Davis County Health Department

Communicable Disease Surveillance & Control

Communicable Diseases Davis County 2007

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Executive Summary

This annual Communicable Disease Surveillance & Control report summarizes all communicable diseases that were reported in Davis County in 2007. 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 in 2007.

The most notable communicable disease in 2007 was Cryptosporidiosis. Davis County, as well as the State of Utah, experienced a very large outbreak of cryptosporidiosis beginning in early June and continuing through October. Davis County, historically, sees an average three cases each year; but in 2007 investigated 294 cases of cryptosporidiosis. The outbreak was associated with public swimming pools. These public pools provided an effective mode of transmission for the disease. The outbreak was slowed by public health interventions implemented during the outbreak, but was sustained until the swimming pool season ended.

Other communicable disease areas of concern in 2007 include:

- Chlamydia remains the most commonly reported infectious disease in Davis County. In 2007, 482 cases of Chlamydia were reported to the Health Department. This was a 10% decrease from 2006 (538 cases). However, most Chlamydia cases still go undiagnosed making it extremely difficult to describe the true burden in our community. This decrease observed in 2007 is the first decrease in over ten years. However, it may only reflect a random variation and not a true reduction in disease burden.

- Chickenpox remains the third most reported disease in Davis County. The majority of Chickenpox cases reported to Davis County are in children who have been previously vaccinated and represent a partial or inadequate vaccine-induced immunity. Currently, the health department is encouraging all individuals who have received a single dose of the vaccine to receive a second booster dose.

- Latent TB Infections continue to occupy a large percentage of the disease burden in Davis County. It is the fifth most reported disease with the majority of these cases being foreign born or returned LDS missionaries.

- Gonorrhea rates continue to be higher than long-term historical averages. However, the rates have slightly decreased over the last several years. Gonorrhea is the seventh most reported infectious disease in the Davis County. Like Chlamydia, gonorrhea is substantially under-diagnosed and under-reported, and approximately twice as many new infections are estimated to occur each year then are reported. Davis County investigated 47 cases of Gonorrhea in 2007.

- Davis County experienced West Nile Virus activity in all categories (mosquito pools, wild birds, chickens, horses, and humans). The county had six human cases last year. The 2007 season experienced a moderate decrease in virus activity over last year likely because of aggressive and effective mosquito control activities. The Davis County Mosquito Abatement District continued its goal of reducing the numbers of mosquitoes to 50% of the five-year average. Aggressive elimination of mosquitoes around WNV positive mosquito pools, sentinel chickens, horses, and human cases also played an important role in reduction of human disease.

- The 2006-2007 influenza season in Davis County peaked in mid-March, much later than the previous season's late December peak. The season was relatively mild, with only 33 reported hospitalized cases, compared to 52 the previous season. However, there was one influenza-associated pediatric death reported during 2007, the first in several years.

- Davis County identified and investigated six clusters of gastrointestinal illness in 2007. Norovirus was identified as the causative agent in four of these clusters.

- Davis County documented 18 cases of pertussis in 2007. This was a substantial decrease (36%) in pertussis from the previous year. The decrease may be attributable to aggressive contact investigations and increased use of the new vaccine (TdaP), introduced in 2005.

- Davis County was very busy this year responding to potential rabies exposures. Three rabid bats were reported to the health department and investigations identified 15 individuals who had significant exposures to the animals. 11 were given human rabies immunoglobulin and vaccinated.

- Davis County had one Tularemia case reported during the summer of 2007 which was linked to a Utah County outbreak. The cases associated with the outbreak all had exposure along the west side of Utah Lake.

Introduction

The Communicable Disease Surveillance and Control Program 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 Davis County Health Department Communicable Disease Surveillance and Control program is organized into four main areas: STD/HIV program, Tuberculosis Control program, Infectious Disease program, and Surveillance. A program description follows:

STD/HIV program:

Sexually Transmitted Diseases (STDs) affect men and women of all backgrounds and economic levels. Even though the United States has made progress in decreasing the number of cases through better testing and risk-reduction education, there is 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 Communicable Disease Surveillance and Control - STD/HIV program ensures that all reported infected individuals have an interview with a public health 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 or diagnosed with tuberculosis diseases.
- 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 (i.e. homeless, foreign-born, 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 Communicable Disease Surveillance and Control program implements the following activities:

- Interview with the 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 finding and report to UDOH (Utah Department of Health)

The infectious disease program has been further divided into the following categories and each specific disease report will follow this grouping:

- **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 caused by insects, animals, or birds

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

Disease Surveillance program:

Communicable Disease Surveillance 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 page summarizes 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) 451-3003

- **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) 451-3003

Or FAX (801) 451-3464

- 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 - July, 2007

Davis County Demographics - 2007

Population: 287,924

Age Group	
Less than 1 year	5,753
1 – 14 years	72,335
15 – 24 years	48,570
25 – 44 years	82,246
45 – 64 years	56,944
65 – 84 years	19,642
More than 85 years	2,434

Gender	
Male	145,857
Female	142,067

Race*	
White	261,266
Black	2,997
American Indian or Alaskan Native	1,626
Asian	4,848
Native Hawaiian or Pacific Islander	1,096
Two or more races	4,426

*Race Population Data is only available for 2006 – 276,259

Ethnicity*	
Hispanic or Latino (of any race)	16,519

*Ethnicity Data is only available for 2006 – 276,259

City Populations*	
Unincorporated County	2,500
Bountiful	42,700
Centerville	15,218
Clearfield	28,000
Clinton	19,400
Farmington	14,500
Fruit Heights	5,200
Hill Air Force Base	4,500
Kaysville	23,240
Layton	66,310
North Salt Lake	9,800
South Weber	5,945
Sunset	5,200
Syracuse	20,000
West Point	7,800
West Bountiful	5,013
Woods Cross	7,400

*City Population Data is only available for 2005 (Provided by the Department of Community and Economic Development, estimated by various sources)

Additional Information

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

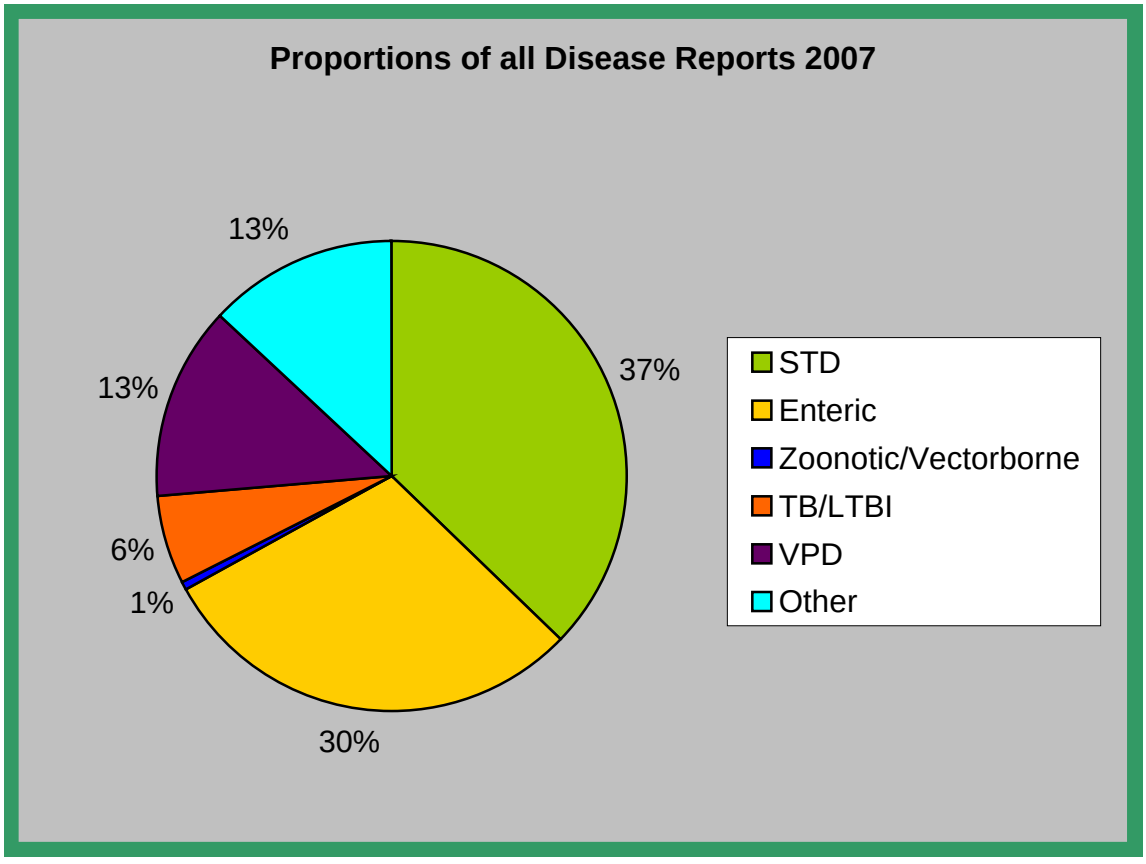
Davis County has 11% of Utah's population.

Reportable Disease Summary

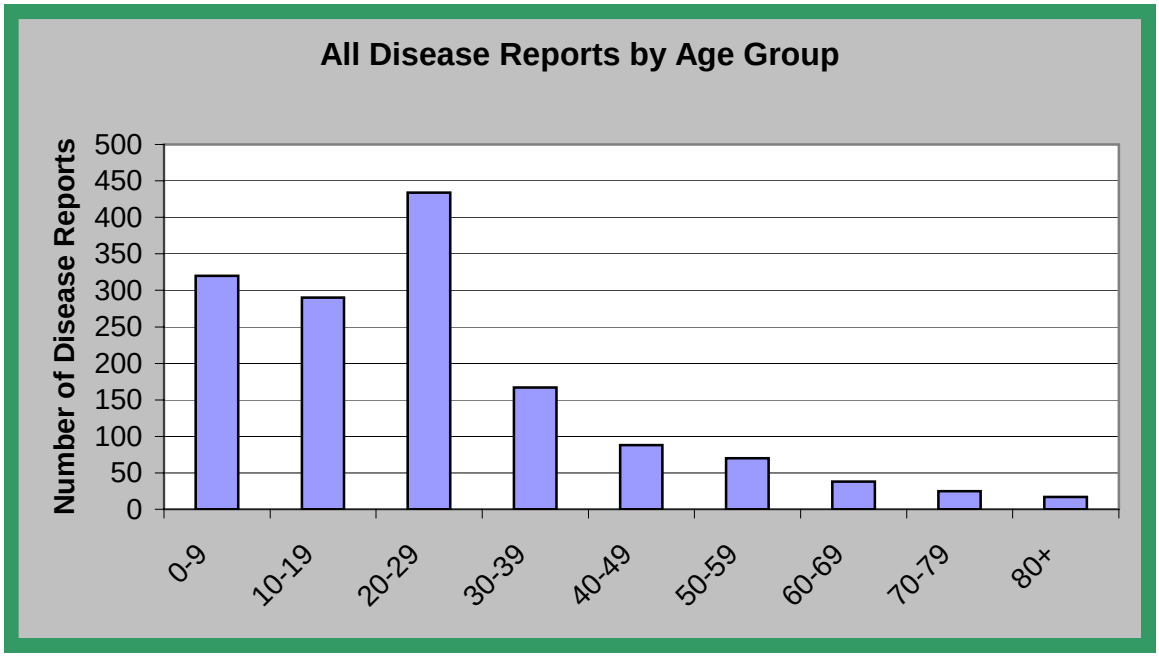
Disease morbidity and mortality have decreased over the past century, partly due to the partnership between private and public health care. Unfortunately, new emerging diseases are surfacing, requiring additional efforts on both the medical community and public health. Existing pathogens are also increasing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

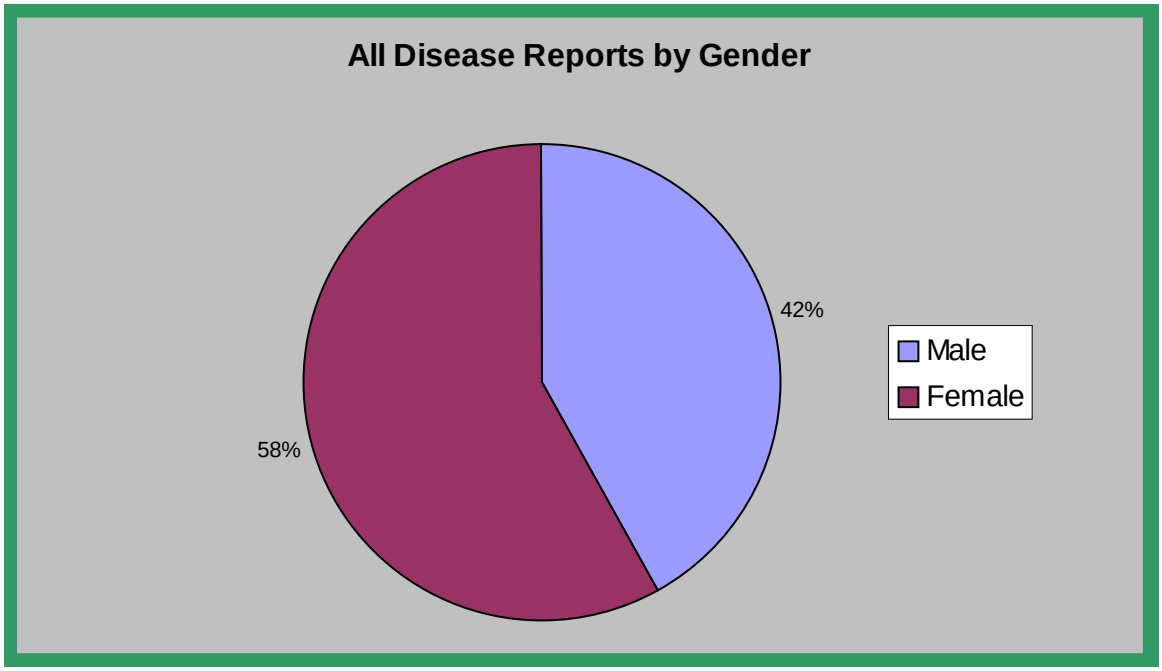
What: Davis County Health Department received a total of 1,445 disease reports during 2007. This constituted an 11% increase over 2006 disease reports. The increase in 2007 is due to the outbreak of cryptosporidiosis.

The majority (37%), of the diseases reported were sexually transmitted diseases followed by enteric diseases (30%), vaccine preventable diseases (13%), other diseases (13%), tuberculosis infections (6%), and zoonotic/vectorborne diseases (1%).

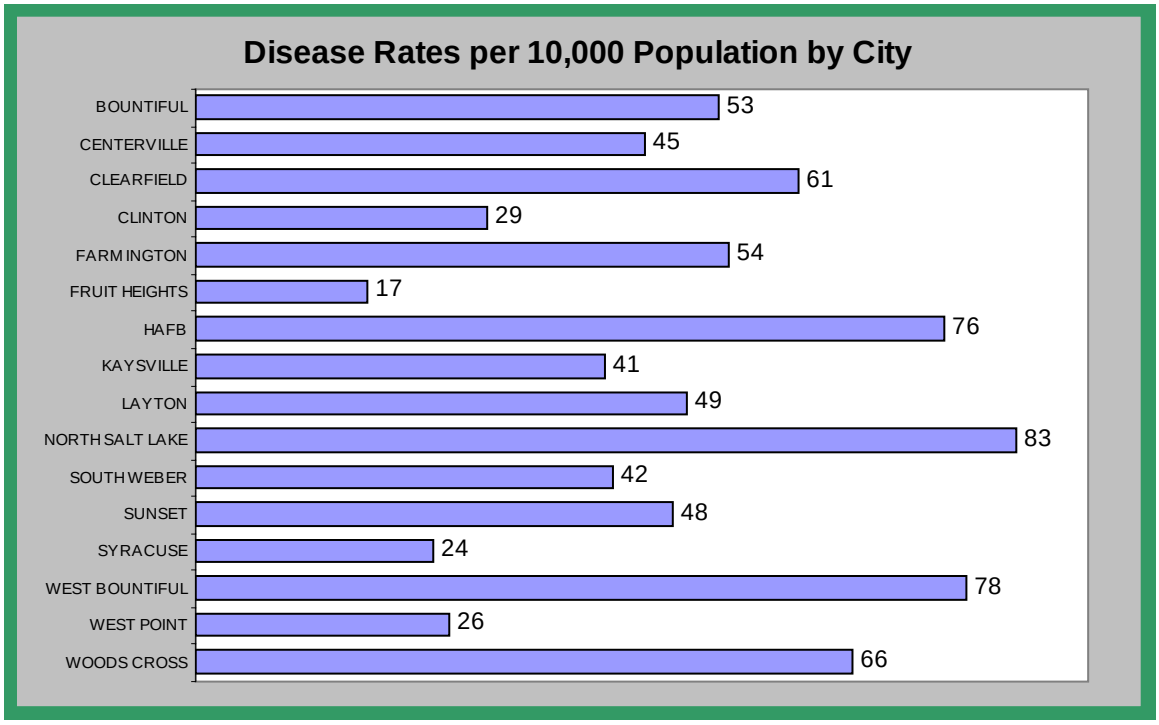


Who: Cases were most often reported among females (58%) and among 20-29 year-olds. Sexually transmitted diseases and latent TB infection had a significant impact on the 20-29 year old age group. The Cryptosporidiosis outbreak and vaccine preventable diseases had a significant impact the 0-9 and the 10-19 year old age groups. Statistically females are more impacted by sexually transmitted diseases.

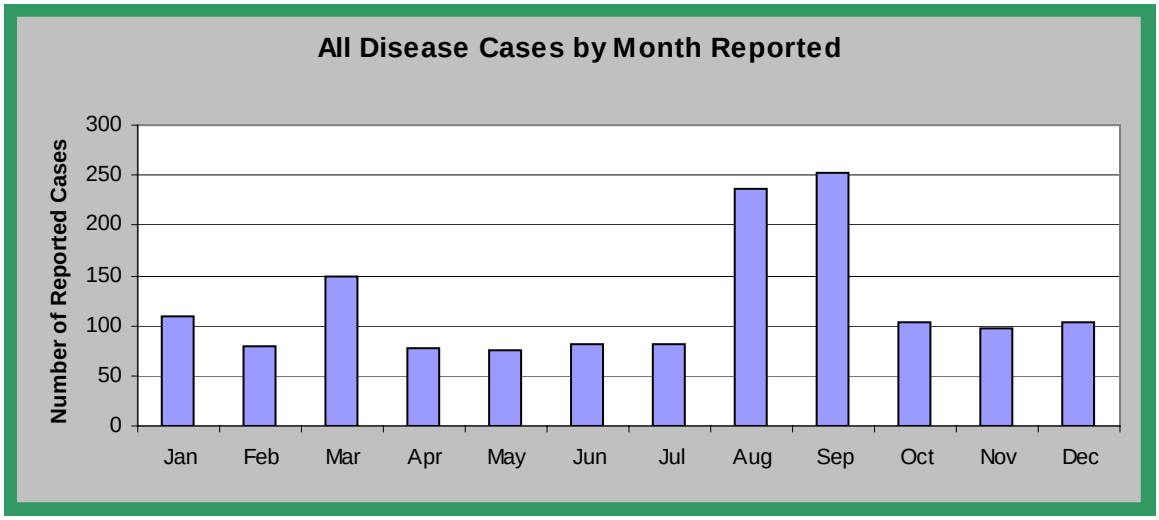




Where: Disease rates by city are identified by the place of residence of the individual who is affected. These rates do not suggest that one city is better or worse than another, but simply describe the disease burden in each city by the individuals who reside there. Tuberculosis data is not included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



When: The disease burden in Davis County normally stays very consistent over the whole year. However, in 2007 there was a large increase during August and September due to the Cryptosporidiosis outbreak. There was an average of 120 reportable diseases per month.



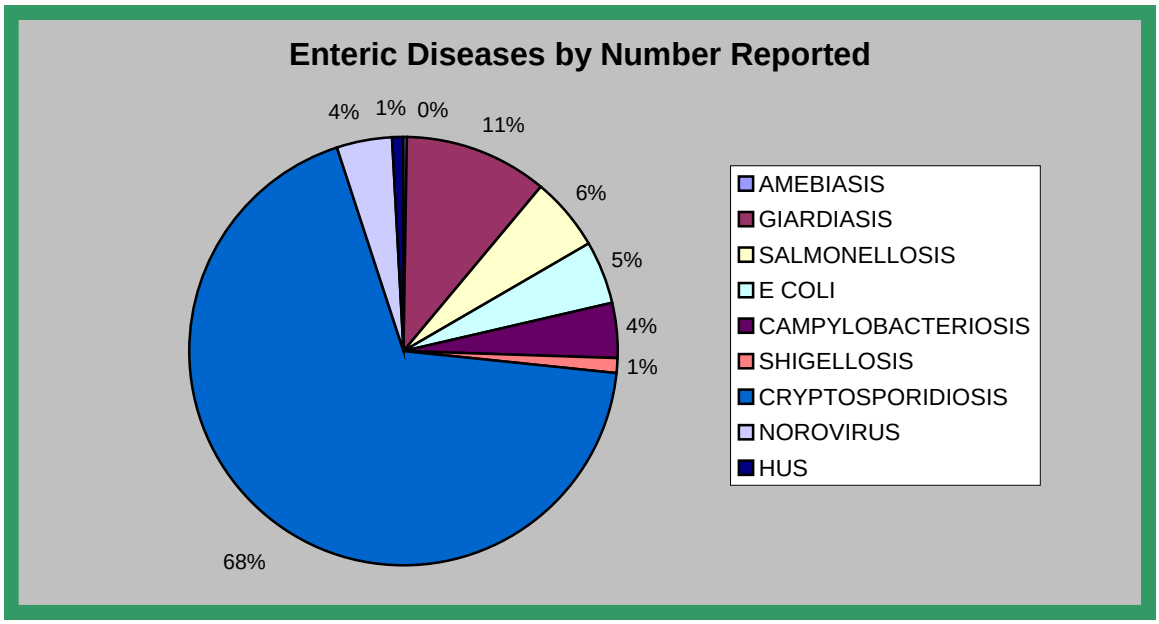
DISEASE CASES IN ORDER OF NUMBER REPORTED			
DISEASE	**Rank**	**Number**	**Proportion**
CHLAMYDIA	**1**	**482**	**33.24%**
CRYPTOSPORIDIOSIS	**2**	**294**	**20.28%**
CHICKENPOX	**3**	**111**	**7.66%**
HEPATITIS C	**4**	**94**	**6.48%**
LATENT TB INFECTION	**5**	**88**	**6.07%**
STREPTOCOCCAL INVASIVE DISEASE	**6**	**54**	**3.72%**
GONORRHEA	**7**	**47**	**3.24%**
GIARDIASIS	**7**	**47**	**3.24%**
INFLUENZA HOSPITALIZED	**8**	**33**	**2.28%**
HEPATITIS B	**9**	**26**	**1.79%**
MENINGITIS – ASEPTIC & VIRAL	**9**	**26**	**1.79%**
SALMONELLOSIS	**10**	**24**	**1.66%**
E COLI SHIGA TOXIN PRODUCING	**11**	**20**	**1.38%**
CAMPYLOBACTERIOSIS	**12**	**18**	**1.24%**
PERTUSSIS	**12**	**18**	**1.24%**
NOROVIRUS	**13**	**17**	**1.17%**
HAEMOPHILUS INFLUENZAE INVASIVE DISEASE	**14**	**7**	**0.48%**
HIV and AIDS	**15**	**6**	**0.41%**
WEST NILE VIRUS	**15**	**6**	**0.41%**
SYPHILIS ALL STAGES	**16**	**5**	**0.34%**
HEMOLYTIC UREMIC SYNDROME	**17**	**4**	**0.28%**
SHIGELLOSIS	**17**	**4**	**0.28%**
LEGIONELLOSIS	**18**	**3**	**0.21%**
MENINGITIS - BACTERIAL OTHER	**19**	**2**	**0.14%**
TUBERCULOSIS ACTIVE INFECTION	**19**	**2**	**0.14%**
AMEBIASIS	**20**	**1**	**0.07%**
COCCIDIOIDOMYCOSIS	**20**	**1**	**0.07%**
ENCEPHALITIS	**20**	**1**	**0.07%**
LYME DISEASE	**20**	**1**	**0.07%**
MALARIA	**20**	**1**	**0.07%**
MENINGOCOCCAL INVASIVE DISEASE	**20**	**1**	**0.07%**
TULAREMIA	**20**	**1**	**0.07%**
TOTAL		**1445**	**100.00%**

DISEASE CASES REPORTED 2004 - 2006	2005	2006	2007
AMEBIASIS	0	1	1
BOTULISM INFANT	1	2	0
CAMPYLOBACTERIOSIS	13	11	18
CHICKENPOX	87	174	111
CHLAMYDIA	455	538	482
COCCIDIOIDOMYCOSIS	3	2	1
COLORADO TICK FEVER	1	0	0
CRYPTOSPORIDIOSIS	0	0	294
DENGUE FEVER	1	2	0
E. COLI – SHIGA TOXIN PRODUCING	8	14	20
ENCEPHALITIS	1	3	1
GIARDIASIS	32	42	47
GONORRHEA	58	55	47
HAEMOPHILUS INFLUENZAE - INVASIVE	3	0	7
HEPATITIS A	0	0	0
HEPATITIS B - ACUTE AND CHRONIC	34	29	26
HEPATITIS C - ACUTE AND CHRONIC	103	100	94
HEMOLYTIC UREMIC SYNDROME (HUS)	0	4	4
HIV and AIDS	4	1	6
INFLUENZA (HOSPITALIZED CASES)	53	42	33
LEGIONELLOSIS	1	0	3
LISTERIOSIS	0	2	0
LYME DISEASE	0	0	1
MALARIA	1	1	1
MENINGITIS – BACTERIAL	2	7	2
MENINGITIS - ASCEPTIC OR VIRAL	38	22	26
MENINGOCOCCAL - INVASIVE DISEASE	2	1	1
MUMPS	3	0	0
NOROVIRUS	2	1	17
PERTUSSIS	66	49	18
ROCKY MOUNTAIN SPOTTED FEVER	0	2	0
SALMONELLOSIS	63	31	24
SHIGELLOSIS	4	6	4
STREPTOCOCCAL - INVASIVE DISEASE	33	42	54
SYPHILIS ALL STAGES	1	9	5
TOXIC SHOCK SYNDROME	2	1	0
TUBERCULOSIS (ACTIVE CASES)	1	1	2
TUBERCULOSIS (LATENT INFECTIONS)	128	121	88
TULAREMIA	0	0	1
WEST NILE VIRUS	0	11	6

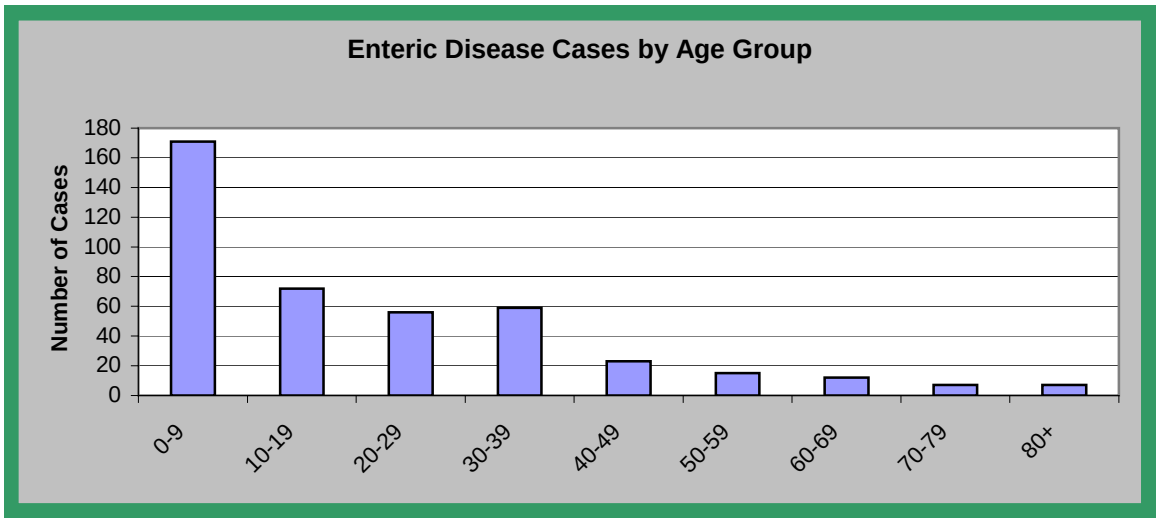
Enteric Diseases

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.

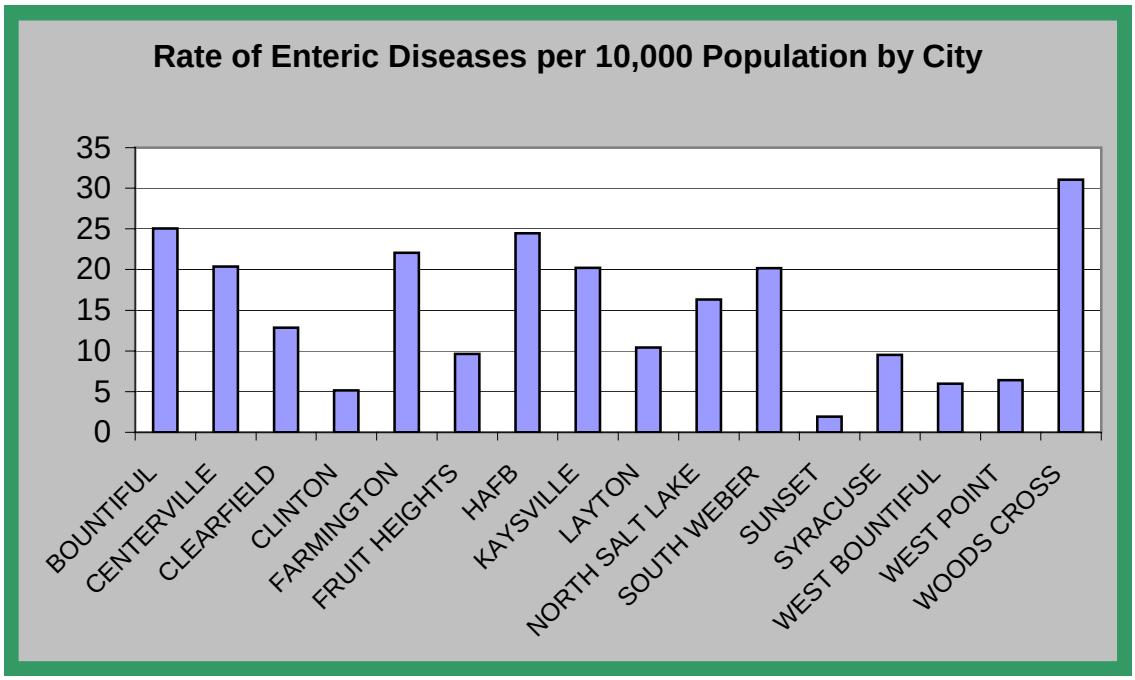
What: There were 429 total enteric disease cases reported during 2007. Cryptosporidiosis was the most frequently reported enteric disease with 294 cases (68%) followed by Giardiasis at 47 cases (11%), and Salmonellosis at 24 (6%). Reports of suspect foodborne illness clusters without an identified bacteria or virus were investigated but are not included in this data.



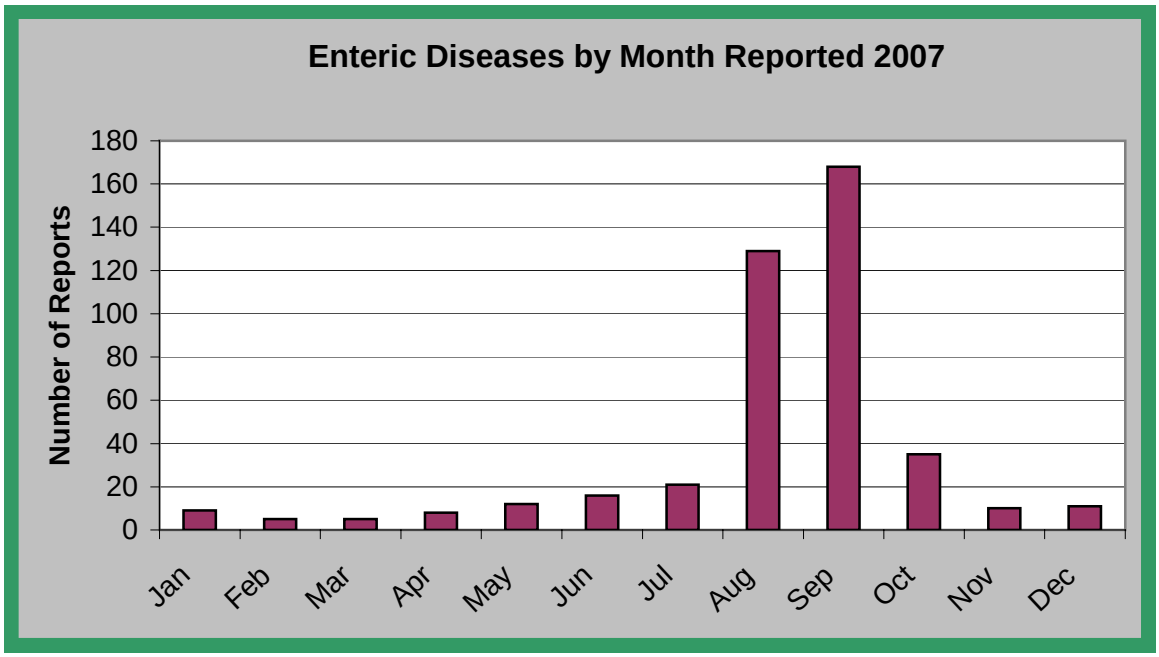
Who: Enteric diseases were reported most often among children less than 10 years old.



Where: Enteric diseases were reported among residents of every city within Davis County. The rates by city varied, but the average number of enteric diseases was 15 per 10,000 residents up from four per 10,000 in 2006.



When: Enteric diseases are reported year-round, with a heavier occurrence during the summer months. Enteric diseases were reported most often during August & September. The large numbers of reports in August & September are due to the Cryptosporidiosis outbreak.



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 2007, there was **one case** of amebiasis reported in Davis County.

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 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 2007, there were **no cases** of infant botulism and **no cases** of food-borne botulism reported in Davis County.

Additional Information: None

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

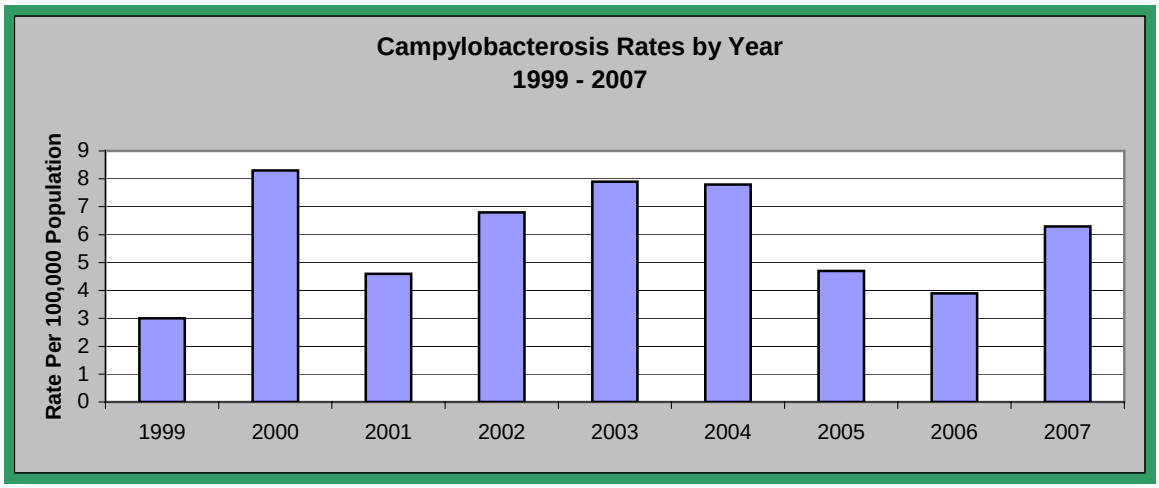
Purpose of Surveillance:

- 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 each 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 2007, there were **18 cases** of campylobacteriosis reported in Davis County, which is a increase in the number of cases reported in 2006.



Additional Information:

In 2007, a *Campylobacter* outbreak was detected in Utah, which was linked to a diary farm in Utah County. The ingestion of raw milk was associated with this infection. One of the Davis County cases also ingested raw milk from this facility. Contact with farm animals can be another source of infection. Most of the cases reported to Davis County had engaged in camping activities, traveled to foreign countries, or had farm animal exposure.

Action Steps:

- Implementation of new disease plans and electronic reporting system (NEDSS)
- Free stool testing was 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 diseases cases by the results of PFGE patterns provided by UPHL.
- Collaboration among physicians, hospitals, laboratories and other Utah health departments to assist in the early identification and control of foodborne illnesses
- Enhancement of Foodborne Outbreak investigation teams to include Environmental Health, Communicable Disease, and Epidemiology staff.

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, or 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 2007, 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:

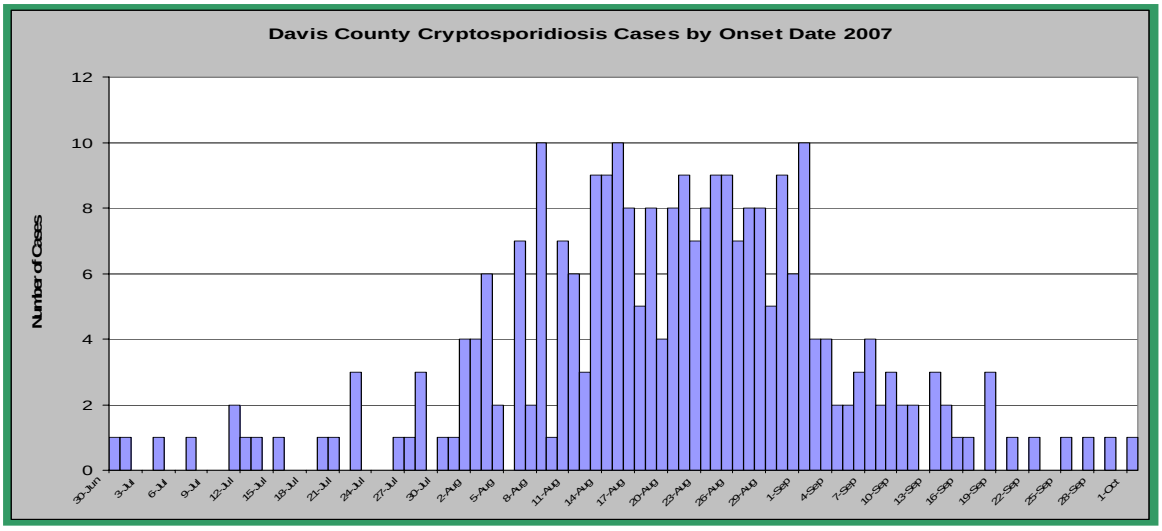
Cryptosporidiosis is an infection caused by the protozoan organism *Cryptosporidium parvum*. *Cryptosporidia* have been found in many hosts, including man, cattle and other domestic mammals. Infections occur via person-to-person, fecal-oral, animal-to-person, and waterborne transmission. During the past two decades, "crypto" has become recognized as one of the most common causes of waterborne disease within humans 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 2007, there were **294** cases of cryptosporidiosis reported in Davis County.

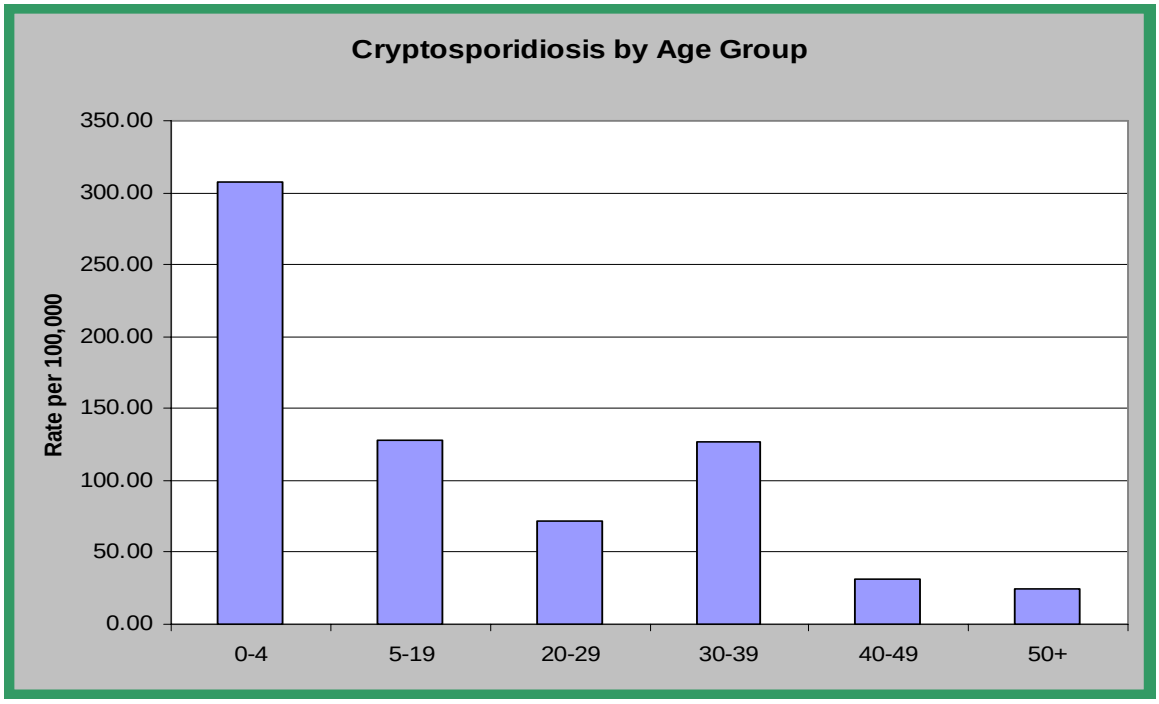
Additional Information:

Davis County, historically sees on average, 3 cases each year; but in 2007 investigated 294 cases of cryptosporidiosis. The outbreak was associated with public swimming pools. These public pools provided an effective mode of transmission for the disease. The outbreak was slowed by public health interventions implemented during the outbreak, but was sustained until the swimming pool season ended.

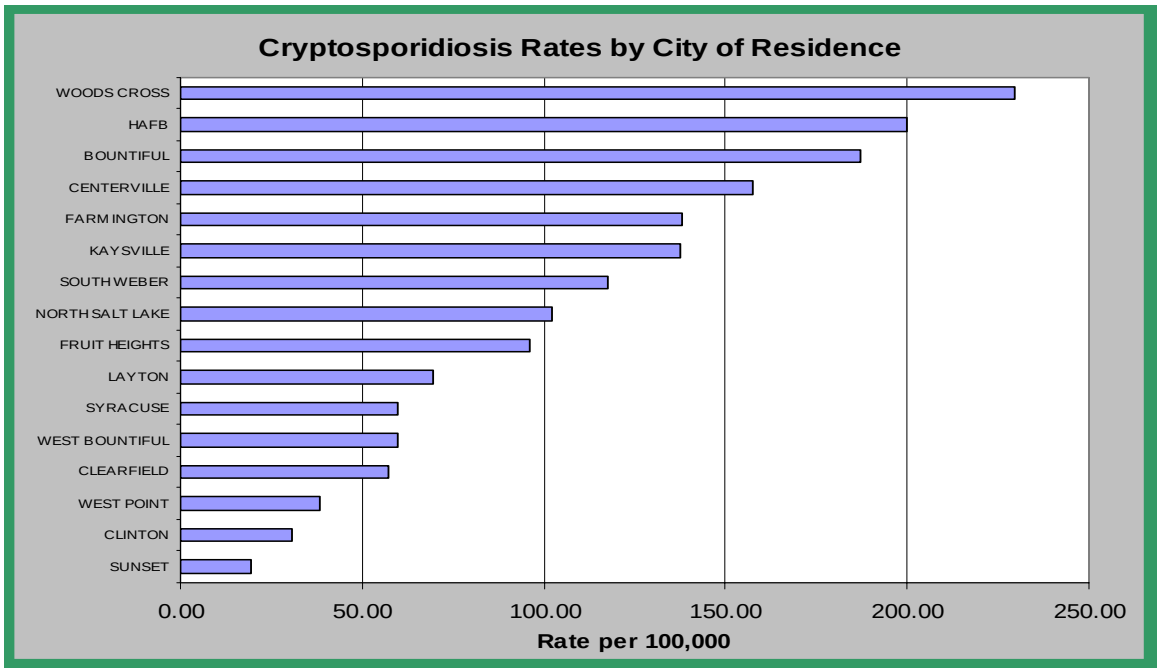
The outbreak of cryptosporidiosis in Davis County began showing up in late June and continued through October. The peak activity was during the month of August.



This outbreak had a tremendous impact on the children in our community. Children under the age of five were hardest hit. The rate for the 0-4 age group was more than double the rate for any other age group. This elevated rate was the primary reason for the ban on children under the age of five in public pools.



The south-end of the county seemed to be hit much harder than the north-end. Data suggest that clustering of disease was occurring around large municipal swimming pools and private water parks throughout the outbreak.



Action Steps:

- Implemented temporary swimming restrictions on all public pools and water parks
- Tested ***five*** local pools for Cryptosporidium, which resulted in positive results for all five pools
- Participated in a state-wide Cryptosporidium prevention campaign for the general public
- Provided Davis County medical providers with testing and treatment guidelines
- Provided Davis County daycare facilities with prevention and sanitation guidelines
- Provided Davis County School District with school-specific prevention and sanitation guidelines
- Offered free stool testing for symptomatic residents who are uninsured and have no medical provider
- Participated in weekly surveillance meetings
- Provided medical community with updates on the disease outbreak

Future Steps:

- Ongoing enhanced surveillance of suspect Cryptosporidium cases
- Public education campaign
- Provider education on testing procedures for Cryptosporidium

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 2007, 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

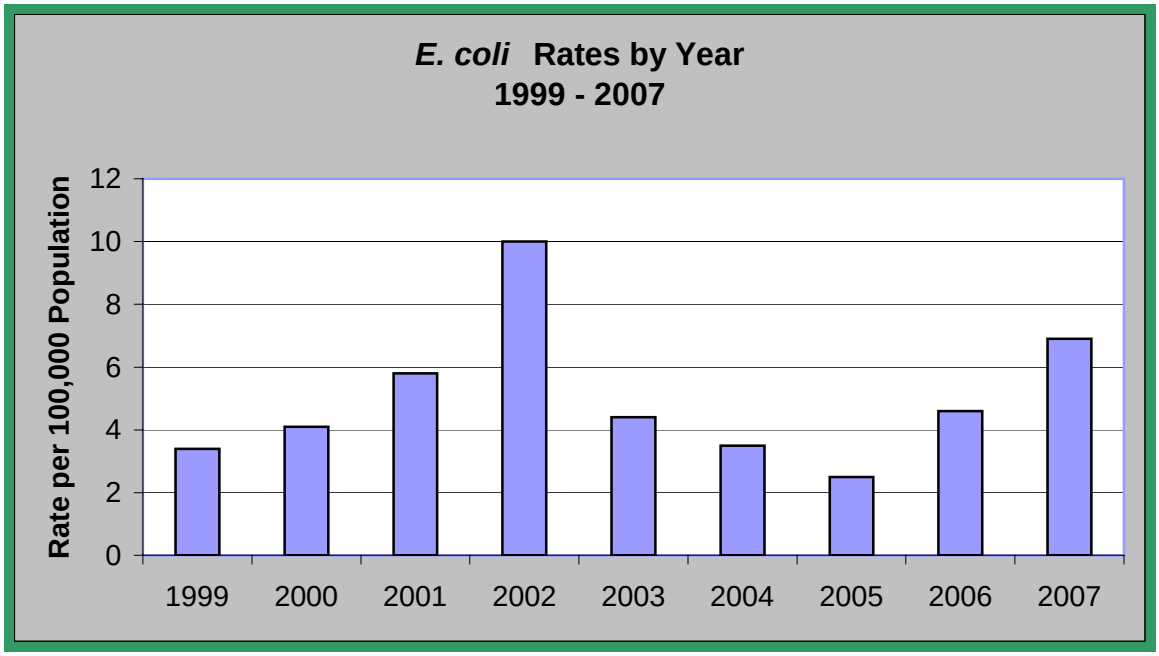
Purpose of Surveillance:

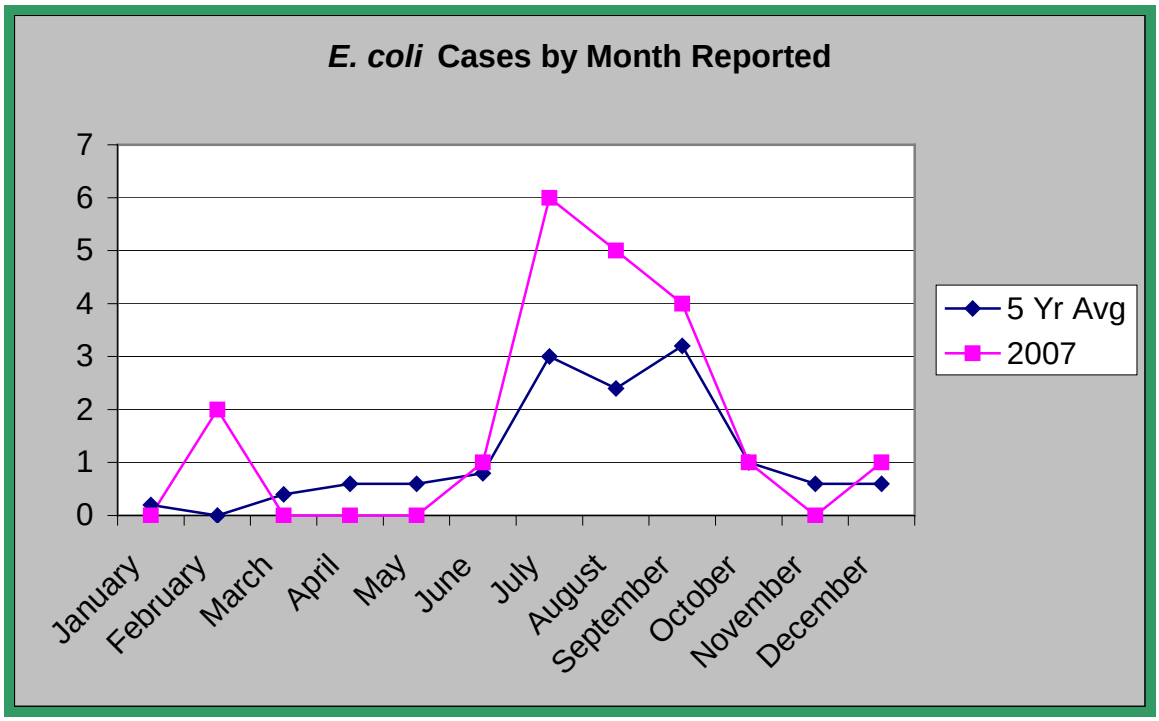
- To identify sporadic cases and common source outbreaks
- To promote disease control measures

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. Other sources of transmission include 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 2007, there were **20 cases** of *E. coli* reported in Davis County, compared to 14 reported in 2006. This increase maybe associated with change in new laboratory testing procedures and reporting. 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. Preliminary reports are acted upon to ensure that there are no ongoing identified risks to the community. Of the 20 *E. coli* cases, two progressed on to Hemolytic Uremic Syndrome (HUS). Davis County also observed an increase in the number of shiga toxin producing *E. coli* not typed as O157:H7

Action Steps:

- Free stool testing for symptomatic individuals who are uninsured and do not have a medical provider
- Implementation of new enteric disease investigation form that provides a more in-depth look into the various enteric disease cases
- Exclusion of infected individuals from food handling, daycare/school settings and direct patient care
- Implementation of new disease plans and electronic reporting system (NEDSS)
- Continue efforts to link enteric diseases cases by the results of PFGE patterns provided by UPHL.

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 foodborne illnesses.
- Enhancement of Foodborne Outbreak investigation teams to include Environmental Health, Communicable Disease, and Epidemiology staff.

GIARDIASIS

Disease Reporting Requirements:

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

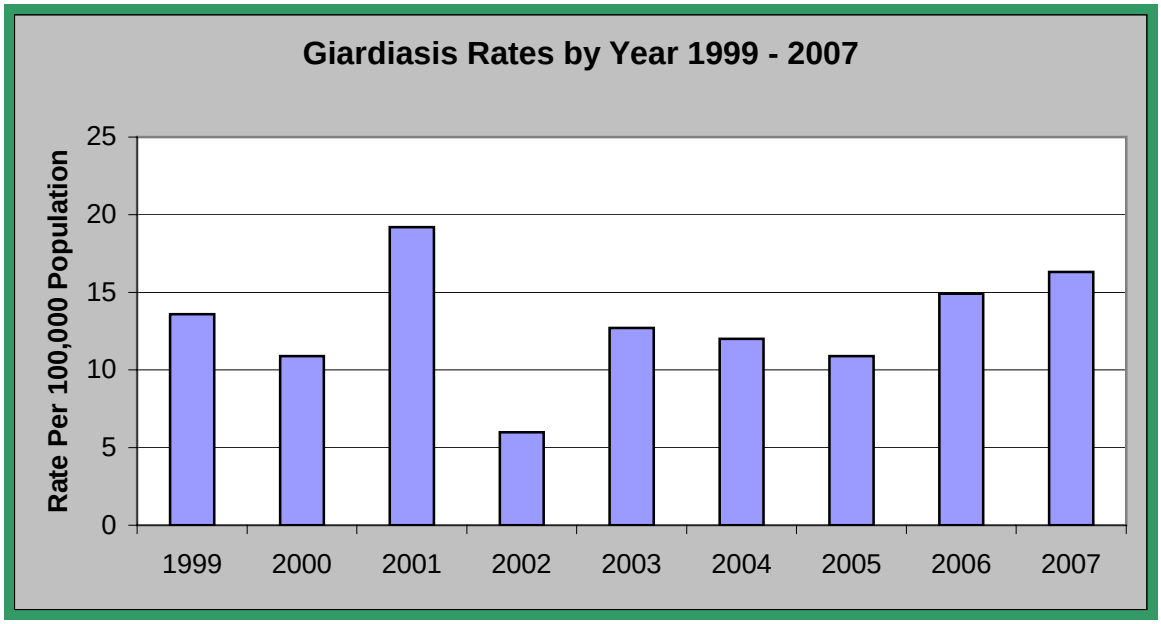
Purpose of Surveillance:

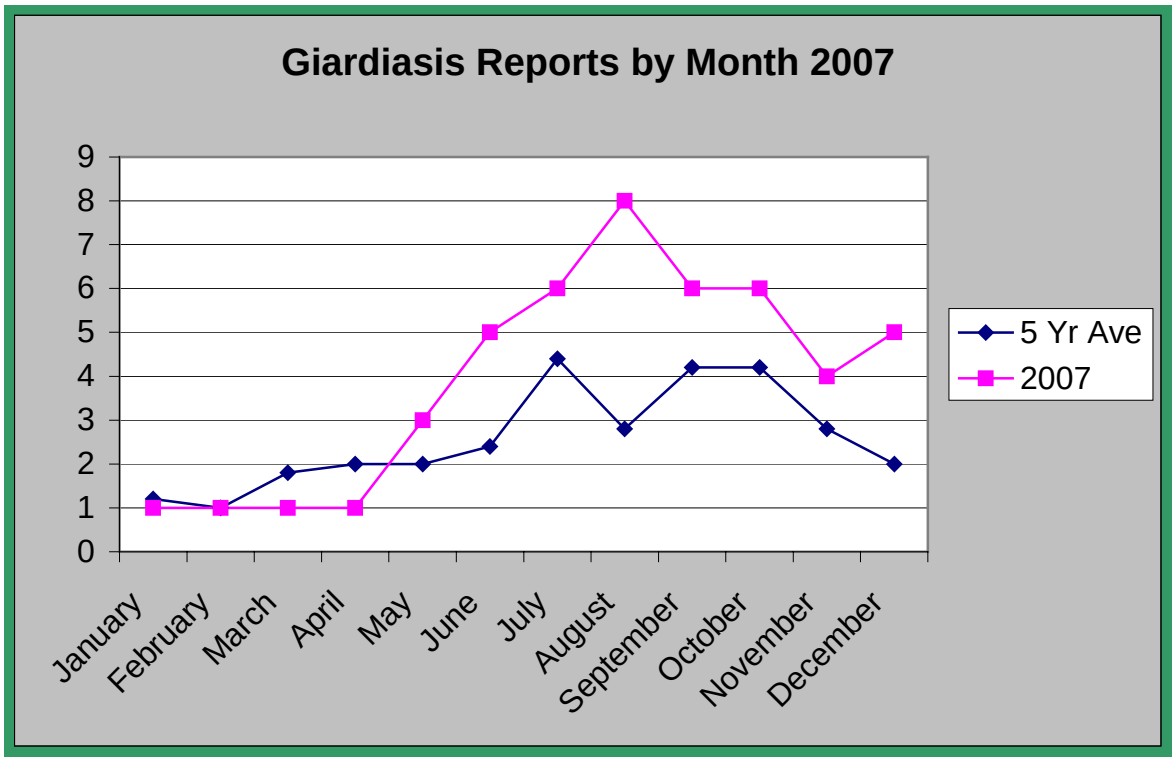
- To identify common source outbreaks
- To identify and eliminate sources of transmission

Disease Description:

Giardiasis is an infection of the upper small intestine caused by *Giardia lambia*, 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 2007, there were **47 cases** of giardiasis reported in Davis County.





Additional Information:

Childcare settings pose an elevated risk due to diapered children and a higher possibility of cross contamination. Recreation exposure (lakes, oceans, streams) is also a likely culprit for giardia and turned out true with many of the cases in Davis County.

Action Steps:

- Development and pilot of new enteric disease investigation form.
- Free stool testing for symptomatic individuals who are uninsured and have no medical provider

Future Steps:

- Ongoing public education regarding food safety techniques
- Implementation of new disease plans and electronic reporting system (NEDSS)
- Collaboration among physicians, hospitals, laboratories and other Utah health departments to assist in the early identification and control of foodborne illnesses.

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 2007, there were **4 cases** of HUS reported in Davis County. Two of the cases reported were related to an *E.coli 0157:H7* infection and no organisms were isolated in the remaining two cases.

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 of the pediatric HUS cases are cause by *E.coli* 0157:H7, most of the adult TTP cases have an unknown etiology.

Action Steps:

- All pediatric cases that are diagnosed with HUS caused by *E.coli* 0157:H7 are excluded from daycare and/or school 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.
- An extensive history is obtained, which helps determine if there is an ongoing public health threat in the community.
- Implementation of new enteric disease investigation form that provides a more in-depth look into the various enteric disease cases
- Control and Prevention education is provided to the cases and their families/contacts.

Future Steps:

- Ongoing public education regarding food safety techniques
- Implementation of new disease plans and electronic reporting system (NEDSS)
- Continue efforts to link enteric diseases cases by the results of PFGE patterns provided by UPHL.
- Collaboration among physicians, hospitals, laboratories and other Utah health departments to assist in the early identification and control of foodborne illnesses.

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 2007, there were **no cases** of listeriosis reported in Davis County.

Additional Information: None

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. Currently, there are at least five 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 spread. Environmental and fomite contamination may also act as a source of infection. Good evidence exists for transmission due to aerosolization of vomitus that presumably results 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 are due to norovirus infection, and it is now thought that at least 50% of all foodborne outbreaks of gastroenteritis can be attributed to noroviruses.

During 2007, there was **17 cases** of norovirus reported in Davis County. Most of the reported cases were linked to a facility-wide outbreak

Additional Information:

The Communicable Disease Surveillance and Control program responded to (4) separate gastrointestinal illness clusters at different facilities in Davis County. Three of the affected facilities house elderly residents and the fourth location was a daycare center. DCHD met with each facility to discuss control measures and the disinfection process. Stool specimens were collected and tested positive for Norovirus at all (4) facilities. Illness was contained and resolved within a few weeks. One death was noted at one of the facilities, but it was undetermined if cause of death was related to the Norovirus. Disinfection procedures were monitored to ensure proper technique or completeness. Prevention guidelines were provided to all facilities.

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

Action Steps:

- On all (4) gastrointestinal clusters, Communicable Disease staff interviewed ill individuals to help identify a possible causative agent
- Environmental Health also conducted site inspections to ensure health code compliancy
- Free stool testing was offered to symptomatic individuals who are uninsured and have no medical provider

- Prevention control measures & disinfection processes were implemented and monitored
- Distribution of Norovirus information to schools and long term care facilities (LTCF) that explains how to control norovirus and provides instructions on disinfection of contaminated environments

Future Steps:

- Encourage ill individuals to seek medical attention early in their illnesses
- Provide information to the community via website on proper hand washing techniques

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

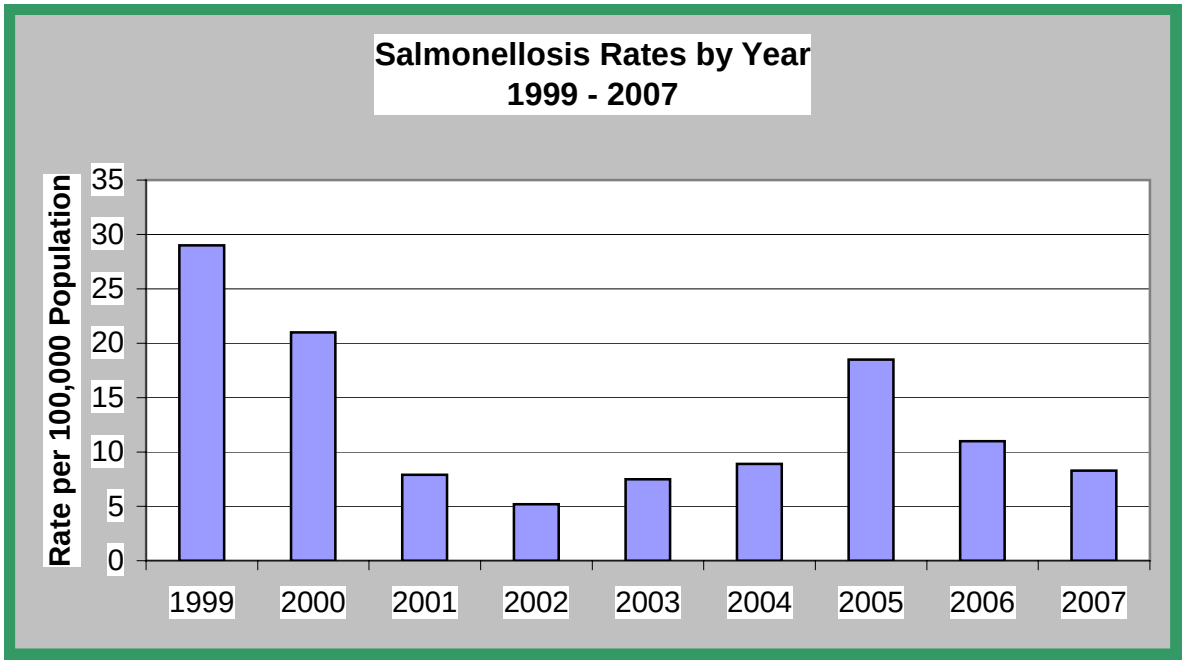
Purpose of Surveillance:

- To identify common source outbreaks for investigation
- To identify and eliminate sources of and institute control measures such as excluding infected food handlers 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 2007, there were **24 cases** of Salmonellosis reported in Davis County, a decrease from the 31 cases reported in 2006.

Additional Information:



In 2007, a recall involving frozen pot pies was linked to Salmonellosis. Davis County Environmental Health assisted in the removal of these food items from the shelves of local food stores. **Three** of the salmonella cases that were reported to Davis County had PFGE matches to the pot pie outbreak. Supplemental surveillance questionnaires were completed on all three cases, which included questions regarding the use of microwave cooking of frozen meals.

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. All isolated organisms are analyzed to identify linkage with other Utah and U.S. cases. *S. typhimurium* was identified as the most commonly reported *Salmonella* serotype during 2007.

SEROTYPE	Number	Proportion
TYPHIMURIUM	**7**	**29.17%**
UNKNOWN	**4**	**16.67%**
ENTERITIDIS	**2**	**8.33%**
STANLEY	**2**	**8.33%**
MUENCHEN	**1**	**4.17%**
B MONOPHASIC	**1**	**4.17%**
HADAR	**1**	**4.17%**
I4,5,12 I	**1**	**4.17%**
MBANDAKA	**1**	**4.17%**
INFANTIS	**1**	**4.17%**
MONTEVIDEO	**1**	**4.17%**
NEWPORT	**1**	**4.17%**
NOT TESTED	**1**	**4.17%**
Total	**24**	**100.00%**

Action Steps:

- Implementation of new enteric disease investigation form that provides a more in-depth look into the various enteric disease cases
- Due to the high potential spread, ill food handlers, daycare providers, and direct caregivers are excluded from work until two 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 foodborne illnesses.

SHIGELLOSIS

Disease Reporting Requirements:

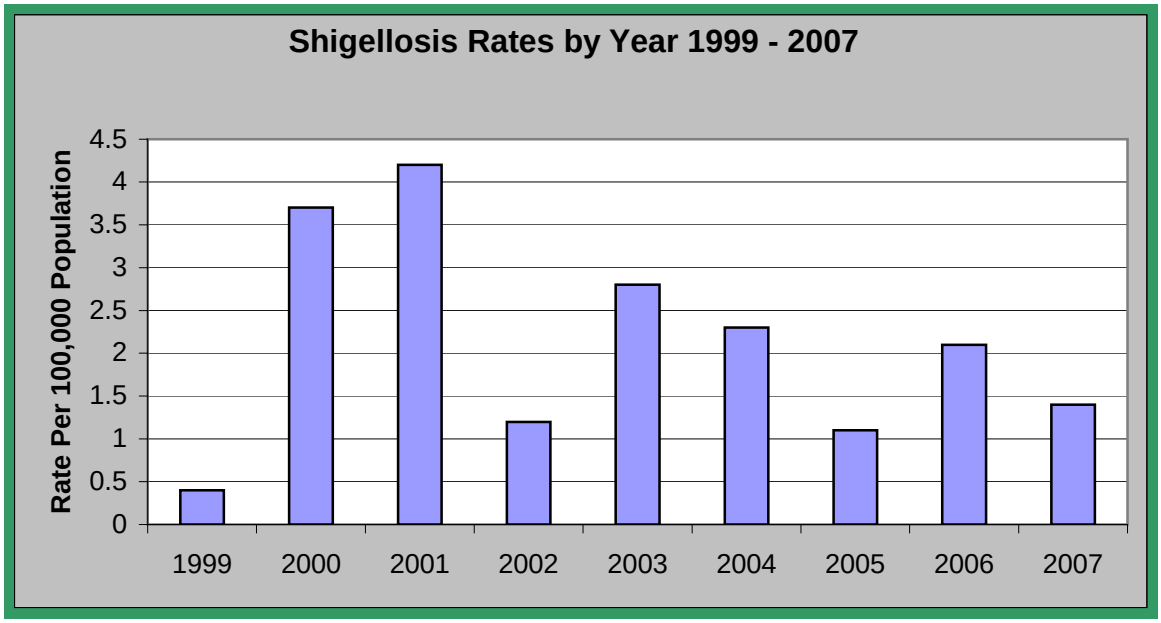
Healthcare Providers and Laboratories - report cases within 3 working days of identification

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 2007, 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 infected 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 the public awareness of the danger of eating raw or undercooked pork products. Today cases more often associated with eating raw or undercooked wild game meats.

During 2007, there were **no cases** of trichinosis 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 2007, there were **no cases** of typhoid fever reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

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 infected food products and prevent additional cases

Disease Description:

Vibrio is a genus of bacteria that can produce a variety of toxins. This is an infection of variable severity characterized by diarrhea and vomiting, primary septicemia, or wound infections. Asymptomatic infections may occur, and the organism may cause extraintestinal 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 a 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 2007, there were **no cases** of vibriosis reported in Davis County.

Additional Information: None

Action Steps: None

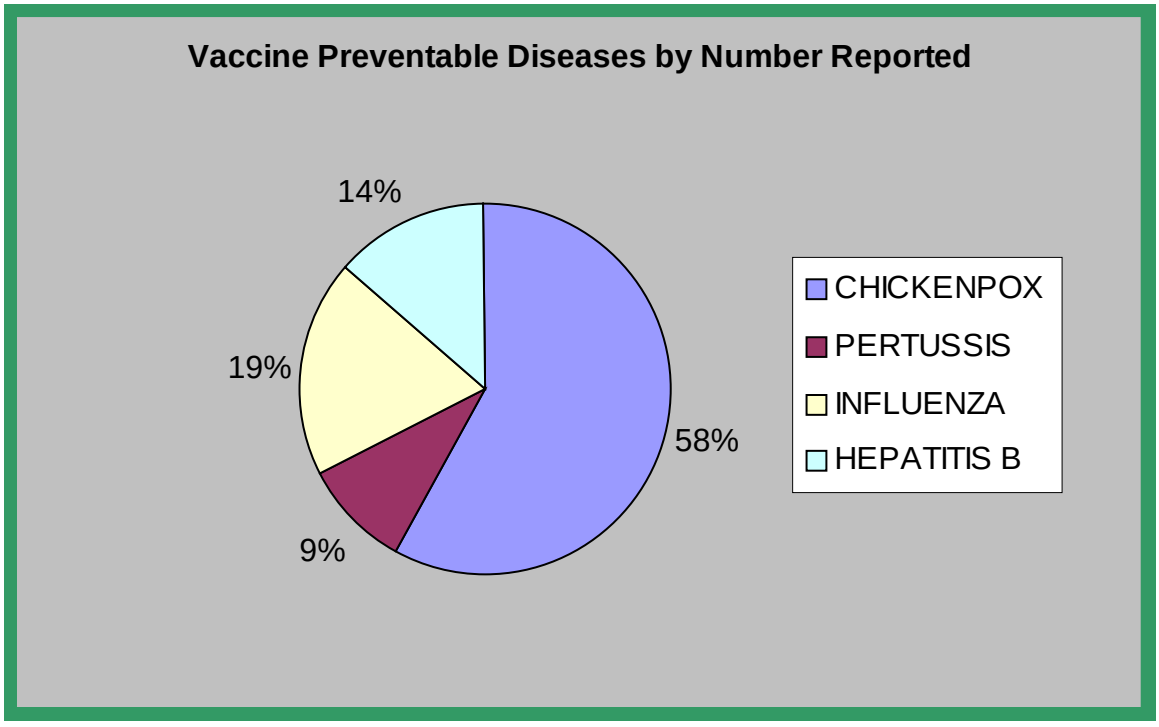
Future Steps: None

Vaccine Preventable Diseases

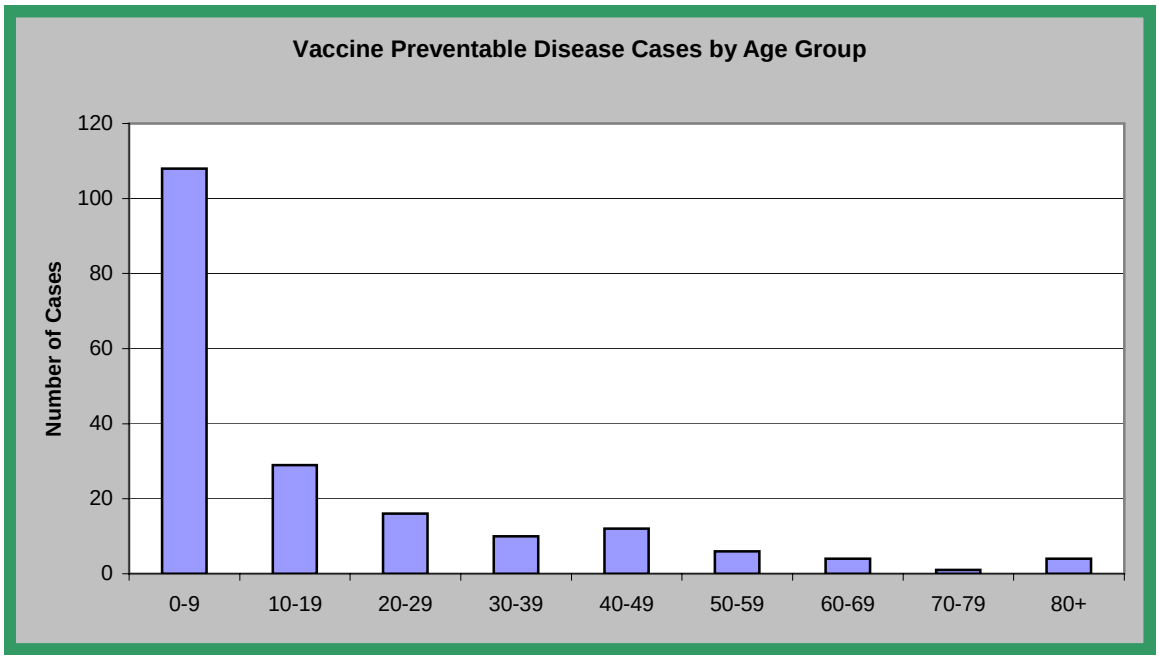
Vaccine Preventable Diseases (VPD) are those diseases that are preventable through the use of immunizations. Many of the vaccine-preventable diseases historically caused a great deal of morbidity and mortality in children. Rates of VPDs have dramatically declined in large part because of immunizations. 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.

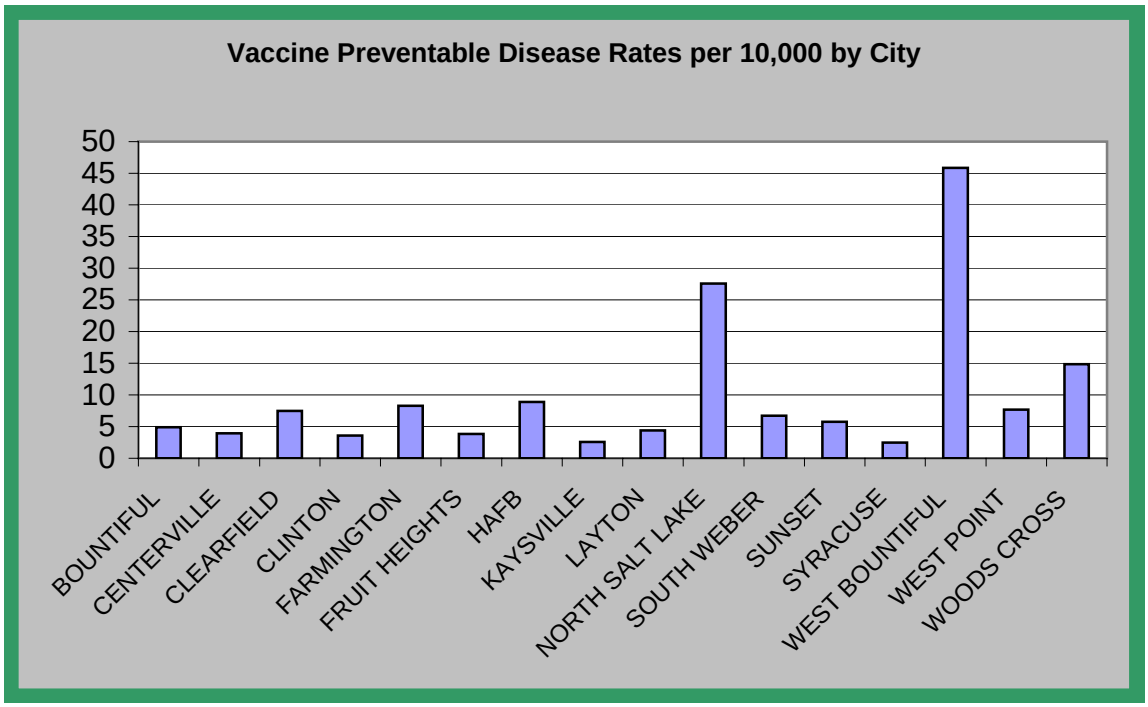
What: Chickenpox was the disease most often reported in this category with 58% of the cases followed by hospitalized influenza cases (19%), hepatitis B (14%), and pertussis (9%).



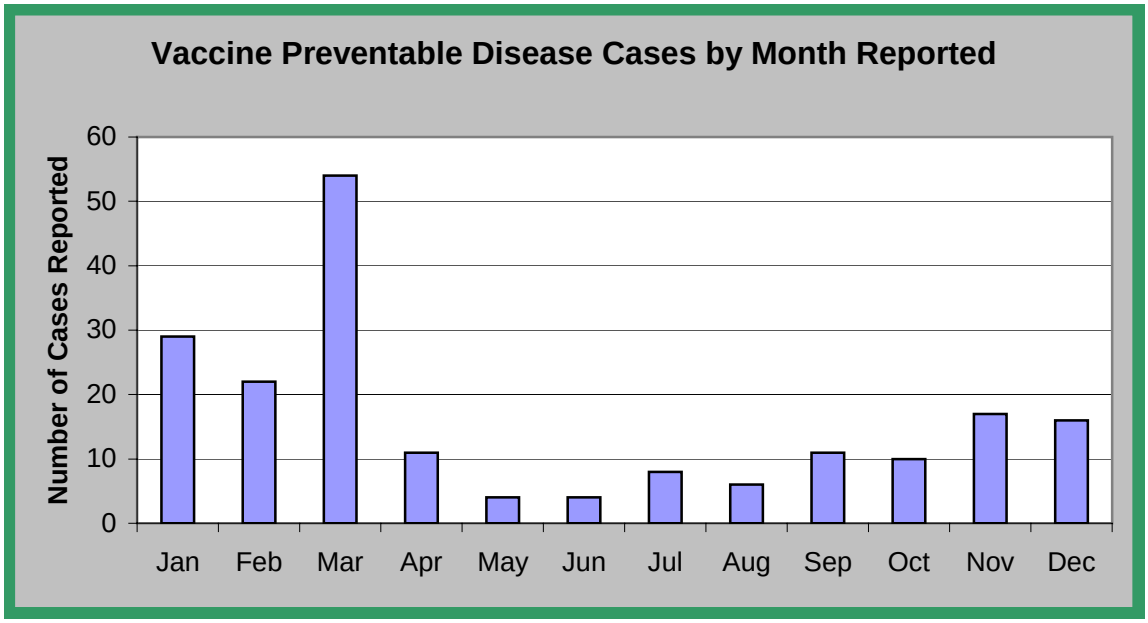
Who: Vaccine Preventable Diseases were most often reported among children under age 10 and were reported equally among males and females.



Where: The average rate of vaccine preventable diseases was about ten cases per 10,000 residents. The cities of North Salt Lake and West Bountiful experienced a rate more than double the average in 2007. This higher rate is primarily the result of outbreaks of Chickenpox identified in thier communities.



When: Vaccine Preventable Diseases occur more frequently during the winter months. However, vaccine preventable diseases tend to follow the school year. The large number of cases in March is due to an outbreak of Chickenpox in an elementary school.



CHICKENPOX

Disease Reporting Requirements:

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

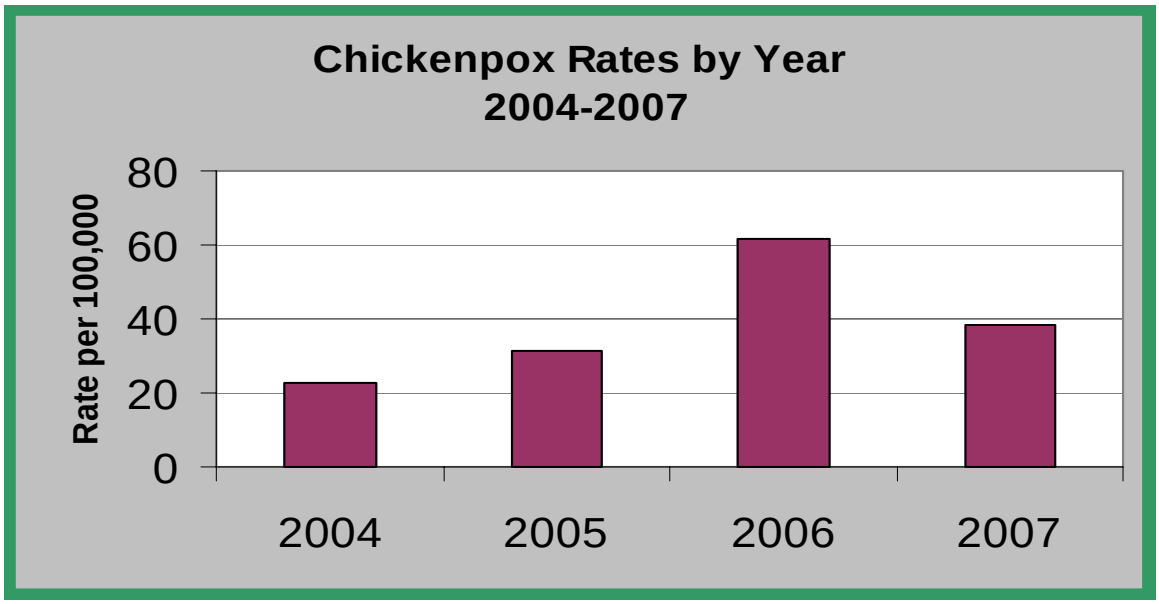
Purpose of Surveillance:

- 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

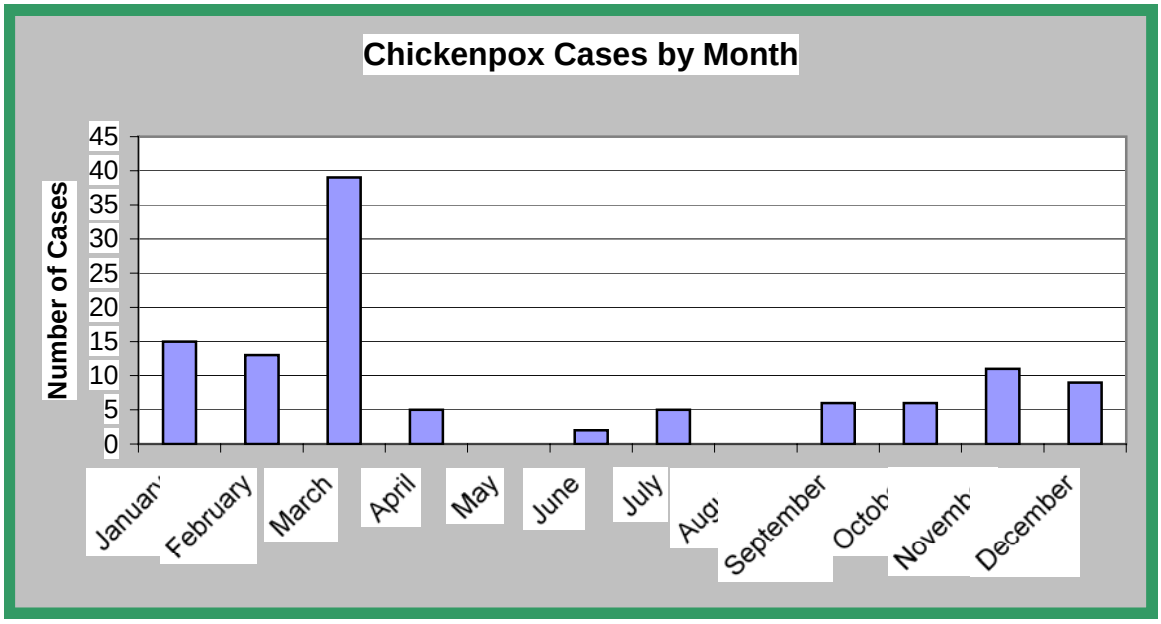
Disease Description:

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 2007, there were **111 cases** of chickenpox reported in Davis County, a decrease from the 174 cases reported in 2006. Nearly, 68% of the chickenpox cases reported had a known history of receiving at least one dose of varicella vaccine.



Few 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. The month of March was elevated because of an outbreak of chickenpox in an elementary school.



Additional Information:

Over the past few years, surveillance has noted that reports of "breakthrough" chickenpox cases have occurred more frequently. In Davis County, 68% 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. If exposed to chickenpox, these individuals may develop a mild case of chickenpox with less than 50 blisters. When this occurs, duration is shorter and symptoms are milder.

Due to this increase in breakthrough occurrence, CDC is now recommending 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:

- Public campaign was conducted to educate on the importance of a (2) dose varicella vaccine series
- Development of new chickenpox disease control measures for school settings
- Revised chickenpox report form was distributed to schools within Davis County that was user friendly and required minimal time to complete. This facilitated better reporting of numbers and a more accurate disease description

Future Steps:

- Distribution of educational information regarding the new 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 2007, 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 **no cases** of Hepatitis A in 2007. The last confirmed hepatitis A case in Davis County was reported in 2004.

Additional Information:

In 2007, Davis County investigated a suspect case of Hepatitis A that likely acquired the infection while visiting a foreign country. The disease investigation process was unable to either confirm or rule out this infection, therefore, was categorized as a "suspect" case. Contacts were identified, interviewed, and offered prophylaxis & vaccination. No additional cases developed.
.

Action Steps: None

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 2007, there were **24 cases** of chronic HBV and **2 cases** of acute HBV reported in Davis County. Of the chronic cases, 10 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 encouraged to received the 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:

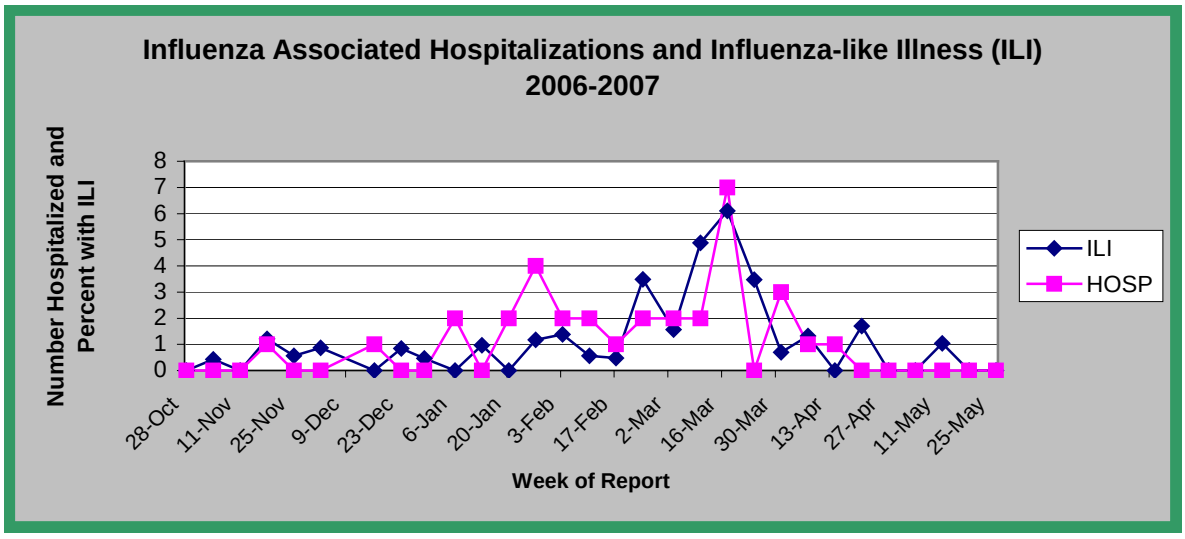
- To determine where, when, and what influenza viruses are circulating
- To determine if influenza activity is increasing or decreasing, but not to ascertain how many people have become ill with influenza during the influenza season
- To detect changes in the epidemic that would be consistent with the 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 2006-2007 influenza season, there were **33 cases of hospitalized influenza** reported in Davis County. There was **one influenza-associated pediatric death** reported.

In addition to tracking influenza hospitalizations, patients with influenza-like illness (ILI) are monitored through sentinel physician surveillance. ILI is defined as fever $\geq 100^{o}$ F with sore throat and/or cough. During the 2006-2007 season, Davis County monitored ILI at two medical clinics. The 2006-2007 influenza season peaked mid-March.



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%.

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 influenza strains
- 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
- Enhance school absentee surveillance to characterize influenza season
- Sentinel ILI (influenza-like illness) monitoring
- Improved 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. Since1992, the incidence in 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 2007, there were **no cases** of measles reported in Davis County.

Additional Information:

Although no cases of measles were confirmed in 2007, 2 cases were reported as suspect measles and a prompt investigation was initiated until the disease could 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 have 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 2007, there were **no cases** of mumps reported in Davis County.

Additional Information:

Although no cases of mumps were confirmed in 2007, 1 case was reported as suspect mumps and a prompt investigation was initiated until the disease could 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

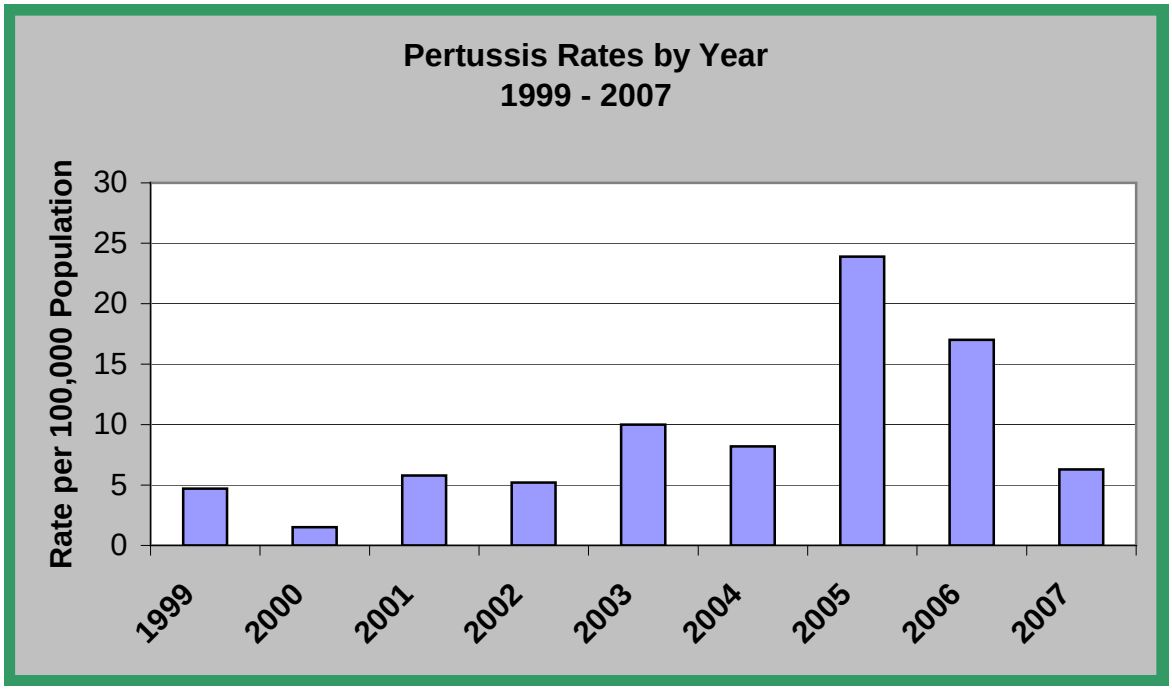
Purpose of Surveillance:

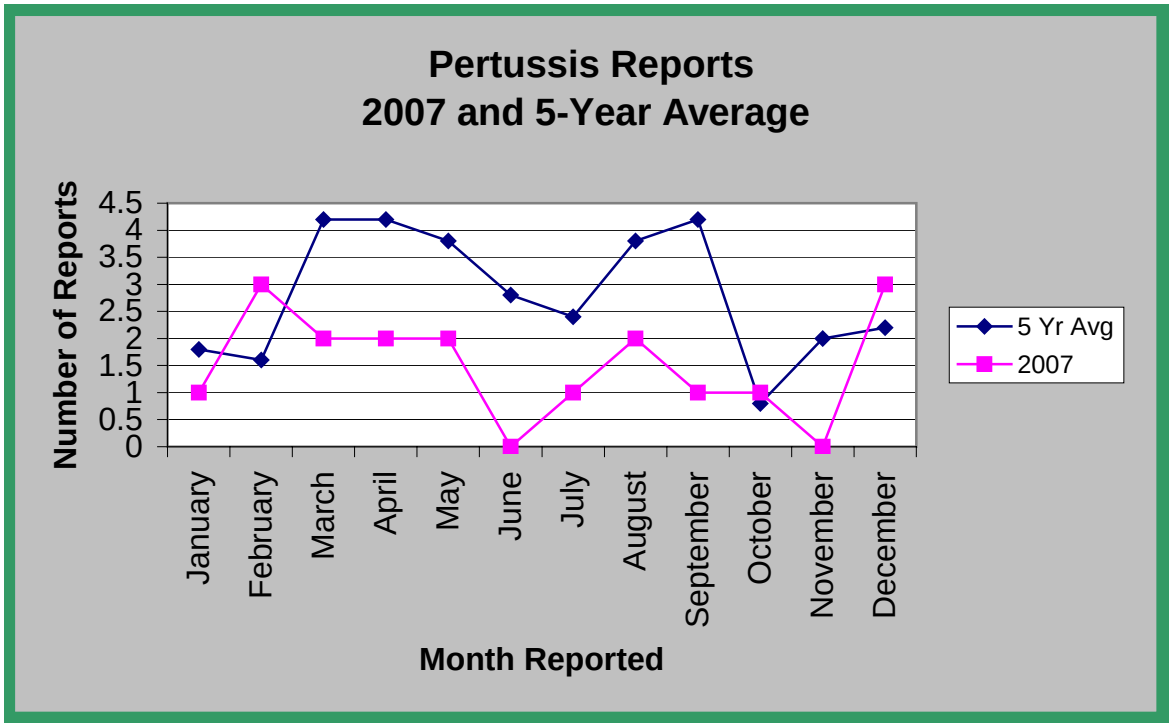
- To prevent transmission of pertussis to persons at high risk for severe illness and complications
- To identify outbreaks and implement disease control, including early recognition, testing and treatment of cases

Disease Description:

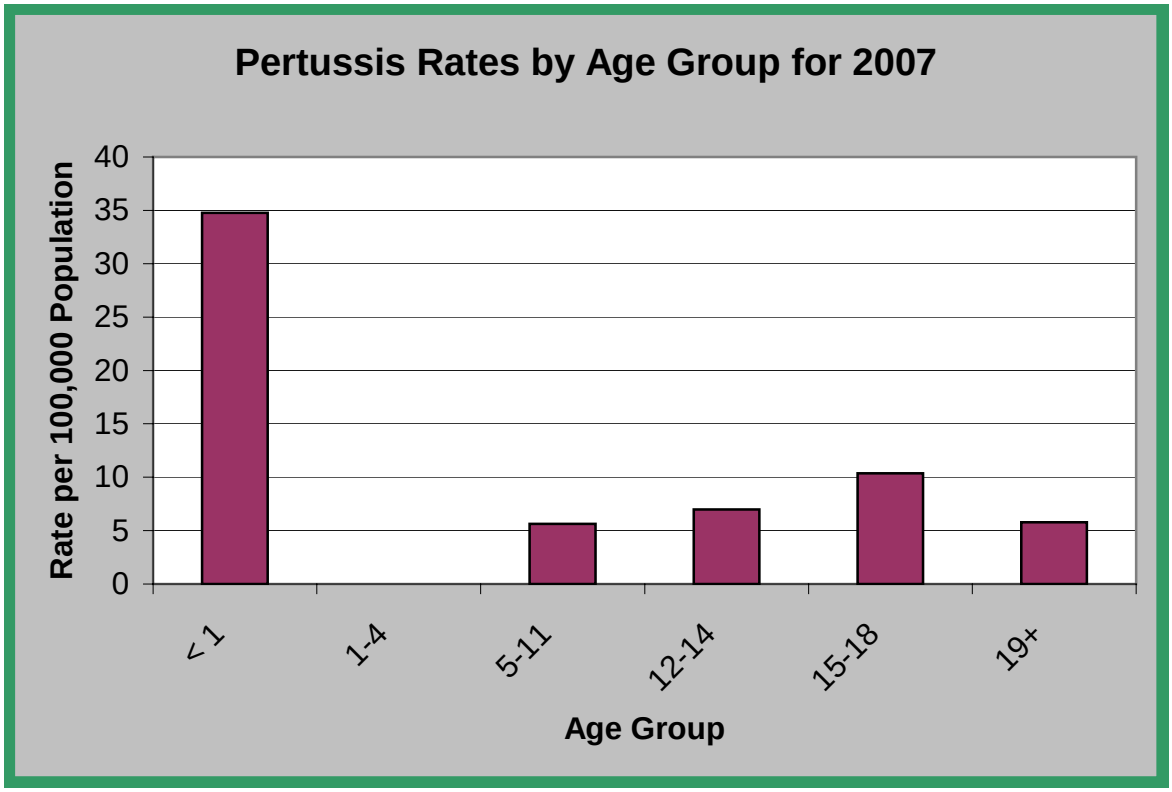
Pertussis is a vaccine preventable disease caused by the bacteria *Bordetella pertussis*. Pertussis is of particular concern in infants, because of higher rates of hospitalization, pneumonia, and death compared with older children and adults.

During 2007, there were **18 cases** of pertussis reported in Davis County, a substantial decrease from the 49 cases reported during 2006.





The rate of pertussis in 2007 was highest among infants due to incomplete vaccination status followed by the adolescent age group, whose immunity has waned.



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 Utah immunization requirement for 7th grade school entry is gradually making an impact on the pertussis disease burden in Davis County. Students are now required to receive a Td or Tdap booster.

Actions Steps:

- 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 new Tdap booster vaccine for adolescents and adults
- Updating the medical community on the recommended testing procedures and 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 2007, 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 2007, there were **no cases** of rubella reported in Davis County.

Additional Information:

Although no cases of rubella were confirmed in 2007, 2 cases were reported as suspect rubella and a prompt investigation was initiated until the disease could be 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 2007, there were **no cases** of tetanus reported in Davis County.

Additional Information: None

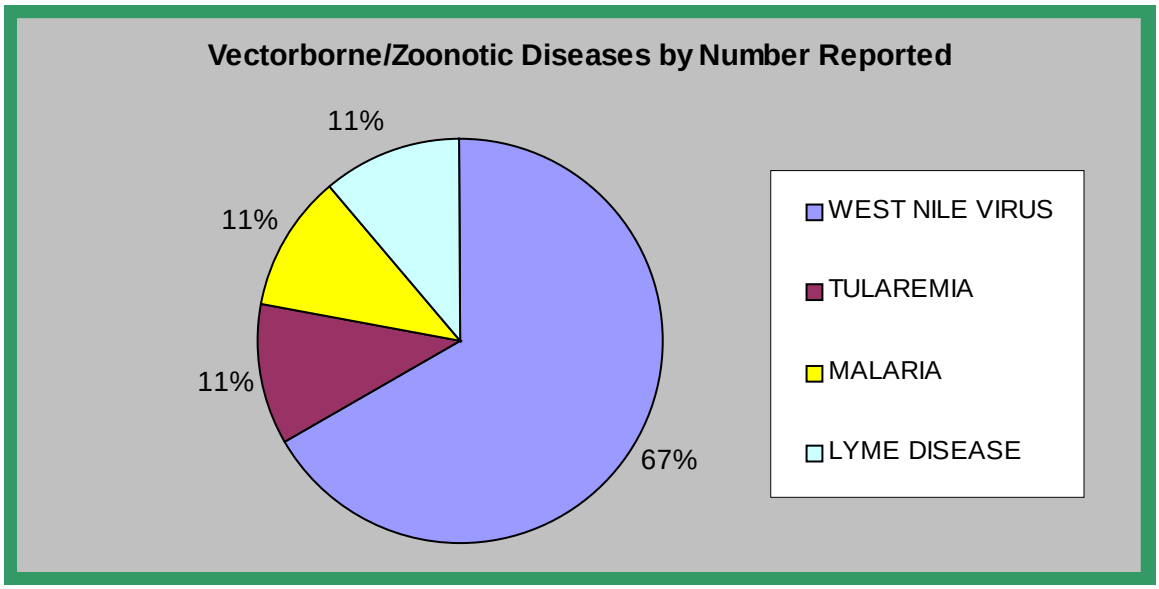
Action Steps: None

Future Steps: None

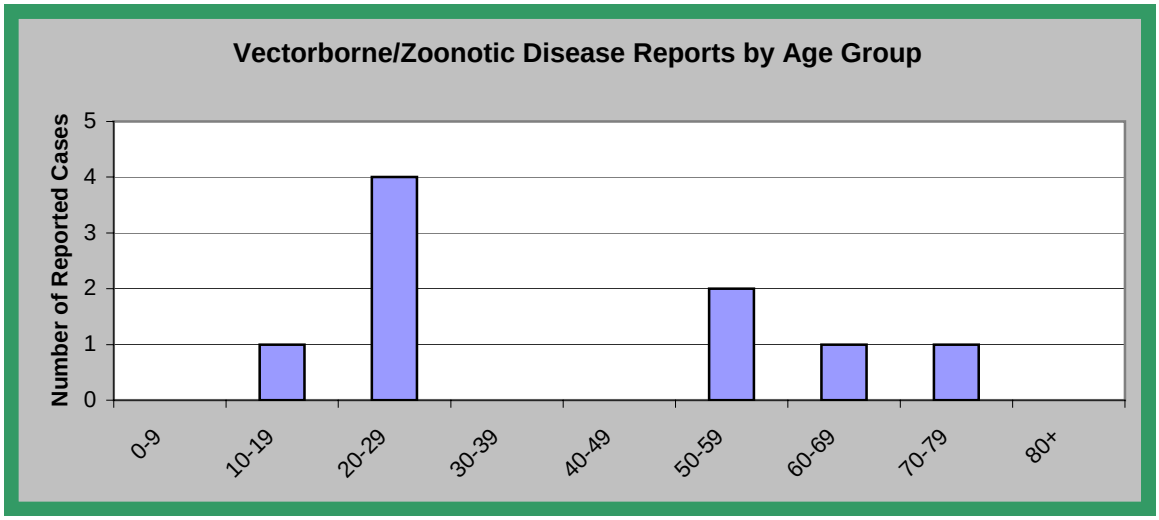
Vectorborne/Zoonotic Diseases

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. In this section, all reportable vectorborne/zoonotic diseases will be discussed.

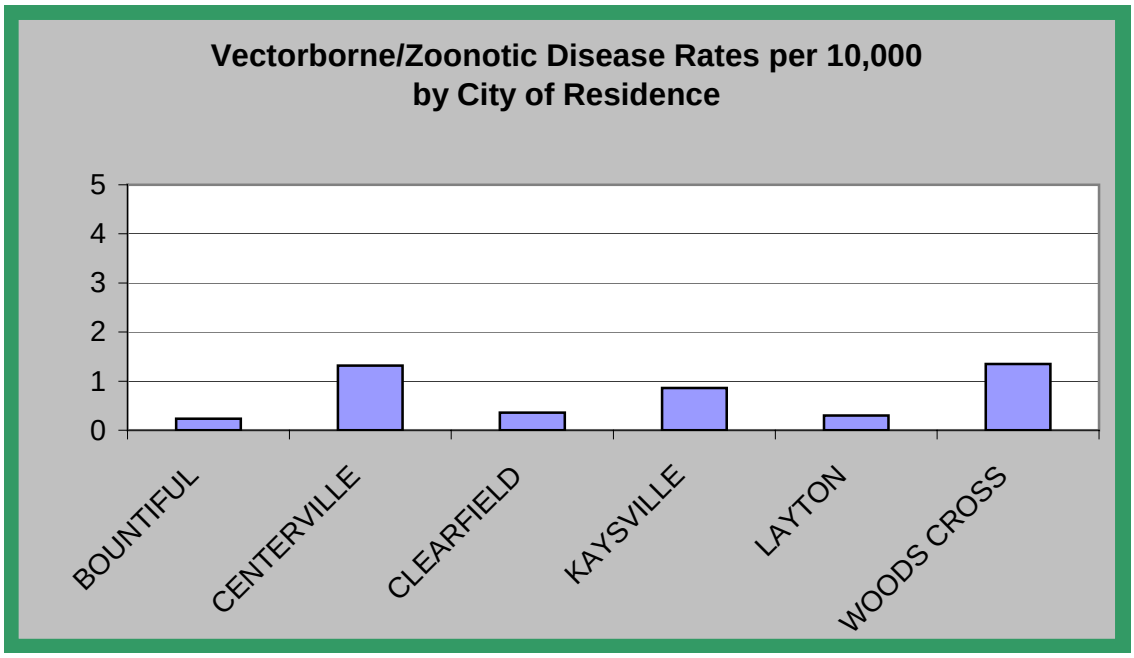
What: In 2007, Davis County had nine cases reported of vectorborne/zoonotic diseases. West Nile virus was the most commonly reported disease in this category.



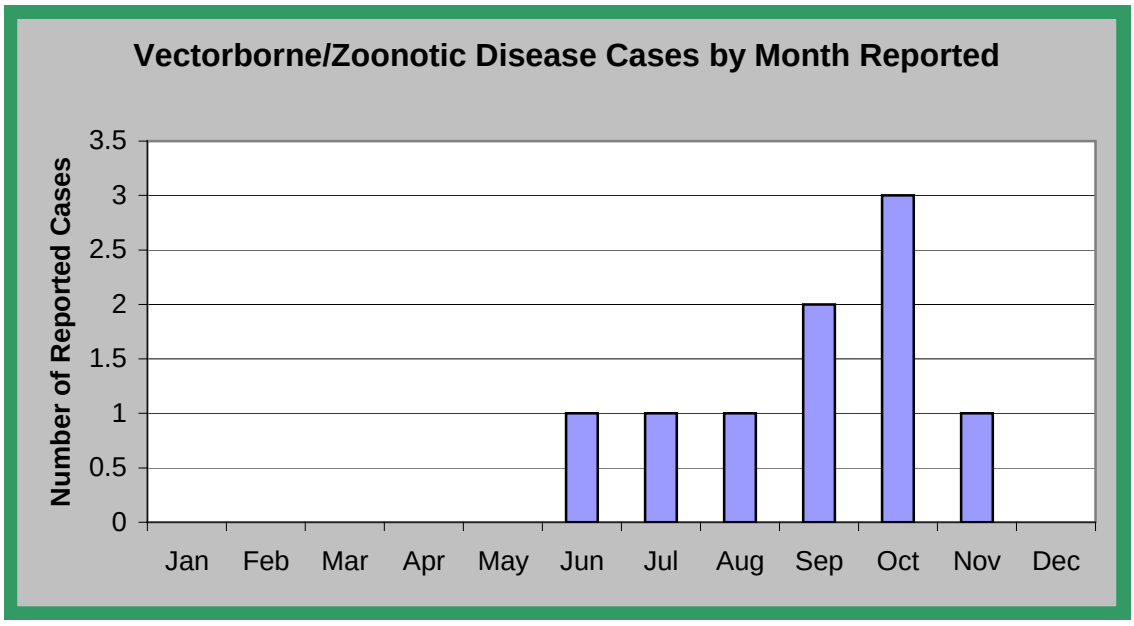
Who: Vectorborne/Zoonotic diseases were most often reported among males (56%) and the majority of cases were reported among adults age 20-29 years.



Where: Cities not shown on the chart did not have any cases reported in 2007.



When: Vectorborne/Zoonotic diseases were most often reported in summer months. This is due mainly to West Nile and the seasonality of the virus.



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 bioterroism. 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 2007.

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 2007, there were **6 cases** of West Nile virus, a type of arboviral infection. Other arboviral diseases include Dengue Fever, Colorado Tick Fever, Yellow Fever and St. Louis encephalitis.

Additional Information:

One suspect case of Colorado Tick Fever was investigated and ruled out.

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 2007, there were **no cases** of brucellosis reported in Davis County.

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 2007, there were **no cases** of Dengue Fever reported in Davis County.

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 2007, 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 known 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 2007, 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 March 26, 2007, a total of 465 cases of hantavirus pulmonary syndrome have been reported in the United 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.

During 2007, there were **no cases** of Hantavirus Pulmonary Syndrome reported in Davis County.

Additional Information:

Although no cases of Hantavirus were confirmed in 2007, two suspect cases were reported in which a prompt investigation was initiated until the disease could be ruled out.

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 2007, there was **one case** of Lyme Disease reported in Davis County. The case had multiple outdoor exposures in other states, therefore it is assumed that the disease was not acquired in Utah.

Additional Information:

Four suspect cases were reported, 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 2007, there was **1 case** of malaria reported in a Davis County resident who had recently returned from a malaria endemic area.

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 2007, 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*.

Since 1996, fewer than 50 confirmed cases were reported in the United States each year. Likely many more cases may occur that are not reported.

During 2007, 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 2007, there were **no cases** of Q-Fever reported in Davis County.

Additional Information:

One suspect case was investigated and ruled out.

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 2007, there were **3 cases** of rabies reported in bats in Davis County. Two of the positive bats involved multiple human contacts at two different schools (Elementary and High School). **No human cases** were reported.

Additional Information:

The first bat involved an exposure at an elementary school where a young boy found the ill bat, put it in his backpack and brought it to school. This bat was collected and tested by the Utah Public Health Lab. It was positive and highly virulent. Due to the ages of the children and the difficulty identifying potentially exposed individuals, the DCHD held a school-wide meeting with parents to educate them on the exposure and get their assistance in interviewing their children to determine if an exposure occurred. Of those potentially exposed, the exposures consisted of skin contact to the bat (touching, petting, & holding) - no obvious bites or scratches were noted. However, due to new guidelines from CDC, ***ten*** students were identified as having a higher risk of exposure and referred to their medical providers for evaluation and post-exposure prophylaxis. One child was evaluated and treated by DCHD due to financial barriers. ***Eight*** of the children completed the post-exposure prophylaxis and two were determined by their provider as having “no exposure”.

The second positive bat was identified 3 days after the first bat and was also found at a school (high school). ***Five*** adolescents were identified as having a possible exposure and were referred to their medical providers for evaluation and post-exposure prophylaxis. ***Three*** of the five students were administered the post-exposure prophylaxis and the other two were deemed by their provider as having "no exposure".

The third positive bat exposure involved a single individual that was referred for evaluation and post-exposure prophylaxis.

Two other bat exposures occurred in 2007 in which a human was exposed, but the bat was not recovered and tested. Both were also referred to their medical provider for evaluation and post-exposure prophylaxis.

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

Action Steps:

- Implementation of new CDC guidelines pertaining to rabid animal exposures
- Administered post-exposure prophylaxis to a Davis County resident
- Enhanced coordinated efforts between the DCHD and Davis County Animal Control regarding rabid animal exposures
- Educated local hospitals on new CDC guidelines

Future Steps:

- Educate local veterinarians on new CDC guidelines and reporting laws pertaining to rabid animal exposures
- Educate local physicians/clinics on new CDC guidelines pertaining to rabid animal exposures

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 2007, 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 2007, there were **no cases** of RMSF reported in Davis County.

Additional Information:

One suspect case was investigated and ruled out.

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 the *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 2007, there was **one case** of tularemia reported in Davis County. On average in Utah, there are 2 cases of tularemia reported each year. But during the summer of 2007, 14 cases of tularemia were reported, all of which occurred from one cluster on the west side of Utah Lake. One of the 14 cases resided in Davis County and was investigated by DCHD.

Additional Information:

Those infected this year had attended youth group activities for the Church of Jesus Christ of Latter Day Saints that were held at the Mosida Lodge located on the west side of Utah Lake. Once clusters of illnesses were identified, a questionnaire was developed and administered to infected/not infected individuals in an effort to help identify the source of the tularemia infection. Six individuals in Utah were hospitalized due to complications of the infection. Many of those infected, including the Davis County resident, continue to have prolonged illness and have required multiple doctor visits and hospitalizations.

The Center for Disease Control and Prevention (CDC) came to Utah to assist with field investigations. Laboratory tests were conducted on the deer flies, rabbit carcasses and deer mice to determine if they were positive for *F. tularensis*. None of the deer flies tested positive for *F. tularensis*. Of the live rodents trapped and tested, none tested positive for *F. tularensis*. However, of the 12 rabbit carcasses collected, 11 (92%) tested positive for *F. tularensis*.

Action Steps:

- Cohort study surveys were sent out to approximately 150 LDS single adults who had attended a campout on the West side of Utah Lake
- Collected blood and wound samples from Davis County case to test for Tularemia
- Participated in weekly conference calls with Utah Department of Health (UDOH) and the CDC to collaborate efforts of the investigation

Future Steps:

- Develop prevention literature for those who may be participating in activities that put them at risk of exposure to Tularemia
- Ongoing enhanced surveillance for suspect cases of Tularemia

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 2007, 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.

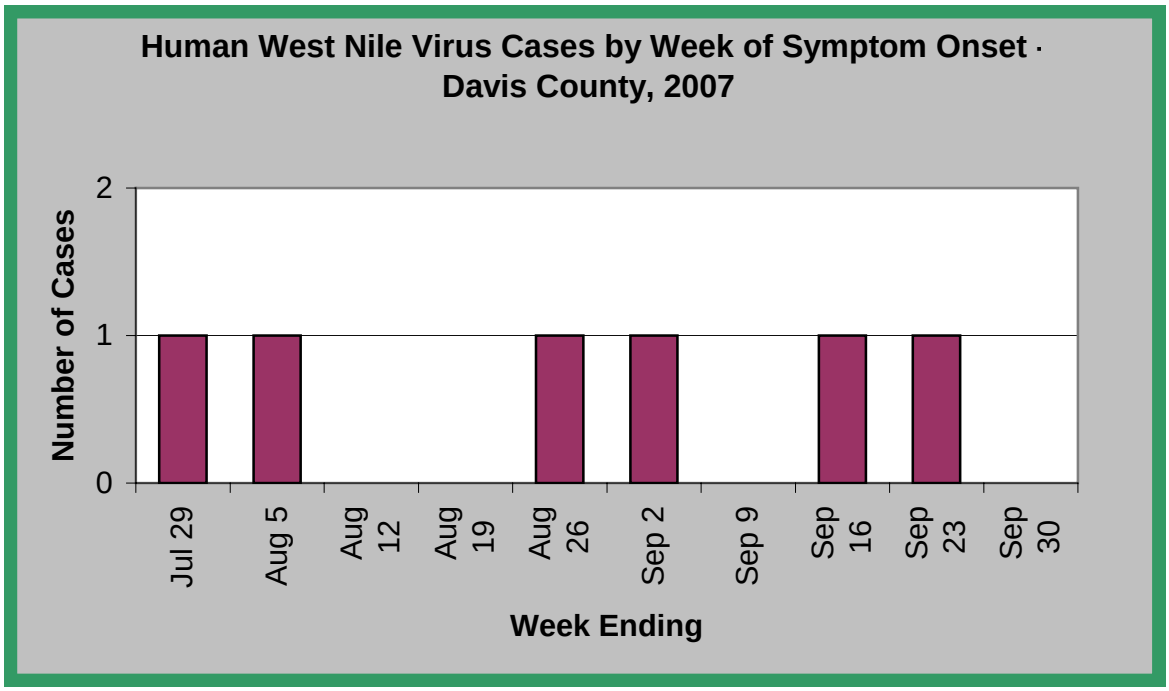
Purpose of Surveillance:

- 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 unapparent. Approximately 20% of those infected develop a generally 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 2007, there were **6 cases** of West Nile virus reported in Davis County.



Human Cases of WNV by Age Group & Clinical Diagnosis: Davis County, 2007				
Age Group	**Fever**	**Neurologic Disease***	**Death**	**Total**
< 18	**0**	**1**	**0**	**1**
18 - 39	**1**	**1**	**0**	**2**
40 - 64	**2**	**0**	**0**	**2**
65 +	**0**	**1**	**0**	**1**
Total	**3**	**3**	**0**	**6**

* Neurologic disease includes the presentation of meningitis, encephalitis, and acute flaccid paralysis (poliomyelitis-like syndrome).

Non-human WNV Surveillance Positive Results: Davis County, 2007			
Sentinel Chickens	**Horses**	**Mosquito Batches**	**Dead Birds**
14	**1**	**32**	**1**

Additional Information:

In 2007, Davis County detected WNV activity through multiple surveillance sources (mosquito pools, sentinel chickens, veterinary reports of infected horses and confirmed human cases). Human cases were affected at all levels of the disease: asymptomatic infections detected through serology testing; mild-moderate illnesses – typically not requiring hospitalization; full neuroinvasive disease requiring hospitalization.

Action Steps:

- Investigation of confirmed cases to obtain clinical manifestations and infection demographics (location where disease may have been acquired)
- Infection demographics were used to determine mosquito abatement activities
- Public education campaign to ensure dissemination of information to at-risk populations
- Provided resource materials to the medical community
- Statewide weekly conference call
- Health fair booths with WNV literature and prevention messages
- Establishment of WNV information hotline

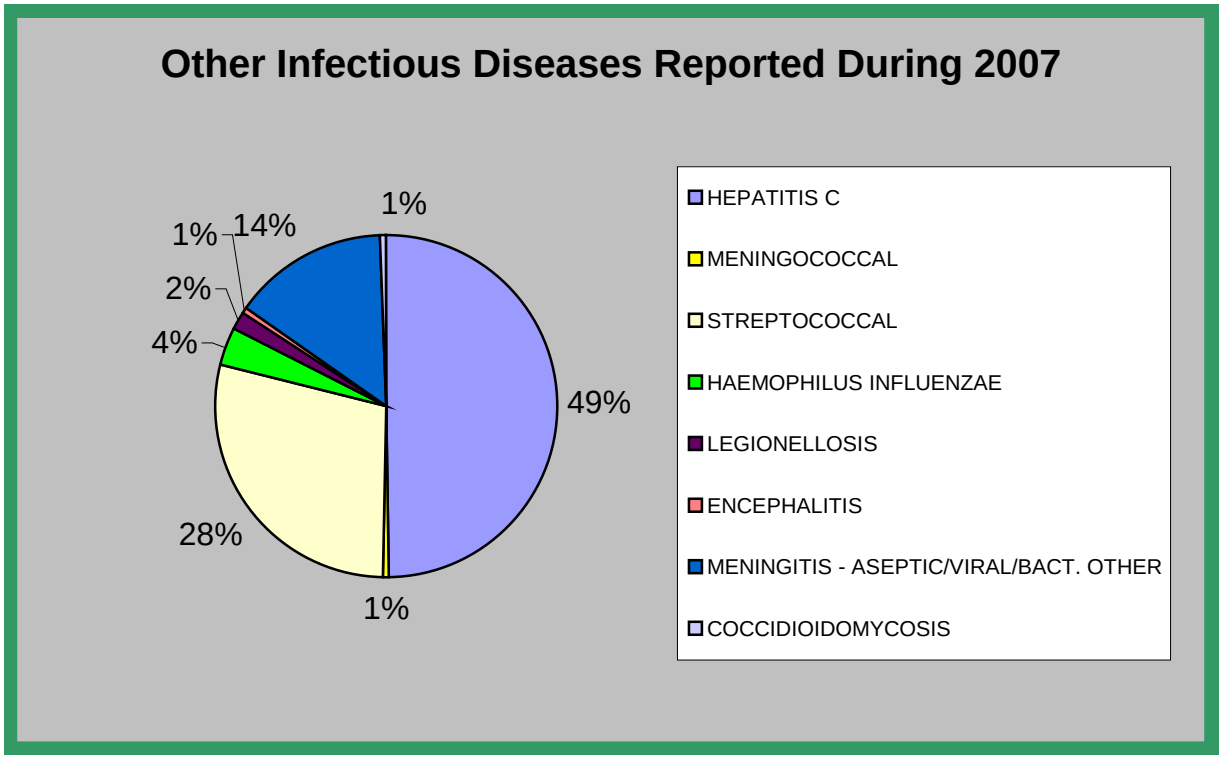
Future Steps:

- 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: Hepatitis C cases made up the majority of this category followed by Streptococcal and Meningitis infections.



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% are skin-test positive for coccidioidomycosis.

During 2007, there was **1 case** of coccidioidomycosis reported in Davis County. The investigation of this disease concluded that the coccidioidomycosis was acquired outside of Utah.

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 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 2007, there were **no cases** of CJD or other TSEs reported in Davis County.

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:

Haemophilis influenzae is the leading cause of bacterial meningitis in children two months to five years in the U.S. 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 2007, there were **7 cases** of invasive *Haemophilis influenzae* reported in Davis County. Of the 7 cases, two were further sub-typed as type A, one type F, three were non-typeable, and one was not typed.

Additional Information: None

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 2007, there were **no cases** of Hansen's Disease reported in Davis County.

Additional Information: None

Action Steps: None

Future Steps: None

HEPATITIS C (ACUTE AND CHRONIC INFECTIONS)

Disease Reporting Requirements:

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

Purpose of Surveillance:

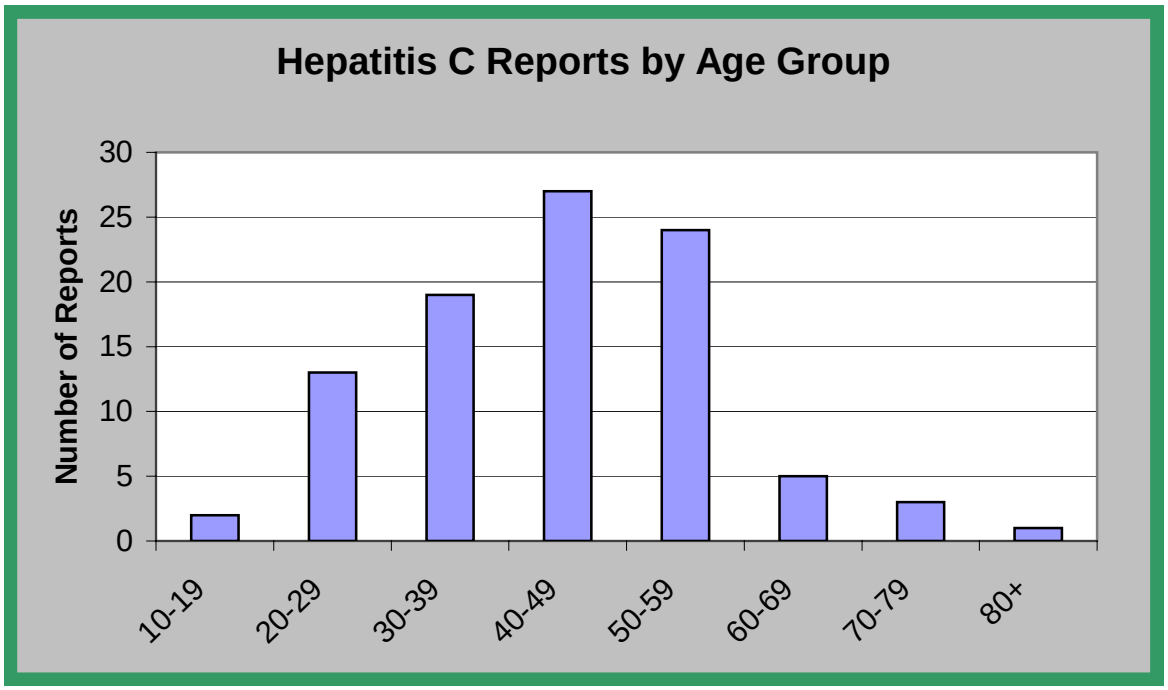
- To provide education to cases in order to minimize risk of transmission and to reduce risk factors for development of chronic liver disease
- To identify epidemiological features of hepatitis C for prioritization of prevention activities

Disease Description:

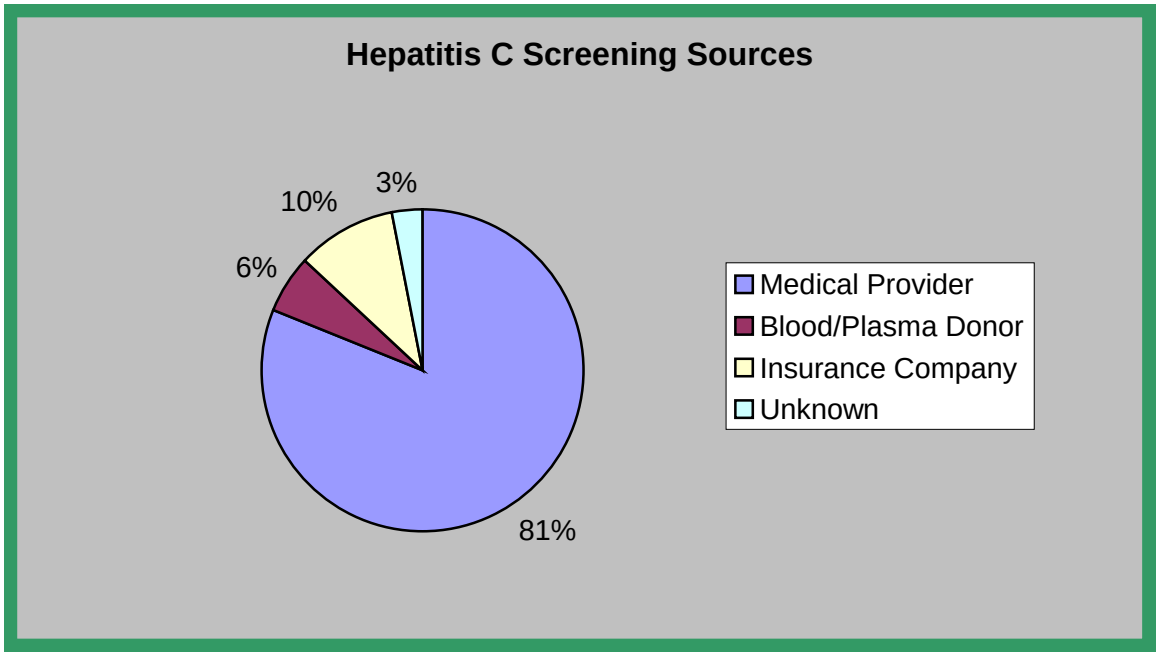
Hepatitis C (HCV) is transmitted primarily by direct exposure to blood of HCV-infected people. The prevalence of HCV infection in the general population of the U.S. is estimated at 1.8%. Highest prevalence is among people with large or repeated direct percutaneous exposure to blood or blood products,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

During 2007, there were **94 reports** of HCV in Davis County.

The majority of the reported cases fall in the 40-49 year age group.



Of the 94 cases reported, 81% were identified through a medical provider versus a blood/plasma donation center or an insurance company.



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 no acute cases identified among the 94 cases reported in 2007. Risk factors for HCV infection included history of injecting drug use, blood transfusions, birth in an endemic country, and exposure to other HCV infected individuals (sexual and/or household contacts). The majority of cases were asymptomatic.

Action Steps:

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

Future Steps:

- Education to medical community on the need for confirmatory testing
- Risk-reduction education to 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 2007, there were **3 cases** of Legionellosis reported in Davis County, which included one death.

Additional Information:

DCHD was notified early in 2007 about an out of county Legionellosis case that had stayed at two Davis County medical facilities during the incubation period. Both facilities were contacted and testing was performed. Tests from both facilities were positive for *Legionella pneumophila*. Water treatment instructions were provided to both facilities, which included heat challenge and chlorination procedures. Post treatment testing was conducted and Legionella load was controlled. DCHD worked with each facility to provide guidance on developing written standards/procedures to monitor and control Legionella infection at their facilities. No additional cases were detected. Water sample testing was also submitted to CDC for confirmation and PFGE Pattern Identification.

Action Steps:

- Provided guidance to medical facilities regarding Legionella testing and control measures

Future Steps: None

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 2007, there was **one case** of invasive meningococcal disease reported in Davis County. The investigation of this disease resulted in 16 contacts being evaluated for signs/symptoms and preventively treated for their exposure. Two contacts to an out of jurisdiction meningococcal case were evaluated and offered prophylaxis.

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, prompt identification, rapid prophylactic treatment of contacts, and administration of the meningococcal vaccine.

Action Steps:

- Rapid notification and investigation of all suspect meningococcal infections
- Obtaining an accurate history of places of exposure
- Contacting, evaluating, educating, and treating exposed individuals

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. During 2007, there were **9 cases** of bacterial meningitis reported in Davis County. Of those, 2 were due to *Streptococcus pneumoniae* and 1 by each of the following: *Staphylococcus aureus, Pseudomonas, Haemophilus influenzae,* Group A *Streptococcus*, Group B *Streptococcus*, Other *Streptococcus*, and *Neisseria meningitidis.*

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 2007, there were **26 cases** of aseptic/viral meningitis reported in Davis County. Of those, 14 cases were due to enteroviruses, 3 were due to West Nile virus, 1 was due Herpes, and the causative virus was not identified for 8 cases**.**

Additional Information:

All meningitis cases are promptly investigated to identify causative organisms 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 of 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 to 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 2007.

Additional Information:

One suspect vaccinia was reported in a toddler who had vesicular lesions and was exposed to the father, who is in the military and recently vaccinated against Smallpox. An immediate investigation began and control measures were implemented. Testing of lesion came back negative for Orthopox virus.

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 2007, 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.

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 2007, there were **54 cases** of streptococcal invasive disease reported in Davis County.

Invasive Streptococcal Organism	Number of Cases Reported in 2006		
	Bacteremia	**Meningitis**	**Other**
Group A	5	1	1
Group B	8	1	0
Streptococcus pneumoniae	13	3	6
Other *Streptococcus*	15	1	0

Additional Information:

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

Action Steps: None

Future Steps: None

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 occurs as a complication of skin abscesses or surgery.

During 2007, there were **no cases** of toxic shock reported in Davis County.

Additional Information: None

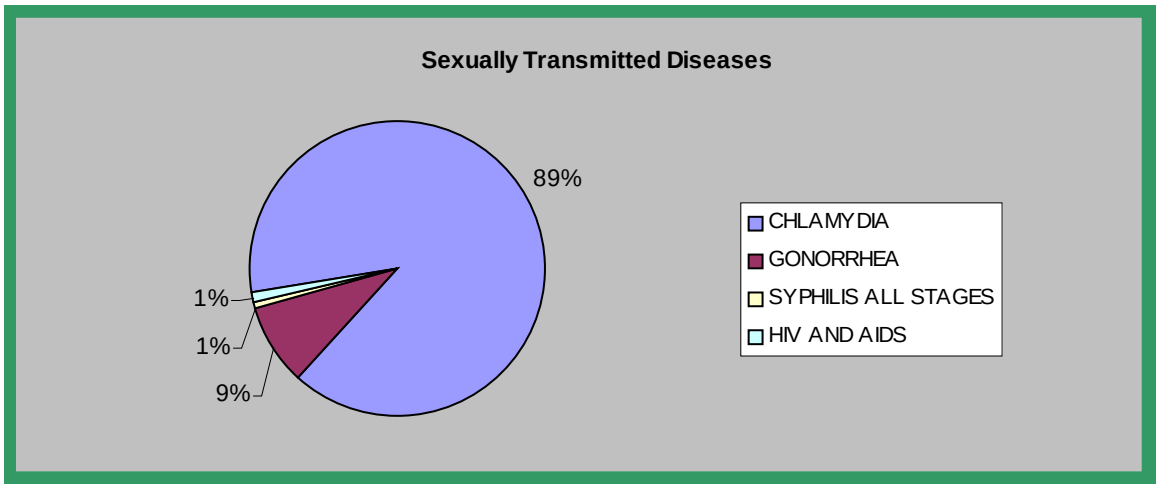
Action Steps: None

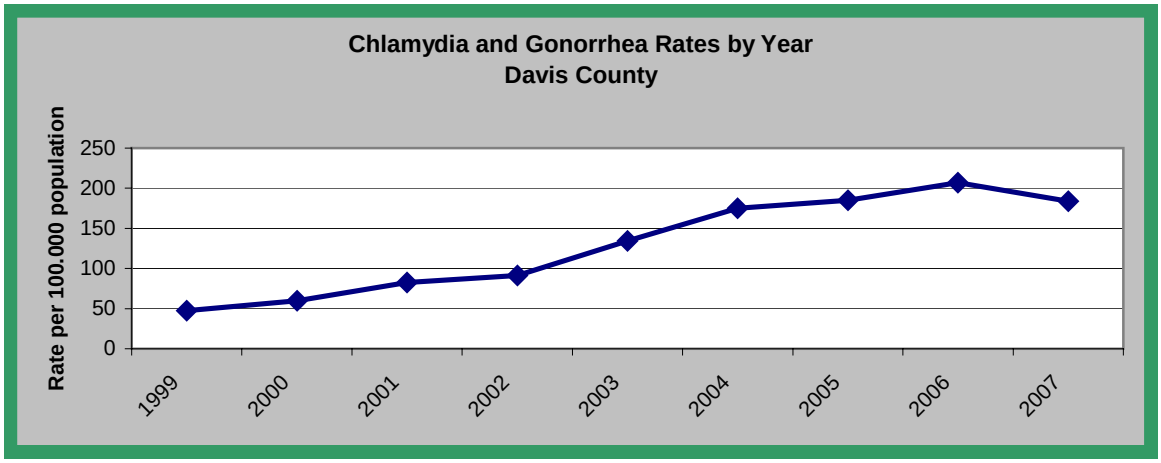
Future Steps: None

Sexually Transmitted Diseases

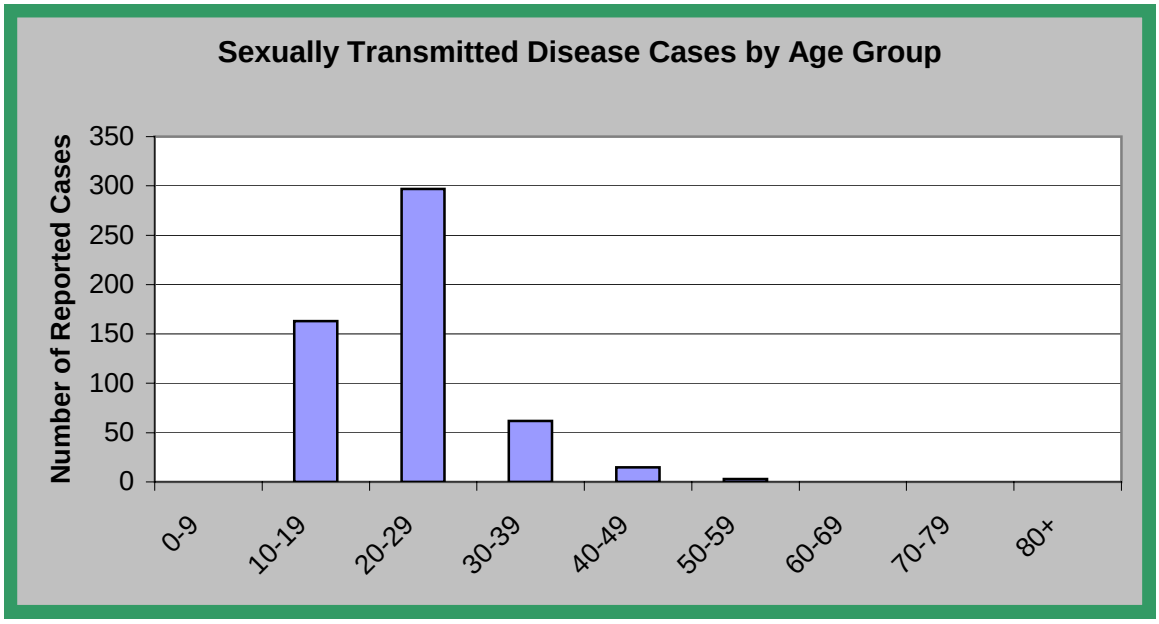
Sexually transmitted diseases (STD) are caused by bacteria, viruses, and other organisms transferred from one person to another through sexual activity. Bacterial STDs, such as chlamydia, gonorrhea, and syphilis, are curable – using appropriate antibiotic therapy. However, permanent damage may remain (i.e. pelvic inflammatory disease, scar tissue). Viral STDs such as herpes, human papillomavirus, hepatitis B, and human immunodeficiency virus (HIV) are not typically curable, but medication is available to increase quality of life by decreasing symptoms. Complications from STDs range from mild and brief illness to infertility, cancer, and even death. Less invasive testing techniques (i.e. urine testing) have made chlamydia and gonorrhea testing more convient. In this section, we will be discussing only the reportable STDs (chlamydia, gonorrhea, syphilis, chancroid, pelvic inflammatory disease, and HIV/AIDS).

What: The sexually transmitted diseases reported during 2007 were chlamydia, gonorrhea, syphilis, HIV and AIDS. Chlamydia was the most commonly reported with 482 cases, followed by gonorrhea with 47 cases. Chlamydia rates are higher than historically seen, but decreased in 2007 for the first time in ten years.

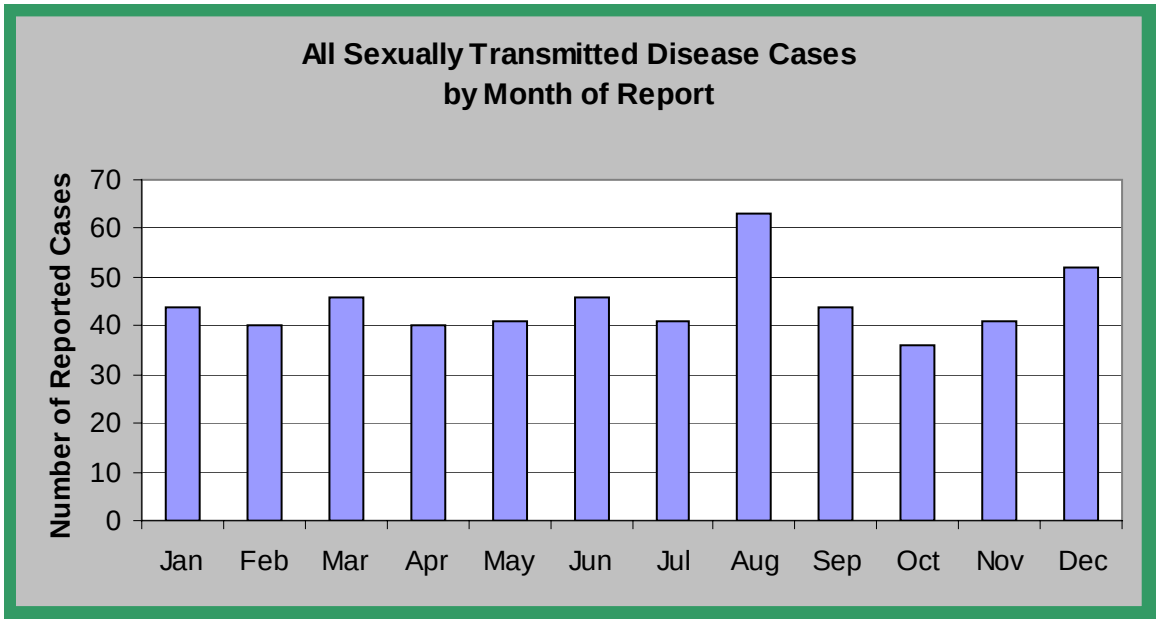




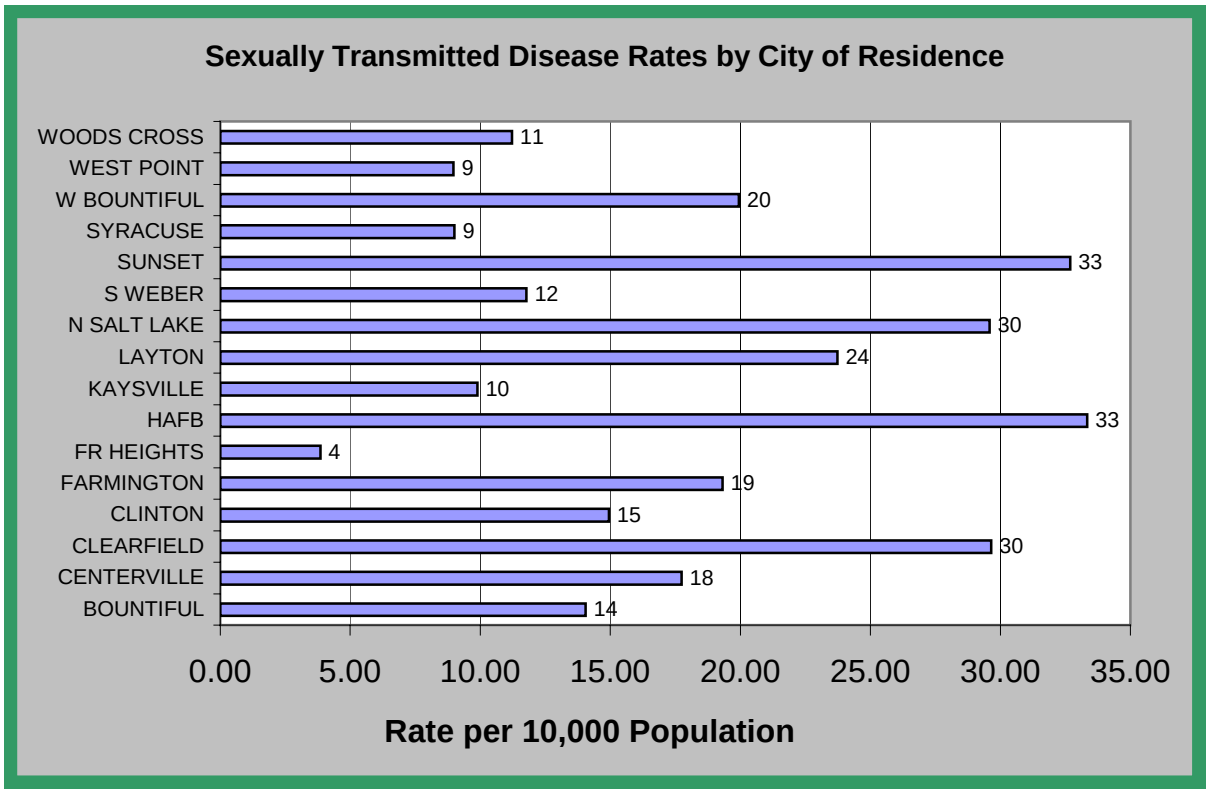
Who: Sexually transmitted diseases were most often reported among women (64%), and among 20-29 year olds.



When: Sexually transmitted diseases were reported every month with an average of 44 cases per month. STDs do not appear to have any seasonal trend.



Where: Sexually transmitted diseases affected every city in Davis County. The average number of cases per city was 18 per 10,000 residents. North Salt Lake, Clearfield, HAFB, and Sunset had nearly twice the average number of cases.



ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS) and HUMAN IMMUNIODEFICIENCY 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 counseling, partner elicitation, and risk-reduction education

Disease Description:

AIDS was first reported in the United States in 1981 and has since become a major worldwide epidemic. AIDS is caused by human immunodeficiency virus. 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 mother to child through the birth process or breast-feeding.

During 2007, there were **6 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 may be due in part to the nature of this disease. Many infected individuals are asymptomatic and therefore do not seek testing.

Action Steps:

- Strict confidentiality is maintained on all HIV/AIDs case investigations
- Focus is centered on partner elicitation, notification and testing
- Extensive risk-reduction education is provided to all positive cases and their contacts
- Free testing offered to all identified contacts
- Referrals to appropriate resources

Future Steps:

- Public education on risk-reduction activities
- Free testing for at-risk individuals
- Outreach activities concentrating on reaching at-risk populations
- Web page focused on STDs – including HIV/AIDS

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 counseling, partner elicitation & notification, testing, and risk-reduction education

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-inoculation 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 2007, 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

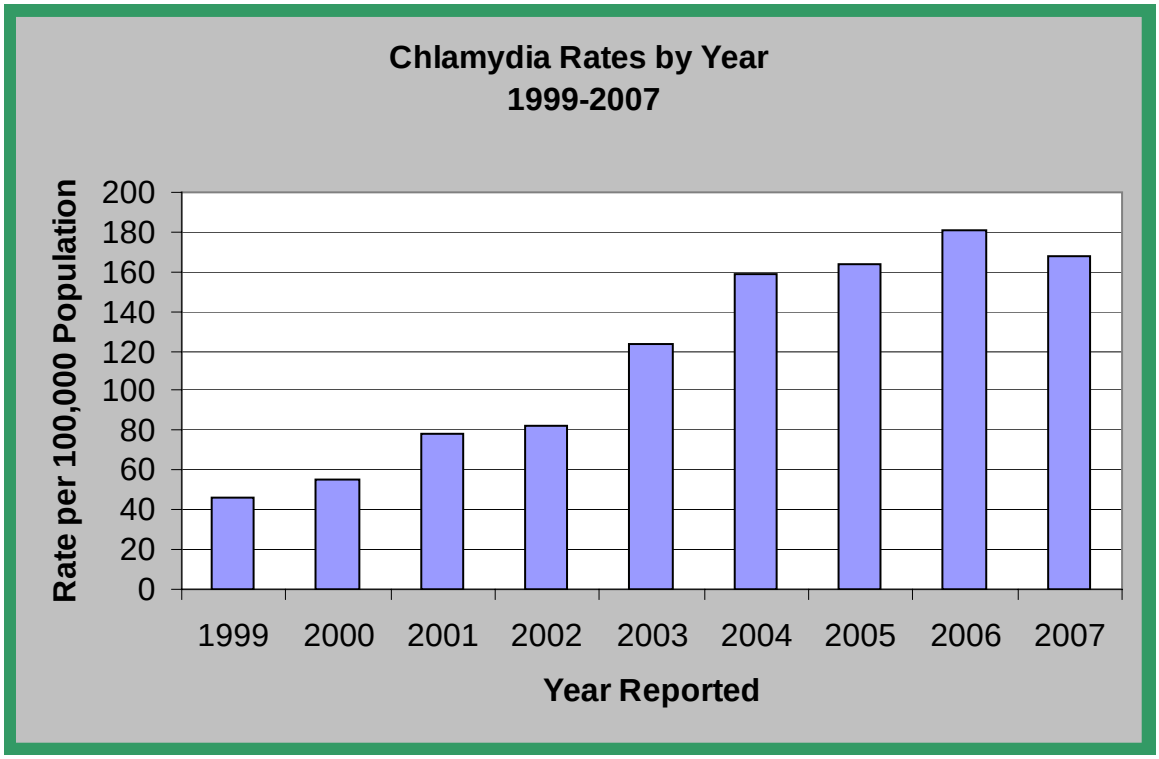
Purpose of Surveillance:

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

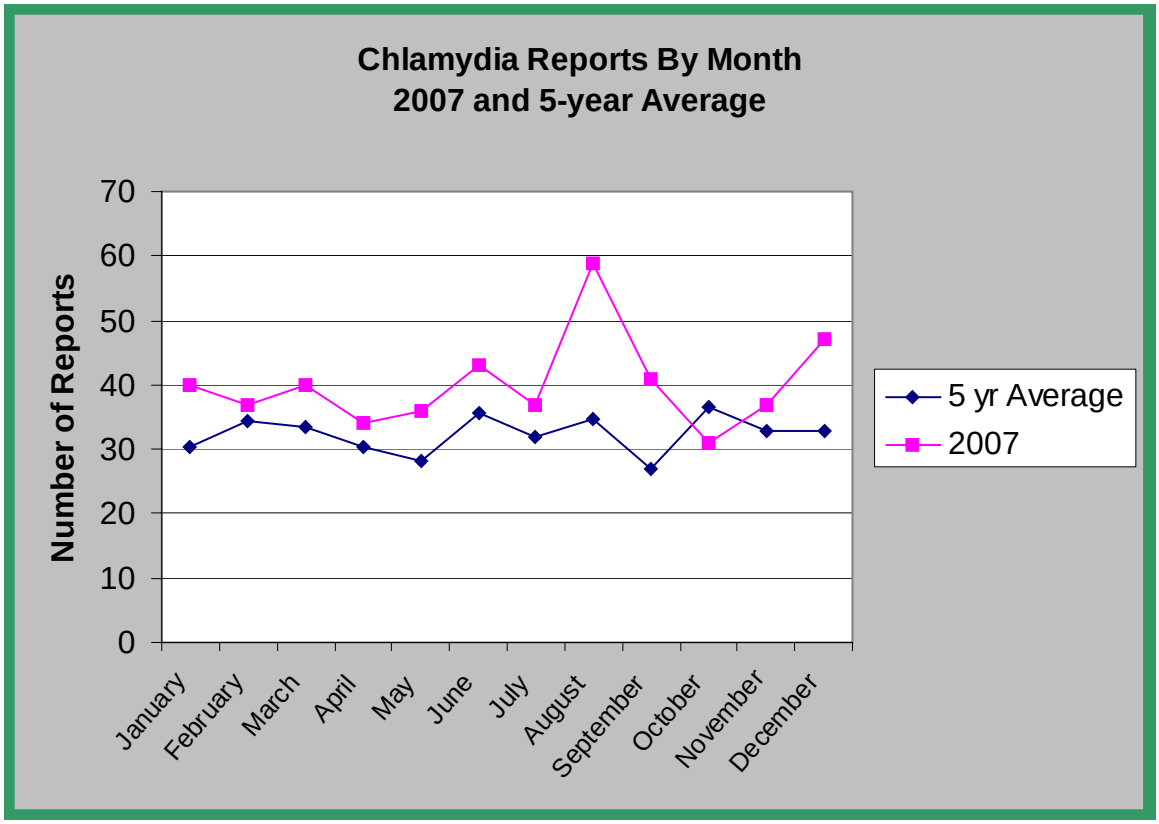
Disease Description:

Chlamydia is a sexually transmitted bacterial disease (STD) caused by *Chlamydia trachomatis*. Chlamydia is one of the most common STDs seen in the United States today. 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.

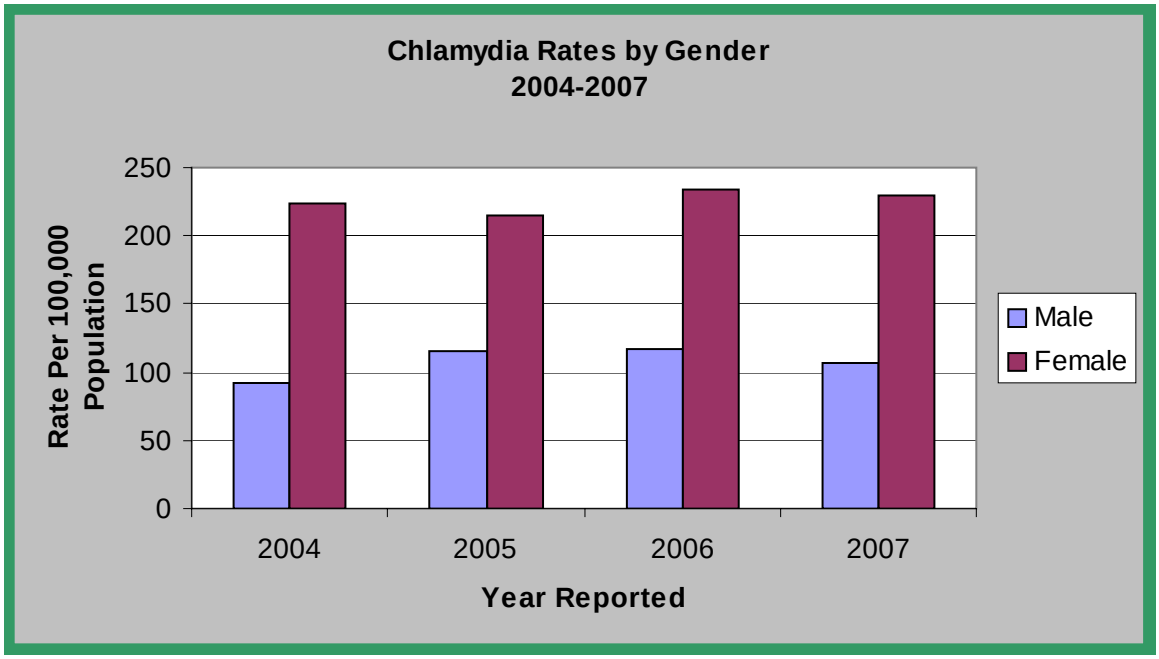
During 2007, there were **482 cases** of chlamydia reported in Davis County. Chlamydia incidence has declined this year for the first time in several years.



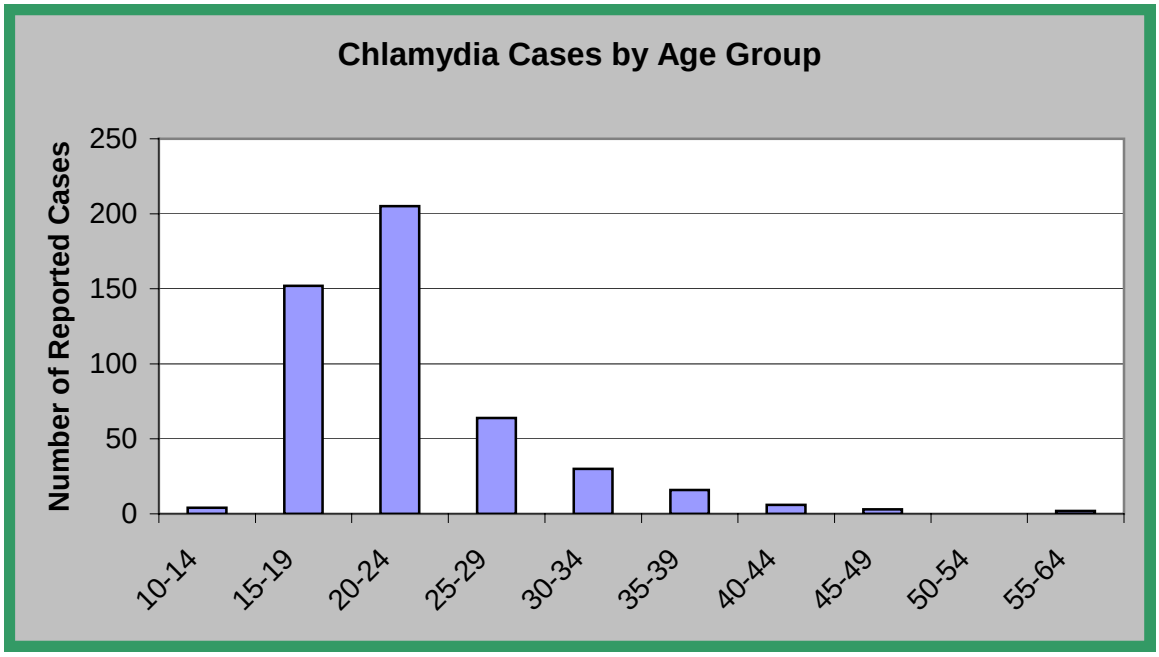
During 2007, the average number of chlamydia reports per month was 40 (range 31-59). The number of reports per month was higher than the 5-year average every month except October.



As in previous years, the rate of chlamydia was higher among females in 2007. This is due in part to testing during routine annual female exams.



Chlamydia cases ranged in age from 14 to 59 years; the majority of cases (45%) were reported among 20-24 year olds.



Additional Information:

Chlamydia infection in Davis County is of great concern. During interviews with infected individuals, numerous high-risk activities are being noted (i.e., multiple sex partners, unknown sex partners, unprotected sex, increase in oral and anal sexual activity). A complacent attitude toward the infection 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 higher incident of asymptomatic cases.

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 was offered to identified contacts
- Implementation of epidemiological tools to help identify at-risk populations
- Outreach education presentations provided to at-risk populations within the community
- Development of a website page specific for STD information and education
- STD Awareness Summit was held with neighboring health districts to address increasing STD rates along the Wasatch front
- Conducted an STD program evaluation with all twelve health districts in Utah
- Staff attended an advanced 'Disease Investigation' training to elevate their ability to investigate and identify contacts of STDs
- Provided county physicians/clinics with free medication to treat their patients who are uninsured and diagnosed with an STD
- Obtained approval for a high school-based STD presentation that will begin in 2008

Future Steps:

- Continued aggressive case investigations and contact tracing (cards, hotline, website)
- 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)

GONORRHEA

Disease Reporting Requirements:

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

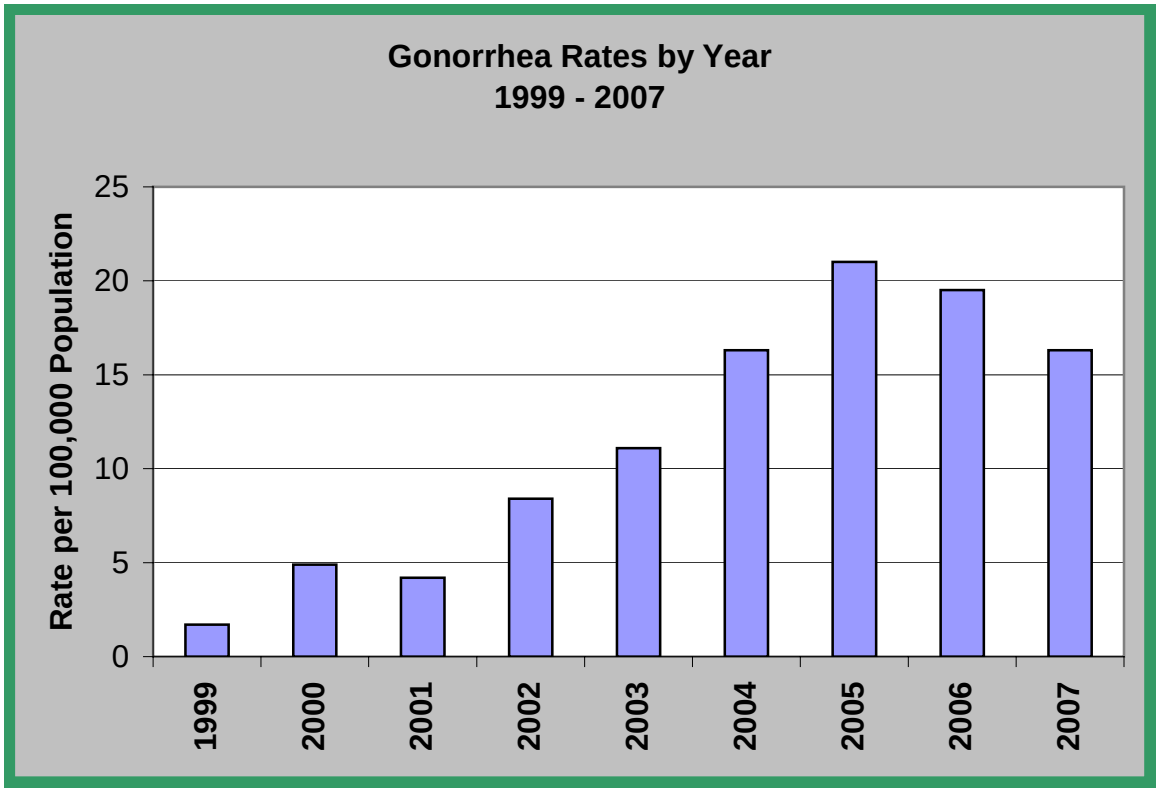
Purpose of Surveillance:

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

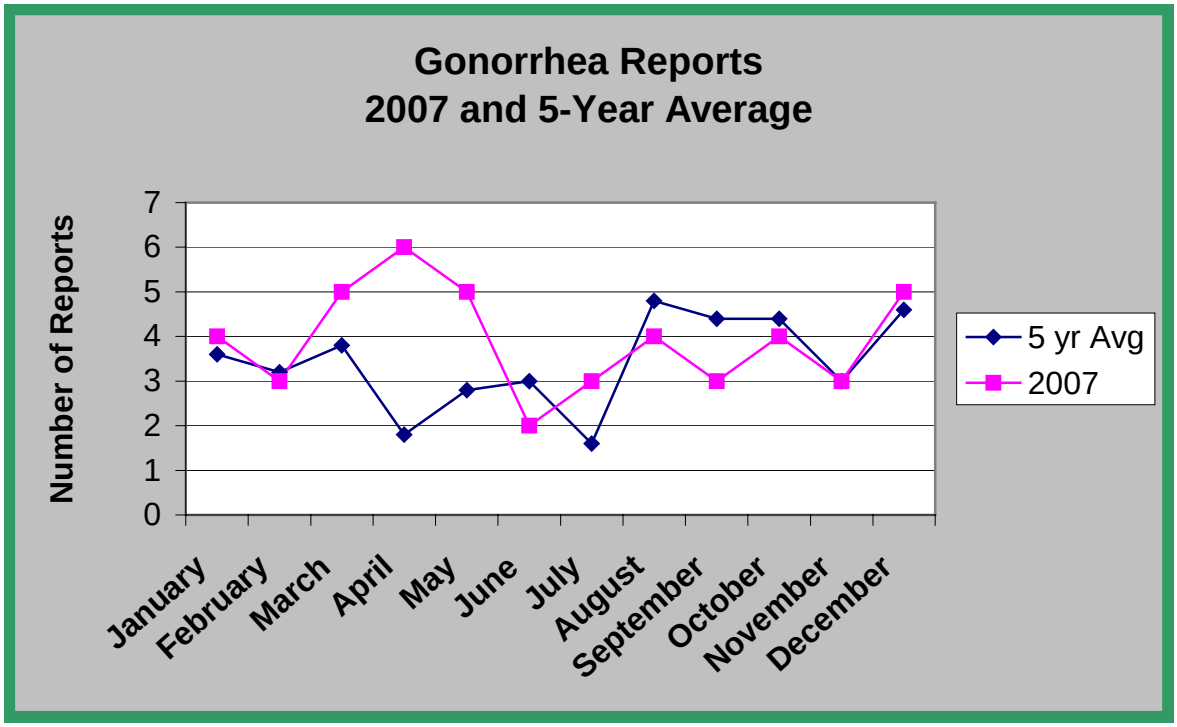
Disease Description:

Gonorrhea is a sexually transmitted disease caused by the bacteria *Neisseria gonorrhoeae*. Gonorrhea infections are often asymptomatic in woman. If left untreated, gonorrhea may result in serious complications including infertility.

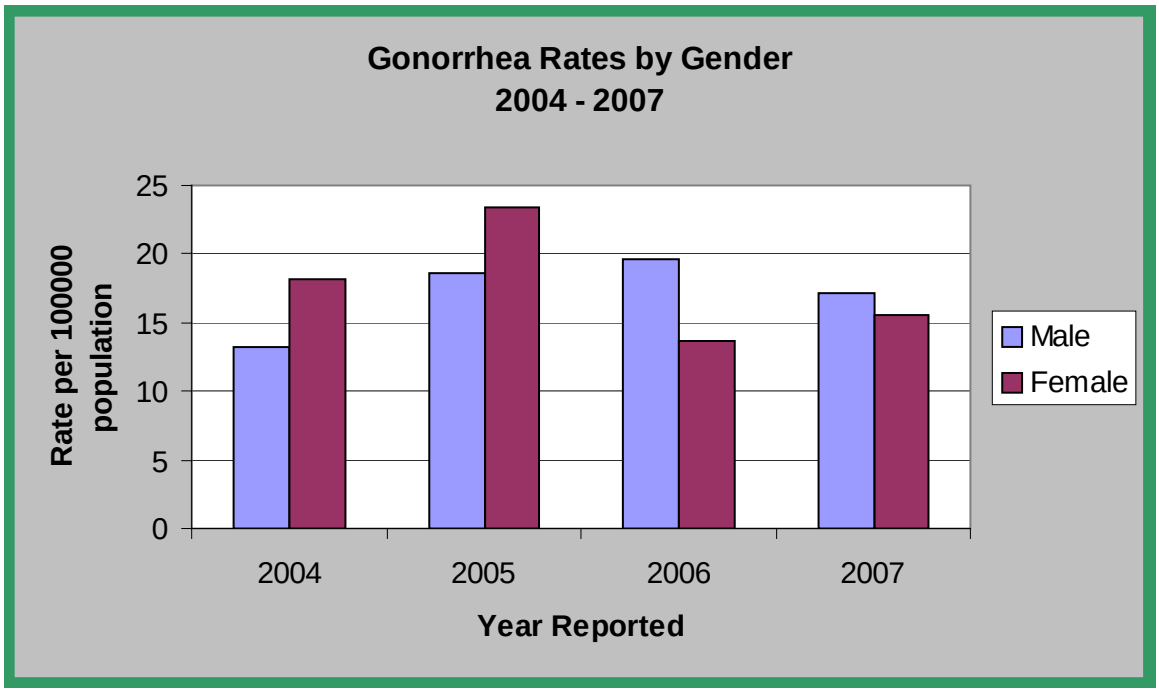
During 2007, there were **47 cases** of gonorrhea reported in Davis County, compared to 55 cases reported during 2006. There was a steady increase in reported cases from 1999 to 2005. The last two years has experienced a slight decrease each year.



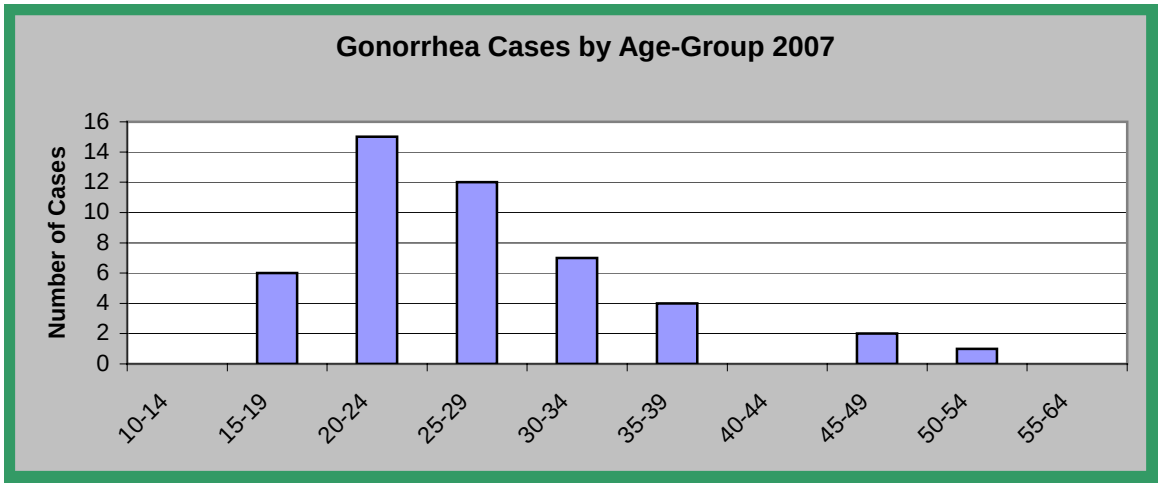
The number of gonorrhea reports per month ranged between 2 and 6 and was above the 5-year average every month except February, June, August, September, and October.



During the years 2004 and 2005, the rate of reported gonorrhea cases was higher among females, which was different from the national trend. However, during 2006 and 2007, the rate was higher among males, which is typically observed.



Gonorrhea cases ranged in age from 15 to 54 years; the majority of cases (32%) were reported among 20-24 year olds.



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 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 were offered to identified contacts
- Implementation of epidemiological tools to help identify at-risk populations within the community
- Outreach education presentations provided to at-risk populations within the community
- STD Awareness Summit was held with neighboring health districts to address the increasing STD rates along the Wasatch front
- Conducted an STD program evaluation with all twelve health districts in Utah
- Staff attended an advanced 'Disease Investigation' training to elevate their ability to investigate and identify contacts of STDs
- Development of a website page specific for STD information and education (including presentation materials for the public)

Future Steps:

- Continued aggressive case investigations and contact tracing (cards, hotline, website e-mail)
- 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)

PELVIC INFLAMMATORY DISEASE (PID)

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 cases caused by chlamydia and gonorrhea infections

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.

Although PID is a reportable condition, it is severely underreported by healthcare providers. During 2007, there were **no cases** of PID reported in Davis County.

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 identify, test, and treat contacts
- 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.*

During 2007, there were **5 cases** of syphilis reported in Davis County. Of those, 4 were latent infections and 1 was a primary infection.

Additional Information:

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 has been an issue in Davis County as well.

Action Steps:

- Implementation of new reporting guidelines that facilitate faster notification, investigation, and treatment of confirmed syphilis cases and their contacts
- Routine testing for syphilis included with STD examinations in Davis County STD clinics
- Free treatment available 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

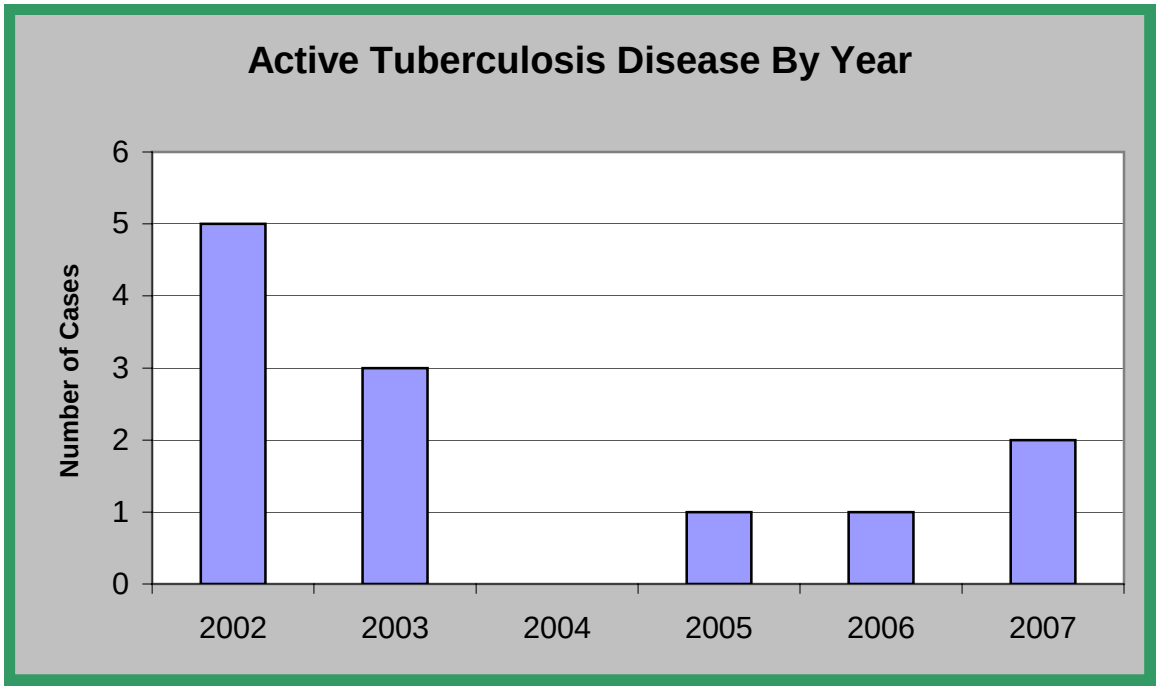
Tuberculosis

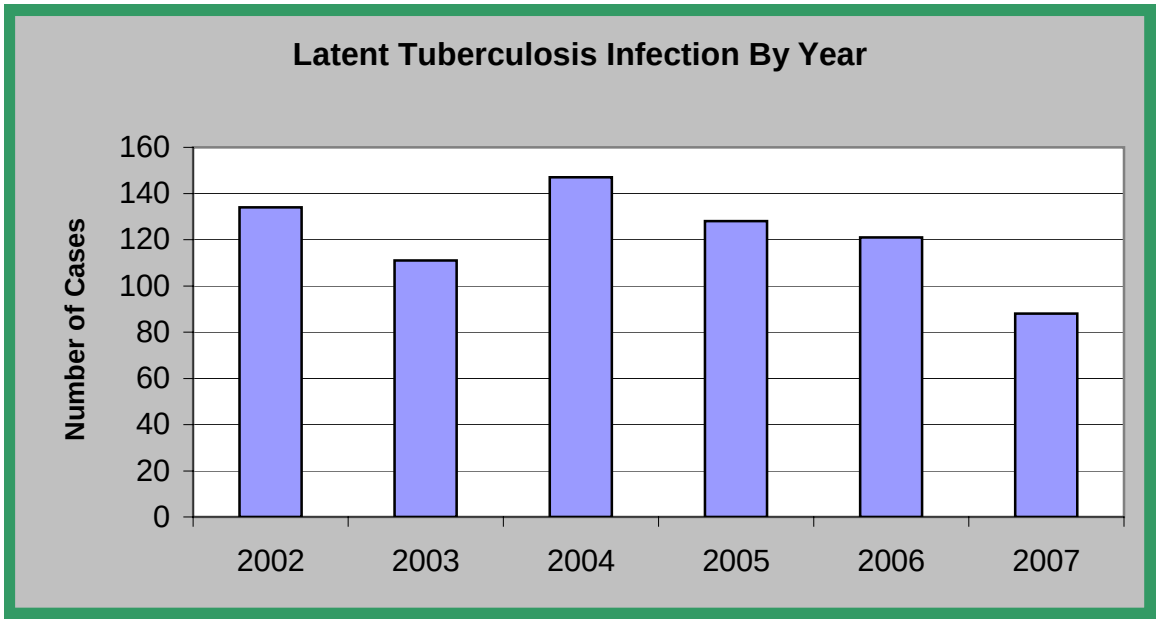
There are an estimated 9-14 million people in the United States infected with *M. tuberculosis*. On average, about 10% of infected individuals will develop active TB disease at some point in their lives.

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.

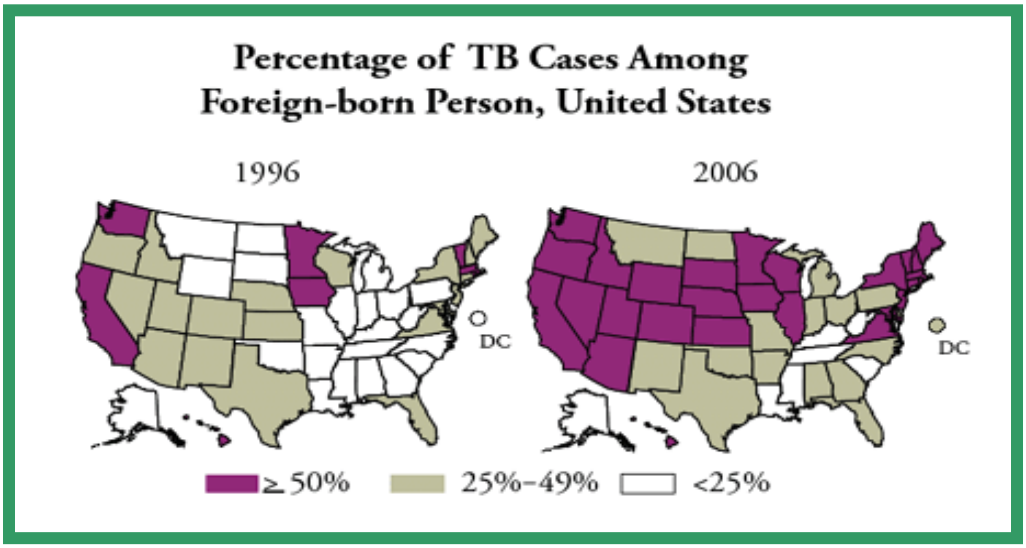
In this section, tuberculosis disease and latent tuberculosis infection (LTBI) will be reviewed.

WHAT: Davis County had two active tuberculosis disease in 2007 and 88 LTBI cases. 98% 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-borne or have traveled/lived in endemic countries.



WHEN: There is no seasonality to tuberculosis disease or infection. The county manages, on average, 40 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 2007, Davis County had **two 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 6 years, Davis County has had 12 active cases. All but one of those 12 cases were foreign-born. The TB cases seen in Davis County over the past year were pulmonary TB and extrapulmonary TB.

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 – which included some worksite tuberculin skin testing (TST)
- 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 & providers in the community

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 the local correctional facility to improve reporting and follow-up procedures for active tuberculosis cases

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.

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

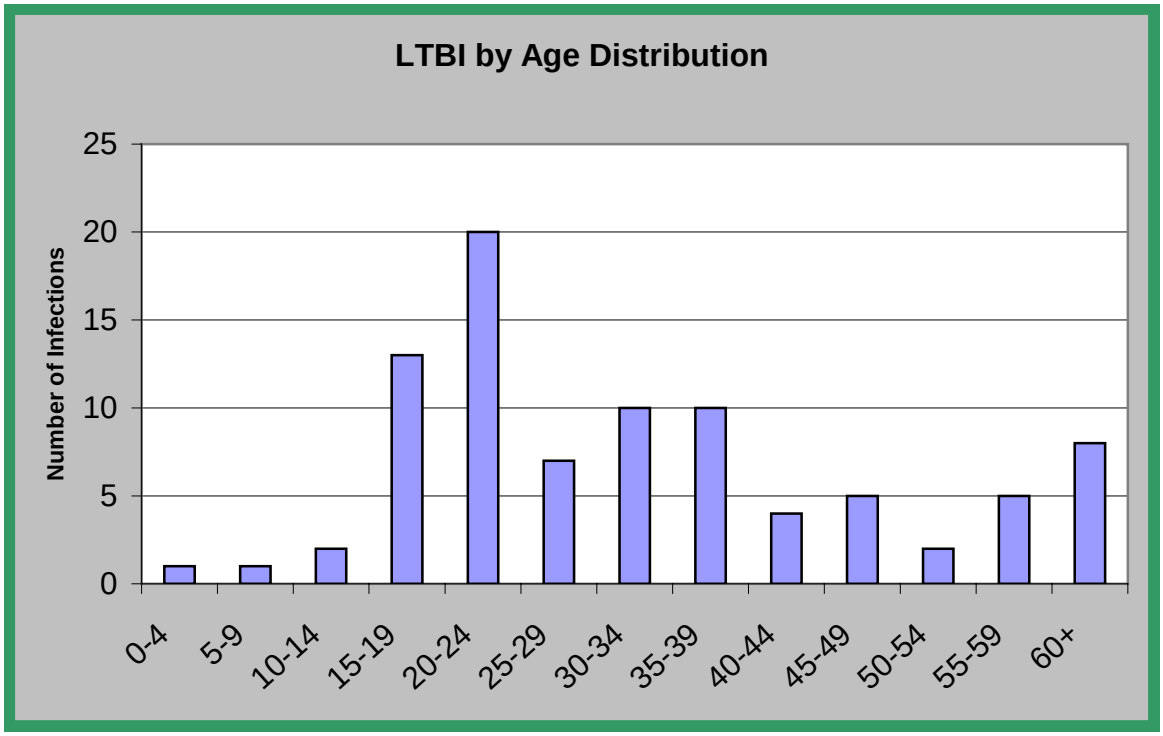
Disease Description:

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, don't feel sick, can't spread TB to others, and usually have a positive skin test reaction. Development into active disease can occur if they do not receive treatment for latent TB infection.

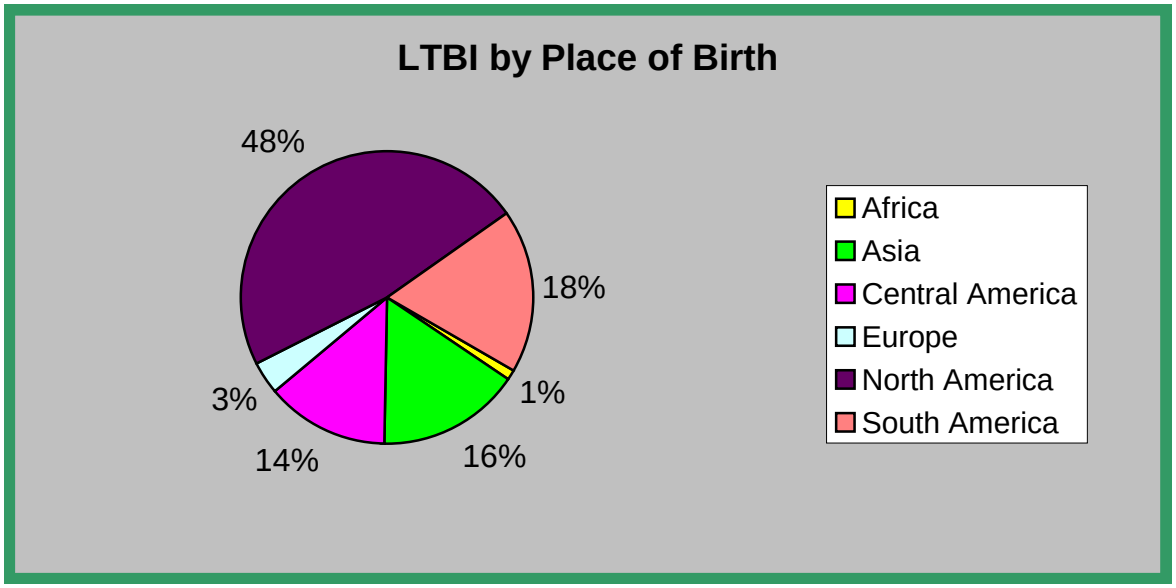
In 2007, Davis County had **88 cases** of LTBI.

Davis County Health Department provided **1,237** tuberculin skin tests to the public in 2007. However, this only accounts 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 disease. In the past, treatment for LTBI was termed "preventative treatment". Today, the term "latent tuberculosis treatment" is used in 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
- Developed protocols and tools to ensure appropriate patient follow-up at new health department clinic locations
- Developed and implemented new skin test screening tool for use in the health department immunization clinics
- 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

Future Steps:

- Implementation of Respiratory Protection Plan
- Continue to re-evaluate screening tools used in the immunization clinics to ensure that no LTBI is missed
- Continue to assess value of providing Quatiferon – 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