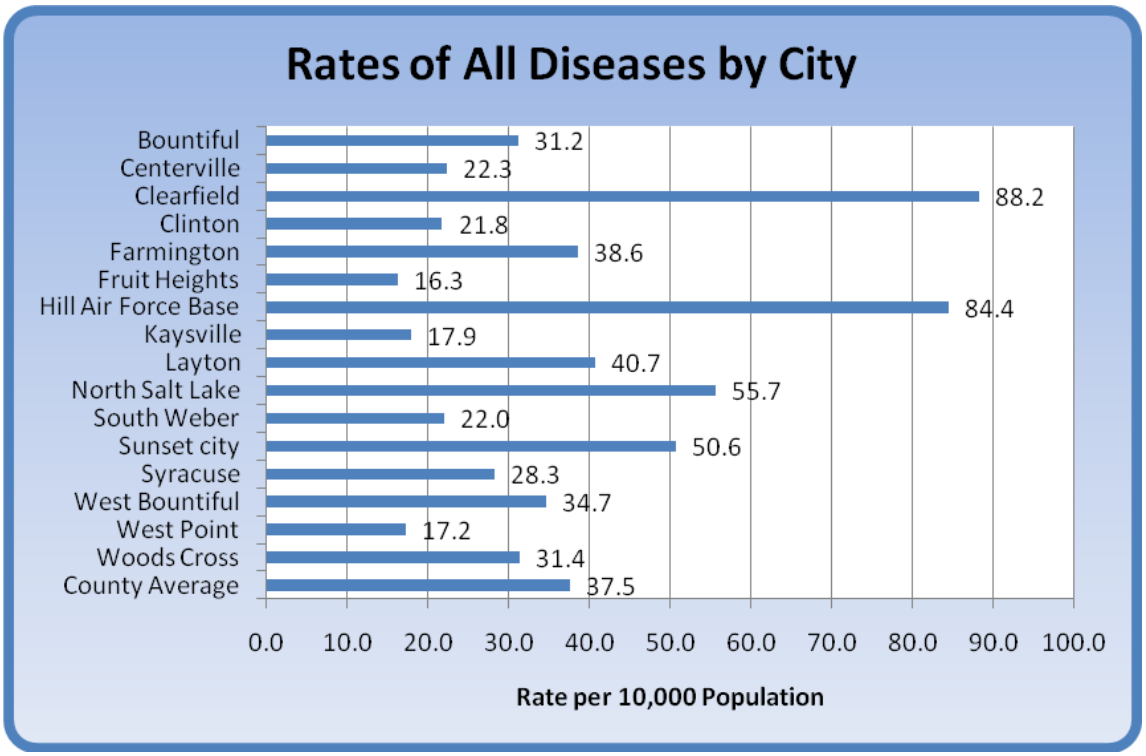


Who: Cases were most often reported among females (57%) and among 20-29 year-olds. Sexually transmitted diseases and latent tuberculosis infection had a significant impact on the 20-29 year old age group. Statistically, females are more impacted by sexually transmitted diseases.

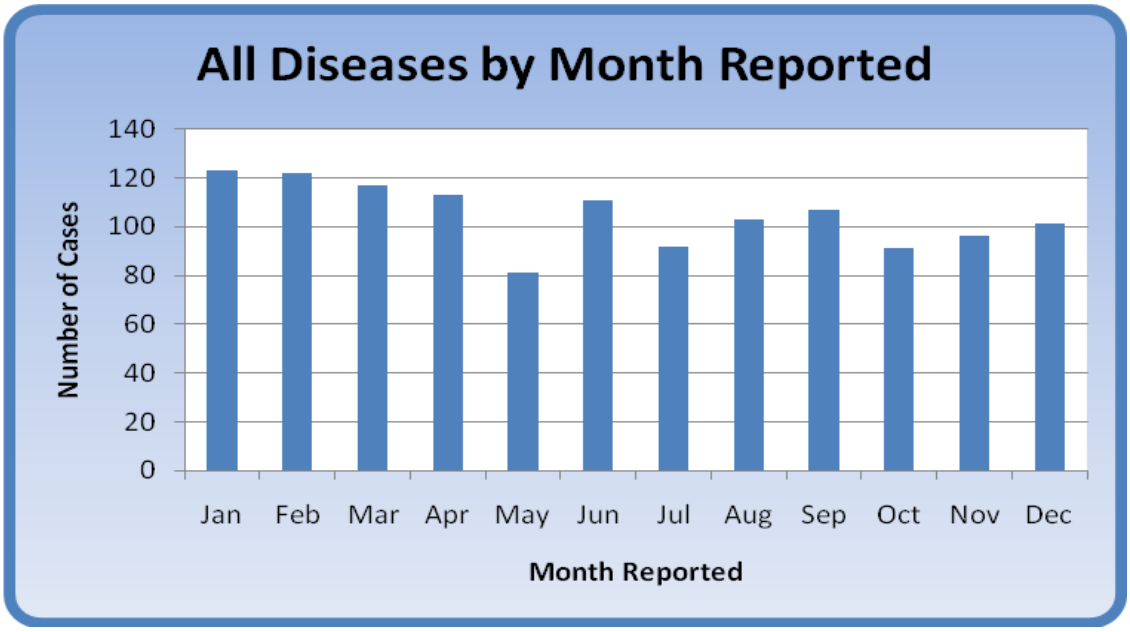




Where: Disease rates by city are identified by the place of residence of the affected individual. These rates do not suggest that one city is better or worse than another, but simply describe the disease burden in each city. Tuberculosis data is not included because most of the infections were acquired outside of Davis County.



When: The disease burden in Davis County normally stays consistent throughout the year. An average of 105 diseases was reported per month.



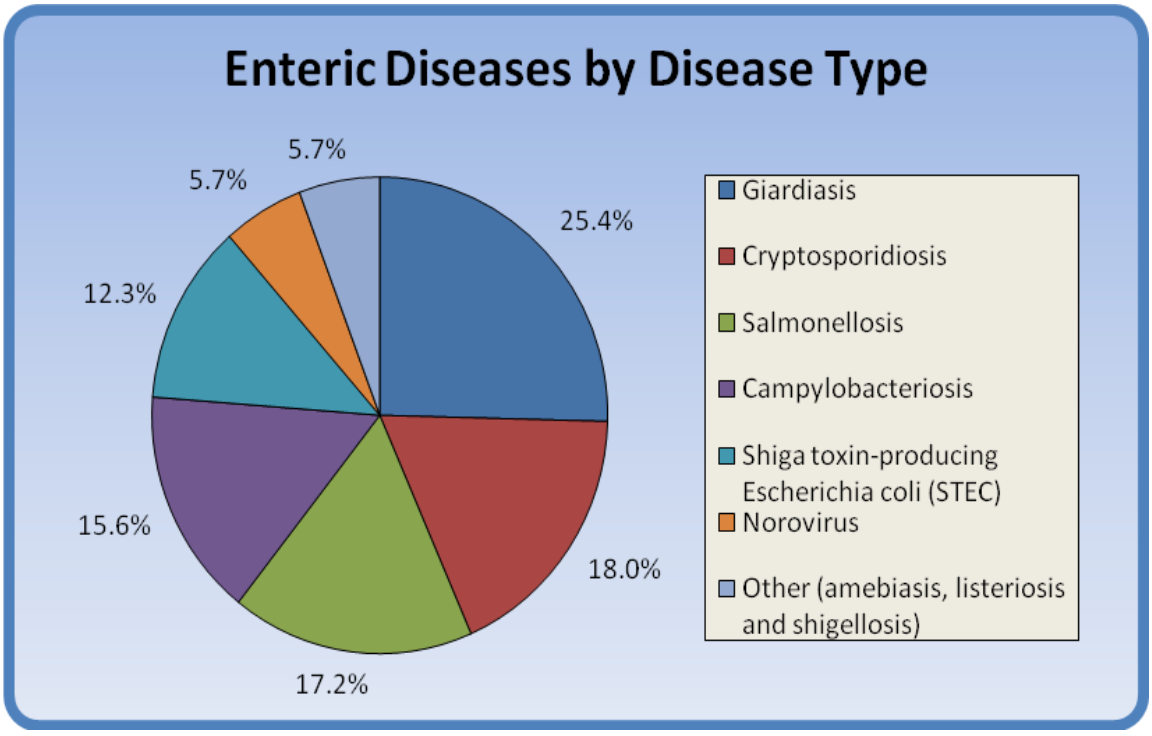
Top 20 Diseases		
Disease	**Rank**	**Number of Cases**
Chlamydia	1	702
Tuberculosis - Latent Infections (LTBI)	2	80
Streptococcal Invasive Disease	3	74
Hepatitis C - acute and chronic	4	71
Chickenpox (Varicella)	5	62
Gonorrhea	6	38
Giardiasis	7	31
Pertussis	8	28
Hepatitis B - acute and chronic	9	24
Cryptosporidiosis	10	22
Salmonellosis	11	21
Campylobacteriosis	12	19
E. coli - Shiga toxin-producing	13	15
Syphilis - All Stages	14	13
Influenza-Hospitalized Cases	15	11
HIV/AIDS	16	9
Meningitis - Aseptic or Viral	16	9
Norovirus	18	7
Shigellosis	19	4
Tuberculosis - Active Cases	20	3

Diseases Reported by Year			
Disease	2010	2009	2008
Amebiasis	1	0	0
African Tick Bite Fever	0	1	0
Brucellosis	0	0	1
Campylobacteriosis	19	26	60
Chickenpox (Varicella)	62	97	104
Chlamydia	702	735	535
Coccidioidomycosis	1	3	2
Creutzfeldt-Jakob Disease	0	2	1
Cryptosporidiosis	22	3	7
Dengue	1	0	0
E. coli - Shiga toxin-producing	15	20	12
Encephalitis	1	1	0
Giardiasis	31	35	39
Gonorrhea	38	35	26
Haemophilus influenzae - Invasive	0	4	4
Hansen Disease	0	1	1
Hepatitis A	2	1	2
Hepatitis B - acute and chronic	24	31	37
Hepatitis C - acute and chronic	71	115	112
Hemolytic Uremic Syndrome (HUS)	0	2	0
HIV/AIDS	9	10	11
Influenza-Hospitalized Cases	11	153	57
Legionellosis	0	3	2
Listeriosis	2	1	1
Lyme Disease	0	1	4
Malaria	1	0	0
Meningitis - Bacterial	2	2	2
Meningitis - Aseptic or Viral	9	22	19
Meningococcal - Invasive Disease	0	1	0
Mumps	1	1	1
Norovirus	7	1	1
Pertussis	28	18	13
Salmonellosis	21	30	27
Shigellosis	4	5	2
Streptococcal Invasive Disease	74	48	56
Syphilis - All Stages	13	5	13
Tuberculosis - Active Cases	3	3	1
Tuberculosis - Latent Infections (LTBI)	80	100	79
Typhoid Fever	0	0	1
West Nile Virus	1	0	2
Yersiniosis	0	1	0

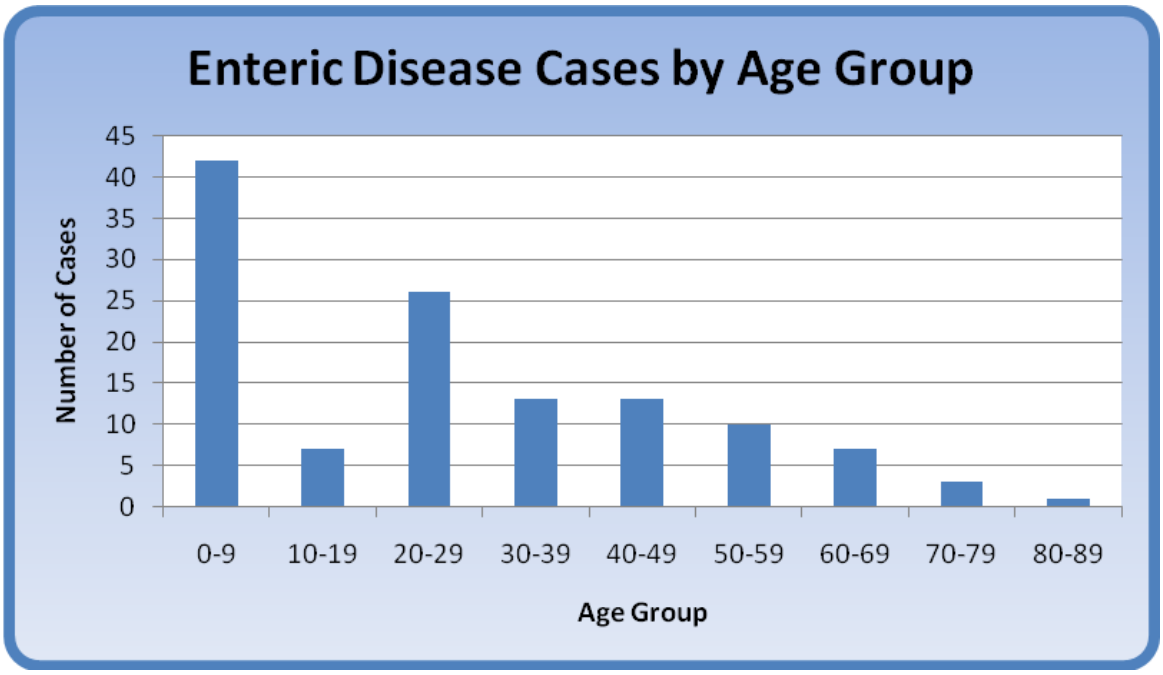
Enteric Diseases

This section focuses on the diseases (bacterial, viral, and parasitic) that are shed in the feces and can be spread by the individual directly or through contaminated food and water. Enteric diseases are generally characterized by gastrointestinal symptoms such as nausea, vomiting, and diarrhea.

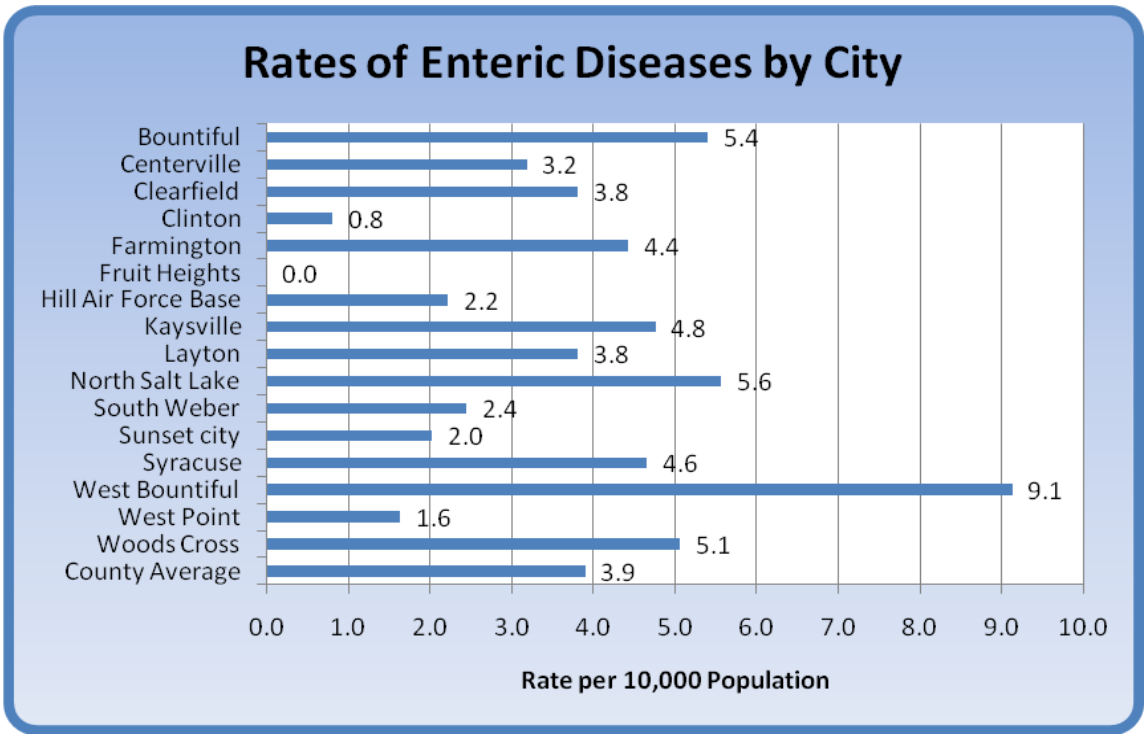
What: There were 122 enteric disease cases reported during 2010. Giardia was the most frequently reported enteric disease with 31 cases (25.4%), followed by cryptosporidiosis with 22 cases (18.0%), salmonellosis with 21 cases (17.2%), and campylobacteriosis with 19 cases (15.6%). Reports of suspect foodborne illness clusters without an identified bacteria or virus were investigated but are not included in these data.



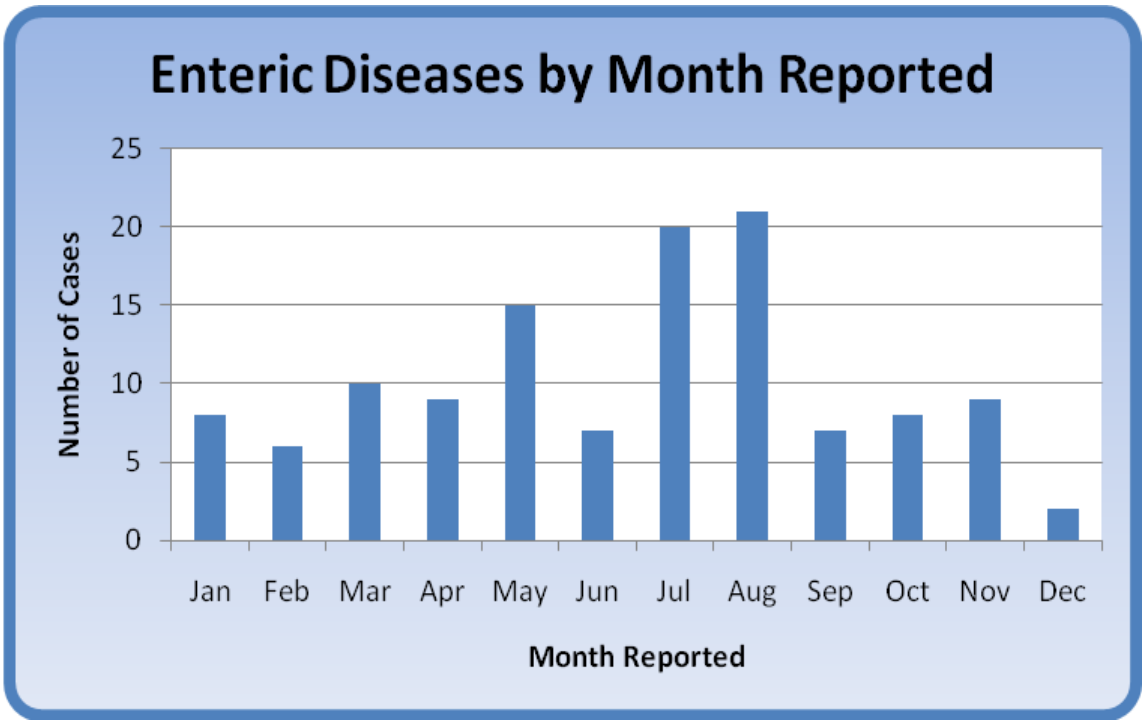
Who: A little more than half the cases were males (53%) and over 34% were children less than 10 years of age.



Where: Enteric diseases were reported among residents of every city within Davis County except for Fruit Heights. The rate by city varied, but the average rate of enteric diseases was 3.9 per 10,000 residents.



When: Enteric diseases are reported year-round, with a higher incidence during the summer months.



AMEBIASIS

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification.

Purpose of Surveillance:

- To identify common source outbreaks for investigation

Disease Description:

Amebiasis is an intestinal illness caused by a one-celled parasite (amoeba) called *Entamoeba histolytica.* It is most common in people who live in developing countries that have poor sanitary conditions. In the United States, amebiasis is most often found in immigrants from developing countries. It also is found in people who have traveled to developing countries and in people who live in institutions that have poor sanitary conditions.

Infected people are the only sources of the parasite. Fecal material from infected people may contaminate water or food and may serve as a vehicle to infect others. Animals are not infected with and do not carry the parasite. Flies, in some parts of the world, may transfer cysts from human stool to fruits and vegetables.

During 2010, there was **one case** of amebiasis reported in Davis County. The case immigrated to Utah from Vietnam in July of 2009.

Additional Information: None

Action Steps: None

Future Steps: None

BOTULISM

Disease Reporting Requirements:

Healthcare Providers – report suspect cases immediately
Laboratories – report immediately and submit appropriate specimens to the Utah Public Health Laboratory

Purpose of Surveillance:

- To confirm suspected cases and identify common source outbreaks
- To promptly identify cases requiring medical evaluation and/or treatment, including therapy with botulism antitoxin
- To identify and remove contaminated food products that could cause further cases of food-borne botulism

Disease Description:

Food-borne botulism is a food poisoning caused by a toxin produced by the bacteria, *Clostridium botulinum*. Food-borne botulism occurs after eating food containing the toxin that is formed by the bacterium in food. This toxin does not give a bad odor or taste to food. The disease most often develops after consuming improperly processed home-canned foods or home-preserved meats.

Infant botulism is a disease caused when the *Clostridium botulinum* toxin is produced in the intestines of very young children after becoming infected by the bacteria. Children who get infant botulism are generally younger than six months old. The spores of *Clostridium botulinum* are common in soil, and can also be found in a variety of foods and in dust. Infant botulism has been associated with feeding contaminated honey (and rarely corn syrup) to infants, but not in children older than one year of age or in adults.

In the United States an average of 110 cases of botulism are reported each year. Of these, approximately 25% are food-borne, 72% are infant botulism, and the rest are wound botulism. Outbreaks of food-borne botulism involving two or more persons occur most years and are usually caused by eating contaminated home-canned foods. The number of cases of food-borne and infant botulism has changed little in recent years, but wound botulism has increased because of the use of black-tar heroin, especially in California.

During 2010, there were **no cases** of infant botulism and **no cases** of food-borne botulism reported in Davis County.

Additional Information:

Davis County investigated suspect cases of infant botulism in 2010. All cases were ruled out, with most cases being diagnosed with Spinal Muscular Atrophy (SMA). SMA has similar manifestations to infant botulism. As a result, infant botulism is part of the differential diagnosis.

Action Steps: None

Future Steps: None

CAMPYLOBACTERIOSIS

Disease Reporting Requirements:

Healthcare Providers – report cases within 3 working days of identification
Laboratories – report cases within 3 working days of identification and submit isolate to the Utah Public Health Laboratory

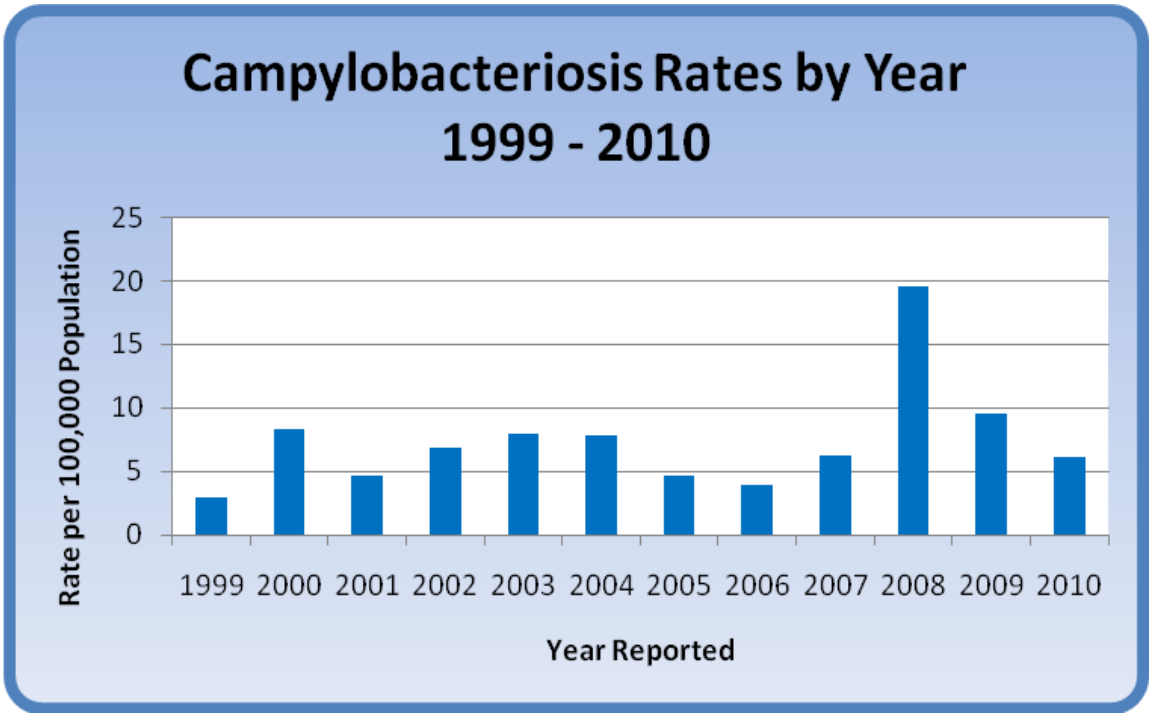
Purpose of Surveillance:

- To identify common source outbreaks for investigation
- To identify and eliminate sources of transmission

Disease Description:

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 main sources of infection. *Campylobacter* is one of the most common bacterial causes of diarrheal illness in the United States. Virtually all cases occur as isolated, sporadic events, not as a part of large outbreaks. Active surveillance through the Centers for Disease Control and Prevention (CDC) indicates about 15 cases are diagnosed each year for every 100,000 persons in the population. Many more cases go undiagnosed or unreported, and campylobacteriosis is estimated to affect over 1 million persons every year, or 0.5% of the general population.

During 2010, there were **19 cases** of campylobacteriosis reported in Davis County.



Additional Information:

An outbreak of campylobacter was noted in 2010 and involved the ingestion of unpasteurized raw milk. The infected individuals purchased the raw milk from a dairy farm in Weber County. Approximately 10 cases were confirmed, with three of the cases being Davis County residents. Additional ill family contacts were identified during the investigation who indicated the consumption of raw milk as well.

The Department of Agriculture performed coliform testing. As a result of this testing, the sale of raw milk was suspended at the dairy farm until appropriate standards were met.

Action Steps:

- Ongoing implementation of disease plans and electronic reporting system (UT-NEDSS)
- Free stool testing offered to symptomatic individuals who are uninsured and do not have a medical provider

Future Steps:

- Ongoing public education regarding food safety techniques
- Continue efforts to link enteric disease cases with PFGE pattern testing
- Collaboration among physicians, hospitals, laboratories and other Utah health departments to assist in the early identification and control of food/water borne illnesses
- Continue using the food/waterborne investigation teams (Environmental Health, Epidemiology, and Communicable Disease) to assist in the identification and control of disease outbreaks

CHOLERA

Disease Reporting Requirements:

Healthcare Providers – report suspect cases immediately
Laboratories – report immediately and submit appropriate specimens to the Utah Public Health Laboratory

Purpose of Surveillance:

- To identify cases and common source outbreaks for investigation
- To eliminate sources of transmission

Disease Description:

Cholera is a severe and potentially fatal diarrheal disease caused by infection with certain toxin-producing strains of *Vibrio cholera*. In the United States, cholera was prevalent in the 1800s but has been virtually eliminated by modern sewage and water treatment systems. However, as a result of improved transportation, more persons from the United States travel to parts of Africa, Asia, and Latin America where epidemic cholera is occurring. U.S. travelers to areas with epidemic cholera may be exposed to the cholera bacterium. In addition, travelers may bring contaminated seafood back to the United States, which has caused food-borne outbreaks.

During 2010, there were **no cases** of cholera reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

CRYPTOSPORIDIOSIS

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify common source outbreaks for investigation

Disease Description:

Cryptosporidiosis is an infection caused by the protozoan organism *Cryptosporidium parvum*. *Cryptosporidia* have been found in many hosts, including man, cattle and other domestic mammals. Infections occur via person-to-person, fecal-oral, animal-to-person, and waterborne transmission. During the past two decades, "crypto" has been recognized as one of the most common causes of waterborne disease in the United States. The parasite may be found in drinking water and recreational water in every region of the United States and throughout the world.

During 2010, there were **22 cases** of cryptosporidiosis reported in Davis County. This number was much higher than expected. On average, about 5 cases are reported in the county annually. However, the number of cases is still much lower than the 294 cases reported in 2007 as a result of the state-wide cryptosporidiosis outbreak.

Additional Information:

Cryptosporidiosis is often associated with recreational water exposure. Of the 22 cases reported in 2010, 12 participated in outdoor water and/or swimming pool activities during their exposure periods. No clusters of cases or common exposures were identified.

As a result of the 2007 outbreak, many swimming pool facilities in Davis County installed ultraviolet light disinfection systems. These UV light disinfection systems are effective in controlling cryptosporidium cysts.

Action Steps:

- Ongoing implementation of disease plans and electronic reporting system (NEDSS)
- Provided the medical community with updates on emerging diseases and outbreak situations

Future Steps:

- Ongoing enhanced surveillance of suspect Cryptosporidium cases
- Public education on recreational water disease-prevention measures
- Continue provider education on testing/treatment procedures for c*ryptosporidium*
- Continue using the food/waterborne investigation teams (Environmental Health, Epidemiology, and Communicable Disease) to assist in the identification and control of disease outbreaks

CYCLOSPORIASIS

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify common source outbreaks for investigation

Disease Description:

Cyclosporiasis is an infection caused by the parasite *Cyclospora cayetanensis*. *Cyclospora* may be transmitted by ingestion of contaminated water or food. Outbreaks linked to contaminated water, as well as outbreaks linked to various types of fresh produce, have been reported in the United States. It is not yet known whether animals can be infected and serve as sources of infection for humans.

During 2010, there were **no cases** of Cyclosporiasis reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

SHIGA TOXIN PRODUCING *E. coli* (STEC) INFECTION

Disease Reporting Requirements:

Healthcare Providers – report cases within 3 working days of identification
Laboratories – report cases within 3 working days of identification and submit isolate to the Utah Public Health Laboratory

Purpose of Surveillance:

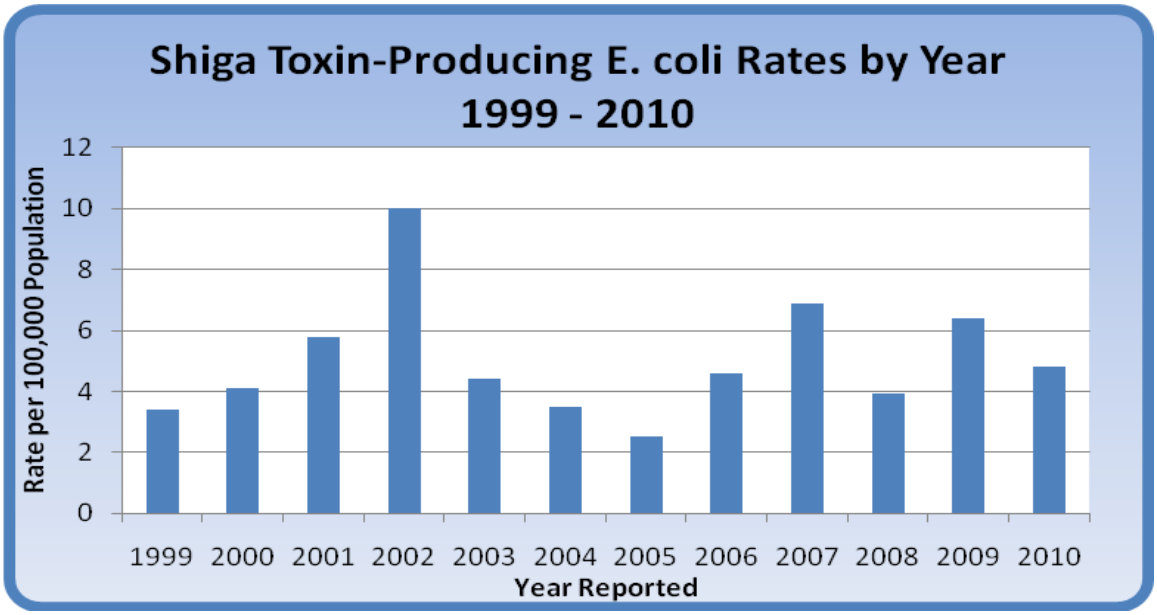
- To identify sporadic cases and common source outbreaks
- To promote disease control measures

Disease Description:

E. coli is a bacteria that normally lives in the intestines of humans and animals. There are many strains of *E. coli* such as 0121, 011, 026 and the most common strain 0157:H7. These strains of *E. coli* produce Shiga toxins that can cause hemorrhagic colitis, manifested as bloody stools.

Sources of transmission include consumption of undercooked, contaminated ground beef and other beef products, unpasteurized milk, drinking or swimming in water that is contaminated with sewage, or eating unwashed fruits or vegetables that have been fertilized with cow manure. Person-to-person transmission can occur within households, childcare centers, and long-term care facilities.

During 2010, there were **15 cases** of *E. coli* reported in Davis County, a 25 percent decrease from the 20 cases reported in 2009. Typically, the number of reports of *E. coli* peaks during the summer months.



Additional Information:

Cases of *E.coli* O157:H7 are taken seriously by the Communicable Disease program. Reports are acted upon quickly to ensure that there are no ongoing identified risks to the community. Of the 15 *E. coli* cases, no cases progressed to Hemolytic Uremic Syndrome (HUS). Reporting requirements changed in 2008 which now require agencies to report any specimen that is preliminary positive for *shiga toxin* – prior to typing. This was done in an effort to indentify other shiga toxin releasing *E.coli* organisms (not 0157:H7) that may also be a public health threat.

An *E coli* outbreak occurred in a home daycare in 2010. Three cases were lab confirmed and connected by DNA fingerprinting. A fourth case was PFGE linked to the daycare pattern, but was not an attendee at the daycare. The investigation determined that the fourth case had had exposure to one of the confirmed cases outside of the daycare setting.

The daycare was closed until negative stools were obtained and the health department deemed the situation to be under control.

Action Steps:

- Free stool testing offered to symptomatic individuals who are uninsured and do not have a medical provider
- Exclusion of infected individuals from food handling, daycare/school settings and direct patient care
- Ongoing implementation of disease plans and electronic reporting system (NEDSS)
- Continued efforts to link enteric disease cases using the results of PFGE pattern testing.

Future Steps:

- Ongoing public education regarding food safety techniques
- Collaboration among physicians, hospitals, laboratories and other Utah health departments to assist in the early identification and control of food/waterborne illnesses
- Continue using the food/waterborne investigation teams (Environmental Health, Epidemiology, and Communicable Disease) to assist in the identification and control of disease outbreaks

GIARDIASIS

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

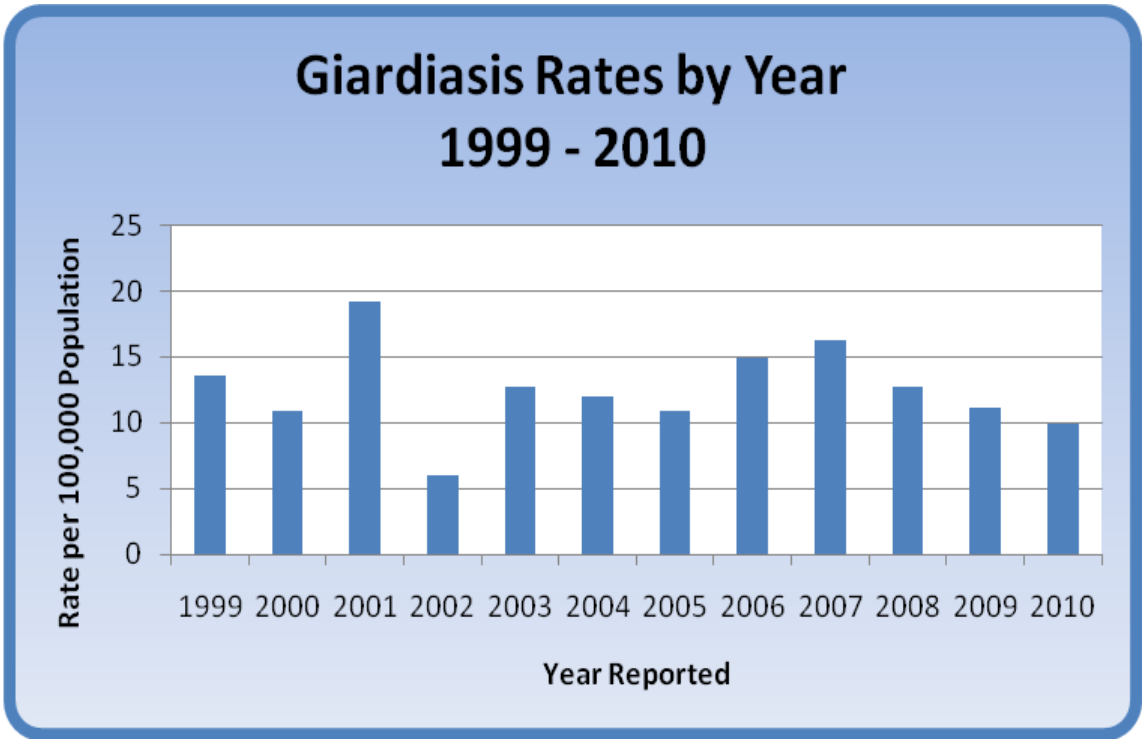
Purpose of Surveillance:

- To identify common source outbreaks
- To identify and eliminate sources of transmission

Disease Description:

Giardiasis is an infection of the upper small intestine caused by *Giardia lamblia*, a flagellate protozoan, found widely in nature. Humans and other mammals, (especially beavers, dogs, and cats), are reservoirs and shed the organism in their stool. Persons with giardiasis are infectious to others for the entire period of their illness, which can be weeks or months. Severity of disease varies from no symptoms to chronic diarrhea.

During 2010, there were **31 cases** of giardiasis reported in Davis County, a decrease from the 35 cases reported in 2009.



Additional Information:

Giardiasis tends to have intermittent symptoms, thus individuals may seek medical attention months after the initial infection occurred. Many of the cases in 2010 were diagnosed by Gastroenterologists after a colonoscopy was performed.

Action Steps:

- Ongoing implementation of disease plans and electronic reporting system (NEDSS)

Future Steps:

- Ongoing public education regarding food safety techniques
- Collaboration among physicians, hospitals, laboratories and other Utah health departments to assist in the early identification and control of food/waterborne illnesses
- Continue using the food/waterborne investigation teams (Environmental Health, Epidemiology, and Communicable Disease) to assist in the identification and control of disease outbreaks

HEMOLYTIC UREMIC SYNDROME (POST DIARRHEAL)

Disease Reporting Requirements:

Healthcare Providers - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify cases caused by communicable diseases
- To identify common source outbreaks
- To facilitate disease control measures for cases caused by communicable diseases

Disease Description:

Hemolytic Uremic Syndrome (HUS) is a life threatening illness characterized by hemolytic anemia, thrombocytopenia, and acute renal failure. Infection with *E. coli* 0157:H7 and other serotypes of Shiga toxin–producing *E. coli* (STEC) is believed to be the leading cause of HUS in the United States.

During 2010, there were **no cases** of HUS reported in Davis County.

Additional information:

8% of those who are diagnosed with *E.coli* 0157:H7 will progress on to HUS (Hemolytic Uremic Syndrome) or TTP (Throbotic thrombocytopenic purpura). Other diseases or conditions may also cause HUS (pneumococcal pneumonia, pregnancy and/or postpartum, AIDS, and certain medications). Although most pediatric HUS cases are caused by *E.coli* 0157:H7, the adult TTP cases have an unknown etiology.

Action Steps:

- All persons diagnosed with HUS caused by *E.coli* 0157:H7 are excluded from daycares, schools, and direct patient care until the health department can verify (2) negative stools
- Symptomatic contacts are encouraged to seek medical attention and testing to prevent the likelihood of additional HUS or TTP cases. Prompt diagnosis and intervention measures provide ill individuals the best outcome
- Free stool testing offered to symptomatic individuals who are uninsured and have no medical provider
- Control and prevention education is provided to the cases and their families/contacts

Future Steps:

- Ongoing public education regarding food safety techniques
- Continue efforts to link enteric diseases cases with the results of PFGE pattern testing
- Collaboration among physicians, hospitals, laboratories and other Utah health departments to assist in the early identification and control of food/waterborne illnesses
- Continue using the food/waterborne investigation teams to assist in the identification and control of disease outbreaks

LISTERIOSIS

Disease Reporting Requirements:

Healthcare Providers - report cases within 3 working days of identification
Laboratories - report cases within 3 working days of identification and submit appropriate specimen to the Utah Public Health Laboratory

Purpose of Surveillance:

- To identify common source outbreaks for investigation
- To identify and eliminate sources of transmission including contaminated food products

Disease Description:

Listeriosis is a bacterial infection caused by *Listeria monocytogenes.* It is usually transmitted via consumption of contaminated food. In elderly and immunocompromised persons, sepsis and meningitis are the main presentations. Pregnant women may experience a mild, flu-like illness followed by fetal loss or bacteremia and meningitis in their newborns. Immunocompromised persons may experience acute febrile gastroenteritis. In the U.S., an estimated 2,500 persons become seriously ill with listeriosis each year.

During 2010, there were **two cases** of listeriosis reported in Davis County.

Additional Information:

One case in 2010 had a PFGE pattern that matched a national cluster. The case investigation did not identify any common exposures.

Action Steps: None

Future Steps: None

NOROVIRUS

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To detect outbreaks
- To facilitate outbreak control measures

Disease Description:

Noroviruses are named after the original strain "Norwalk virus," which caused an outbreak of gastroenteritis in a school in Norwalk, Ohio, in 1968. There are at least five known norovirus genogroups, which in turn are divided into at least 31 genetic clusters. Noroviruses are transmitted primarily through the fecal-oral route, either by consumption of fecally contaminated food or water or by direct person-to-person contact. Environmental and fomite contamination may also be a source of infection. Evidence exists for transmission via aerosolization of vomitus that resulting in droplets contaminating surfaces or entering the oral mucosa and being swallowed. No evidence suggests that infection occurs through the respiratory system. CDC estimates that 23 million cases of acute gastroenteritis due to norovirus infection occur each year, and that at least 50% of all foodborne outbreaks of gastroenteritis can be attributed to noroviruses.

During 2010, there were **seven cases** of lab-confirmed norovirus reported in Davis County. Five of the seven cases were linked to a Davis County restaurant. A health department team (Communicable Disease and Environmental Health) worked closely with the facility to provide cleaning guidelines and education to the employees. No additional cases were identified.

Davis County received additional reports of gastrointestinal illnesses that were investigated and likely caused by norovirus. However, testing was not available for these cases.

Additional Information:

Due to the fairly short onset (24-48 hours) and duration (typically 24 hours), plus the self-limiting mild-to-moderate manifestation, ill individuals often don't seek medical attention. Therefore, many *norovirus* outbreaks are missed. Reports to the health department often are received after the patient has recovered, making it difficult to get a confirmed diagnosis.

Action Steps:

- Free stool testing is offered to symptomatic individuals in cluster and outbreak settings when deemed appropriate.

Future Steps:

- Ongoing public education regarding food safety techniques
- Ongoing education encouraging ill individuals to seek medical attention early in their illnesses
- Provide information to the community via website on proper hand washing techniques
- Continue using the food/waterborne investigation teams to assist in the identification and control of disease outbreaks
- Collaboration among physicians, hospitals, laboratories and other Utah health departments to assist in the early identification and control of food/waterborne illnesses

SALMONELLOSIS

Disease Reporting Requirements:

Healthcare Providers - report cases within 3 working days of identification
Laboratories - report cases within 3 working days of identification and submit isolate to the Utah Public Health Laboratory

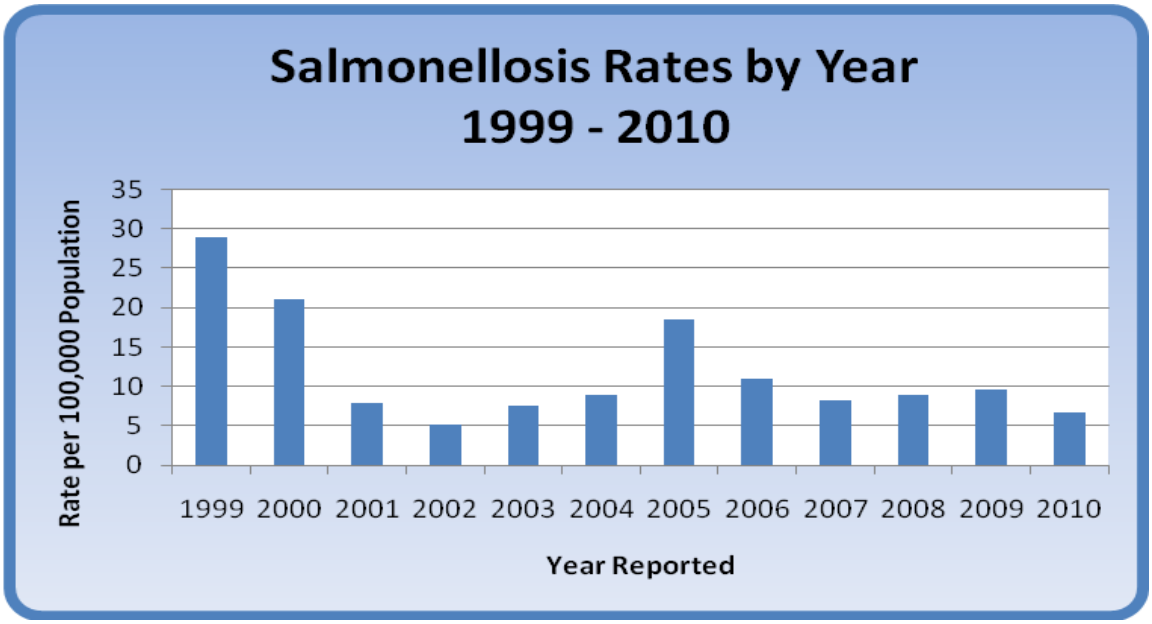
Purpose of Surveillance:

- To identify common source outbreaks for investigation
- To identify and eliminate sources of infection and institute control measures such as excluding infected food handlers and caregivers from work

Salmonellosis is a bacterial infection generally transmitted through ingestion of contaminated food or water. Salmonellosis can also be transmitted by direct contact with an infected human or animal. *Salmonella* bacteria are commonly found in food products and are carried by many domestic animals. Every year, approximately 40,000 cases of salmonellosis are reported in the United States. Because many milder cases are not diagnosed or reported, the actual number of infections may be thirty or more times greater. Salmonellosis is more common in the summer than winter. Children are the most likely to get salmonellosis. Young children, the elderly, and immunocompromised are most likely to have severe infections. It is estimated that approximately 600 persons die each year with acute salmonellosis.

During 2010, there were **21 cases** of Salmonellosis reported in Davis County, a 30% decrease from the **30** cases reported in 2009. Three of the confirmed cases of Salmonella were linked to Utah and/or national outbreaks involving duckling exposures, frozen dinners, and egg consumption.

Additional Information:



Because of the many different serotypes of *Salmonella*, serotyping and PFGE patterns play an important role in identifying sources and epidemiological links in the community. Private laboratories are required to submit *Salmonella* isolates to the Unified State Laboratories: Public Health for serotyping and PFGE analysis. PFGE patterns are compared with other Utah and U.S. *Salmonella* isolates to identify possible clusters and suspect sources. *S.*Typhimurium was the most commonly reported *Salmonella* serotype during 2010.

Salmonella Serotype	Number of Cases
Typhimurium	8
Enteritidis	3
Oranienburg	2
Anatum	1
Chester	1
Dublin	1
Javiana	1
Newport	1
Paratyphi B	1
Poona	1
Santpaul	1
Uganda	1
Not Tested	1
Total	**21**

Action Steps:

- Ongoing implementation of disease plans and electronic reporting system (UT-NEDSS)
- Due to the high potential spread, ill food handlers, daycare providers, and direct caregivers are excluded from work until negative stools are obtained

Future Steps:

- Ongoing public education regarding food safety techniques
- Ensure collaboration among physicians, hospitals, laboratories and other Utah health departments to assist in the early identification and control of food/waterborne illnesses.

SHIGELLOSIS

Disease Reporting Requirements:

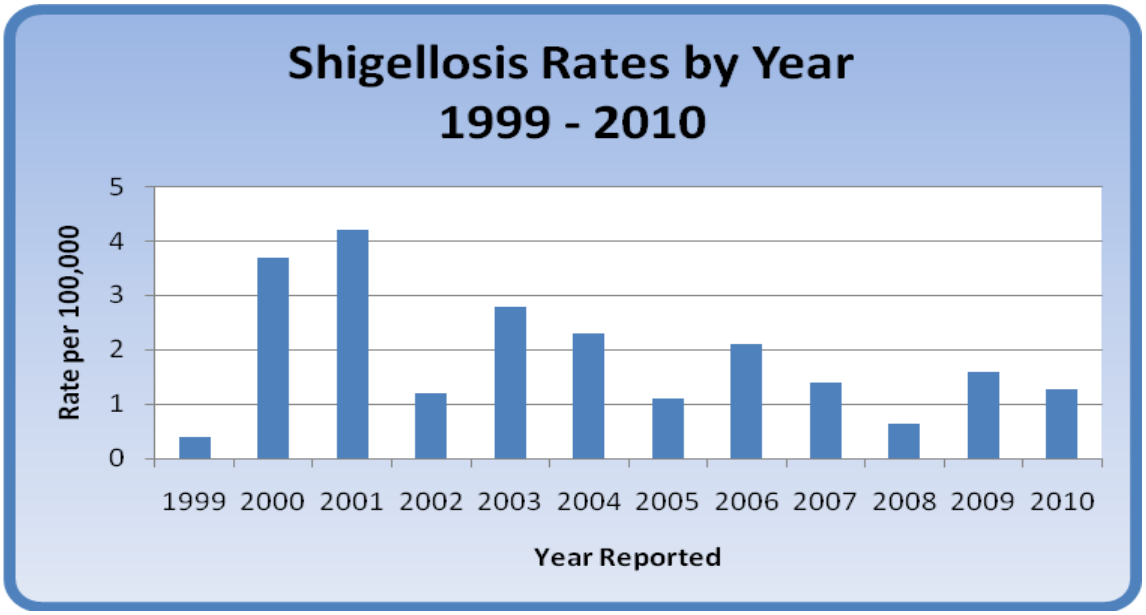
Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify common source outbreaks for investigation
- To identify and eliminate sources of transmission and institute control measures such as excluding infected food handlers and caregivers from work

Shigellosis is a human disease of the large and small intestines caused by the *Shigella* bacteria. Shigellosis infections result from direct contact or by consumption of contaminated food or water. Every year, about 18,000 cases of shigellosis are reported in the United States. Because many milder cases are not diagnosed or reported, the actual number of infections may be twenty times greater. Shigellosis is particularly common and causes recurrent problems in settings where hygiene is poor and can sometimes sweep through entire communities. Shigellosis is more common in summer than winter. Children, especially toddlers aged 2 to 4, are the most likely to get shigellosis. Many cases are related to the spread of illness in child-care settings, and many more are the result of the spread of the illness in families with small children.

During 2010, there were **4 cases** of shigellosis reported in Davis County.



Additional Information: None

Action Steps: None

Future Steps: None

TRICHINELLOSIS

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify common source exposures
- To identify and eliminate contaminated food products and prevent additional cases

Disease Description:

Trichinellosis is a disease caused by an intestinal roundworm, *Trichinella spiralis*, which infects many wild mammals. Human infection results from eating undercooked pork or wild game harboring the encapsulated cysts of *T. spiralis*. Trichinellosis is now relatively rare, with an average of 12 cases per year reported in the U.S. The number of cases has decreased because of legislation prohibiting the feeding of raw-meat garbage to hogs, commercial and home freezing of pork, and public awareness of the danger of eating raw or undercooked pork products. Today cases are often associated with eating raw or undercooked wild game meats.

During 2010, there were **no cases** of trichinellosis reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

TYPHOID FEVER
(Cases and Carriers)

Disease Reporting Requirements:

Healthcare Providers – report suspect cases immediately
Laboratories – report suspect cases immediately and submit appropriate specimen to the Utah Public Health Laboratory

Purpose of Surveillance:

- To identify and track chronic typhoid carriers at risk of transmitting disease
- To identify and eliminate sources of transmission

Disease Description:

Typhoid fever is a severe bacterial infection caused by *Salmonella typhi*. It is transmitted via consumption of contaminated water and food. *S. typhi* is shed intermittently in the feces and urine of chronic carriers for prolonged periods. CDC reports about 400 cases per year in the United States, occurring mostly among travelers. An estimated 21 million cases of typhoid fever and 200,000 deaths occur worldwide.

During 2010, there were **no cases** of typhoid fever reported in Davis County.

Additional Information:

Action Steps:

- Due to the high potential of transmission, ill food handlers, daycare providers, and direct caregivers are excluded from work until negative stools are obtained
- Contacts are tested for carriage of *Salmonella typhi*
- Implementation of disease plans and electronic reporting system (UT-NEDSS)

Future Steps:

- Ongoing public education regarding food safety techniques
- Ensure collaboration among physicians, hospitals, laboratories and other Utah health departments to assist in the early identification and control of food/waterborne illnesses
- Continue using the food/waterborne investigation teams (Environmental Health, Epidemiology, and Communicable Disease) to assist in the identification and control of outbreaks

VIBRIOSIS
(Excluding Cholera)

Disease Reporting Requirements:

Healthcare Providers - report cases within 3 working days of identification
Laboratories – report cases within 3 working days of identification and submit appropriate specimen to the Utah Public Health Laboratory.

Purpose of Surveillance:

- To identify common source exposures
- To identify and eliminate contaminated food products to prevent additional cases

Disease Description:

Vibrio is a genus of bacteria that can produce a variety of toxins. It causes infections of variable severity characterized by diarrhea and vomiting, primary septicemia, or wound infections. Asymptomatic infections may occur and the organism may cause extra-intestinal infections. The two vibrio species of concern are *V. parahaemolyticus* and *V. vulnificus* and both live in coastal seawaters, fish, and shellfish.

> ***V. parahaemolyticus*** is an acute bacterial enteric disease with watery diarrhea and abdominal cramps, usually with nausea, vomiting, fever, and headache. This disease is moderately severe and can last from 1-7 days. This is typically seen as sporadic cases, but foodborne outbreaks have been seen from raw or undercooked seafood. This occurs primarily during the summer months.
>
> ***V. vulnificus*** can present as septicemia having a similar presentation to toxic shock or hemolytic uremic syndrome (HUS) or in a mild to severe cause of wound infections. Illness due to this organism occurs most frequently in coastal states, as exposure to seawater through accidents or occupational wounds is most likely in these areas.

During 2010, there were **no cases** of vibriosis reported in Davis County.

Additional Information: None

Action Steps: None

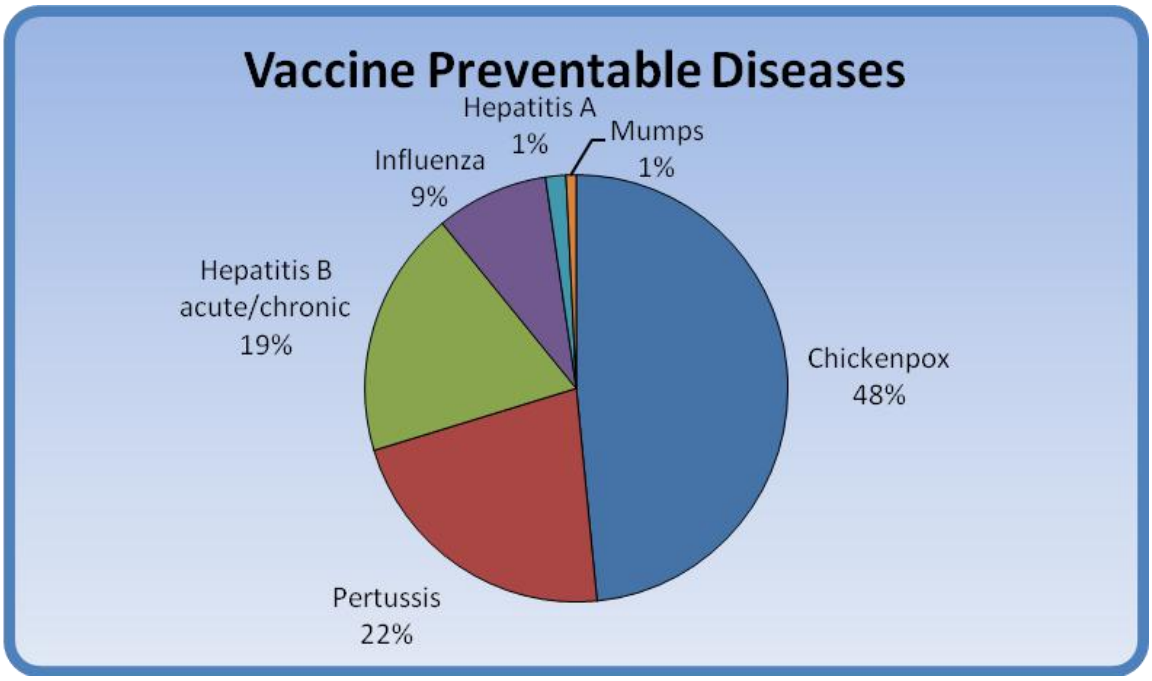
Future Steps: None

Vaccine Preventable Diseases

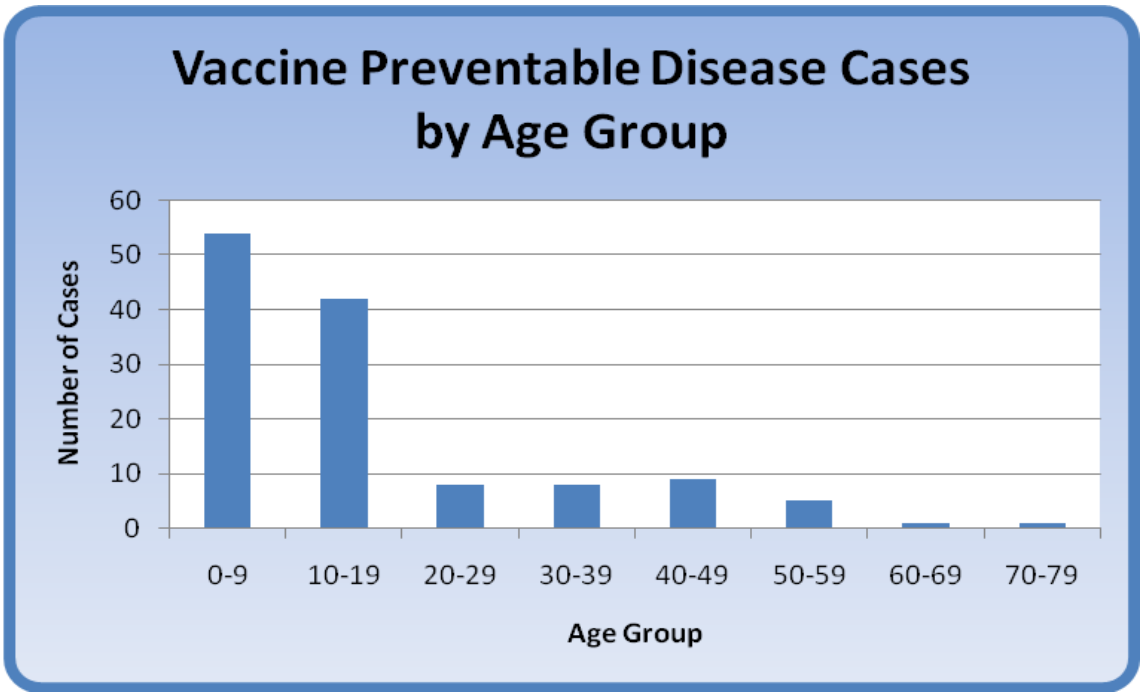
Vaccine Preventable Diseases (VPD) are those diseases that are preventable through the use of immunizations. Many of the vaccine-preventable diseases historically caused a great deal of morbidity and mortality in children. Rates of VPDs have dramatically declined in large part because of immunizations. Yet worldwide each year, 27 million children do not receive basic vaccines and two million people die of vaccine-preventable diseases. Immunizations are the most effective step in protecting the community against VPDs. However, these diseases still occur because of importation, vaccine failure or breakthrough, and incomplete or no vaccinations.

Once 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 public education.

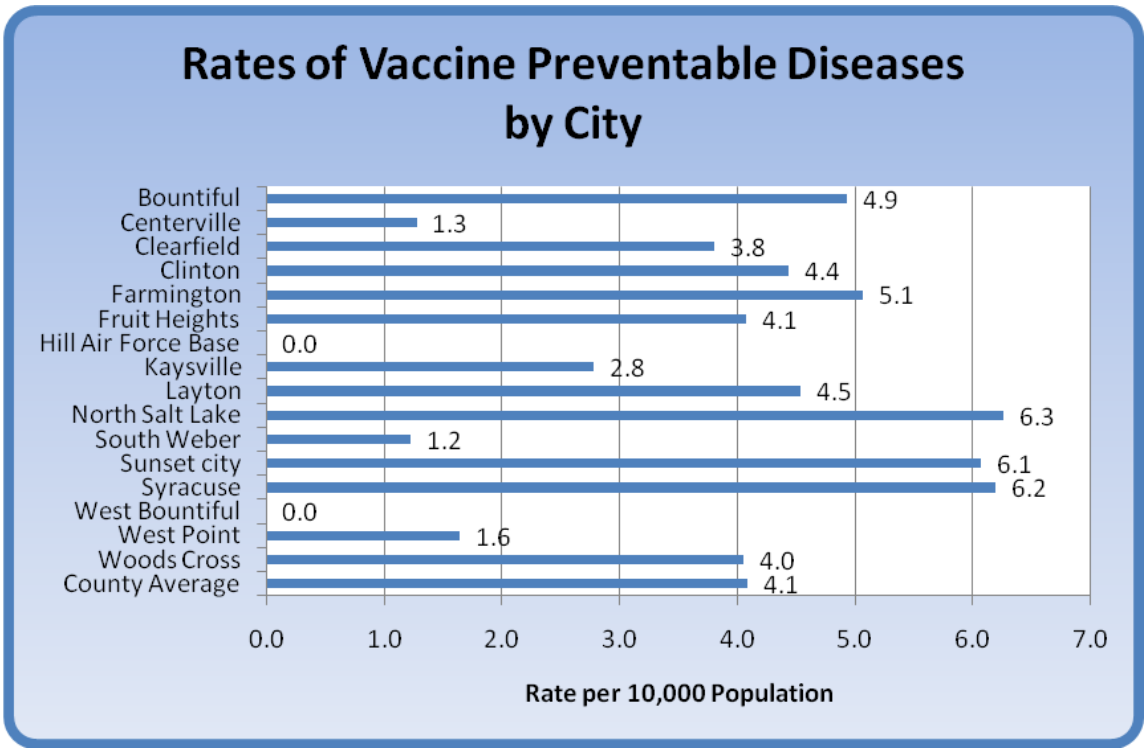
What: Chickenpox was the disease most often reported in this category with 48% of cases, followed by pertussis (22%), hepatitis B (19%), and hospitalized influenza (9%).



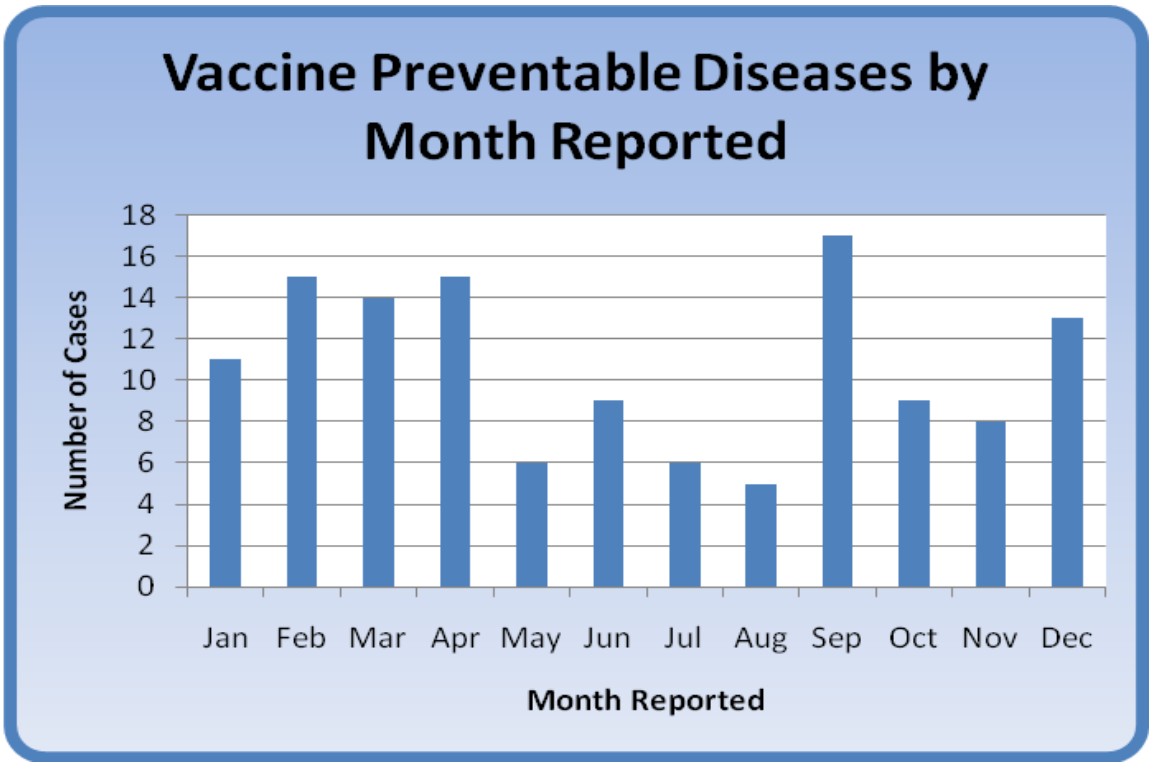
Who: Vaccine Preventable Diseases were most often reported among children under the age of 10.



Where: The average rate of vaccine preventable diseases was 4.1 cases per 10,000 residents.



When: Vaccine Preventable Diseases (particularly pertussis and chickenpox) are reported more frequently during the school year.



CHICKENPOX

Disease Reporting Requirements:

Healthcare Providers and Laboratories – report within 3 working days of identification

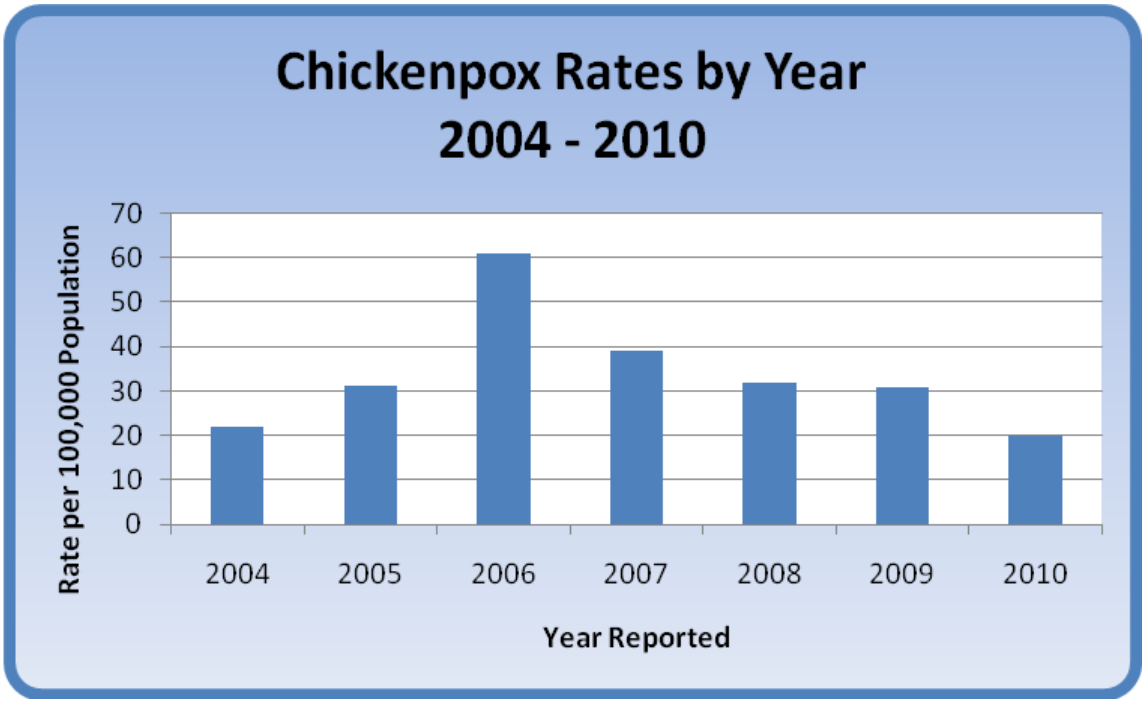
Purpose of Surveillance:

- To identify contacts of cases that may be at high risk for serious complications
- To identify outbreaks and institute control measures
- To monitor disease trends
- To monitor the impact of vaccination on incidence, morbidity, and mortality

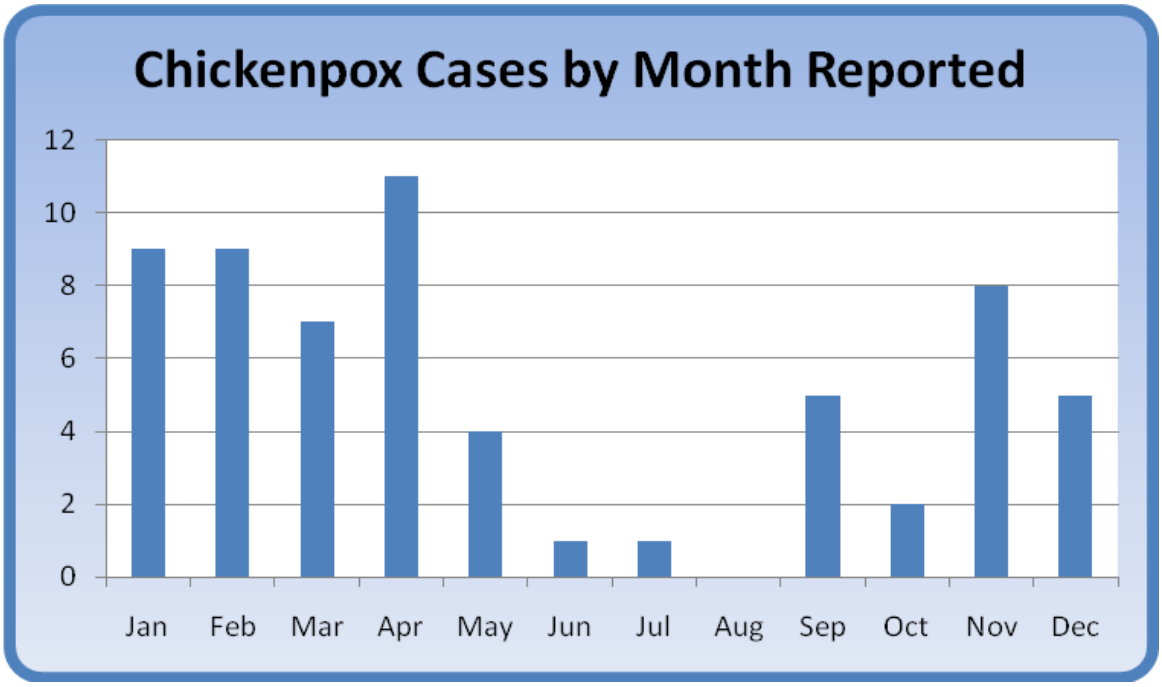
Disease Description:

Chickenpox is a vaccine preventable disease caused by the varicella-zoster virus (VZV), a member of the *Herpesvirus* group. Chickenpox is transmitted primarily via airborne respiratory secretions or vesicle fluid, but may also be transmitted by direct contact with an infected person or fomite.

During 2010 there were **62 cases** of chickenpox reported in Davis County, a 36% decrease from the 97 cases reported in 2009. One case (an infant) was hospitalized. There were no deaths.



Few chickenpox cases were reported during the summer months, likely because chickenpox cases are often transmitted in school settings and school nurses/school staff report most of these cases.



Additional Information:

Over the past few years, surveillance has noted that "breakthrough" chickenpox cases have been reported more frequently. In Davis County, 79% of reported cases had a history of vaccination and were classified as breakthrough disease. After vaccination, about 1 in 10 persons do not develop enough protection to completely prevent chickenpox disease. Chickenpox cases who were vaccinated tended to have more mild illness with fewer lesions than non-vaccinated cases. Among the 59 vaccinated cases with a documented number of lesions, 76% had less than 50 lesions while only 31% of unvaccinated cases had less than 50 lesions.

Number of Lesions	Vaccinated	Percent	Not Vaccinated	Percent
<50	35	76.1%	4	30.8%
50-249	11	23.9%	6	46.2%
250-499	0	0.0%	3	23.1%
Total	**46**		**13**	

To prevent breakthrough disease, CDC recommends a routine *two* dose varicella vaccination for children and a second dose "catch-up" vaccination for children, adolescents and adults who previously received only *one* dose.

Action Steps:

- Continued public campaign to educate on the importance of a (2) dose varicella vaccine series
- Implementation of the chickenpox disease control measures for school settings

Future Steps:

- Distribution of educational information regarding the CDC recommendations
- Enforcement of Utah's immunization requirements for school entry, which includes a varicella vaccination or disease history documentation

DIPHTHERIA

Disease Reporting Requirements:

Healthcare Providers – report suspect cases immediately
Laboratories – report immediately and submit appropriate specimens to the Utah Public Health Laboratory

Purpose of Surveillance:

- To facilitate appropriate treatment of cases, disease control measures, and preventive treatment for contacts of cases

Disease Description:

Diphtheria is a vaccine-preventable disease caused by toxin-producing strains of the bacteria *Corynebacterium diphtheriae.* It is transmitted by direct person-to-person contact with respiratory secretions and cutaneous lesions.

The incidence of diphtheria is approximately 0.001 cases per 100,000 population in the U.S. since 1980; before the introduction of vaccine in the 1920s, incidence was 100-200 cases per 100,000 population. Diphtheria remains endemic in developing countries. The countries of the former Soviet Union have reported >150,000 cases in an epidemic which began in 1990.

During 2010, there were **no cases** of diphtheria reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

HEPATITIS A

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases immediately

Purpose of Surveillance:

- To promptly identify contacts of cases to initiate post-exposure prophylaxis
- To identify common-source outbreaks for investigation
- To identify potential sources of transmission and institute control measures such as excluding infected food handlers from work

Disease Description:

Hepatitis A is a vaccine preventable disease caused by the hepatitis A virus. It is transmitted via the fecal-oral route either by direct contact or by consumption of contaminated food or water.

Hepatitis A rates have declined steadily since 1999 when routine vaccination was recommended for children living in states with highest incidence, including Utah. In 2004, the U.S. incidence dropped to an all time low of 1.9 cases/100,000 population.

Davis County had **two cases** of Hepatitis A in 2010. Ten suspect cases were investigated and ruled out.

Additional Information:

One case was confirmed in an assisted living facility. Exposed residents were provided immune globulin (IG) injections due to their age. Identified employees were also vaccinated and/or prophylaxed with IG. Enhanced surveillance was conducted and no additional cases were identified.

Action Steps:

- Confirmed/suspect cases were excluded from high-risk occupations until eight days after onset of jaundice or until the health department determines it was safe to return

Future Steps:

- On-going promotion of the hepatitis A vaccine

HEPATITIS B (ACUTE AND CHRONIC INFECTIONS)

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify outbreaks for investigation
- To identify contacts to facilitate testing and post-exposure prophylaxis
- To identify infected pregnant women and ensure prompt treatment to prevent infection of the newborn
- To identify sources of nosocomial transmission

Disease Description:

Hepatitis B (HBV) is a vaccine preventable disease caused by the hepatitis B virus. It is transmitted through blood or body fluids. 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 to an infected mother. In the U.S., 5% to 8% of the total population has been infected, and .2% to .9% of the population has chronic infection. Acute HBV infection occurs most commonly among adolescents and adults in the U.S.

During 2010, there were **25 cases** of chronic HBV and **one case** of acute HBV reported in Davis County. Of the chronic cases, **11** tested positive during pregnancy and were referred to our Perinatal Hepatitis B Program.

Additional Information:

Of the non-pregnant hepatitis B cases, many were high risk for infections (i.e. foreign born, substance abuser, sexual partner positive, household contact positive)

Action Steps:

- Contacts to all chronic and acute cases of hepatitis B are recommended to seek testing to determine if exposure resulted in infection
- Those contacts who were not infected are educated on prevention methods and encouraged to get the (3) dose hepatitis B vaccination series

Future Steps:

- On-going promotion of hepatitis B vaccination

Perinatal Hepatitis B Program:

The Perinatal Hepatitis B program is responsible for the case management (evaluation, monitoring, testing and facilitation of HBIG/Hep B vaccination) of all reported cases of HBsAg positive pregnant females in Davis County. Within this program, women who are prenatally tested and determined to be chronic hepatitis B carriers are interviewed to identify close contacts. These identified close contacts (sexual partners, household contacts, and children) are tested to see if they are infected with the hepatitis B virus. If serology testing is negative, the hepatitis B series is offered – free of charge. Prior to the delivery of their baby, arrangements are made with the delivering hospital to administer HBIG and first dose of hepatitis B vaccine within 12 hours after delivery in an effort to protect the newborn from acquiring the virus. This infant is monitored until all 3 doses of vaccine have been administered. At that point, serology testing is conducted to ensure antibody protection. If the infant is a non-responder to the vaccine, a repeat series is begun. Testing is again done at completion of the second series. The case management of HBsAg positive pregnant female can range from 8-18 months.

INFLUENZA

Disease Reporting Requirements:

Healthcare Providers - report hospitalized cases and influenza-associated pediatric deaths within 3 working days of identification
Laboratories - report hospitalized cases and influenza-associated pediatric deaths within 3 working days of identification and submit appropriate specimens to the Utah Public Health Laboratory

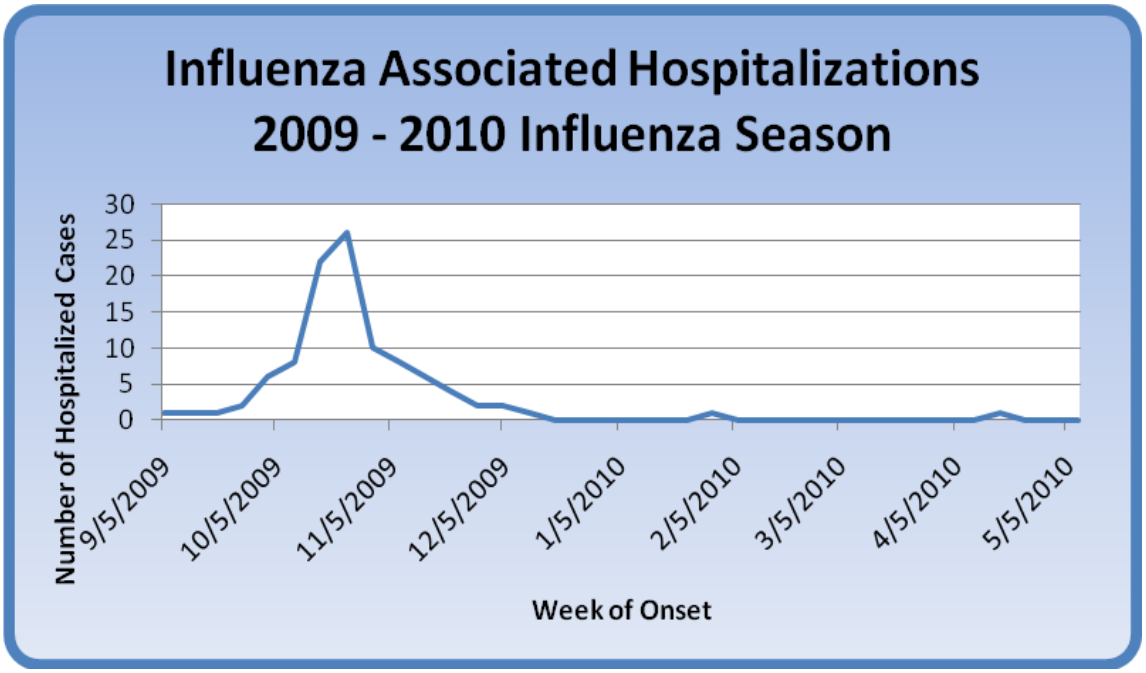
Purpose of Surveillance:

- To determine where, when, and what influenza viruses are circulating
- To determine if influenza activity is increasing or decreasing, but not to ascertain how many people have become ill with influenza during the influenza season
- To detect changes in the epidemic that would be consistent with the introduction of a new or mutated virus

Disease Description:

Influenza is an acute respiratory disease caused by RNA viruses from the *Orthomyxoviridae* family. Humans are the primary reservoir for human influenza, but many influenza species can also infect birds and mammals. Influenza is transmitted via droplets and direct contact.

During the 2009-2010 influenza season, there were **102 cases** of hospitalized influenza reported in Davis County.



Additional Information:

The influenza vaccine provides 70-80% protection (in young healthy adults) against the anticipated circulating influenza strain. The protective level is a little less in the elderly, but it is still estimated that the vaccine can lessen the severity of disease in this population by 50-60% and decrease deaths due to influenza by 80%.

Throughout the fall of 2009 and spring of 2010, efforts were continued to protect the citizens of Davis County against the circulating H1N1 influenza. Vaccines were administered through the mass clinic locations (Davis Conference Center & Bountiful Regional Center) until mid January 2010. School-based clinics at local elementary schools were established to reach the youth and their families and for the general public at the Layton Hills mall, for those who may have missed the opportunity at the mass clinic locations. By January 2010, significant decreases in cases were noted. Davis County Health Department administered 92,000 H1N1 vaccines free of charge to county residents. The seasonal influenza vaccine now contains the H1N1 strain and continues to be administered in the 2010 -2011 season.

Action Steps:

- Investigation of all hospitalized cases of influenza to help identify circulating strains, predisposing risk factors, and vaccination status
- All pediatric deaths due to influenza are investigated to monitor virulence of the influenza strain. Specimens may be sent to CDC to test for resistance to antiviral therapy
- Unvaccinated contacts of positive cases are encouraged to get the influenza vaccine
- Public educated on respiratory etiquette techniques and basic personal hygiene to help interrupt the disease transmission
- Multiple outreach influenza vaccination clinics offered throughout the community, with an emphasis on at-risk populations

Future Steps:

- On-going promotion of influenza vaccine
- Continue monitoring & analysis of the Davis School District absentee surveillance data
- Continue sentinel ILI (influenza-like illness) monitoring
- Improve tracking and assessment of immunization rates among health care workers

MEASLES

Disease Reporting Requirements:

Healthcare Providers and Laboratories – report suspect cases immediately

Purpose of Surveillance:

- To rapidly identify and confirm cases
- To identify susceptible contacts of cases for measles post-exposure prophylaxis
- To implement disease control measures
- To assess progress toward disease elimination goals

Disease Description:

Measles is an acute viral respiratory illness. Although it is one of the most highly infectious diseases known, it is vaccine-preventable. Measles is transmitted by direct contact with infectious droplets or, less commonly, by airborne spread. Since 1992, the incidence in the U.S. has been low and indigenous cases are uncommon. Cases of measles continue to occur from importation of the virus from other countries.

During 2010, there were **no cases** of measles reported in Davis County.

Additional Information:

Although no cases of measles were confirmed in 2010, suspect cases of measles are promptly investigated and control measure implemented until the disease can be ruled out.

Action Steps: None

Future Steps: None

MUMPS

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify cases and contacts of cases to implement disease control measures

Disease Description:

Mumps is an acute vaccine preventable viral disease. The mumps virus replicates in the upper respiratory tract and is spread through direct contact with respiratory secretions or saliva, or through fomites.

In the United States, since 2001, an average of 265 mumps cases has been reported each year. However, during January 1 - October 7, 2006, a total of 45 states and the District of Columbia reported 5,783 confirmed or probable mumps cases to CDC. This was the largest number of mumps cases reported to CDC in a single year since 1991, when 4,264 cases were reported. It was concluded that multiple factors contributed to the spread of the 2006 outbreak, which was first detected on a college campus in Iowa.

During 2010, there was **one case** of mumps reported in Davis County.

Additional Information:

All suspect cases of mumps are promptly investigated and control measures implemented until the disease can be ruled out.

Action Steps: None

Future Steps: None

PERTUSSIS

Disease Reporting Requirements:

Healthcare Providers – report suspect cases within 3 working days
Laboratories – report immediately and submit isolate to the Utah Public Health Laboratory

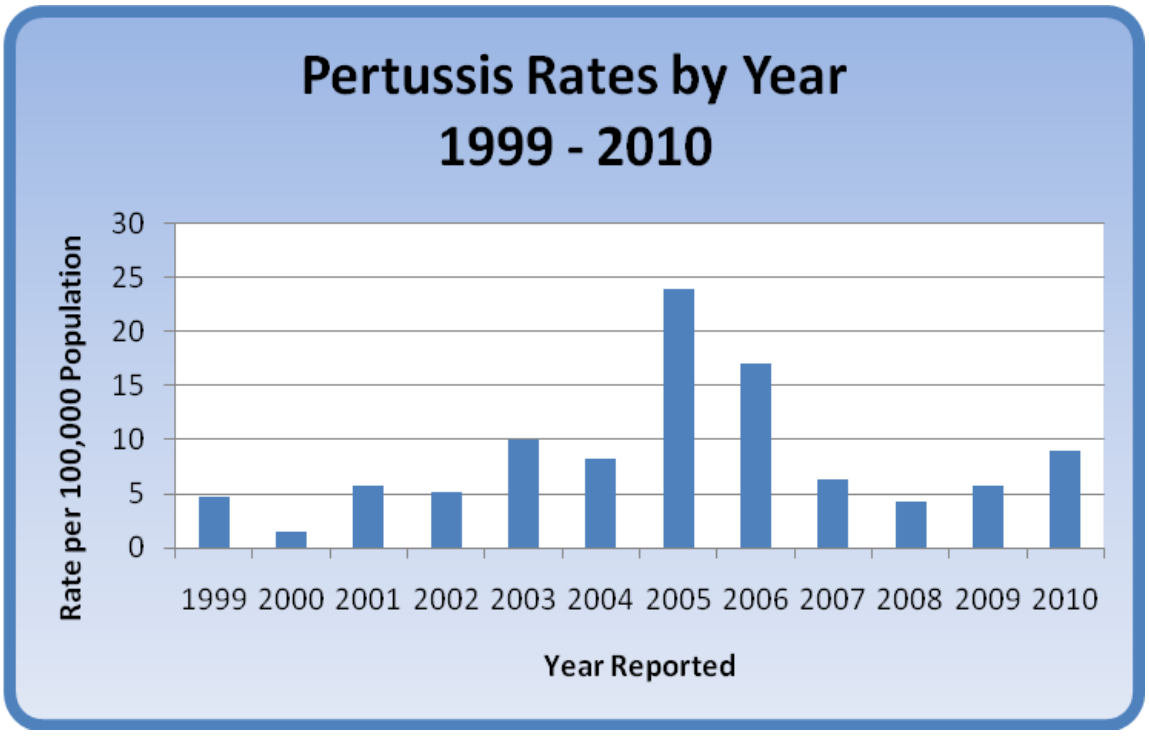
Purpose of Surveillance:

- To prevent transmission of pertussis to persons at high risk for severe illness and complications
- To identify outbreaks and implement disease control, including early recognition, testing and treatment of cases

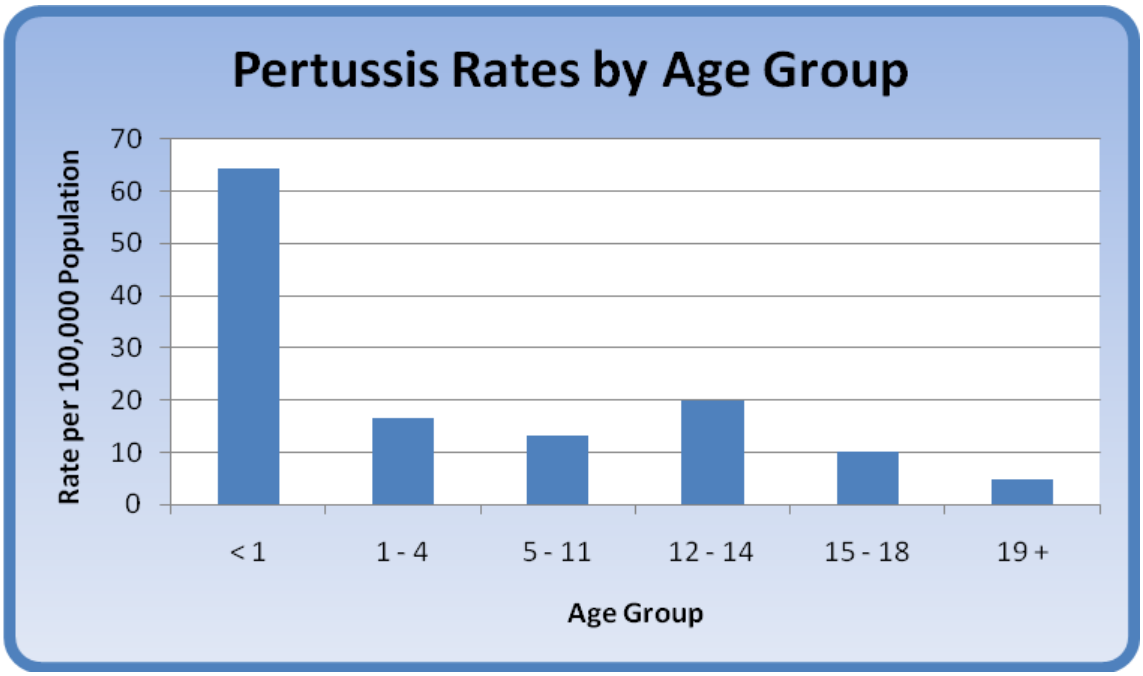
Disease Description:

Pertussis is a vaccine-preventable disease caused by the bacteria *Bordetella pertussis*. Pertussis is of particular concern in infants, because of higher rates of hospitalization, pneumonia, and death compared with older children and adults.

During 2010, there were **28 cases** of pertussis reported in Davis County, an increase from 18 cases reported during 2009 and 13 cases reported in 2008.



The rate of pertussis in 2010 was highest among children less than one year of age due to incomplete vaccinations.



Additional Information:

Pertussis cases are investigated promptly and aggressively in an effort to stop disease spread. Effective preventative antibiotic medications are recommended for exposed contacts of confirmed/probable cases. Declining vaccine protection has been noted over the past several years, yet there was no adolescent/adult vaccine available to help with this growing issue. Now, an effective adolescent/adult vaccine (Tdap) is available to boost the waning immunity. The addition of Td or Tdap booster to the Utah immunization requirement for 7th grade school entry is gradually making an impact on the pertussis disease burden in Davis County.

During 2010, the state of California experienced a historical high incidence of Pertussis. From January 1 through December 31, 2010, 8,383 cases (a rate of 21.4 cases/100,000) of pertussis (including ten infant deaths) were reported throughout California. This is the most cases reported in 63 years when 9,934 cases were reported in 1947.

Davis County also had an increase in cases. A few cases reported connections to the California outbreak. The majority of the cases were <18 years old and were likely related to the waning affect of the Dtap vaccine.

Actions Steps:

- Prompt investigation of lab confirmed and/or clinically diagnosed pertussis cases to ensure adequate treatment, exclusion from public gatherings (school, work, day

care) until antibiotic treatment renders the case non-infectious (typically 5 days after initiating treatment), and identification of close contacts so that preventative treatment can be facilitated
- Ill contacts are treated as suspect cases and handled as above
- Medical community education on updated treatment/prophylaxis therapy
- Public education on disease transmission and preventative measures

Future Steps:

- On-going promotion of DTaP in children and the Tdap booster vaccine for adolescents and adults
- Updating the medical community on the recommended testing procedures and appropriate antibiotic therapy

POLIOMYELITIS (PARALYTIC)

Disease Reporting Requirements:

Healthcare Providers and Laboratories – report suspect cases immediately

Purpose of Surveillance:

- To identify cases of imported poliomyelitis
- To identify cases and contacts of cases requiring post-exposure prophylaxis

Disease Description:

Poliomyelitis paralytic disease is caused by the highly infectious poliovirus. This virus is transmitted primarily person-to-person via the fecal-oral route. The majority of cases are asymptomatic, with flaccid paralysis occurring in less than 1 percent of all infections. Poliovirus was declared eradicated from the Western Hemisphere in 1991.

During 2010, there were **no cases** of polio reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

RUBELLA

Disease Reporting Requirements:

Healthcare Providers and Laboratories – report suspect cases immediately

Purpose of Surveillance:

- To identify cases and implement disease control measures
- To prevent transmission to susceptible pregnant women

Rubella is a viral vaccine-preventable disease caused by the togavirus of the genus *Rubivirus.* Rubella is spread person-to-person via respiratory transmission. Rubella cases are at record low levels in the U.S., but remain a global burden. CDC estimates 110,000 cases of congenital rubella syndrome occur annually throughout the world.

During 2010, there were **no cases** of rubella reported in Davis County.

Additional Information:

A suspect case was investigated and control measure implemented until the case was ruled out.

Action Steps: None

Future Steps: None

TETANUS

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To facilitate prompt appropriate diagnostic testing and management of cases
- To identify sources of infection
- To determine factors contributing to the failure of vaccine delivery

Disease Description:

Tetanus is an acute vaccine preventable disease caused by an exotoxin of *Clostridium tetani*, the tetanus bacillus, which grows anaerobically at the site of a wound. Tetanus spores are everywhere in the environment and can contaminate wounds of all types. Tetanus incidence in the U.S. has rapidly declined since the introduction of tetanus toxoid vaccines. Less than one case per 100,000 population is reported in the U.S. each year.

During 2010, there were **no cases** of tetanus reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

Vectorborne/Zoonotic Diseases

Vectorborne/Zoonotic Diseases are those diseases transmitted via an animal or insect. Vectorborne/Zoonotic diseases do occur in Davis County. However, some of these diseases, such as malaria and dengue fever, are typically acquired outside of the United States.

What: In 2010, Davis County had 3 cases of vectorborne/zoonotic diseases reported.

Disease	Number of Cases
Dengue	1
Malaria	1
West Nile Virus - neuroinvasive disease	1
Total	**3**

Who: Two of the cases of Vectorborne/Zoonotic diseases were male and one was female and all of the cases were adults.

Where: Cases lived in Centerville, West Point and Woods Cross.

When: Vectorborne/Zoonotic diseases are typically more common in the summer when insect vectors are more active and humans are spending more time outdoors and traveling. In 2010, Vectorborne/Zoonotic diseases were reported in March and September.

ANTHRAX

Disease Reporting Requirements:

Healthcare Providers – report suspect cases immediately
Laboratories – report immediately and submit isolate to the Utah Public Health Laboratory

Purpose of Surveillance:

- To confirm suspected cases and identify common source outbreaks
- To identify infections suspected of bioterrorism origin

Disease Description:

Anthrax is an acute infectious disease caused by the spore-forming bacteria *Bacillus anthracis*. Anthrax most commonly occurs in warm-blooded animals, but can also infect humans.

Although anthrax among humans is extremely rare in the United States, anyone can get anthrax if they are exposed to infected animals, or if they eat undercooked meat from infected animals. Workers who are exposed to dead animals and animal products from countries where anthrax is more common are at the highest risk. Anthrax infection can occur in three forms: cutaneous (skin), inhalation, and gastrointestinal. Direct person-to-person spread of anthrax is unlikely.

In the United States, incidence of naturally acquired anthrax is extremely rare (~ 1-2 cases of cutaneous disease per year). Gastrointestinal anthrax is rare, but may occur as explosive outbreaks associated with ingestion of infected animals. Worldwide, the incidence is unknown, though *B. anthracis* is present in most of the world. Unreliable reporting makes it difficult to estimate the true incidence of human anthrax worldwide. *B. anthracis* is considered a potential agent of bioterrorism. In fall 2001, 22 cases of anthrax (11 inhalation, 11 cutaneous) were identified in the United States following intentional contamination of the mail.

There were **no cases** of anthrax reported in Davis County in 2010.

Additional Information: None

Action Steps: None

Future Steps: None

ARBOVIRUS INFECTION

Disease Reporting Requirements:

Healthcare Providers and Laboratories – report Yellow Fever cases immediately
Healthcare Providers and Laboratories – report all other Arbovirus infections within 3 working days of identification

Purpose of Surveillance:

- To identify common source outbreaks
- To identify and eliminate sources of transmission

Disease Description:

Arboviral (short for arthropod-borne) infections are caused by any of a number of viruses transmitted by arthropods such as mosquitoes and ticks. These infections generally occur during warm weather months when mosquitoes are active. Young children and the elderly appear to be most susceptible to arboviral infections. Most arboviral infections are spread by infected mosquitoes. Fortunately, only a few types of mosquitoes are capable of transmitting the disease and only a small number of the mosquitoes are actually carrying the virus.

During 2010, there were t**hree cases** of arboviral infections, which included Dengue, Malaria and West Nile Virus. All three cases had travel outside of Utah or the United States during their exposure periods, therefore, were considered imported infections.

Additional Information: None

Action Steps: None

Future Steps: None

BRUCELLOSIS

Disease Reporting Requirements:

Healthcare Providers – report cases within 3 working days of identification
Laboratories – report cases within 3 working days of identification and submit appropriate specimens to the Utah Public Health Laboratory

Purpose of Surveillance:

- To confirm suspected cases and identify common source outbreaks
- To identify infections suspected of bioterrorism origin

Disease Description:

Brucellosis is caused by an infection with a bacterium of one of the *Brucella* species. Persons at highest risk for brucellosis are those who work with animals that are infected, such as veterinarians and ranchers, and persons who consume raw milk or cheeses or ice cream made with raw milk. Brucellosis may also be transmitted to humans if they are inadvertently exposed to live brucellosis vaccine by a needle stick or other accident.

Brucellosis is not very common in the United States, where 100 to 200 cases occur each year. But brucellosis can be very common in countries where animal disease control programs have not reduced the amount of disease among animals. *Brucella* is considered a potential agent of bioterrorism.

During 2010, there were **no cases** of brucellosis reported in Davis County. However, two suspect cases were investigated and ruled out.

Additional Information: None

Action Steps: None

Future Steps: None

DENGUE FEVER

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify sources of infection

Disease Description:

Dengue Fever (DF) and Dengue Hemorrhagic Fever (DHF) are caused by one of four closely related, but antigenically distinct, virus serotypes (DEN-1, DEN-2, DEN-3, and DEN-4), of the genus *Flavivirus*. Infection with one of these serotypes provides immunity to only that serotype for life, so persons living in a dengue-endemic area can have more than one dengue infection during their lifetime. DF and DHF are primarily diseases of tropical and sub tropical areas, and the four different dengue serotypes are transmitted between humans and the *Aedes* mosquito. Infections produce a spectrum of clinical illness ranging from a nonspecific viral syndrome to severe and fatal hemorrhagic disease. Important risk factors for DHF include the strain of the infecting virus, as well as the age, and especially the prior dengue infection history of the patient.

During 2010, there was **one case** of Dengue Fever reported in Davis County. The investigation revealed that the individual had traveled to Puerto Rico during the exposure period; therefore, the infection was not acquired in the United States.

Additional Information: None

Action Steps: None

Future Steps: None

ECHINOCOCCOSIS

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify the source of infection

Disease Description:

Echinococcosis or hydatid disease results from being infected with the larvae of the tapeworms *Echinococcus granulosus, E. multilocularis*, or *E. vogeli*. *E. granulosus* is found most commonly in dogs that consume the viscera of infected sheep, but can also be found in coyotes, wolves, dingos, and jackals. *E. multilocularis* is found in foxes, coyotes, dogs and cats. *E. vogeli* has been identified only in Central and South America.

During 2010, there were **no cases** of echinococcosis reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

EHRLICHIOSIS

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To facilitate appropriate diagnostic testing and treatment
- To identify sources of infections
- To provide disease prevention information

Disease Description:

Ehrlichiosis is caused by several bacterial species in the genus *Ehrlichia*. Currently, three species of *Ehrlichia* in the United States and one in Japan are known to cause disease in humans. In the United States, human diseases caused by *Ehrlichia* species have been recognized since the mid-1980s. Ixodidae ticks are the vectors for *Ehrlichia* transmission.

The occurrence of these diseases mirrors the geographic distributions and seasonal activities of the tick vectors. Most patients with ehrlichiosis are infected in the spring and summer when they are more commonly exposed to vector ticks.

During 2010, there were **no cases** of ehrlichiosis reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

HANTAVIRUS PULMONARY SYNDROME

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To facilitate diagnostic testing
- To facilitate environmental clean up of rodent-infested areas where cases have occurred

Disease Description:

Hantavirus Pulmonary Syndrome was first reported in the United States in 1993. The Sin Nombre virus, a member of the hantavirus genus, is responsible for the majority of the HPS cases in the United States.

Through December 15, 2010, a total of 560 cases of hantavirus pulmonary syndrome have been reported in the United States (32 states). The case count started when the disease was first recognized in May 1993. Thirty-five percent of all reported cases have resulted in death. As of January 26, 2010, Utah received reports of 31 hantavirus cases. Some of these cases reported exposure outside of Utah.

During 2010, there were **no cases** of Hantavirus Pulmonary Syndrome reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

LYME DISEASE

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To facilitate appropriate diagnostic testing and treatment
- To identify sources of infections
- To provide disease prevention information

Disease Description:

Lyme disease is caused by the spirochete *Borrelia burgdorferi***,** which is transmitted by the bite of infected *Ixodes* ticks. In the U.S., exposure to Lyme disease is common in the northeastern states, Atlantic coastal states, and the upper Midwest.

During 2010, there were **no cases** of Lyme Disease reported in Davis County.

Additional Information:

The testing for Lyme disease is highly sensitive but not very specific. It requires a clinical picture consistent with the disease in order to be confirmed as a true case. Often, suspect cases cannot recall a recent tick bite or do not have symptoms consistent with Lyme disease and are therefore categorized as a "suspect" case. During 2010, 8 suspect cases were investigated and ruled out.

Action Steps: None

Future Steps: None

MALARIA

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify sources of infection

Disease Description:

Malaria is an infection caused by a parasite of the genus *Plasmodium*. *Anopheles* mosquitoes in tropical zones transmit the parasite. Malaria transmission has been eliminated in many countries of the world, including the United States and countries of Western Europe. However, cases of malaria still occur in these countries, mostly in returning travelers or immigrants.

During 2010, there was **one case** of *Plasmodium vivax* malaria reported in Davis County. The case traveled to Guatemala during his exposure period and did not take prophylactic medication.

Additional Information: None

Action Steps: None

Future Steps: None

PLAGUE

Disease Reporting Requirements:

Healthcare Providers – report suspect cases immediately
Laboratories – report immediately and submit isolate to the Utah Public Health Laboratory

Purpose of Surveillance:

- To identify cases caused by bioterrorism
- To identify naturally-occurring sources of infection
- To identify contacts of cases requiring post-exposure prophylaxis

Disease Description:

Plague is a bacterial disease caused by *Yersinia pestis*. This bacterium is found in rodents and their fleas in many areas of the world, including the United States. Clinical forms of plague include bubonic, septicemic, pneumonic, and pharyngeal. *Y. pestis* is considered a potential agent of bioterrorism.

During 2010, there were **no cases** of plague reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

PSITTACOSIS

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report within 3 working days of identification

Purpose of Surveillance:

- To identify sources of transmission and eliminate risk to others
- To facilitate appropriate diagnostic testing and treatment for infected persons
- To monitor clean-up of contaminated areas and management of infected birds

Disease Description:

Psittacosis is a bacterial disease caused by the inhalation of the desiccated droppings, secretions, or dust from the feathers of birds infected with *Chlamydia psittaci*.

From 1999 – 2006, 137 cases of psittacosis were reported in the United States. Many more cases may occur that are not being reported.

During 2010, there were **no cases** of psittacosis reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

Q FEVER

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify sources of transmission and reduce the risk of additional cases
- To identify cases due to bioterrorism

Disease Description:

Q Fever is a bacterial disease caused by *Coxiella burnetii*. Cattle, sheep, and goats are the primary reservoirs of *C. burnetii*. Infection of humans usually occurs by inhalation of these organisms from air that contains airborne barnyard dust contaminated by dried placental material, birth fluids, and excreta of infected herd animals. Ingestion of contaminated milk, followed by regurgitation and inspiration of the contaminated food, is a less common mode of transmission. Other modes of transmission to humans, including tick bites and human-to-human transmission are rare. Many human infections are inapparent and because the disease is underreported, there is no reliable estimate of how many cases of Q fever have actually occurred worldwide.

C. burnetii could be developed for use in biological warfare and is considered a potential terrorist threat.

During 2010, there were **no cases** of Q-Fever reported in Davis County. Three suspect cases were investigated and ruled out.

Additional Information: None

Action Steps: None

Future Steps: None

RABIES (Human and Animal)

Disease Reporting Requirements:

Healthcare Providers and Laboratories – report suspect cases immediately

Purpose of Surveillance:

- To rapidly implement disease control measures
- To monitor the changing epidemiology of rabies

Disease Description:

Rabies is a preventable viral disease of mammals most often transmitted through the bite of a rabid animal. The vast majority of rabies cases reported to the Centers for Disease Control and Prevention (CDC) each year occur in wild animals like raccoons, skunks, bats, and foxes. Domestic animals account for less than 10% of the reported rabies cases, with cats, cattle, and dogs most often reported rabid. In Utah, the majority of cases are reported in bats.

Over the last 100 years, rabies in the United States has changed dramatically. More than 90% of all animal cases reported annually to CDC now occur in wildlife; before 1960 the majority were in domestic animals. The principal rabies hosts today are wild carnivores and bats. The number of rabies-related human deaths in the United States has declined from more than 100 annually at the turn of the century to one or two per year in the1990s. Modern day prophylaxis has proven nearly 100% successful. In the United States, human fatalities associated with rabies occur in people who fail to seek medical assistance, usually because they were unaware of their exposure.

During 2010, there were **no cases** of human rabies reported in Davis County. However, two bats tested positive.

Additional Information:

In 2010, Davis County Environmental Health submitted 75 specimens for rabies testing to the Unified State Laboratories: Public Health.

- Dogs 17
- Cats 33
- Bats 16
- Raccoon 5
- Skunk 3
- Mink 1

Of the 75 tested, two specimens were positive (both bats) and three were deemed un-testable; 49 % (37) involved a human exposure, 46% (35) were animal-to-animal exposures, and 4% (4) were indistinguishable.

The Communicable Disease program evaluated 43 individuals who reported an exposure to an "at-risk" animal. Each case was interviewed and evaluated for need of rabies post exposure prophylaxis (PEP). Those who were recommended PEP were tracked through completion of therapy or until PEP was no longer being received (either by choice or due to negative testing results of the suspect animal).

During the late spring and summer months, reports of animal bites become more prevalent. Rabies post-exposure prophylaxis (PEP) is evaluated on a case-by-case situation. Surveillance of positive animals guides the decision making-process. Rabies post-exposure prophylaxis is available through hospital emergency rooms. However, individual insurance plans often dictate where prophylaxis may be obtained.

Action Steps:

- Implementation of CDC guidelines pertaining to rabid animal exposures
- Ongoing coordination of efforts between the DCHD and Davis County Animal Control regarding rabid animal exposures
- Ongoing education to local hospitals on CDC guidelines
- Public notification of rabies awareness information (news release)
- Distribution of new 4-dose post exposure rabies vaccination regimen to the medical community
- Development of new rabies exposure reporting form

Future Steps:

- Educate local veterinarians on CDC guidelines and reporting laws pertaining to rabid animal exposures
- Educate local physicians/clinics on CDC guidelines pertaining to rabid animal exposures
- Implementation of statewide rabies workgroup
- Implementation of electronic rabies exposure reporting
- Partnership with local animal control to facilitate rapid communication on suspect/confirmed rabid animal exposures and to assist in the pre-exposure vaccination of at-risk employees

RELAPSING FEVER

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify sources of infections
- To facilitate appropriate treatment
- To provide disease prevention information

Disease Description:

Relapsing fever is a systemic disease caused by the spirochetes *Borrelia hermsii* and *Borrelia turicatae.* It is transmitted to humans by the bites of argasid ticks infected with the *Borrelia* spirochete from feeding on infected rodents and squirrels. In the U.S., relapsing fever is a tickborne disease that typically occurs in the western states.

During 2010, there were **no cases** of relapsing fever reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

ROCKY MOUNTAIN SPOTTED FEVER

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To facilitate appropriate diagnostic testing and treatment
- To identify sources of infections
- To provide disease prevention information

Disease Description:

Rocky Mountain spotted fever (RMSF) is a disease caused by the bacterium *Rickettsia rickettsii* (rick-ETT-cee-uh rick-ETT-cee-eye), which is carried by ticks. RMSF is the most severe and most frequently reported rickettsial illness in the U.S. In the last 50 years, approximately 250-1200 cases of RMSF have been reported annually in the U.S., although it is likely that many more cases go unreported.

During 2010, there were **no cases** of RMSF reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

TULAREMIA

Disease Reporting Requirements:

Healthcare Providers– report suspect cases immediately
Laboratories – report suspect cases immediately and submit appropriate specimen to the Utah Public Health Laboratory

Purpose of Surveillance:

- To facilitate prompt and appropriate treatment
- To identify and eliminate sources of transmission
- To identify cases caused by bioterrorism

Disease Description:

Tularemia is a bacterial disease caused by *Francisella tularensis.* Transmission occurs through the bites of arthropods that have fed on an infected animal, by handling infected animal carcasses, by eating or drinking contaminated food or water, or by inhaling infected aerosols in a laboratory setting. *Francisella tularensis* is considered a potential agent of bioterrorism. Approximately 200 cases tularemia are reported annually in the U.S., mostly in persons living in the south-central and western states.

During 2010, there were **no cases** of tularemia reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

VIRAL HEMORRHAGIC FEVER

Disease Reporting Requirements:

Healthcare Workers and Laboratories – report suspect cases immediately

Purpose of Surveillance:

- To identify source of infection and mode of transmission
- To study the pathogenesis of the viruses
- To gain knowledge about the ecology of these viruses and their hosts in order to provide advice about disease control and prevention

Disease Description:

Viral hemorrhagic fevers (VHFs) refer to a group of illnesses that are caused by four distinct families of viruses: arenaviruses, filovirus, bunyaviruses, and flaviviruses. Arthropod ticks, mosquitoes, and rodents serve as vectors for some of the illnesses. However, the hosts of some viruses remain unknown.

The viruses carried in rodent reservoirs are transmitted when humans have contact with urine, fecal matter, saliva, or other body excretions from infected rodents. The viruses associated with arthropod vectors are spread most often when the vector mosquito or tick bites a human, or when a human crushes a tick. However, some of these vectors may spread virus to animals, livestock, for example. Humans then become infected when they care for or slaughter the animals. Some viruses that cause hemorrhagic fever such as Ebola, Marburg, Lassa and Crimean-Congo hemorrhagic fever viruses can be spread from person-to-person.

Taken together, the viruses that cause VHFs are distributed over much of the globe. However, because each virus is associated with one or more particular host species, the virus and the disease it causes are usually seen only where the host species live(s).

During 2010, there were **no cases** of VHFs reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

WEST NILE VIRUS

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report within three working days of identification.

Purpose of Surveillance:

- To assess the impact of the disease
- To monitor trends
- To identify risk factors for infection and determine high risk populations
- To identify areas in need of targeted interventions

Disease Description:

Most West Nile Virus (WNV) infections are mild and often clinically inapparent. Approximately 20% of those infected develop a mild illness (West Nile Fever). Approximately 1 in 150 infections will result in severe neurological disease. The most significant risk factor for developing severe neurological disease is advanced age.

During 2010, there was **one human case** of neuroinvasive West Nile virus reported in Davis County. Exposure likely occurred during travel to Arizona.

Non-human West Nile Virus Surveillance Positive Results: Davis County		
Sentinel Chickens	Horses	Mosquito Pools
1	0	2

Additional Information:

In 2010, Davis County detected WNV activity in one sentinel chicken and in two mosquito pools.

Action Steps:

- Investigation of confirmed cases to obtain clinical manifestations and infection demographics (location where disease may have been acquired)
- Public education campaign to ensure dissemination of information to at-risk populations
- Provided resource materials to the medical community
- Distribution of mosquito repellant at outdoor community activities

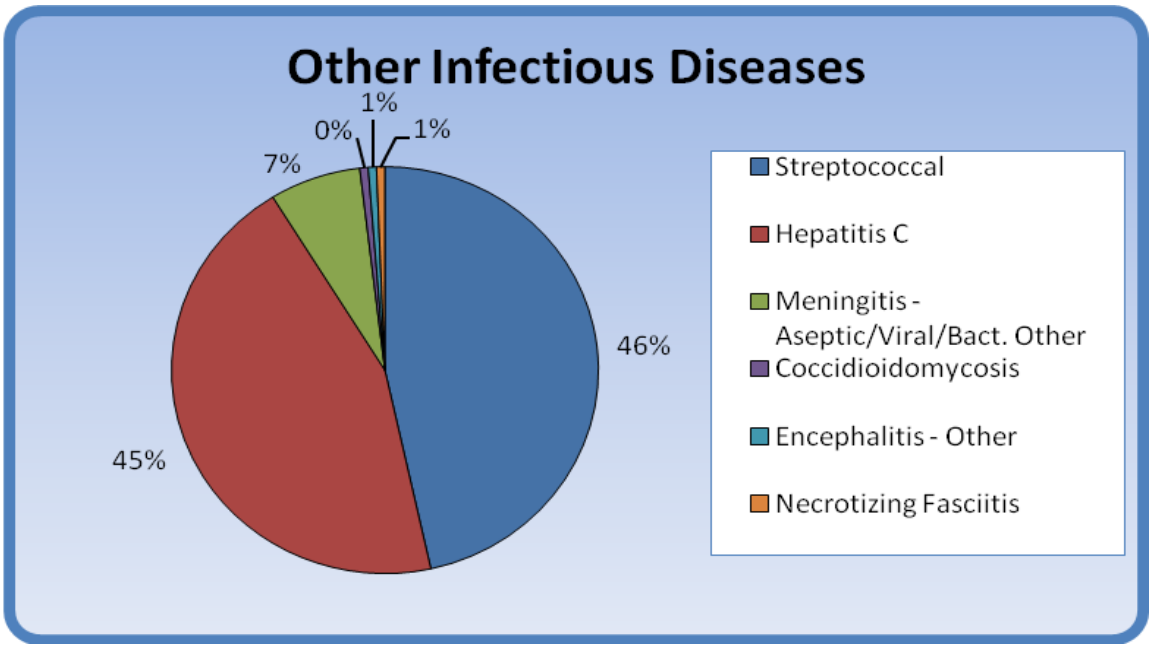
Future Steps:

- On-going public education campaign
- Enhanced surveillance activities to assist in the prompt detection of seasonal WNV activity

Other Infectious Diseases

All other diseases that do not fall under a specific identified category will be discussed in this section.

What: Invasive streptococcal infections made up the majority of this category, followed by hepatitis C and meningitis cases.



COCCIDIOIDOMYCOSIS

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify sources of infection and outbreaks for investigation

Disease Description:

Coccidioidomycosis is an infectious disease caused by inhaling spores of the fungus *Coccidioides immitis*. The disease starts out as a respiratory illness and may progress to a persistent infection. Disseminated coccidioidomycosis is the most severe form of the disease and is often fatal. In endemic areas such as Arizona, 10-50% of the population are skin-test positive for coccidioidomycosis.

During 2010, there was **one case** of coccidioidomycosis reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

CREUTZFELDT-JAKOB DISEASE (CJD)
(AND OTHER TRANSMISSIBLE SPONGIFORM ENCEPHALOPATHIES (TSEs))

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify the source of infection
- To eliminate possible sources of transmission

Disease Description:

Prion diseases or transmissible spongiform encephalopathies (TSEs) are a family of rare progressive neurodegenerative disorders that affect both humans and animals. They are distinguished by long incubation periods, characteristic spongiform changes in the brain associated with neuronal loss, and failure to induce inflammatory response.

The causative agent of TSEs is believed to be a prion. A prion is an abnormal, transmissible agent that is able to induce abnormal folding of normal cellular prion proteins in the brain, leading to brain damage and the characteristic signs and symptoms of the disease. Prion diseases are usually rapidly progressive and always fatal.

Classic CJD is a human prion disease. It is a neurodegenerative disorder with characteristic clinical and diagnostic features. Infection with this disease leads to death usually within 1 year of onset of illness.

Classic CJD has been recognized since the early 1920s. The most common form of classic CJD is believed to occur sporadically, caused by the spontaneous transformation of normal prion proteins into abnormal prions. This sporadic disease occurs worldwide, including the United States, at a rate of approximately one case per 1 million population per year, although rates of up to two cases per million are not unusual. The risk of CJD increases with age, and in persons aged over 50 years of age, the annual rate is approximately 3.4 cases per million. In recent years, the United States has reported fewer than 300 cases of CJD a year. Whereas the majority of cases of CJD (about 85%) occur as sporadic disease, a smaller proportion of patients (5-15%) develop CJD because of inherited mutations of the prion protein gene.

During 2010, there were **no cases** of CJD or other TSEs reported in Davis County. Since 1999, 15 Utahans have died of CJD. This number is not higher than expected.

Additional Information: None
Action Steps: None
Future Steps: None

HAEMOPHILUS INFLUENZAE (INVASIVE DISEASE)

Disease Reporting Requirements:

Healthcare Providers – report suspect cases immediately
Laboratories – report immediately and submit appropriate specimens to the Utah Public Health Laboratory

Purpose of Surveillance:

- To identify *Haemophilis influenzae* serotype b (Hib) disease for investigation
- To monitor occurrence of invasive disease due to non-serotype b *Haemophilis influenzae*
- To identify contacts of persons with Hib infection, and assure administration of post-exposure prophylaxis

Disease Description:

Prior to 1987, most invasive *Haemophilis influenzae* infections were due to Hib. Colonization of type b organism is rare, occurring in < 2-5% of children. The introduction of the Hib conjugate vaccine in 1987 led to a rapid decline in the number of pediatric invasive *Haemophilis influenzae* infections – a 99% decrease in cases per 100,000 children younger than 5 years of age.

During 2010, there were **no cases** of invasive *Haemophilis influenzae* reported in Davis County.

Additional Information:

Chemoprophylaxis is indicated for contacts to *Haemophilis influenzae* type b disease.

Action Steps: None

Future Steps: None

HANSEN'S DISEASE (LEPROSY)

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify source of infection
- To ensure prompt antibiotic treatment

Disease Description:

Hansen's Disease is a chronic bacterial disease caused by *Mycobacterium leprae.* The mode of transmission for this disease is not fully understood, however, most investigators think that *M. leprae* is usually spread from person-to-person in respiratory droplets. Close contacts with patients with untreated, active disease, and persons living in countries with highly endemic disease are at highest risk.

Hansen's Disease is very rare in the United States, but is common in other parts of the world. Places where Hansen's Disease is common include South and Southeast Asia and some parts of Latin America.

During 2010, there were **no cases** of Hansen's Disease reported in Davis County. However, one case from 2009 continued with monthly directly observed therapy for lepromatous disease.

Additional Information:

Leprosy (Hansen's disease) has two common forms, tuberculoid and lepromatous, and these have been further subdivided. Both forms produce sores on the skin, but the lepromatous form is most severe, producing large, disfiguring lumps and bumps.

Over the past 3 years, Davis County has had two cases – both of which were imported infections.

Action Steps:

- Communication & consultation with the NHDP to help diagnose and treat infected individual
- Monthly direct observed therapy (DOT) was conducted by health department staff to ensure treatment compliancy
- Education on disease transmission and communicability was provided to contacts of the Hansen's case
- Ongoing communication & consultation with Infectious Disease physician

Future Steps:

- Ongoing monitoring of adherence & response to therapy

HEPATITIS C (ACUTE AND CHRONIC INFECTIONS)

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

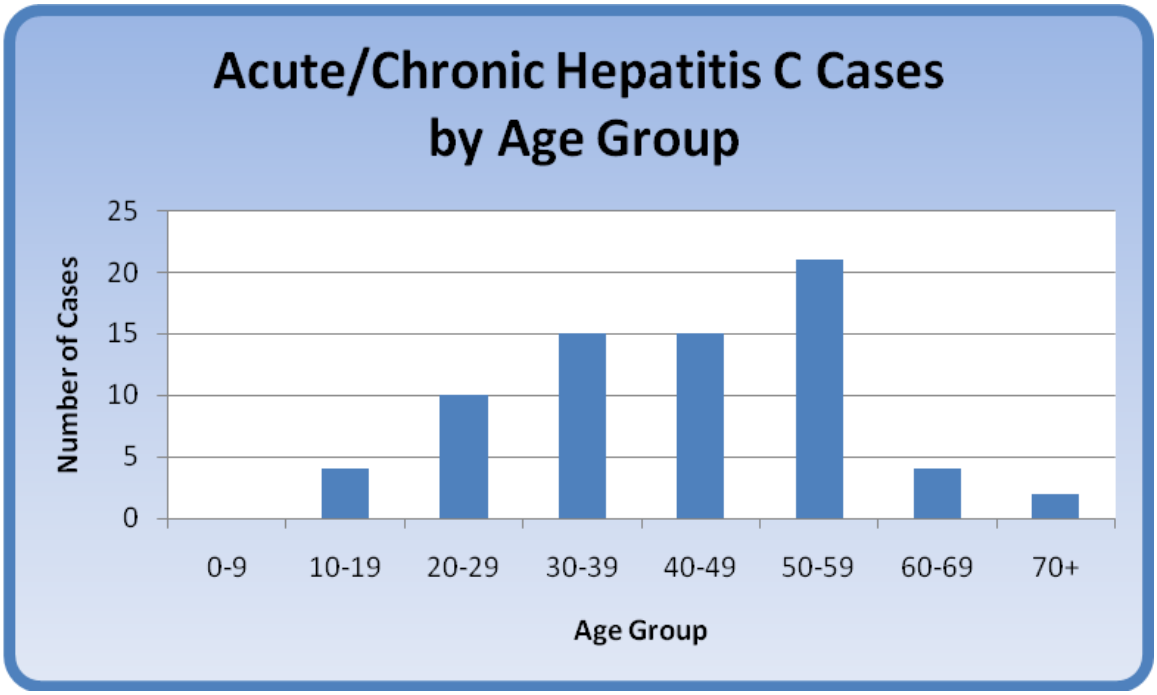
- To provide education to cases in order to minimize risk of transmission and to reduce risk factors for development of chronic liver disease
- To identify epidemiological features of hepatitis C for prioritization of prevention activities

Disease Description:

Hepatitis C (HCV) is transmitted primarily by direct exposure to blood of HCV-infected people. The prevalence of HCV infection in the general population of the U.S. is estimated at 1.8%. Highest prevalence is among people with large or repeated direct percutaneous exposure to blood or blood products, such as injection drug users and people with hemophilia who were treated with clotting factor concentrates produced before 1987.

During 2010, there were **71 reports** of HCV in Davis County, a decrease from the 115 cases reported in 2009.

Cases are most common in the 50-59 year age group; 72% are between the ages of 30 to 50 years. More than 59% of cases are male.



Additional Information:

Hepatitis C is typically reported as a positive HCV antibody test. Investigation of this disease is focused on determining whether the case is acute, chronic, or a false-positive. Additional confirmatory testing is necessary. There were three acute cases identified among the 71cases reported in 2010. Risk factors for HCV infection include history of injecting drug use, body piercing and tattoos, blood transfusions, exposure to contaminated medical devices, mother to infant, and exposure to other HCV infected individuals (sexual and/or household contacts). The majority of cases are asymptomatic.

Action Steps:

- Obtaining confirmatory testing or encouraging confirmatory testing on all HCV antibody positive cases
- Referral to gastroenterologist for follow-up care
- Education on communicability of infection and preventative measures

Future Steps:

- Education to medical community on the need for confirmatory testing
- Risk-reduction education to the public

LEGIONELLOSIS

Disease Reporting Requirements:

Healthcare Providers - report cases within 3 working days of identification
Laboratories - report cases within 3 working days of identification and submit appropriate specimen to the Utah Public Health Laboratory

Purpose of Surveillance:

- To identify common source outbreaks and nosocomial cases for investigation
- To identify and eliminate preventable sources of transmission

Disease Description:

Legionellosis is a bacterial infection caused by *Legionella pneumophila*. The disease is transmitted through the air from a soil or water source. All studies to date have shown that person-to-person spread does not occur. Outbreaks occur following the exposure of many individuals to a common source of *Legionella pneumophila* bacteria in the environment.

An estimated 8,000-18,000 cases occur each year in the United States, but only a fraction of these are reported. Most legionellosis cases are sporadic; 23% are nosocomial and 10%-20% can be linked to outbreaks.

During 2010, there were **no cases** of Legionellosis reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps:

- Provide ongoing guidance to medical facilities regarding Legionella testing and control measures for their facilities

MENINGOCOCCAL DISEASE (INVASIVE)

Disease Reporting Requirements:

Healthcare Providers – report suspect cases immediately
Laboratories – report immediately and submit isolate to the Utah Public Health Laboratory

Purpose of Surveillance:

- To identify cases and exposed persons and implement appropriate disease control measures including post-exposure prophylaxis
- To identify outbreaks of disease requiring use of meningococcal vaccine
- To monitor trends in the incidence of specific serotypes and strains of *Neisseria meningitidis*

Disease Description:

Meningococcal Disease is a severe infection caused by the bacteria *Neisseria meningitidis*. The organism is transmitted via respiratory droplets. Carriers may be asymptomatic or have only mild respiratory symptoms. Risk factors for invasive meningococcal disease include age less than one year, smoking, recent viral respiratory infection, and living in certain close settings such as dormitories.

The current rate of disease in the U.S. is 1.3 cases/100,000 population per year. In the U.S. serogroups C and Y are the most prevalent, each causing 33% of the reported invasive disease. This disease is most common in winter and spring.

During 2010, there were **no cases** of invasive meningococcal disease reported in Davis County.

Additional Information:

Invasive meningococcal infections have an 8-15% mortality rate, with an estimated 10-20% long-term sequelae for those who survive. Therefore, suspicion of this disease needs to be reported versus waiting for confirmatory results. Davis County has had meningococcal outbreaks in the past, but these outbreaks were contained due to rapid notification, early identification, prompt prophylactic treatment of contacts, and the administration of the meningococcal vaccine.

Action Steps: None

Future Steps:

- On-going promotion of the meningococcal vaccine – especially for high risk individuals (i.e. college freshman living in a dormitory, crowding, low socioeconomic status, and day care/nursery facilities)

MENINGITIS (ASEPTIC/VIRAL and BACTERIAL)

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify common source outbreaks for investigation
- To identify types that may be communicable and may require disease control measures and preventive treatment for contacts of cases

Disease Description:

Meningitis can be caused by a number of viruses and bacteria. Aseptic/viral meningitis is generally less severe, resolving without specific treatment. Bacterial meningitis can be quite severe and may result in brain damage, hearing loss, disability, or death.

Prior to the 1990s, *Haemophilis influenzae* was the leading cause of bacterial meningitis in the U.S. Since the introduction of the Hib vaccine, *Streptococcus pneumoniae* and *Neisseria meningitidis* have taken the lead as causes of bacterial meningitis.

Enteroviruses are the leading identifiable cause of aseptic/viral meningitis in children and adults, particularly in summer and autumn in the U.S. However the epidemiology of aseptic/viral meningitis is changing with the emergence of West Nile virus.

During 2010, there were **11 cases** of aseptic/viral and **two cases** of bacterial meningitis reported in Davis County. Of those, three cases were due to enterovirus, two were due to staphylococcus Aureus, and the causative organism was not identified for the remaining 6 cases**.**

Additional Information:

All meningitis cases are promptly investigated to identify the causative organisms in order to implement appropriate disease control measures.

Action Steps: None

Future Steps: None

SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

Disease Reporting Requirements:

Healthcare Providers and Laboratories – report suspect cases immediately

Purpose of Surveillance:

- To promptly detect cases and their contacts
- To rapidly implement of control measures

Disease Description:

Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus, called SARS-associated coronavirus (SARS-CoV). SARS was first reported in Asia in February 2003. Over the next few months, the illness spread too many countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained. The virus that causes SARS is transmitted most readily by respiratory droplets spread person-to-person.

Currently, there is **no** known SARS transmission anywhere in the world. The most recent human cases of SARS-CoV infection were reported in China in April 2004 in an outbreak resulting from laboratory-acquired infections.

Additional Information: None

Action Steps: None

Future Steps: None

SMALLPOX

Disease Reporting Requirements:

Healthcare Providers and Laboratories – report suspect cases immediately

Purpose of Surveillance:

- To facilitate criminal investigation
- To rapidly implement disease control measures

Disease Description:

Smallpox was a systemic viral disease caused by the variola virus, a species of *Orthopoxvirus*. The last naturally acquired case of smallpox in the world occurred in October 1977 in Somalia. Global eradication was certified by the World Health Organization two years later. Smallpox is considered a potential agent of bioterrorism.

Davis County had **no cases** of Smallpox reported in 2010.

Additional Information: None

Action Steps: None

Future Steps: None

STAPHYLOCOCCUS AUREUS WITH RESISTANCE OR INTERMEDIATE RESISTANCE TO VANCOMYCIN (VRSA & VISA)

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To assess the extent of the transmission of the organism
- To rapidly identify contacts of cases
- To provide appropriate infection control guidance

Disease Description:

VISA and VRSA are specific types of antimicrobial-resistant staph bacteria. While most staph bacteria are susceptible to the antimicrobial agent vancomycin, some have developed resistance. VISA and VRSA cannot be successfully treated with vancomycin because these organisms are no longer susceptible to vancomycin. However, to date, all VISA and VRSA isolates have been susceptible to other Food and Drug Administration (FDA) approved drugs.

VISA and VRSA infections are extremely rare. To date, there have been 8 cases of VISA and 3 cases of VRSA reported in the United States.

During 2010, there were **no cases** of VISA or VRSA reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

STREPTOCOCCAL DISEASE (INVASIVE)

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify risk factors associated with invasive infections
- To monitor the changing epidemiology of invasive infections

Disease Description:

The primary invasive Streptococcal diseases of public health concern are Group A, Group B and *Streptococcus pneumoniae*.

Group A Streptococcal invasive disease manifests as necrotizing fasciitis [NF], streptococcal toxic shock syndrome [STSS], bacteremia, and pneumonia. 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.

Group B Streptococcal invasive disease in neonates manifests as sepsis, pneumonia and meningitis. Infection in the first week of life is called "early-onset disease." 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 GBS colonization occurs. Mode of transmission of disease in non-pregnant adults and older infants (>1 week) is unknown.

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

Group G streptococcus is a normal human flora and individuals with this disease have underlying health problems, especially cancer.

Streptococcus pneumoniae invasive disease manifests as pneumonia, bacteremia, meningitis, and arthritis. More than 90 serotypes exist, and of the strains causing invasive disease, 88% are serotypes included in the 23-valent polysaccharide vaccine. Before the new pneumococcal conjugate vaccine was introduced in 2001, over 80% of invasive isolates in children <5 years old were those that are included in the 7-valent vaccine.

During 2010, there were **74 cases** of invasive streptococcal infections reported in Davis County, a 56% increase from the 48 cases reported in 2009. The most commonly reported streptococcal infections were "Invasive Streptococcal Disease- Other" (which includes *S. viridians, S. mutans* and *S. Salivarius* among others) with 28 cases and invasive *Streptococcus pneumonia* infections with 20 cases.

Invasive Streptococcal Infections by Type	Number of Cases
Streptococcal disease, invasive-Other	28
Streptococcus pneumoniae, invasive disease	20
Streptococcal disease, invasive-Group A	12
Streptococcal disease, invasive-Group B	8
Streptococcal disease, invasive-Groups C and G	6
Total	**74**

Additional Information:

Most invasive streptococcal infections are isolated in blood cultures. Some have obvious sources of infection (i.e. wounds, post surgical), while others manifest with early "flu-like" symptoms, leading up to invasive infections (meningitis, pneumonia or bacteremia).

In 2010, Davis County had **nine** streptococcal deaths. Four were related to group A streptococci, two were due to *Streptococcus pneumonia*, and one each were due to group B streptococci, group C streptococci and alpha hemolytic streptococci (not *S. pneumonia).*

Action Steps:

As a result of the increase in streptococcal deaths, additional action steps were implemented:

- Enhanced surveillance efforts
- Dissemination of information to the medical community
- Spatial analysis was applied to cases to identify possible clustering
- In-depth investigation to identify commonalities and possible sources of infection in the community

Future Steps:

- Ongoing enhanced surveillance

TOXIC-SHOCK SYNDROME

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify etiologic agent
- To identify risk factors

Disease Description:

Toxic shock syndrome is most often caused by exotoxin producing strains of *Staphylococcus aureus*. *S. aureus* commonly colonizes skin and mucous membranes in humans. TSS has been associated with use of tampons and intravaginal contraceptive devices in women and also occurs as a complication of skin abscesses or surgery.

During 2010, there were **7 cases** of toxic shock reported in Davis County. Six cases were due to group A streptococcus and one case was due to group C streptococcus. Two of the cases also had necrotizing fasciitis and five of the cases (71%) were fatal.

The mortality rate in patients with toxic shock syndrome is approximately 3-5%. The mortality rate in patients with streptococcal toxic shock syndrome is approximately 30%.

Additional Information: None

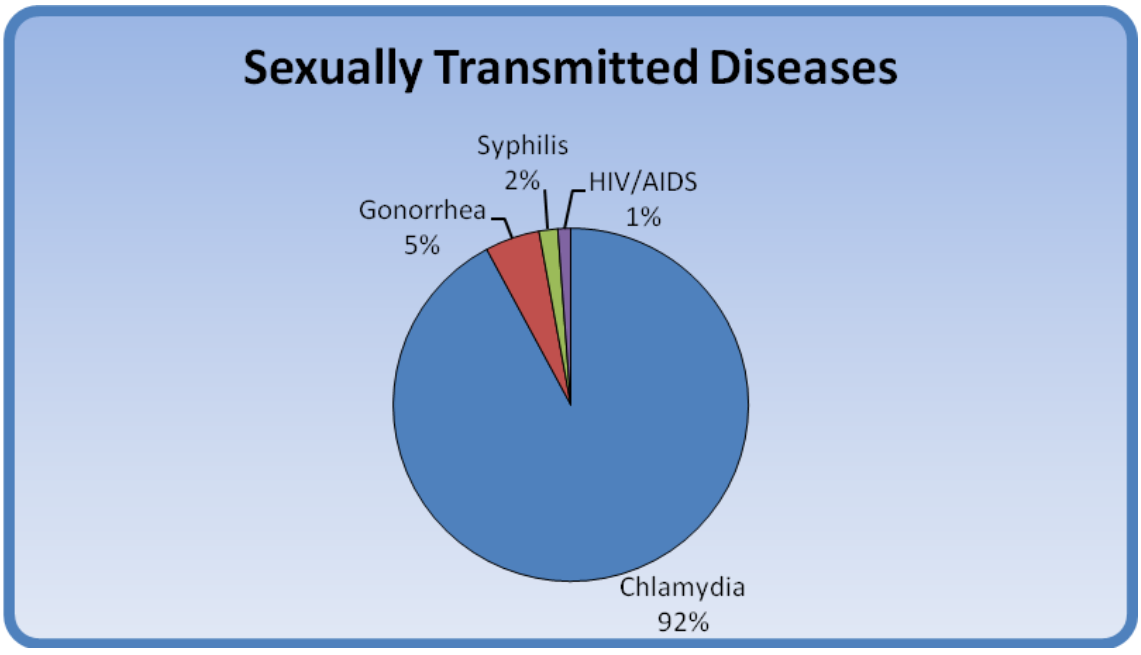
Action Steps: None

Future Steps: None

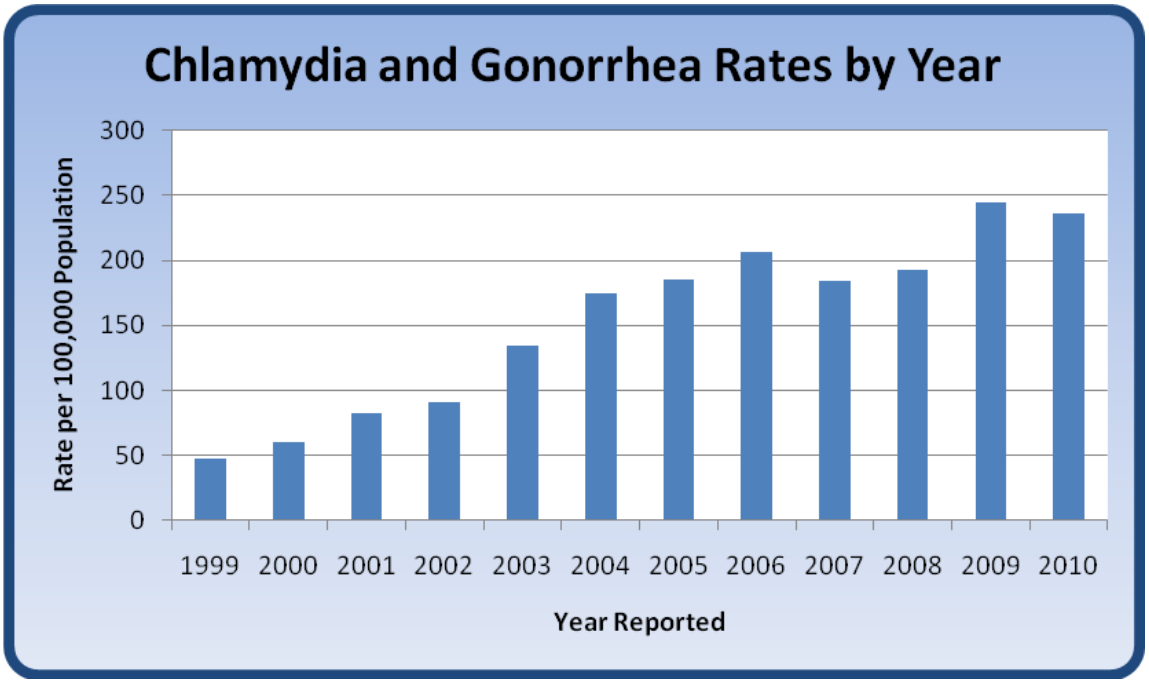
Sexually Transmitted Diseases

Sexually transmitted diseases (STD) are caused by bacteria, viruses, and other organisms transmitted from one person to another through sexual activity. Bacterial STDs such as chlamydia, gonorrhea, and syphilis, are curable – using appropriate antibiotic therapy. However, permanent damage may occur (i.e. pelvic inflammatory disease, scar tissue). Viral STDs such as herpes (HSV), human papillomavirus (HPV), hepatitis B, and human immunodeficiency virus (HIV) are not typically curable, but medication is available to improve quality of life by decreasing the symptoms. Complications from STDs range from mild/moderate illness to infertility, chronic pain, cancer, and even death. Less invasive testing techniques (i.e. urine testing) have made chlamydia and gonorrhea testing more convenient.

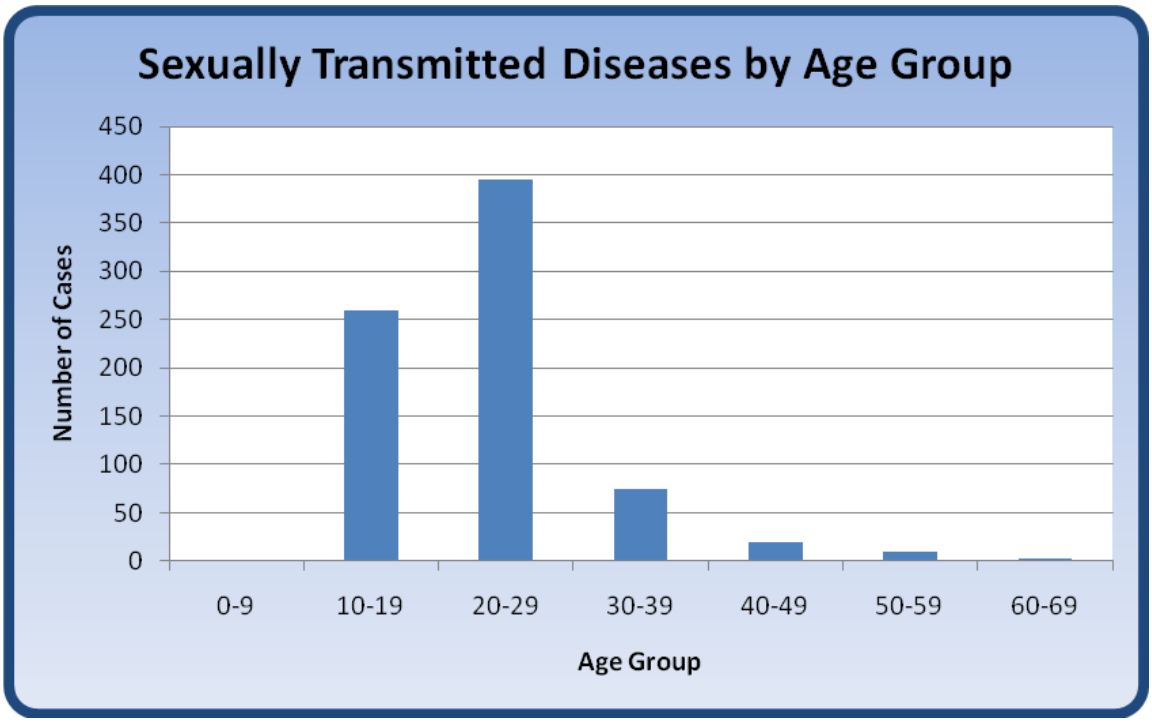
What: The sexually transmitted diseases reported during 2010 were chlamydia, gonorrhea, syphilis, HIV and AIDS. Chlamydia was the most commonly reported with 702 cases, followed by gonorrhea with 38 cases.



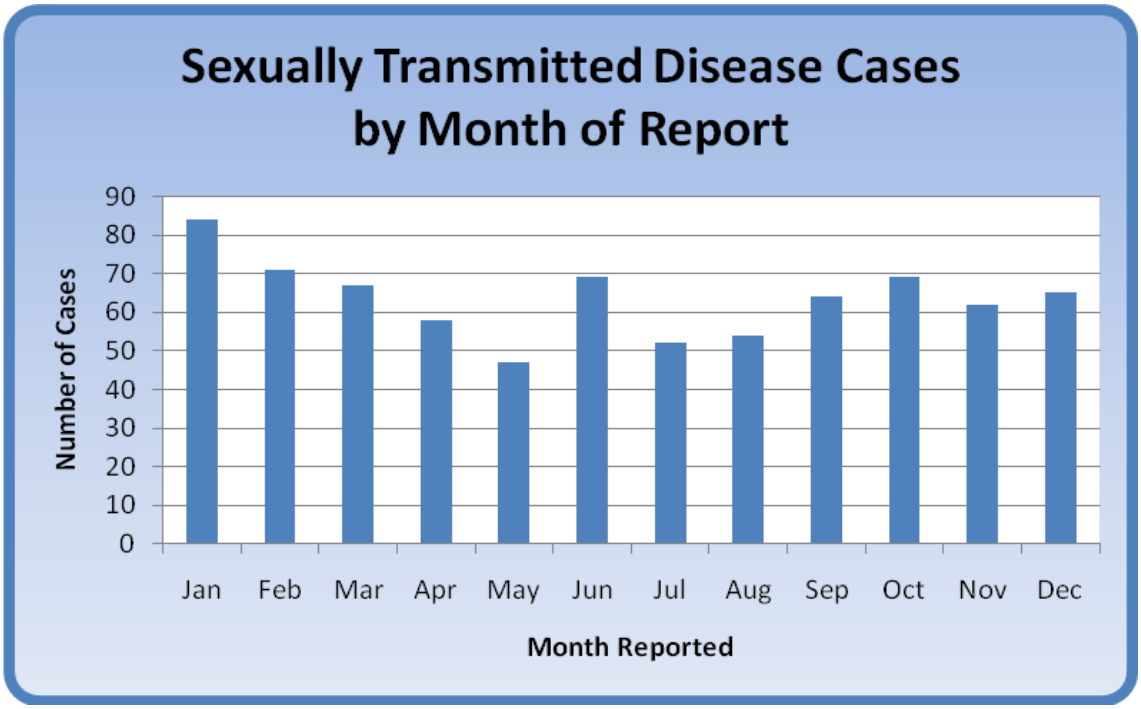
Chlamydia and gonorrhea rates have been increasing for the past several years. This is partially due to increased screening of high risk individuals. The rate of chlamydia/gonorrhea infections decreased slightly from 2009 to 2010.



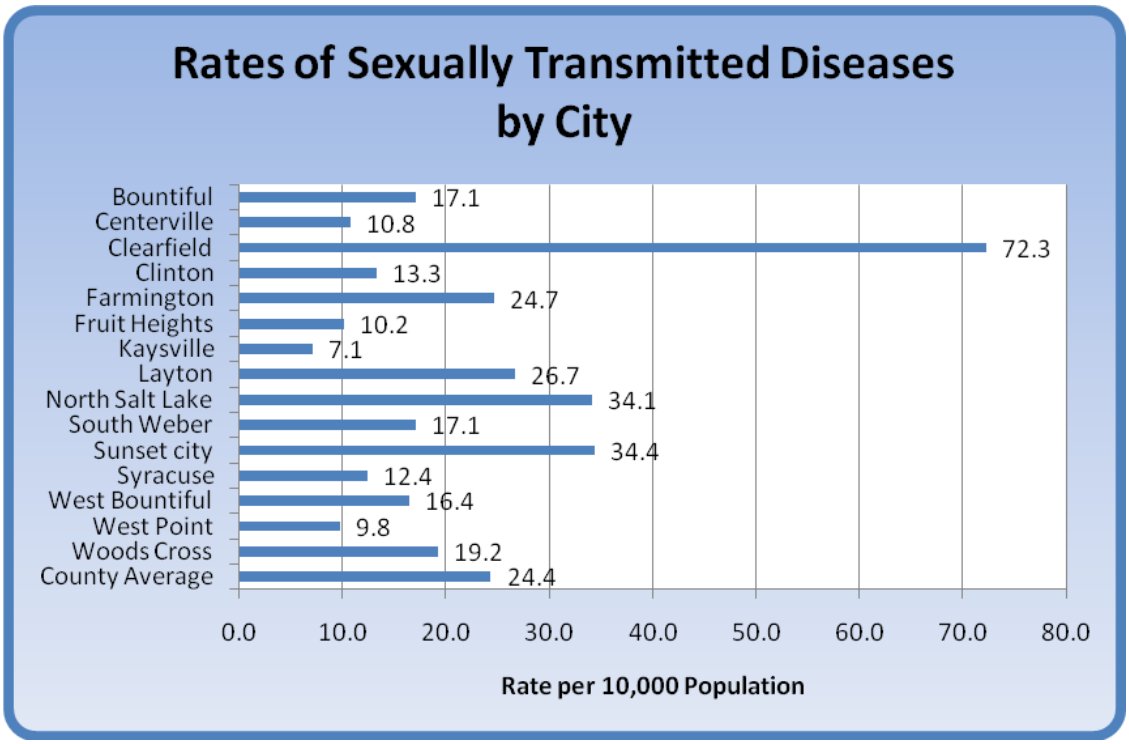
Who: Sexually transmitted diseases were most often reported among women (61%) and among 20-29 year olds.



When: Sexually transmitted diseases were reported every month with an average of 64 cases per month. STDs do not have any seasonal trend.



Where: Sexually transmitted diseases occurred among residents of every city in Davis County. The average rate per city was 24.4 cases per 10,000 residents.



ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS) and HUMAN IMMUNODEFICIENCY VIRUS (HIV)

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To assess HIV and AIDS incidence and prevalence in Davis County
- To implement disease control measures such as risk-reduction education/counseling, partner elicitation and notification, and testing/treatment

Disease Description:

AIDS was first reported in the United States in 1981 and has since become a major worldwide epidemic. AIDS is caused by the human immunodeficiency virus (HIV). HIV is transmitted person-to-person through the exchange of deep body fluids from one person to another (i.e. sexual intercourse), abraded skin or mucus membrane contact with infected blood, CSF, vaginal secretions or semen; the use of HIV-contaminated needles and syringes; transfusion of infected blood; and transplantation of HIV-infected tissues or organs. HIV can also be transmitted from an infected mother to an infant during pregnancy, through the birth process and/or in breast milk.

During 2010, there were **nine cases** of HIV/AIDS reported in Davis County.

Additional Information:

The HIV/AIDS disease incidence in Davis County is low. Although STDs in general are the number one disease burden, the true prevalence of HIV infected individuals in the community is unknown. This is due in part to the nature of this disease. Infected individuals can be asymptomatic for many years and therefore do not seek testing.

Currently, there are 2,551 known HIV positive individuals in Utah, with 152 coming from Davis County (including AIDS cases). Davis County has the 4th highest prevalence of HIV/AIDS in Utah, with Salt Lake County being the highest.

Action Steps:

- Strict confidentiality is maintained on all HIV/AIDS case investigations
- Focus is centered on partner elicitation, notification, and free testing/treatment
- Extensive risk-reduction counseling is provided to all positive cases and their contacts
- Outreach STD/HIV education in the Davis School District for Jr. High (8th grade) and High School (10th/11th grade) students and also at the two Davis County Job Corps Centers (Clearfield & Weber Basin)
- Web access, via Davis School District for the HIV/STD Power Point presentations
- Referrals to appropriate resources
- Rapid HIV testing now used in the STD contact clinic

Future Steps:

- Continued public education on risk-reduction activities
- Ongoing partnership with Midtown Community Health Center - Davis to offer free screening
- Outreach activities concentrating on reaching at-risk populations
- Davis County website specifically addressing STD & HIV/AIDS, including educational materials, testing locations, and other resource materials

CHANCROID

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To identify source of infection
- To implement disease control measures such as risk-reduction education/counseling, partner elicitation and notification, and testing/treatment

Disease Description:

Chancroid is an acute bacterial disease caused by *Haemophilus ducreyi*. It is transmitted through direct sexual contact to discharges from infected lesions and pus from buboes. Auto-transmission to non-genital sites may occur in infected persons. Chancroid occurs most often among men and is most prevalent in tropical and subtropical regions.

During 2010, there were **no cases** of chancroid reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

CHLAMYDIA

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

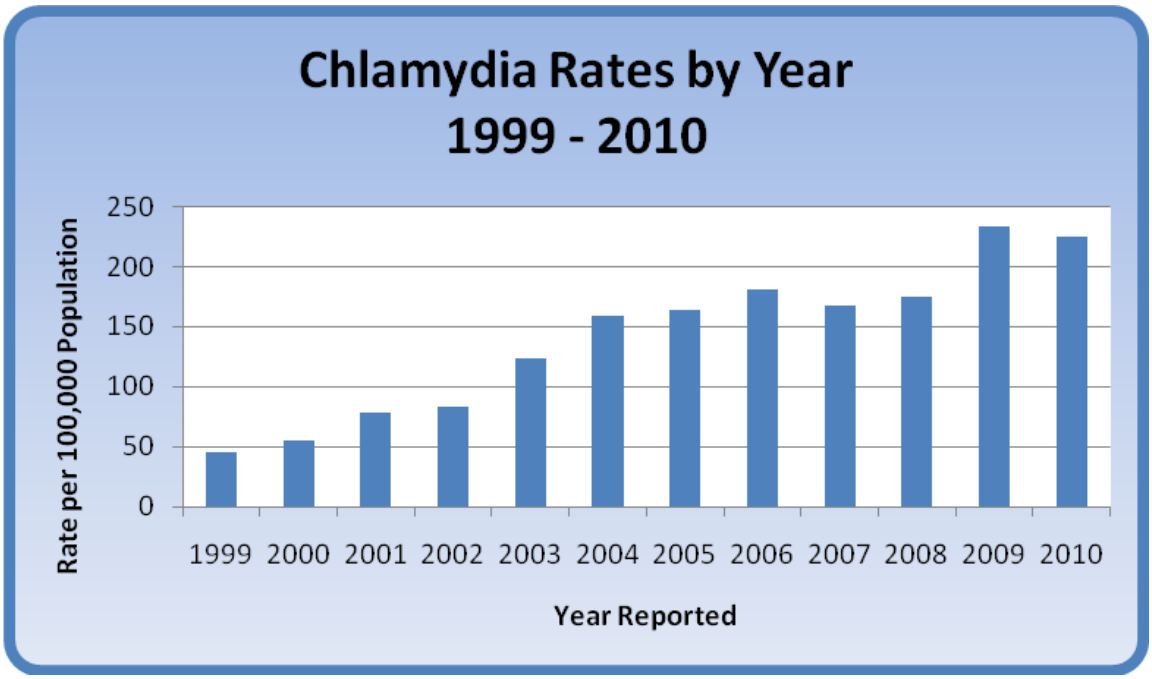
Purpose of Surveillance:

- To implement disease control measures such as risk-reduction education/counseling, partner elicitation and notification, and testing/treatment
- To identify high risk populations for targeted intervention
- To monitor trends over time and across subpopulations

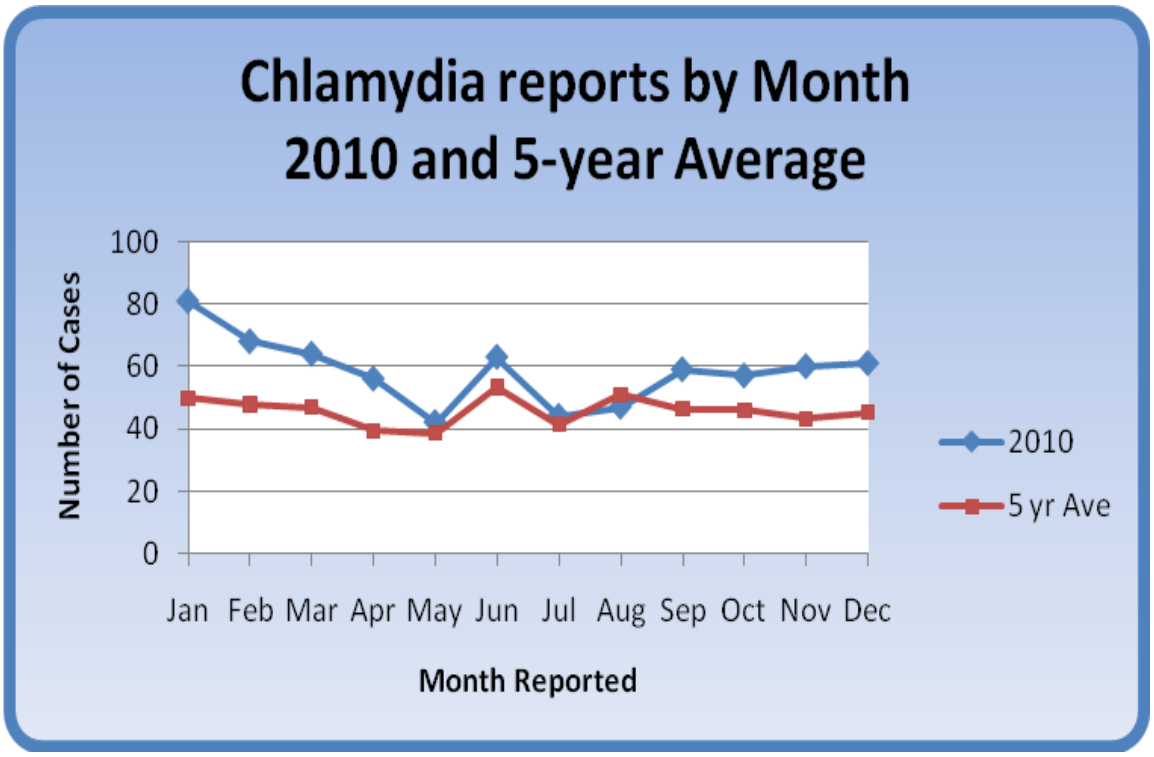
Disease Description:

Chlamydia is a sexually transmitted bacterial disease (STD) caused by the bacteria *Chlamydia trachomatis***.** Chlamydia is one of the most common STDs reported in the United States. The vast majority of chlamydia infections are asymptomatic. Approximately 75% of females and 50% of males who are infected do not have any symptoms. Serious complications include chronic pain and sterility in both males and females.

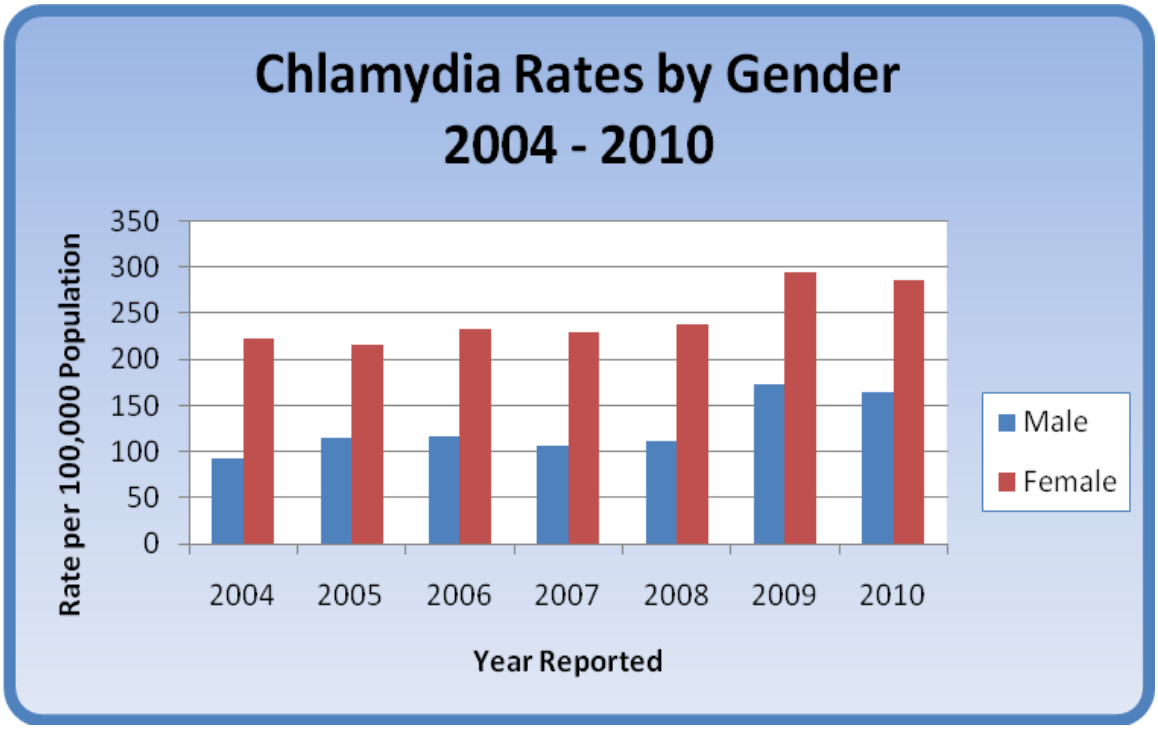
During 2010, there were **702 cases** of chlamydia reported in Davis County, a slight decrease from the 735 cases reported in 2009.



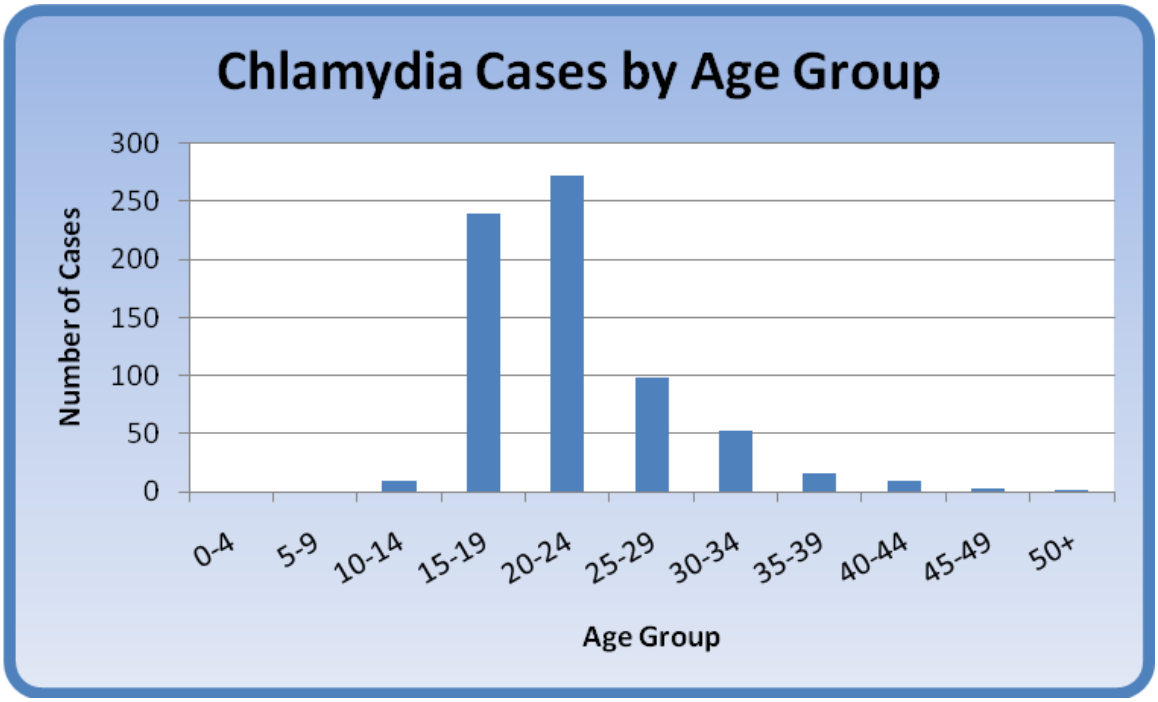
During 2010, the average number of chlamydia reports per month was 59 (range 42-81).



As in previous years, the rate of chlamydia was higher among females in 2010. This is due in part to testing during routine annual female exams.



Chlamydia cases ranged in age from 10 to 54 years; almost 73% of the cases were reported among 15-24 year olds.



Additional Information:

Chlamydia infection in Davis County is of great concern. During interviews with infected individuals, numerous high-risk activities are indentified (i.e., multiple sex partners, unknown sex partners, unprotected sex, increase in oral and anal sexual activity). A complacent attitude toward STDs in general has also been noted. Because chlamydia can be readily cured with antibiotics, individuals have less concern about being infected or spreading the infection to their contacts. Investigations also noted a high incidence of asymptomatic cases.

Action Steps:

- Efforts were centered on contact tracing, which included home/site visits for high-risk cases that were unreachable by phone
- Free testing and treatment is offered to sexual contacts of positive cases
- Outreach STD/HIV education in the Davis School District for Jr. High (8th grade) and High School (10th/11th grade) students. Additional outreach education was provided to at-risk populations within the community
- Web access via Davis School District for the HIV/STD power point presentations
- Provided county physicians/clinics with free medication to treat their patients who are uninsured and diagnosed with an STD

Future Steps:

- Continued aggressive case investigations and contact tracing (contact cards, hotline, website, emails, original patient referrals)
- Reach at-risk population to provide testing, treatment and risk reduction education
- Develop new techniques to increase public awareness (website, brochures, presentation within the community, parent education packets)
- Development of a website page specific for STD information and education

GONORRHEA

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

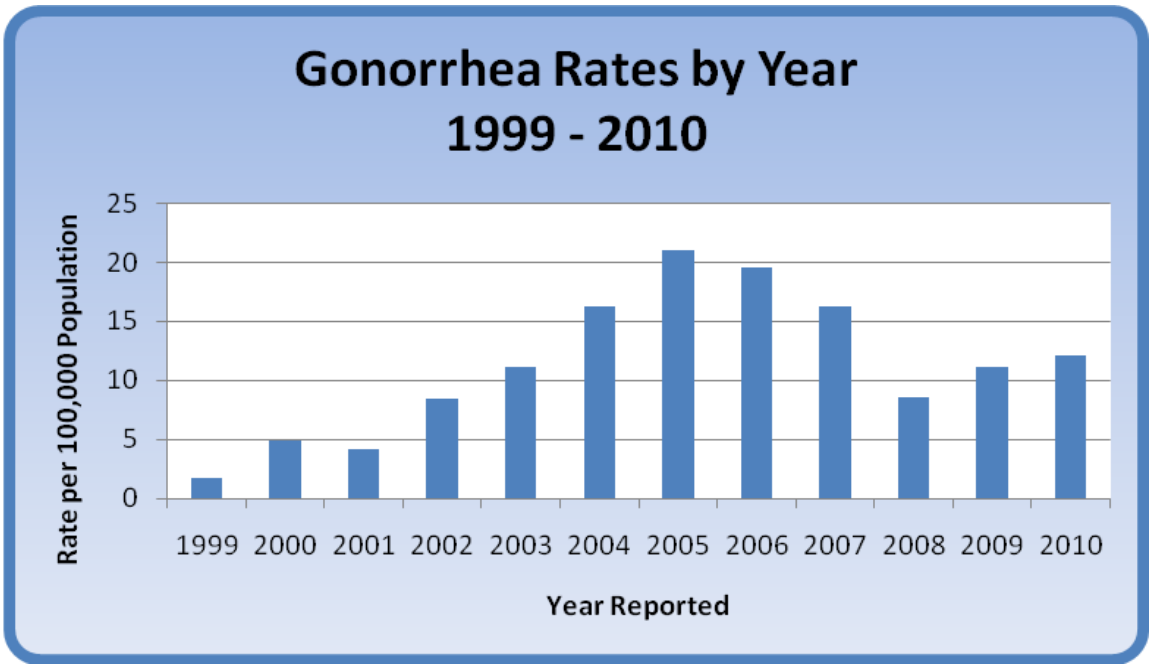
Purpose of Surveillance:

- To implement disease control measures such as counseling, partner elicitation and notification, testing and treatment, and risk-reduction education
- To identify high risk populations for targeted intervention
- To monitor trends over time and across subpopulations

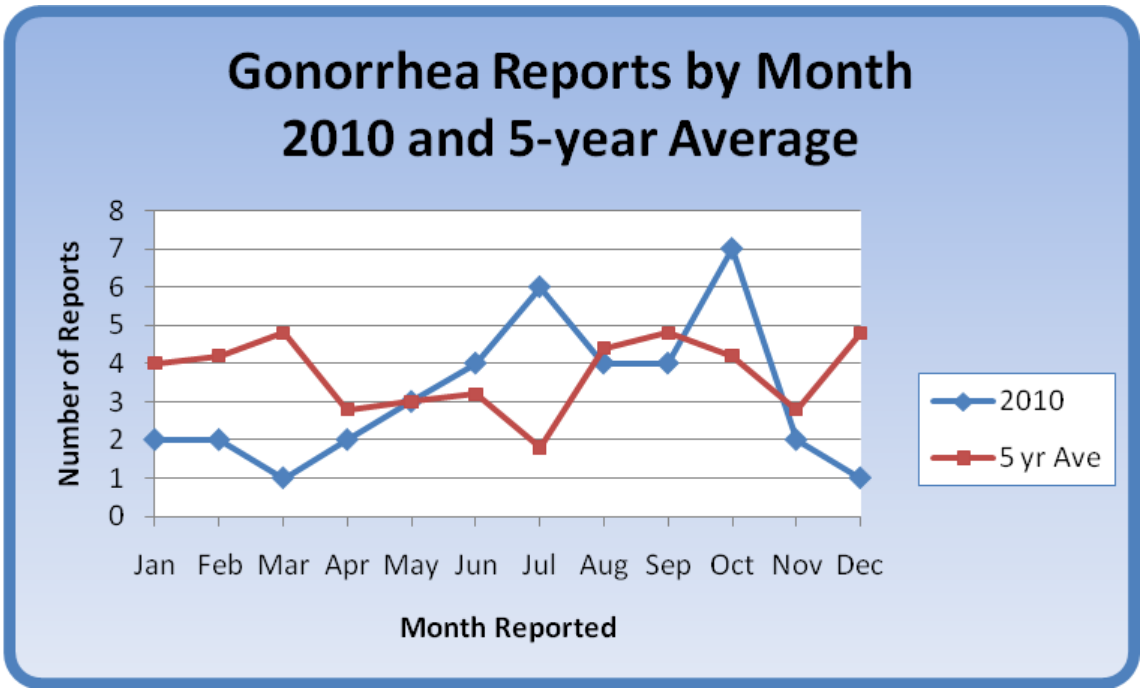
Disease Description:

Gonorrhea is a sexually transmitted disease caused by the bacteria *Neisseria gonorrhoeae*. Gonorrhea infections are often asymptomatic in women, and sometimes in men. If left untreated, gonorrhea may result in serious complications including chronic pain and infertility/sterility.

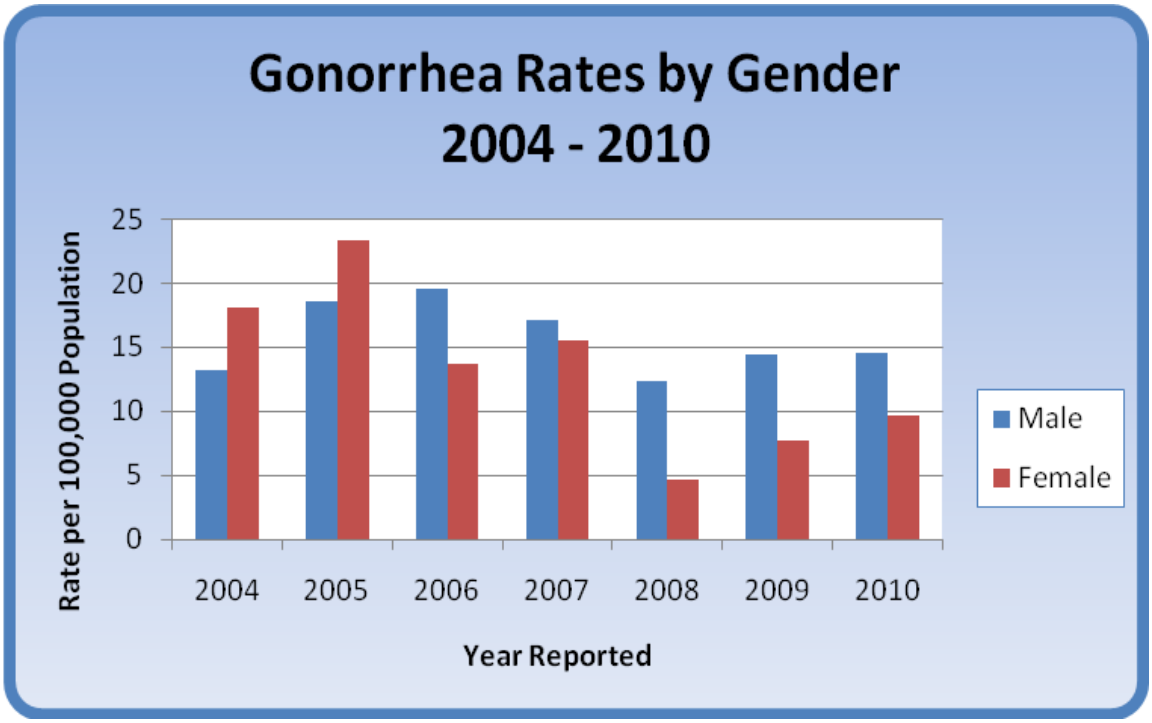
During 2010, there were **38 cases** of gonorrhea reported in Davis County, compared to 35 cases reported during 2009.



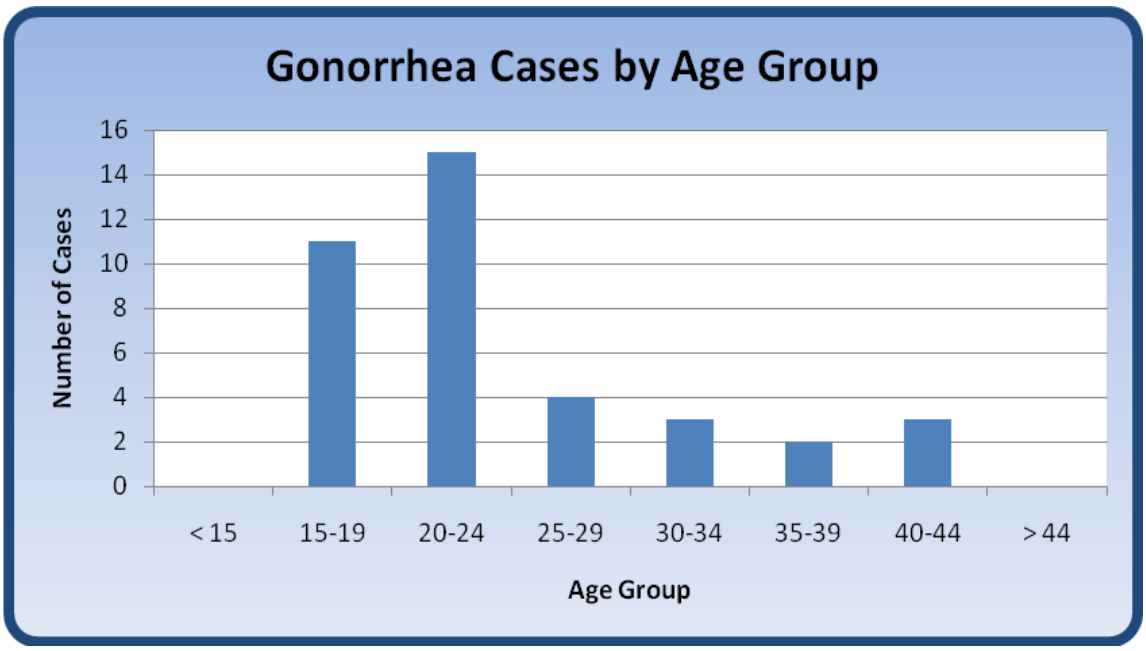
The number of gonorrhea reports per month ranged between 1 and 7.



During the years 2004 and 2005, the rate of reported gonorrhea cases was higher among females, which was different from the national trend. However, between 2006 - 2010, the rate was higher among males, which is typically observed.



Gonorrhea cases ranged in age from 16 to 44 years; over 68% of cases were reported among 15 to 24 year olds. The number of cases of gonorrhea among teens and young adults doubled between 2009 and 2010 from 13 in 2009 to 26 in 2010.



Additional Information:

Gonorrhea is the second most commonly reported STD in Davis County. Like chlamydia, gonorrhea often causes no symptoms. Because of this, gonorrhea is underreported. Another growing problem is the occurrence of antibiotic resistant strains of gonorrhea surfacing in the United States – making it more difficult to treat this infection.

Action Steps:

- Efforts were centered on contact tracing, which included home visits for high-risk cases that were unreachable by phone
- Free testing and treatment is offered to sexual contacts of positive cases
- Implementation of epidemiological tools to help identify at-risk populations within the community
- Other outreach education presentations provided to at-risk populations

Future Steps:

- Continued aggressive case investigations and contact tracing (contact cards, hotline, website, emails, original patient referrals)
- Reach at-risk population to provide testing and risk reduction education
- Develop new techniques to increase public awareness (website, brochures, presentation within the community, parent education packets)
- Development of a website page specific for STD information and education (including presentation materials for the public)

PELVIC INFLAMMATORY DISEASE (PID)
(When diagnosed with a reportable STD)

Disease Reporting Requirements:

Healthcare Providers and Laboratories - report cases within 3 working days of identification

Purpose of Surveillance:

- To facilitate appropriate diagnostic testing and treatment
- To educate and refer for testing/treatment identified contacts of Chlamydia/gonorrhea cases

Disease Description:

Pelvic inflammatory disease (PID) is a general term that refers to infection of the uterus, fallopian tubes and other reproductive organs. It is a common and serious complication of some sexually transmitted diseases, especially chlamydia and gonorrhea. Untreated, up to 40% of women with chlamydia or gonorrhea will develop PID. Each year in the United States, it is estimated that more than 1 million women experience an episode of acute PID.

During 2010, there were **two cases** of PID reported in Davis County. Although PID is a reportable condition (if diagnosed with a reportable STD), it is severely underreported by healthcare providers.

Additional Information: None

Action Steps: None

Future Steps: None

SYPHILIS

Disease Reporting Requirements:

Healthcare Providers and Laboratories – report suspect cases immediately

Purpose of Surveillance:

- To implement disease control measures such as risk-reduction education/counseling, partner elicitation & notification, and testing/treatment
- To identify infected pregnant women and provide treatment in order to reduce the risk of infection in the newborn
- To identify high risk populations for prevention activities
- To monitor changes in syphilis trends over time and across subpopulations

Disease Description:

Syphilis is a sexually transmitted disease (STD) caused by the bacterial spirochete *Treponema pallidum.* Syphilis is broken into three stages: *primary, secondary, and late stage*. People infected with syphilis may not have any symptoms for years; yet remain at risk for late complications if they are not treated. Although transmission appears to occur from persons with sores who are in the primary or secondary stage, many of these sores are unrecognized. Thus, most transmission is from persons who are unaware of their infection. Over the past several years, increases in syphilis among men having sex with men (MSM) have been reported and have been an issue in Davis County as well.

During 2010, there were **13 cases** of syphilis reported in Davis County. Three cases were classified primary or secondary, seven were early or late-latent, and the latency was unknown for three cases.

Syphilis Cases by Stage of Infection

Syphilis Stage	Number of Cases
Primary	2
Secondary	1
Early Latent	4
Late Latent	3
Unknown Duration	3
Total	**13**

Additional Information:

In 2010, Davis County investigated a syphilis cluster where two primary syphilis cases were identified and their contacts were tested and treated.

Action Steps:

- Continued education to the medical community on the new reporting guidelines that facilitate faster notification, investigation, and treatment of confirmed syphilis cases and their contacts
- Routine testing for syphilis included with screenings at the Davis County STD clinics
- Free testing/treatment for cases and their contacts
- Investigation of positive RPR tests have detected a number of biologically false positive cases
- Aggressive contact tracing implemented
- Worked with neighboring health districts to ensure that all contacts of syphilis were identified and brought to testing/treatment

Future Steps:

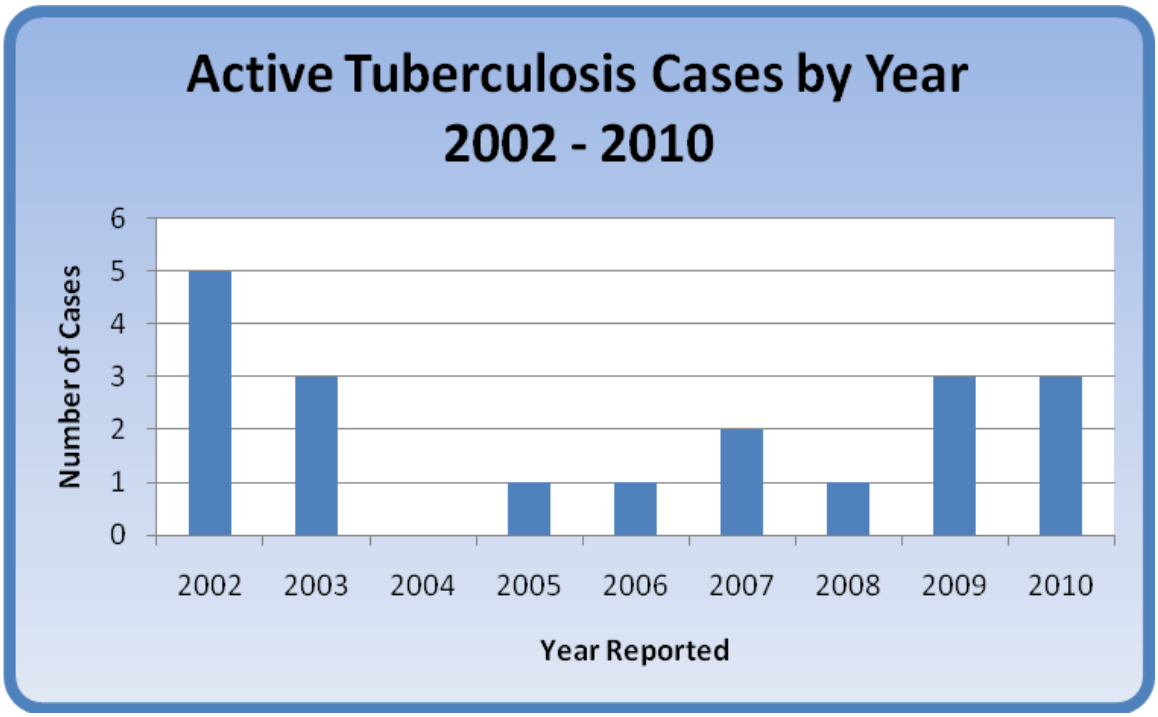
- Dissemination of updated information to the medical community
- Implementation of syphilis discussion forums with surrounding local health departments

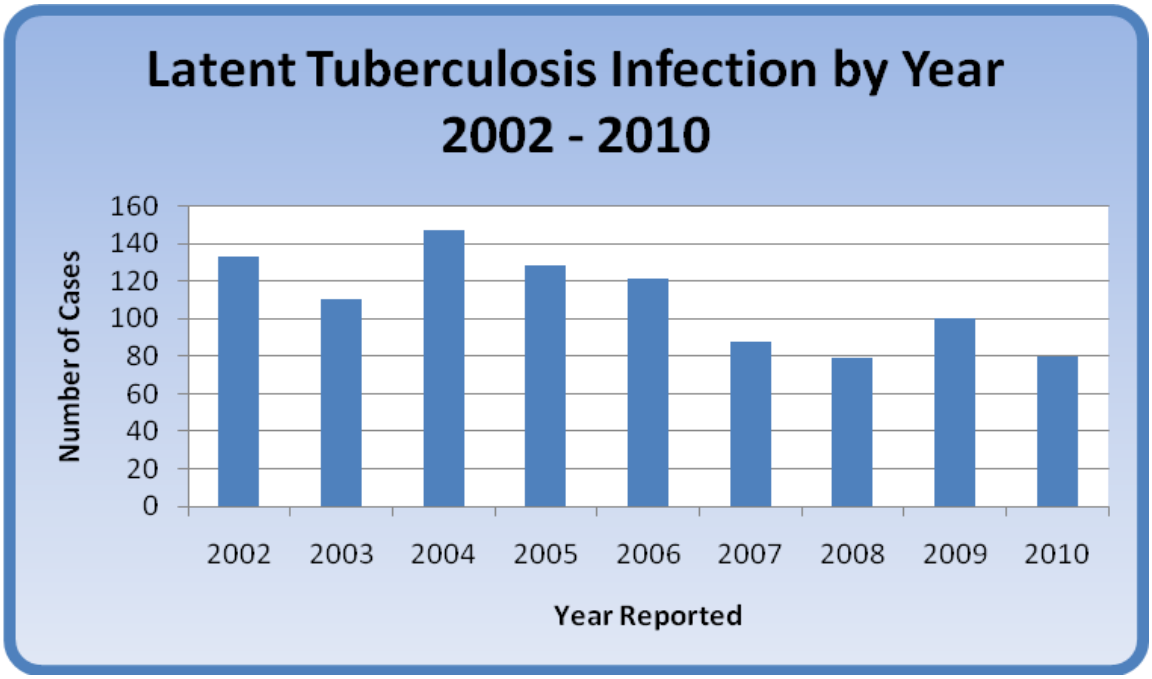
Tuberculosis

There are an estimated 9-14 million people in the United States infected with *M. tuberculosis*. On average, about 10% of infected individuals will develop active tuberculosis (TB) disease at some point in their lives. There were approximately 11,545 TB cases in the United States in 2009 (3.8/100,000) – an 11.3% decline compared to 2008. Utah had 37 (1.3/100,000) cases reported in 2009. The TB rate in 2007 was the lowest recorded since national reporting began in 1953.

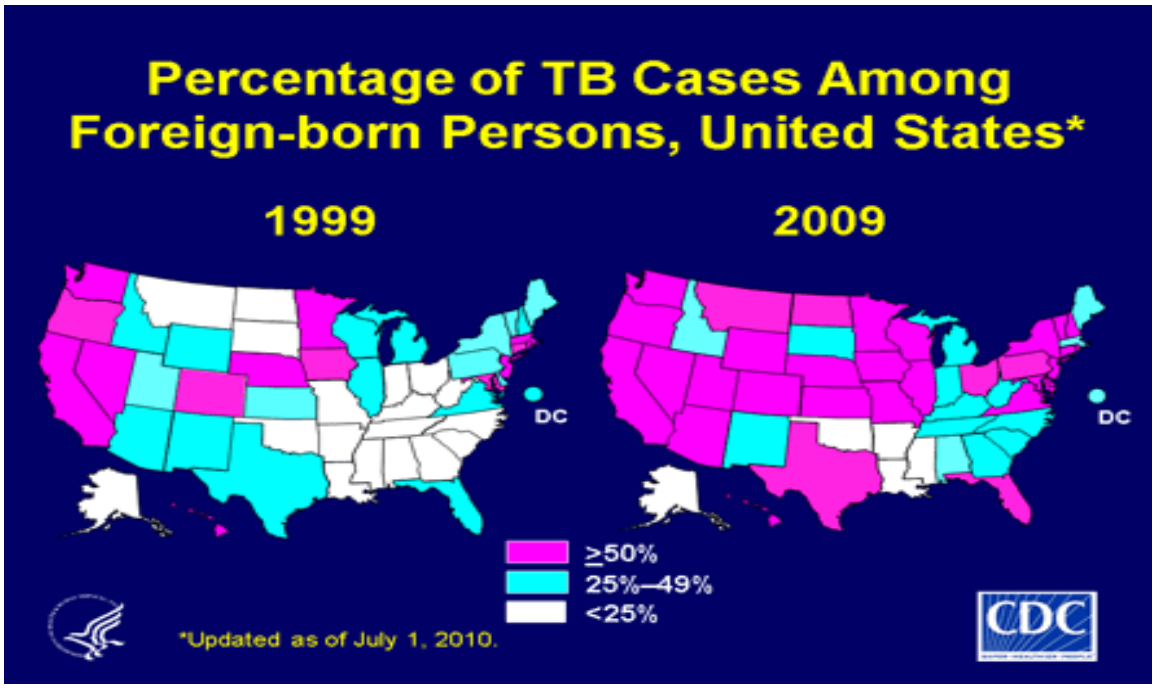
By the early 1980s, TB was considered to be under control and many states and cities redirected TB prevention and control funds to other programs. As a result of this, the country experienced a resurgence of TB, with a 20% increase in cases reported between 1985 and 1992. Many of these were persons with difficult-to-treat drug-resistant TB. This resurgence caused a new look at TB and aggressive prevention and control efforts were initiated. With the introduction of HIV, TB rates remain a constant threat. Also, a new virulent strain of TB has been identified (XDR-TB). This strain is resistant to many of the drugs used to treat tuberculosis and has a high mortality rate.

What: Davis County had three active tuberculosis disease cases in 2010 and 80 LTBI cases. 96% of tuberculosis activity falls under the category of latent tuberculosis infection (LTBI).





Who: In Davis County, active disease and LTBI are primarily seen in individuals who are foreign-born or have traveled/lived in endemic countries.



When: There is no seasonality to tuberculosis disease or infection. The county manages, on average, 50 individuals a month with LTBI.

Where: Active disease and latent infections are reported in residents throughout the county.

TUBERCULOSIS (Active Disease)

Disease Reporting Requirements:

Healthcare Providers and Laboratories – report suspect active cases immediately

Purpose of Surveillance:

- To identify and screen contacts to reduce further spread
- To identify high risk populations for targeted intervention
- To monitor trends over time and across subpopulations

Disease Description:

Tuberculosis (TB) is caused by a type of bacteria called *Mycobacterium tuberculosis*. The bacteria usually attack the lungs (pulmonary) but may attack any part of the body (extrapulmonary). TB is typically spread through the air when a person with TB disease of the lungs or throat expels tiny airborne particles (droplet nuclei). People nearby may breathe in these particles and become infected. People who have latent TB infection do not feel sick, do not have any symptoms, and cannot spread TB. However they may develop active TB disease at some time in the future. The U.S. experienced a resurgence of TB disease between 1985 and 1992, when the number of TB cases increased by 20%. Early detection and treatment of TB are essential to control the spread of the disease and to prevent outbreaks.

In 2010, Davis County had **3 cases** of active tuberculosis. Currently, Utah is considered a low-incidence state.

Additional Information:

Davis County sees very few active TB cases each year. Of those who are diagnosed with active disease, most are foreign-born. Over the past nine years, Davis County has had 19 active cases. All but three of those 19 cases were foreign-born. Two of the 2010 TB cases for Davis County were pulmonary and one case was extrapulmonary.

People who are at a high risk of developing TB disease include:

- Individuals with HIV or AIDS
- Individuals who were infected with TB within the last two years
- Babies and young children
- Substance abusers (especially IV-drug users)
- Individuals with chronic illnesses that weaken the immune system
- Individuals who were not properly treated for TB in the past

Action Steps:

- All suspect/confirmed TB cases were isolated until deemed non-infectious
- All suspect/confirmed TB cases received antibiotic treatment through Directly Observed Therapy (DOT)
- Contact tracing was conducted on all confirmed cases
- Incentives and enablers were used to help ensure compliancy of treatment to completion
- Ongoing internal review of the tuberculosis program and implementation of changes to ensure effective program management
- Distribution of screening and educational tools to facilities and providers in the community
- Ongoing partnership with Midtown Community Health Center – Davis to provide LTBI clients with a medical exam prior to start of treatment
- Implemented worksite contact investigation for an active TB case that resides in Davis County, but worked in a Salt Lake County facility. Out of 10 coworkers who were evaluated by Salt Lake Valley Health Department (SLVHD), five were residents of Davis County. Three of those five were determined to be not infected. The remaining two individuals had incomplete evaluations, so therefore, infection status could not be determined.

Future Steps:

- Ongoing efforts to assist the medical community in detecting and reporting active tuberculosis cases
- Enhance contact tracing methods to help identify at-risk individuals with latent tuberculosis infection
- Enhance partnership with local correctional facilities, medical clinics, and Job Corps centers to improve reporting and follow-up procedures for active tuberculosis cases
- Enhanced partnership with Midtown Community Health Center - Davis

TUBERCULOSIS (Latent Infection)

Disease Reporting Requirement:

Latent tuberculosis infection (LTBI) is not required to be reported. However, if reactive tuberculin skin tests are reported, free or low cost services are available through the health department TB Control program.

Disease Surveillance:

- To obtain a thorough understanding and analysis of disease patterns
- To appropriately plan and implement programs to reduce the burden of disease in our communities

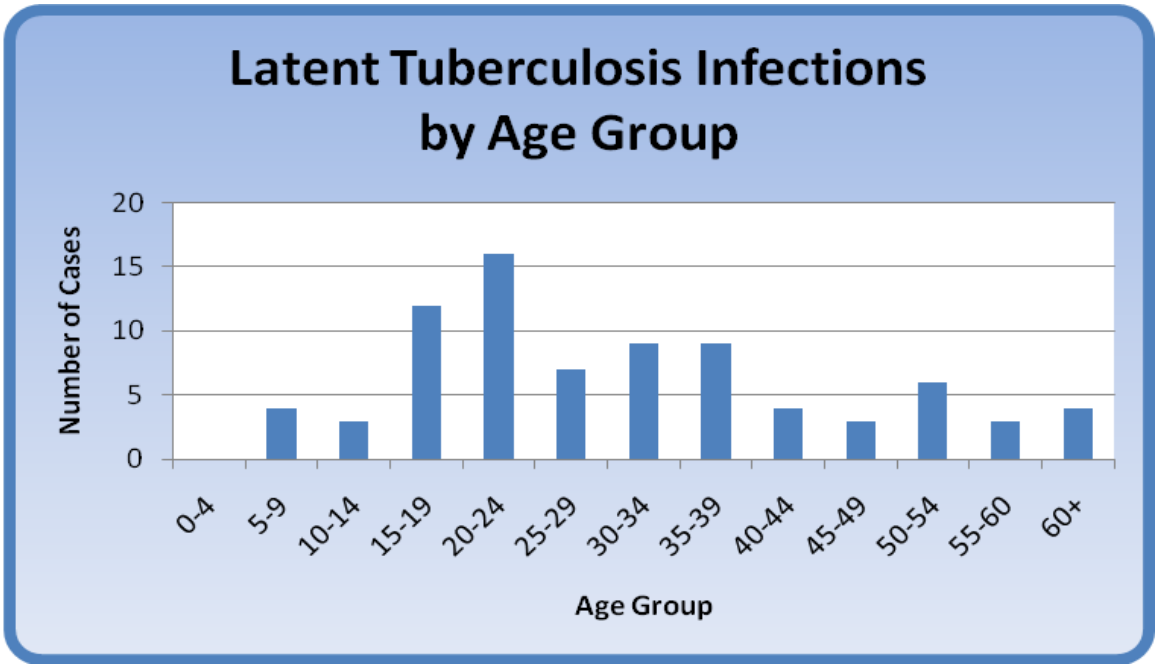
Disease Description:

Latent tuberculosis infection is a condition in which TB bacteria are alive but inactive in the body. People with latent TB infection have no symptoms, can't spread TB to others, and usually have a positive skin test reaction. Development into active disease occurs in about 10% of those who do not receive treatment for latent TB infection.

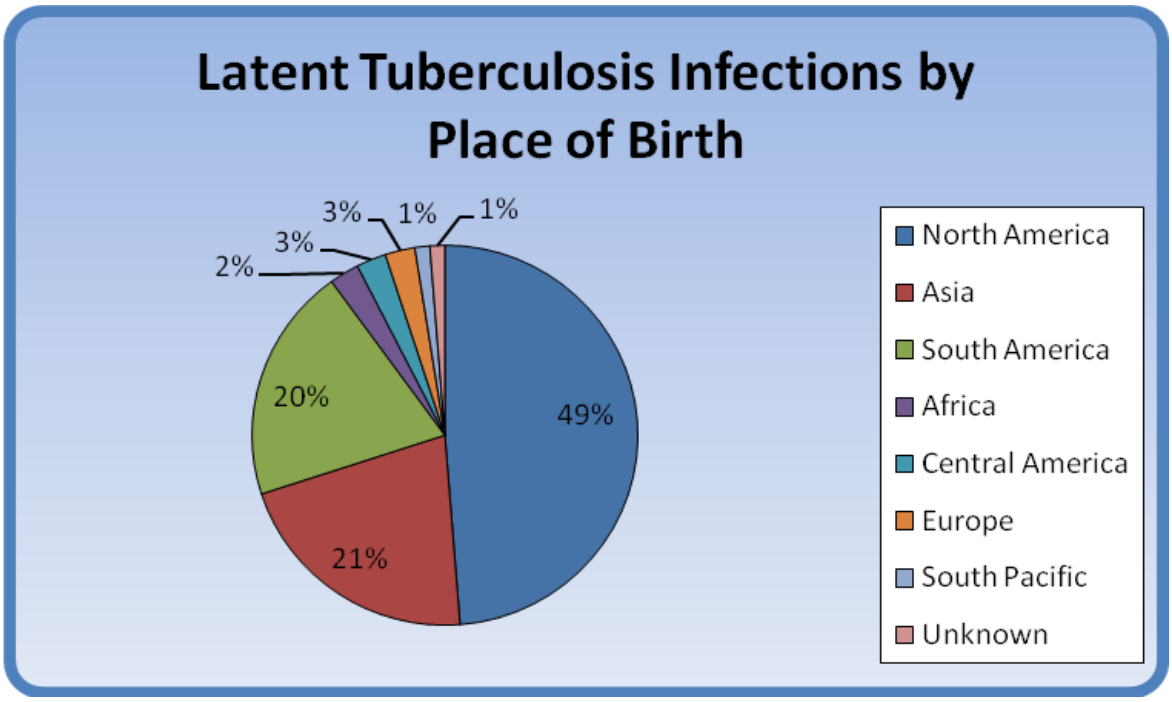
In 2010, Davis County had **80 cases** of LTBI.

Davis County Health Department provided **860** tuberculin skin tests to the public in 2010. However, these numbers only account for a small percentage of all TB tests performed in the community.

LTBI usually occurs in all age groups. In Davis County, we see the highest number of infections in the 20-24 year old age group. This is largely due to the number of LDS missionaries returning from endemic countries.



During interviews, individuals reported the following locations as their place of birth.



Additional Information:

Treatment of LTBI is essential to controlling and eliminating tuberculosis by reducing the risk that TB infection will progress to active disease. In the past, treatment for LTBI was termed “preventative treatment”. Today, the term "latent tuberculosis treatment" is used in the U.S. because the treatment does not actually prevent infection: it prevents an existing silent infection from becoming active.

Action Steps:

- Distributed resource material to the medical community and at-risk facilities, as needed
- Continued partnership with local pharmacy chain to dispense and track inventory of LTBI medications
- Partnered with two Davis County facilities to provide reduced cost chest x-rays
- Provided monthly on-site evaluations for each LTBI client receiving treatment to ensure compliance and assess medication tolerance
- Continued use of enhanced disease management database (TriSano/UT-NEDSS)
- Continued partnership with Midtown Community Health Center – Davis
- Implemented use of webcam for directly observed therapy of TB disease patients

Future Steps:

- Continue to assess screening tools used in the immunization clinics to ensure that no LTBI is missed
- Continue to assess value of providing Quantiferon – TB Gold testing
- Implement targeted-testing guidelines for the community
- Enhance partnership with the local correctional facility to improve reporting and follow-up procedures for latent tuberculosis
- Obtain tuberculosis updates and distribute to medical providers