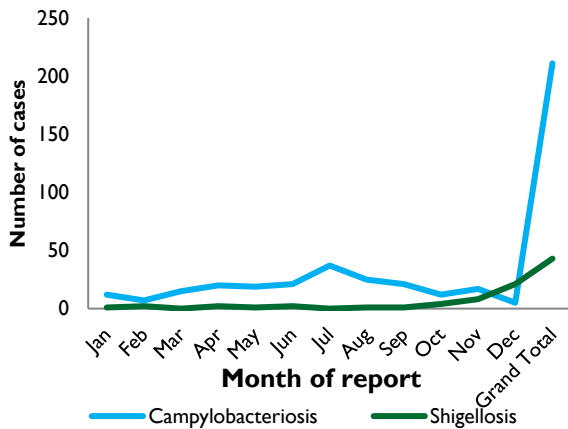


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sickened 32 individuals, mostly school-aged children and their families.

Figure 4. Select enteric illness cases by month — Montana, 2014



Shiga-toxin producing *Escherichia coli* (STEC) is most commonly found in cattle, but can cause severe illness in humans. Cases of STEC in Montana are often linked to consumption of contaminated undercooked beef or direct animal contact. Hemolytic uremic syndrome (HUS) is a complication associated with previous STEC infection that can result in kidney failure often requiring dialysis, and possibly death. In 2014, five cases of HUS were reported in Montana. Four out of five were children less than 8 years of age.

Also notable for 2014 were cases of conditions rarely reported in Montana. Fewer than five cases each of imported typhoid fever, cyclosporiasis, listeriosis, and vibriosis were reported.

1. Typhoid Fever is endemic in developing countries and only found in humans. One can get infected when they come in contact with food or water that was contaminated by an infected person. There is a vaccine against Typhoid Fever for travelers. A cluster of three cases of typhoid fever were reported in 2014.
2. Cyclosporiasis, caused by the parasite *Cyclospora*, is most commonly found in tropical regions and has been associated with outbreaks linked to fresh produce, especially berries. In the United States, a median of two outbreaks are reported each year. Two cases were reported in 2014.
3. Listeriosis can be a very serious condition, especially for the elderly, pregnant women, and those with weakened immune systems, and has been the culprit of nationwide foodborne outbreaks. *Listeria* is commonly found in soil and water and can get into a variety of foods, including raw meat and vegetables, cheeses,

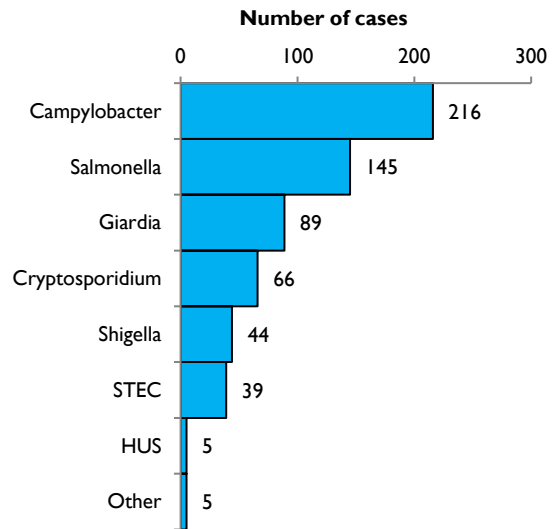
milk, and fish. One case of listeriosis was reported in 2014.

4. Vibriosis: This illness is often foodborne and often linked to seafood, such as oysters, clams, and shellfish, because the causative organism *Vibrio* species is found in water. This disease is often self-limiting, but complications can occur. Two cases, including one death were reported in 2014.

A total of 617 confirmed and probable enteric illnesses were reported in Montana in 2014. The most common agent was *Campylobacter* spp., accounting for 216 (35%) of all reportable enteric cases (Figure 5). Salmonellosis was the second most common reported enteric condition with 145 (24%) cases reported in 2014. This is a 54% increase from cases reported in 2013. However, rates for salmonellosis continue to be below U.S. rates.³

The two most common parasitic conditions caused by *Giardia* and *Cryptosporidium* remained at average levels with 89 (14%) and 66 (11%) respectively. Shigellosis was reported at elevated levels compared to multi-year averages, but case counts did not exceed prior outbreak years (44, 7%). There were 39 (6%) shiga-toxin *E.coli* cases reported in 2014. All other reportable enteric conditions had fewer than five cases reported, comprising the remaining 3% of enteric case reports.

Figure 5. Reported enteric pathogens — Montana, 2014



As noted in Table 1, campylobacteriosis carries the greatest burden of enteric illnesses in Montana with an incidence rate of 21.1 cases per 100,000 population, a slight reduction from 2013. However, campylobacteriosis continues to be a major burden of

illness especially when compared to the 2013 national rate of 14.3 cases per 100,000 population. The rate of salmonellosis increased by 50% to 14.3 cases per 100,000 population. Giardiasis rates have slightly increased to 8.8 cases per 100,000 population. Cryptosporidiosis returned to the yearly average of 6.5 cases per 100,000 population. The rate for shigellosis in 2014 is still higher than average due to outbreak associated cases (4.4 vs. 1.1 cases per 100,000 population). Even though STEC is reported in low numbers, the rate in Montana is slightly higher than the national average (3.8 vs. 2.4 cases per 100,000 population). Incidence of HUS was 0.5 cases per 100,000 population in 2014, below that of the United States. Other enteric illnesses were reported at rates less than 0.5 case per 100,000 population.

Table 1. Enteric illnesses — Montana, 2014

Condition	Cases per 100,000
Campylobacteriosis	21.1
Salmonellosis	14.2
Giardiasis	8.7
Cryptosporidiosis	6.4
Shigellosis	4.3
Shiga-toxin producing <i>E. coli</i> (STEC)	3.8
Hemolytic uremic synd. (HUS)	0.5

There were 21 Montana cases linked to several multistate outbreaks in 2014. Many were caused by *Salmonella* and were often foodborne, but some were linked to live poultry exposures. CDEpi follows up on any clusters identified by pulsed-field gel electrophoresis (PFGE) to support multi-state efforts to identify and control the source of these outbreaks.

Thirty-eight enteric illness outbreaks were reported in 2014, and for most a causative agent was identified (63%) and 14 (37%) were likely caused by norovirus, but could not be confirmed. Of the 26 confirmed outbreaks, 18 (47%) were caused by norovirus. Nearly half of the confirmed norovirus outbreaks were sequenced, and confirmed that the GII.4 Sidney strain that emerged in 2012 was the most prevalent in Montana in 2014. Six additional enteric outbreaks were caused by *Salmonella* (2), *Campylobacter*, *Cryptosporidium*, *Shigella*, and STEC (1 each). Nearly 1,100 Montanans became ill as a result of diarrheal outbreaks, 44 were hospitalized and five died. The deaths were all attributed to norovirus.

The majority of outbreaks (58%) occurred in long-term care facilities and assisted living centers. An increased risk for person-to-person transmission occurs when

persons live in crowded spaces or gather at meetings. Shared community meals, densely populated living spaces, and lack of personal hygiene, such as poor hand washing techniques, exacerbate the spread of enteric illnesses. Other noteworthy locations included schools (8%) and restaurants (8%). Outbreaks in private homes, hospitals, child care, and other public settings were reported as well.

CDEpi continues to improve methods for state-wide surveillance and outbreak investigation. Reducing the burden of enteric illnesses in Montana continues to be a key focus. The majority (87%) of enteric illness outbreaks were reported within one day to local public health officials. Several prevention campaigns aimed towards high risk situations for enteric illness were completed in 2014. A poster contest to teach school aged children about healthy swimming was successful, as were prevention packets for feed stores to educate consumers on health risks associated with live poultry exposures.

Vaccine Preventable Diseases

Pertussis

Pertussis is a highly contagious disease caused by *Bordetella pertussis*. The classic presentation of the disease is characterized by coughing that is so violent and rapid that it leads to an intake of breath marked by a “whoop.” Newborns and young infants are at highest risk for severe disease and complications as they are not fully protected by vaccination until 6 months of age. Nationally, approximately half of all infants aged less than one year with pertussis are hospitalized annually.

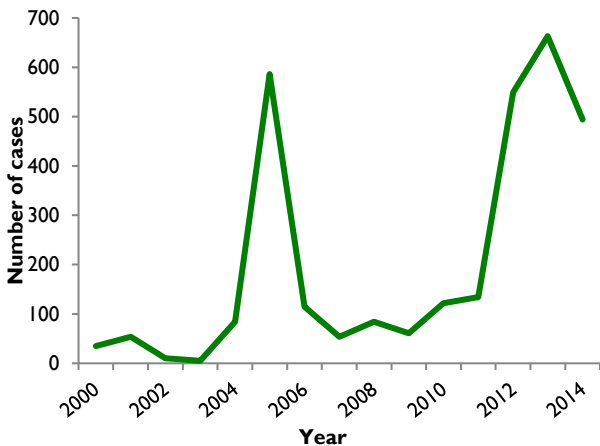
Historically, the number of pertussis cases tends to vary from year to year but peaks in a 3–5 year cycle in the United States (Figure 6). In Montana, such peaks occurred in 2005 and 2012, when 586 and 549 pertussis cases were reported, respectively. However, in 2013, 663 cases of pertussis were reported in Montana; the highest number since 2005. The number of reported cases remained above baseline (6 cases per month) for the entire year as several counties experienced localized outbreaks. In 2014, 494 case of pertussis were reported. While this was 25% fewer cases than in 2013, it remained above the baseline value. Among the 30 counties reporting cases of pertussis in 2014, the number of cases ranged from 1 to 79 with incidence rates ranging from 12.8 to 343.2 per 100,000 population. The majority of cases (41%) occurred among children aged 11–17 years. Eighteen infants aged less than one year were reported as having pertussis and five were hospitalized. 60% of the hospitalized

infants were aged less than three months. There was one reported death due to pertussis in 2014.

Immunization records for 394 cases aged less than 18 years and eligible for pertussis-containing vaccine were assessed for vaccination status per the Advisory Committee on Immunization Practices (ACIP) Recommendations.⁴ Overall, 66 (11%) cases eligible by age had not received any doses of pertussis-containing vaccine. Of these, the greatest percentage of unvaccinated cases (38%) occurred among children aged 5–10 years. In addition, 115 (29%) cases in all pediatric age categories had not received the total recommended number of doses of pertussis-containing vaccine appropriate for age.

Factors contributing to the increased pertussis incidence in Montana and the United States are under evaluation and several potential factors have been identified. These include increased awareness of the disease, improved diagnostic testing, enhanced surveillance and case reporting, waning immunity of the diphtheria, tetanus, acellular pertussis vaccine (DTaP), and potential genetic changes in circulating strains of the bacteria.⁵

Figure 6. Reported pertussis cases — Montana, 2000–2014

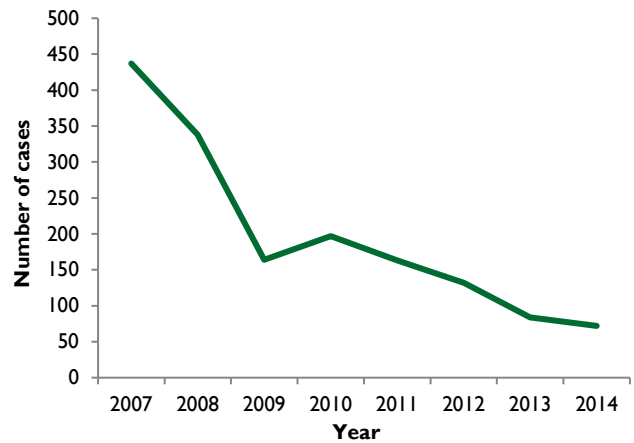


Varicella

Varicella-zoster virus is the causative agent of chickenpox, which was the second most frequently reported vaccine preventable disease in 2014. The number of varicella cases reported in Montana has decreased from a peak of 337 cases in 2008 to 72 cases in 2014 (Figure 7). In 2014, cases were reported from 25 local health jurisdictions with a median age of 8 years. One possible explanation for the decline in reported varicella cases may be due to rising vaccination rates among Montana’s children aged 19 to 35 months. In 2008, 77.7% (95% confidence interval 71.7–83.7) of

children in this age group had received one dose of the varicella vaccine compared to 87.1% (95% confidence interval 81.9–92.3) in 2013.⁶

Figure 7. Reported varicella cases by year — Montana, 2008–2014



Mumps

Mumps is an acute infection caused by a paramyxovirus and characterized by fever, swelling, and tenderness of the salivary glands (parotitis). Once a common childhood disease, incidence of mumps has steadily declined since the introduction of the measles, mumps and rubella (MMR) vaccine. One case of mumps was reported in 2014 that occurred in an individual attending an out of state college where there was an ongoing outbreak of the disease. The patient only had one dose of MMR at the time of infection.

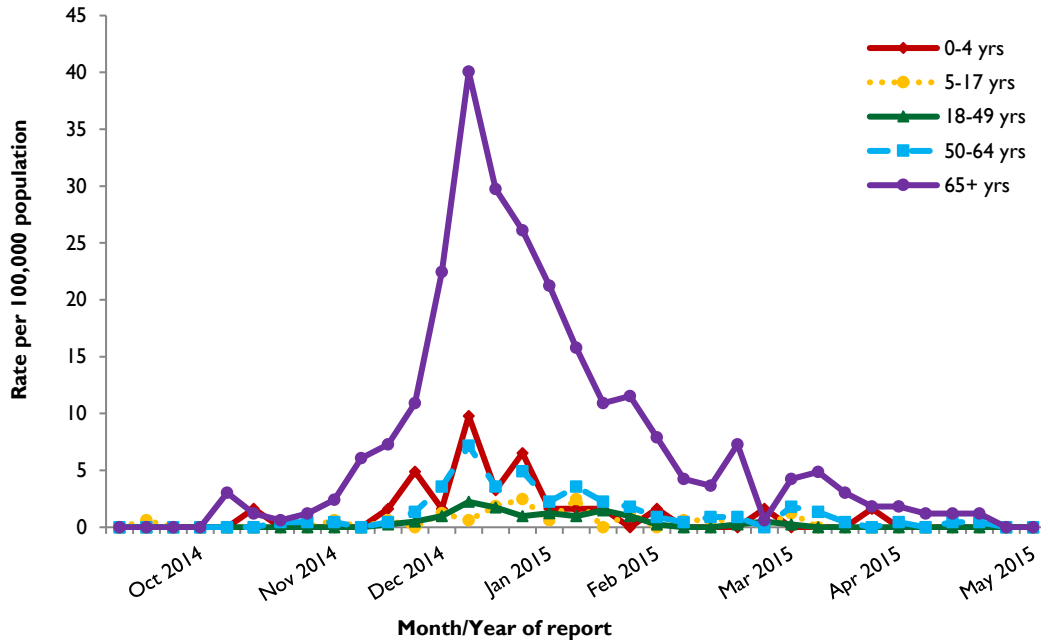
Influenza

A typical influenza season extends from October through mid-May. Nationally, the 2014–2015 influenza season was markedly different from the previous season. The most commonly isolated influenza subtype this season in Montana as well as the United States was influenza A H3N2. This subtype typically correlates with increased illness and hospitalizations, especially in those with greater risk (individuals with compromised immune systems, chronic lung and cardiovascular conditions). In addition, the predominant strain varied genetically from the A H3N2 strain in the 2014–2015 vaccine. As a result, the 2014–2015 influenza vaccine formulation was not a close match, and in fact, provided little protection.⁷

Influenza activity peaked in mid-January 2015 in Montana. The reported number of influenza cases varied greatly across the state, including four counties with fewer than 5 reported influenza cases (range: 0–736 cases). An increase in influenza type B activity and

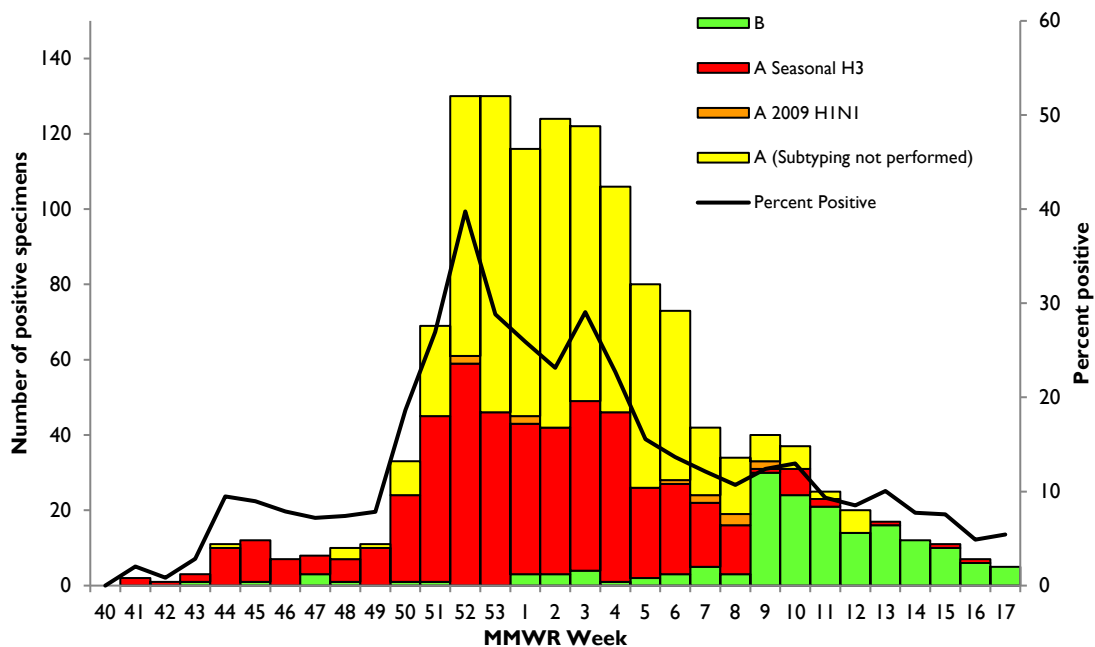
associated hospitalizations was reported towards the end of the season. Influenza-related hospitalizations peaked in early January. By the end of the season, 608 Montanans were hospitalized due to influenza. The cumulative influenza-related hospitalization rate in Montana (59.8 per 100,000 population) was lower than that of the United States (65.5 per 100,000 population).⁸ The highest rate of hospitalizations was among adults aged 65 years or greater (253.7 per 100,000 population, Figure 8). Of the 24 influenza-related deaths reported, 4 (17%) occurred among adults aged <65 years. No pediatric (aged 0–17 years) deaths were reported.

Figure 8. Influenza hospitalization rates by age group — Montana, 2014–2015 Season



The Montana Public Health Laboratory (MTPHL) and eight partner laboratories reported the number of specimens tested for influenza by polymerase chain reaction (PCR) and the number positive by influenza virus type and influenza A virus subtype. The majority of isolates this season were of the Influenza A H3N2 subtype. Of interest was a greater than average increase in influenza type B isolated during the later weeks of the season (Figure 9).

Figure 9. Influenza positive tests reported by the Montana Public Health Laboratory and partners* — Montana 2014–2015



*Benefis Health System, Billings Clinic, Bozeman Deaconess Hospital, Kalispell Regional Medical Center, Missoula Community Hospital, St. Patrick's Hospital, St. Peter's Hospital, and St. Vincent's Hospital

Invasive Diseases

Meningococcal Disease

Meningococcal disease is caused by the gram-negative bacterium *Neisseria meningitidis*. The bacteria reside primarily in humans on the surface of mucosal membranes such as those found in the respiratory tract. Occasionally, *N. meningitidis* invades the human blood stream, and may cross the blood-brain barrier, causing serious disease including meningitis and septicemia. There are 13 serotypes of *N. meningitidis*; 5 cause the most disease worldwide (A, B, C, W, Y). The most common serotypes isolated in the United States are B, C, and Y. In 2014, four meningococcal disease cases were reported in Montana. All four were identified as serogroup Y.

Other Bacterial Invasive Diseases

During 2014, 41 cases of invasive *Streptococcus pneumoniae* were reported in Montana. The median age of patients was 60 years (range: 3 months – 86 years). Fourteen cases of *Haemophilus influenzae* were reported. Fourteen percent of the *Haemophilus* cases (n=2) were in children aged less than 5 years. No cases of invasive *H. influenzae* type B, the type that is vaccine preventable, were reported in 2014.

Sexually Transmitted Diseases

Sexually transmitted diseases (STDs) continue to be the most frequently reported communicable diseases in Montana. Approximately 4,600 STD cases were reported in 2014. All but three Montana counties reported at least one STD case.

Chlamydia

Chlamydia is caused by the bacterium *Chlamydia trachomatis*. Chlamydia infections are usually asymptomatic. In women, infection can result in pelvic inflammatory disease (PID), a major cause of infertility, ectopic pregnancy, and chronic pelvic pain. As with other inflammatory STDs, chlamydia infection can facilitate the transmission of HIV. In addition, pregnant women infected with chlamydia can pass the infection to their infants during delivery, potentially resulting in neonatal ophthalmia or pneumonia. Because of the large burden of disease and risks associated with infection, CDC recommends annual chlamydia screening for all sexually active women aged less than 25 years, women 25 years and older with risk factors, and all pregnant women. *C. trachomatis* infection is the most commonly reported communicable disease in Montana and the

United States. Since 2004, cases and case rates have steadily increased in Montana. In total, 375 more cases were reported in 2014 (4,193 cases) than in 2013, with a corresponding increase in the incidence rate (Figure 10). In Montana, 2,880 chlamydia cases (69%) were reported in females. The greater proportion of cases among females may be attributable to screening recommendations for females, resulting in females seeking medical care at greater rates than males, and therefore being tested more often. More chlamydia cases were diagnosed among persons aged 20–24 years (40%) than any other age group (Figure 11).

Figure 10. Chlamydia case rate — Montana, 2004–2014

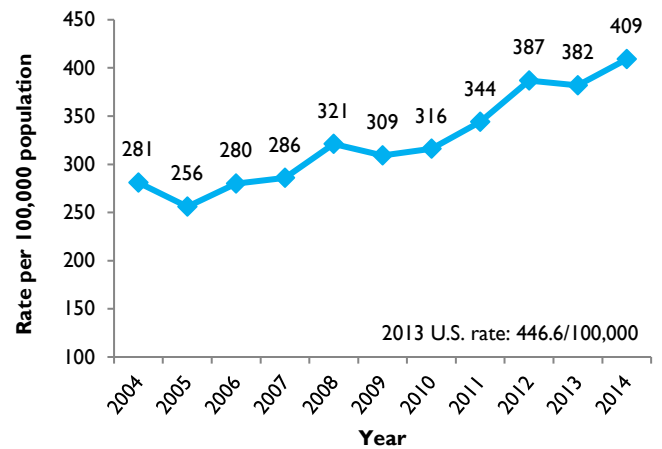


Figure 11. Chlamydia cases by sex and age — Montana, 2014

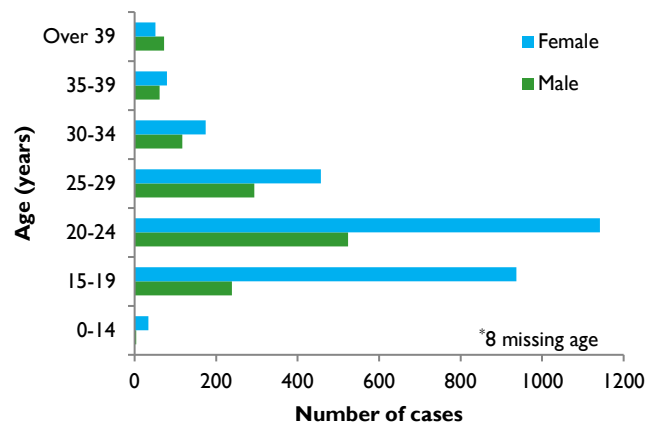


Figure 12 displays the age-specific case rate. The 15–19 years and 20–24 years age groups had the highest incidence rates. While the disease burden is probably highest among these age groups, the high rate is also attributable to screening recommendations that all sexually active females aged 25 years or less who

present for routine healthcare visits receive screening for chlamydia and gonorrhea.

Figure 12. Chlamydia incidence rate by age — Montana, 2014

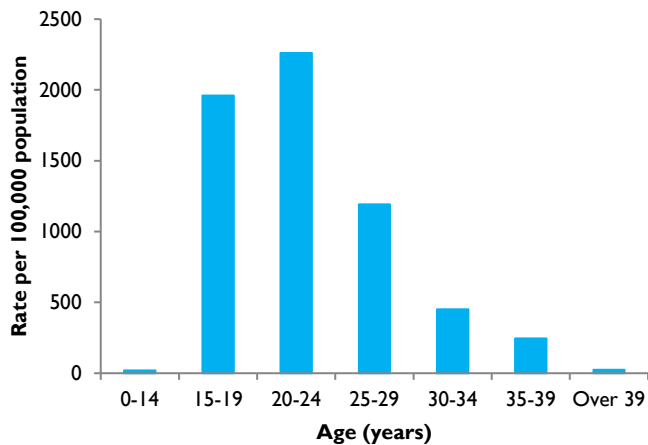


Table 2 outlines the cases of chlamydia reported to DPHHS in 2014 by age, sex, and race. In 2014, the chlamydia incidence rate for persons reported as American Indian was more than four times greater than those reported as white. However, because of the larger percentage of Montana residents classified as white, the number of chlamydia cases among white persons is greater. Moreover, broader STD screening efforts among American Indians may contribute to the higher reported chlamydia incidence rate in this population. However, the specific magnitude of the contribution has not been measured.

Table 2. Chlamydia cases by age, sex, and race — Montana, 2014*

Age (years)	Female					Male					Total
	White	American Indian	Other [†]	Missing	Total	White	American Indian	Other [†]	Missing	Total	
0-14	19	10	--	5	34	1	2	--	1	4	38
15-19	626	228	22	61	937	148	65	12	14	239	1176
20-24	815	234	38	55	1142	343	102	41	38	524	1666
25-29	289	123	18	27	457	206	49	15	27	294	751
30-34	109	53	5	7	174	70	21	17	9	117	291
35-39	45	22	3	9	79	32	19	3	7	61	140
≥ 40	31	11	2	2	51	48	16	6	2	72	123
unknown	3	1	--	--	6	--	--	--	2	2	8
Total	1937	682	88	173	2880	845	274	94	100	1313	4193

* Race classification is irrespective of ethnicity (Hispanic or non-Hispanic)

[†] Other includes persons of more than one race, black, and Asian/Pacific Islander

Gonorrhea

Neisseria gonorrhoeae infections are the second most commonly reported STD in Montana and the United States. In the United States, *N. gonorrhoeae* infections, like those resulting from *C. trachomatis*, are a major cause of PID. In addition, epidemiologic and biologic studies provide strong evidence that gonococcal infections facilitate the transmission of HIV.

In 2014, 434 gonorrhea cases from 28 counties were reported in Montana. This is an incidence rate of 42.8 cases per 100,000 population, almost a 100% increase from 2013 when 224 cases were reported. Montana's rate of gonorrhea cases was relatively stable from 2007–2012, averaging 10.5 cases per 100,000 population, until 2013 when 22.1 cases per 100,000 population were reported (Figure 13). The increase in cases in 2013 from 2012 was much steeper than the increases from 2004 to 2005 or 2005 to 2006.

Figure 13. Gonorrhea incidence rate — Montana, 2004–2014



Figure 14 displays the distribution of cases by sex and age group. In Montana, 221 gonorrhea cases (51%) were reported in females. Of the 130 cases of gonorrhea diagnosed in the 20–24 year age group, 67

(52%) occurred among females. As with chlamydia, this may be related to routine STD screening practices for sexually active women 25 years of age or less.

Figure 14. Gonorrhea cases by sex and age — Montana, 2014

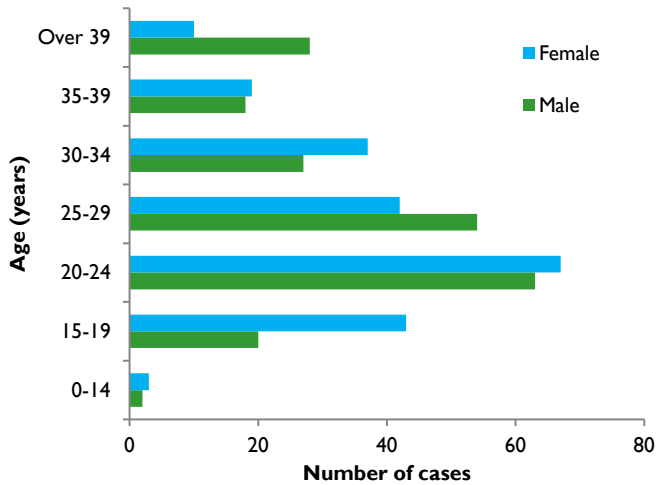
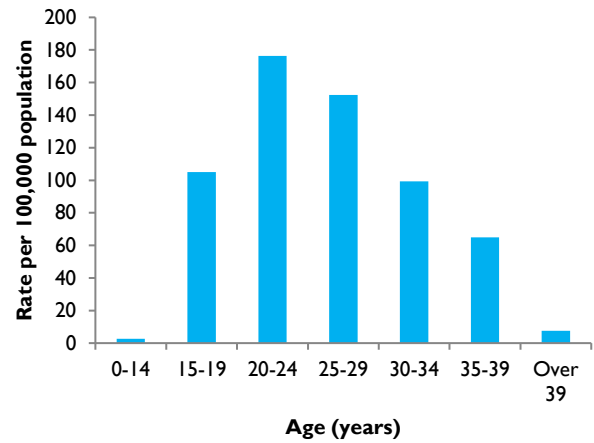


Figure 15 displays the age-specific case rate in 2014. Most of the cases continue to occur in the 20–24 and 25–29 year age groups, which account for more than 52% of the cases and only 13% of the general population. While there was an increase in cases among all races, American Indians disproportionately accounted for the 434 cases in 2014. The largest and steepest increase occurred among American Indians. Table 3 outlines the demographics of gonorrhea cases in 2014 by age, sex, and race.

Figure 15. Gonorrhea case rate by age — Montana, 2014



In 2014, the gonorrhea incidence rate was highest among American Indians (346 cases per 100,000 population). This rate is nearly 25 times greater than those reported as white (14.7 cases per 100,000 population). In 2011, the incidence rate among American Indians was about five times greater than whites and jumped to nearly 30 times in 2012 largely attributable to an outbreak on an American Indian reservation. Broader STD screening practices among American Indians and an increase in cases begetting more testing contribute to the higher reported gonorrhea incidence rate in this population. However, the specific magnitude of these contributions has not been measured.

Table 3. Gonorrhea cases by age, sex, and race — Montana, 2014*

Age (years)	Male					Female					Total
	White	American Indian	Other†	Missing	Total	White	American Indian	Other†	Missing	Total	
0–14	--	2	--	--	2	1	1	--	1	3	5
15–19	3	14	2	1	20	9	31	1	2	43	63
20–24	18	36	2	7	63	18	46	2	1	67	130
25–29	19	31	2	2	54	14	25	1	2	42	96
30–34	13	10	2	2	27	12	23	1	1	37	64
35–39	7	7	1	3	18	6	11	--	2	19	37
≥ 40	15	10	1	2	28	2	6	1	1	10	38
unknown	--	1	--	--	1	--	--	--	--	--	1
Total	75	111	10	17	213	62	143	6	10	221	434

* Race classification is irrespective of ethnicity (Hispanic or non-Hispanic)

† Other includes persons of more than one race, black, and Asian/Pacific Islander

Syphilis

Syphilis is a genital ulcerative STD caused by the bacterium *Treponema pallidum*. It has often been called "the great imitator" because so many of the

signs and symptoms of illness are indistinguishable from those of other diseases. *T. pallidum* is passed from person-to-person through direct contact with a syphilis sore. Infected pregnant women can transmit syphilis to the fetus. Without treatment, *T. pallidum* infection can lead to stillbirth, neonatal death, or infant disorders

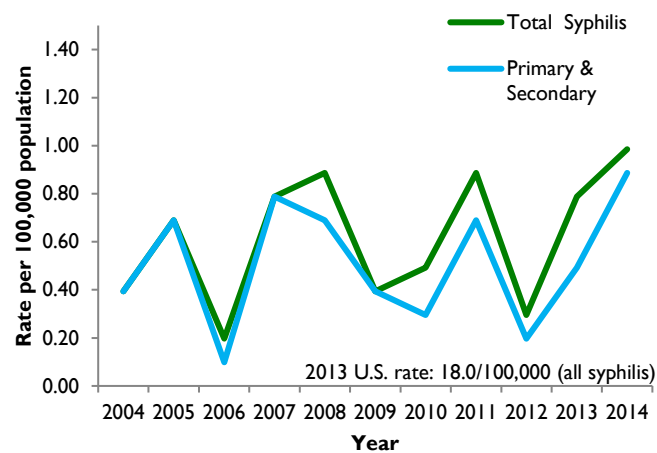
such as deafness, neurologic impairment, and bone deformities.

Syphilis can be divided into stages for the purposes of treatment and follow-up. Patients with early stages of syphilis (primary and secondary) are more infectious. Since 2004, 10 or fewer cases of syphilis (all stages) have been reported in Montana each year. In 2014, nine cases of syphilis were reported; eight were staged as primary or secondary. This was an increase from the four cases of primary or secondary, reported in 2013.

Montana's primary and secondary syphilis rate increased to 0.9 cases per 100,000 population in 2014 from 0.5 in 2013. The U.S. rate has been much higher, around 5.0 cases per 100,000 population in the last five years (2010–2014). Figure 16 displays the fluctuating incidence rate of syphilis in Montana.

A syphilis sore can facilitate the transmission of HIV infection, with two to five times increased likelihood of HIV transmission when sores are present.⁹ In 2014, seven of the ten cases of syphilis diagnosed among men were at the primary or secondary stage. Five of the male patients reported having sex with men (MSM).

Figure 16. Syphilis case rate — Montana, 2004–2014



HIV/AIDS

HIV (human immunodeficiency virus) is a virus spread through body fluids that affects the immune system. While there is no cure, persons infected with HIV can be treated with antiretroviral therapy (ART), which can prolong their life and reduce the chances of transmission. However, left untreated, HIV can attack and destroy CD4 cells of the immune system and lead to AIDS (acquired immunodeficiency syndrome).¹⁰

In 2014, 14 newly diagnosed cases of HIV infection were reported, an incidence rate of 1.4 cases per 100,000 population compared with an estimated U.S. incidence rate of 15.0 cases per 100,000 population in 2013 (Figure 17).¹¹ During 2000–2014, 14–32 cases of HIV infection have been diagnosed each year, mostly among males (Figure 18).

The majority of HIV infections in Montana continue to be diagnosed among white men, with 11 (79%) in 2014. Seven (64%) of the 11 men diagnosed with HIV infection reported sexual contact with another man (MSM) as a risk factor, including two that also reported injection drug use (IDU). All three of the women reported high-risk heterosexual contact as a risk factor. Two persons did not have a risk factor reported.

Figure 17. Case rate of newly diagnosed HIV infection — Montana, 2000–2014

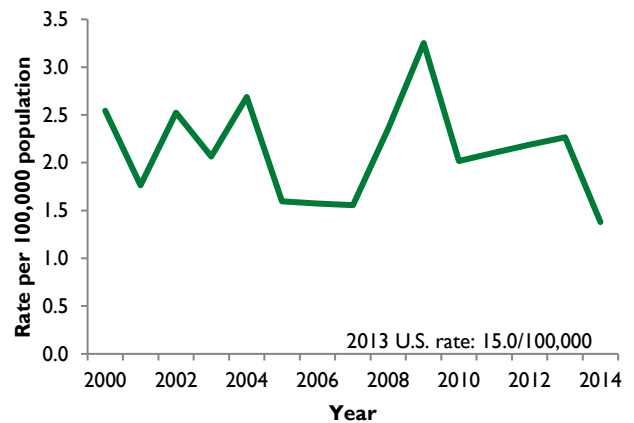
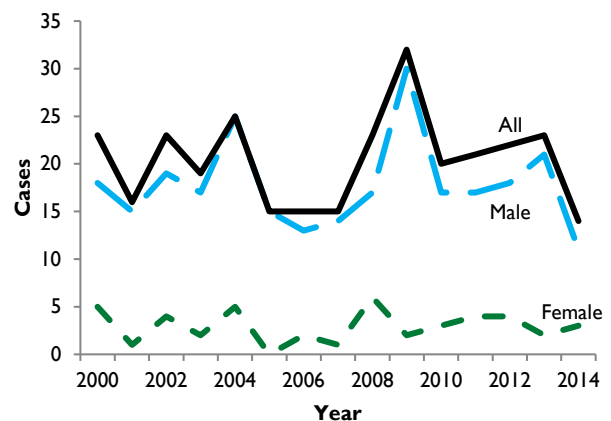


Figure 18: Newly diagnosed HIV infections by year and sex — Montana, 2000–2014



Three (21%) of the 14 cases were diagnosed as AIDS at the same time, or within 30 days of HIV diagnosis, indicating that the person may have gone undiagnosed for some time and a need for earlier and regular testing for individuals at risk for HIV infection. Table 4 outlines selected characteristics of the reported cases of newly diagnosed HIV infection for Montana in 2014.

Since 1985, more than 1,277 HIV cases have been reported to DPHHS. Fifty-four percent (693) of the cases reported were diagnosed in Montana. The remaining were diagnosed out-of-state and were reported after returning or moving to Montana. Nearly 75% of the HIV infections diagnosed in Montana were reported as residents of Cascade, Flathead, Gallatin, Lewis & Clark, Missoula, Silver Bow, or Yellowstone County at the time of diagnosis.

Table 4. Persons newly diagnosed with HIV infection (N=14) — Montana, 2014*

Characteristics	Number
Sex	
Male	11
Female	3
Disease progression	
HIV only	9
HIV and later AIDS	2
HIV & AIDS diagnosed simultaneously*	3
Age at diagnosis (years)	
20–24	2
25–29	3
30–34	3
35–39	2
40–44	2
45–49	1
50–54	1
Ethnicity, race	
Non-Hispanic, white	11
Non-Hispanic, American Indian/Alaska Native	1
Hispanic, any race	1
Non-Hispanic, other†	1
Risk category by sex‡	
Male only:	
Male sexual contact w/ another male (MSM)	5
Injection drug use (IDU)	1
MSM & IDU	2
Heterosexual contact§	1
No identified risk	2
Female only:	
Heterosexual contact§	3

* AIDS diagnosis occurred within 30 days—or one calendar month following HIV diagnosis—or HIV diagnosis occurred any time after AIDS diagnosis

† Non-Hispanic, other is all other races including multiple races

‡ Exposure category describes the combinations of risk factors by which a person may have acquired HIV

§ Heterosexual contact with a person known to have, or to be at high risk for, HIV infection

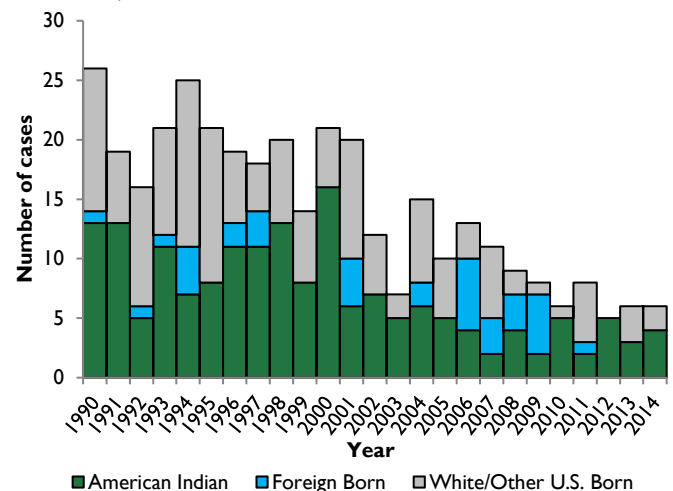
As of December 31, 2014, 566 HIV-infected persons were known to be living in Montana. Eighty-five percent (n=480) of HIV-infected persons are male and 81% (n=458) are non-Hispanic white. Nearly 80% of HIV-infected men were identified as MSM or IDU, and nearly 80% of HIV-infected women reported high-risk heterosexual contact or IDU as a risk.

Tuberculosis

Tuberculosis (TB) is caused by the bacterium *Mycobacterium tuberculosis* and is transmitted person to person through the air when someone with pulmonary TB disease coughs, sneezes, shouts or sings. Persons who become infected with TB can develop active disease at any time during their lifetime. Without treatment of the infection, about 10% of persons with normal immune systems will develop TB disease. The risk is much higher for persons with immunosuppressive conditions such as HIV, diabetes, chronic renal failure, drug or alcohol abuse, and children 5 years of age or younger.

The number of TB cases reported annually in Montana has steadily decreased (Figure 19). During the 1990s, an average of 20 cases was reported annually. From 2000–2009, an average of 12.6 cases per year was reported, with a range of 7 cases in 2003 to 21 cases in 2000. During the most recent 5-year period from 2010–2014, an average of 6.2 cases per year was reported. TB cases among American Indians have declined from an average of 9.7 cases per year in the 1990s to 5.1 cases per year during 2000–2014. TB among foreign-born persons has increased to an average of 1.6 cases per year during 2000–2014 compared with an average of one case per year during the 1990s (Range: 0–6 cases per year).

Figure 19. Reported active tuberculosis cases — Montana, 1990–2014



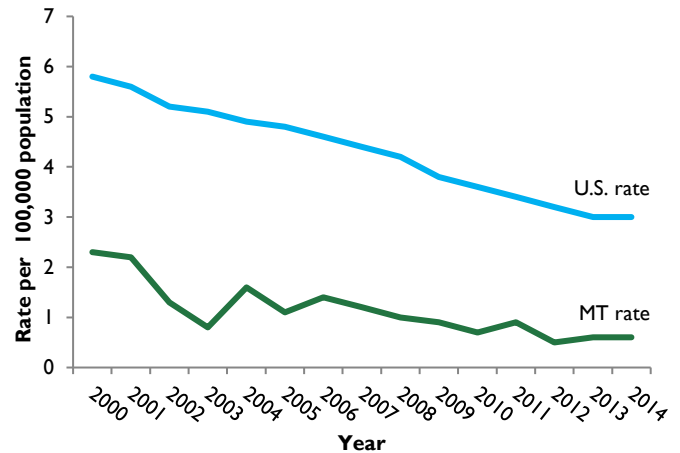
Six cases of active TB were reported in Montana in 2014 (Table 5). Counties of residence included Cascade, Roosevelt, Rosebud, and Sanders. The 2014 Montana TB incidence rate was 0.6 cases per 100,000 population, significantly lower than the 2014 U.S. case rate of 3.0 per 100,000 (Figure 20). Two of the TB cases reported in 2014 were identified as white and four were American Indian.

Table 5. Tuberculosis case summary — Montana, 2014

Characteristics	Number
New TB Cases	6
Incidence Rates	
Montana (total)	0.6/100,000
American Indian	4.2/100,000
Sex	
Male	4
Female	2
Age at diagnosis (years)	
<5	0
5-14	0
15-24	0
25-44	0
45-64	0
≥65	6
Ethnicity, race	
Non-Hispanic, White	2
Non-Hispanic, American Indian	4
Site of Disease	
Pulmonary/Pleural	4
Extrapulmonary only	0
Pulmonary & Extrapulmonary	2
Drug Resistance	
No resistance	5
Isoniazid resistance	1
Multiple-drug resistance	0
Country of Origin	
U.S.-born	6
Foreign-born	0

All of the 2014 cases were U.S.-born and none were epidemiologically linked. All cases were culture-positive and all had drug susceptibility testing performed. One isolate had resistance to isoniazid; none were multidrug-resistant. Since 2000, 4.6% of the total TB cases reported in Montana had single resistance to INH and 1.3 % (2 cases) had multidrug-TB resistance (MDR-TB, resistant to at least isoniazid and rifampin). Of the six cases reported in 2014, three completed tuberculosis treatment and three died prior to treatment completion. All cases were managed using directly observed therapy (DOT). Six pediatric cases (aged <15 years) have been reported since 2000; none were reported in 2014. Pediatric TB cases are considered a sentinel public health event because they provide evidence of recent TB transmission.

Figure 20. Tuberculosis incidence rate — Montana and United States, 2000–2014



Despite the historic low number of TB cases reported in Montana and nationally, a number of challenges remain that slow the progress toward TB elimination. TB persists in specific high-risk populations, including foreign-born persons, racial/ethnic minorities, and homeless persons. Improved diagnostic tools, new drugs that enable shorter, effective treatment of both latent TB infection and active disease, and an effective vaccine are critical for achieving national and global TB elimination.

Viral Hepatitis

Hepatitis A

Hepatitis A virus (HAV) infection is primarily transmitted by the fecal-oral route, either by person-to-person contact or consumption of contaminated food or water. Although viremia occurs early in infection and can persist for several weeks after onset of symptoms, blood borne transmission of HAV is uncommon. In 2014, five cases of acute HAV infection were reported from three counties in Montana. The median age of cases was 66 years. Only one patient reported travel outside of the United States prior to onset of symptoms.

Hepatitis B

Hepatitis B virus (HBV) is transmitted through activities that involve percutaneous (puncture through the skin) or mucosal contact with infectious blood or body fluids. Hepatitis B virus infections have decreased significantly over time with increased use of the HBV vaccine. In 2014, 32 chronic HBV infections were reported in Montana. The median age was 37 years and half of all cases occurred among females. There were no acute Hepatitis B cases reported in 2014.

Hepatitis C

Hepatitis C virus (HCV) is transmitted through contact with the blood of an infected person, primarily through sharing contaminated needles used to inject drugs, needle stick injuries in healthcare settings, and to infants born to HCV-infected mothers. Hepatitis C virus infection sometimes results in an acute illness that typically occurs 6–7 weeks after exposure, but can range from 6–24 weeks. However, approximately 70–80% of people with acute Hepatitis C do not have symptoms. Approximately 75–85% of those infected with HCV develop chronic disease that can lead to cirrhosis of the liver and liver cancer.

An estimated 3.2 million persons in the United States are currently living with chronic HCV infection, the majority of whom are aged 50–70 years. Recently revised CDC recommendations include one-time testing of persons born during 1945–1965, regardless of risk history.

In 2014, more than 1,400 confirmed and probable cases of HCV were reported in Montana. The median age of patients was 48 years (range: 2 months–84 years). In 2014, nearly 30% of newly reported cases of HCV infection were in persons aged 50–59 years, the most common age group. Of the 1,400 HCV cases reported in 2014, fourteen (1%) were acute Hepatitis C. Acute hepatitis C patients had a median age of 28 years (range: 20–64 years) and eight (58%) were female. Fewer than

half (43%) reported recent intravenous drug use (IVDU) prior to onset of symptoms.

Zoonotic and Vector-borne Diseases

Rabies

Rabies is a vaccine-preventable viral disease that is nearly always fatal and is most often transmitted to humans through the bite of a rabid animal. The majority of animal rabies cases reported to DPHHS each year occur among wild animals including skunks and bats. Occasionally domestic animals (e.g., cats, dogs, and horses) are also infected. Human exposure can occur through contact with the saliva of an infected wild or domestic animal. A bite from an infected animal is the most common route of human exposure. Rabies in humans is preventable through prompt and appropriate medical care and use of post-exposure prophylaxis (PEP). Due to recent updates to the Administrative Rules of Montana (ARM), administration of PEP is reportable to DPHHS as of June 2013. In 2014, the first full year of tracking, 122 individuals were recommended for PEP.

During 2014, 16 animals from 11 counties in Montana tested positive for the rabies virus (Figure 21). The proportion of positive tests by species is shown in Table 6. No human cases of rabies were reported in 2014.

Figure 21. Number of positive rabies tests by species — Montana, 2014

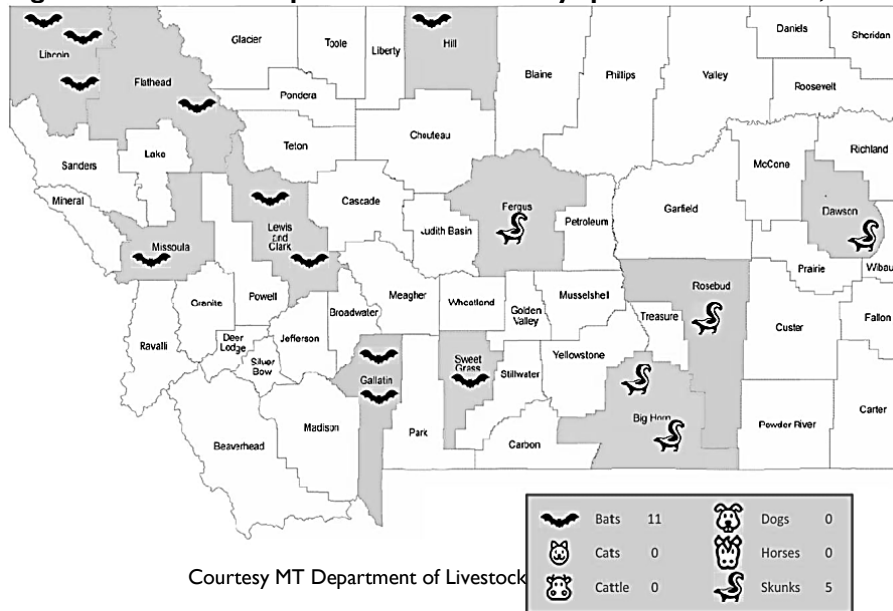


Table 6. Animal rabies testing — Montana, 2014

Species	Number tested	Number positive	Percent positive
Bat	116	11	9%
Skunk	16	5	31%
Cow	19	0	0%
Horse	7	0	0%
Cat	95	0	0%
Dog	111	0	0%

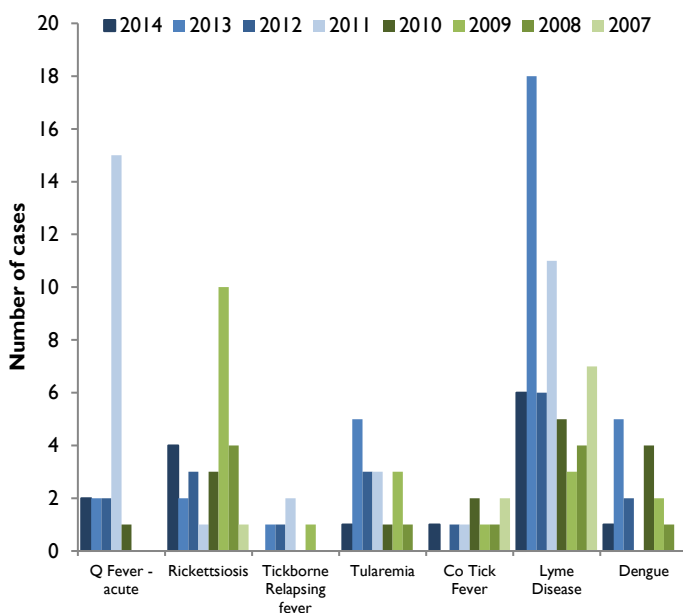
Tickborne Diseases

Additional vector-borne pathogens present in Montana and transmissible to humans include those that cause Colorado tick fever (*Coltivirus* spp.), Rickettsiosis (*Rickettsia* spp.), tickborne relapsing fever (*Borrelia hermsii*), Q fever (*Coxiella burnetii*), tularemia (*Francisella tularensis*), and plague (*Yersinia pestis*). The annual number of cases from 2007–2014 is graphed in Figure 22. Four cases of rickettsiosis and one case of Colorado tick fever were reported in 2014. There were no cases of plague.

In addition to vector-borne transmission, *F. tularensis* and *Coxiella burnetii* can be acquired through inhalation of contaminated aerosols. *Coxiella burnetii* can also be transmitted through exposure to milk, urine, feces, or birth products from infected farm animals (particularly sheep, cattle, and goats). In 2014, there was one case of tularemia, two cases of acute Q fever, and two cases of chronic Q fever reported in Montana. Precautions should be taken to minimize exposure to ticks, fleas, and deer flies.

While travelling out of state, nine Montanans acquired confirmed or probable disease caused by a vector-borne pathogen not locally transmitted in Montana. Six cases of Lyme disease, one case of dengue fever and two cases of malaria were confirmed in Montana residents in 2014. Before travelling, Montanans should plan to limit exposure to mosquitos and ticks and get appropriate vaccines or prophylaxis to prevent vector-borne diseases.

Figure 22. Reported cases of tickborne diseases — Montana, 2007–2014

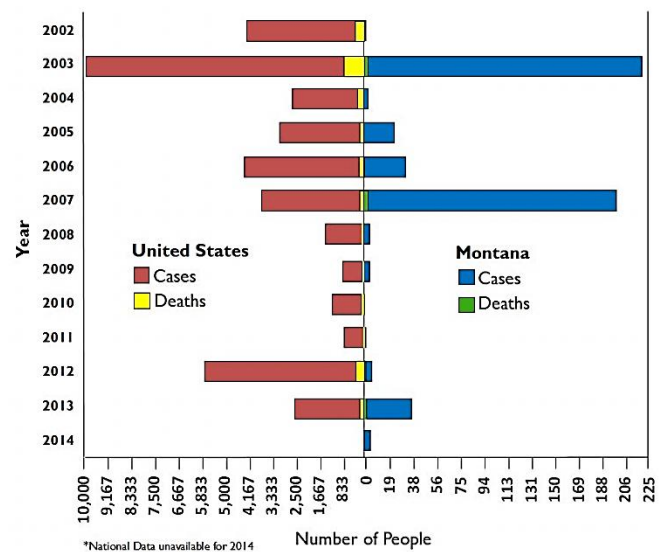


West Nile Virus

West Nile virus (WNV) is an arbovirus that is transmitted by infected mosquitoes throughout the United States. The majority of persons infected with WNV do not exhibit symptoms. Less than 1% of infected persons develop West Nile neuroinvasive disease (WNND), a serious and potentially life-threatening disease. In 2014 five human cases of WNV infection, two of which were WNND, were reported in Montana residents. None of them died. Cases were reported from Yellowstone, Big Horn, Valley, Teton, and Hill counties.

Since the introduction of WNV into Montana in 2002, the number of cases in Montana varied from year to year. Eight of the thirteen years of WNV surveillance had fewer than 10 annual cases (range 0–6). Three years had between 25 and 38 (2005, 2006, 2013) and two years (2003 and 2007) had over 200. The number of cases in Montana and the United States are moderately correlated (Figure 23).

Figure 23. West Nile Virus cases — United States and Montana, 2002–2014



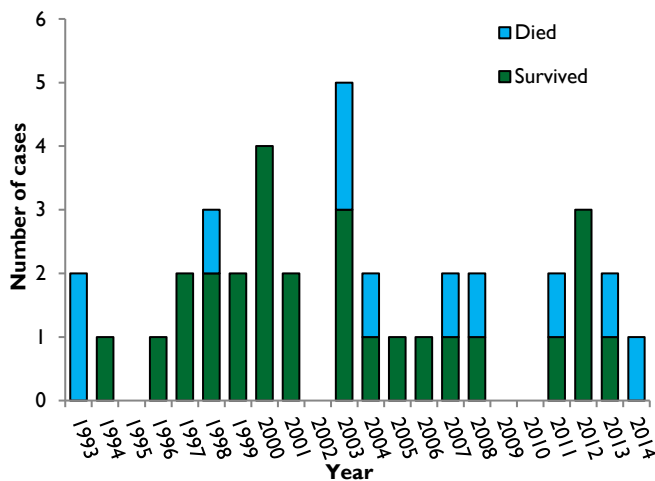
Nationally, the number of cases has varied almost 14 fold between two consecutive years, 2011 and 2012, when 712 and 9,862 cases respectively were reported. Scientists have examined the relationship between WNV activity and environmental conditions, such as temperature and rainfall, but have not identified a pattern. Given the variation of WNV activity in Montana, nationally, and internationally as well as unknown effect of environmental conditions, forecasting the disease burden each season is not possible. Montanans are reminded to prevent mosquito bites every season through use of mosquito repellent, limited

outdoor activity during dawn and dusk, covering skin with clothing, and elimination of breeding pools in vessels around the home.

Hantavirus

Hantavirus is transmitted to humans through exposure to infected rodent urine, droppings or saliva. The rodent hosts that transmit hantavirus to humans are widespread in Montana. Since 1993 Montana has reported 38 cases of Hantavirus Pulmonary Syndrome, including 10 deaths (Figure 24). One case was reported in Montana in 2014.

Figure 24. Reported hantavirus cases and outcome — Montana, 1993–2014



Other Diseases

Coccidioidomycosis (valley fever)

Coccidioidomycosis, also called valley fever, is an infection caused by the fungus *Coccidioides*. The fungus is found in the soil in the southwestern United States and parts of Mexico and Central and South America. The fungus was also recently found in south central Washington.¹² Individuals are infected by inhalation of fungal spores from the air; however, most do not become ill. Individuals who have compromised immune systems, who have diabetes, or women who are pregnant have a greater risk for becoming severely ill.

Although not endemic in Montana, an average of three cases are reported per year in Montana residents. Most of these cases were in individuals that previously lived or worked in areas where coccidioidomycosis is endemic. The remainder are residents that spend their

winters in endemic areas. In 2014, there were 10 cases of coccidioidomycosis reported with a median age of 62 years. All cases reported previous travel to endemic areas.

Histoplasmosis

Histoplasmosis is a disease caused by the fungus *Histoplasma capsulatum*. The fungus lives in the environment, usually in association with large amounts of bird or bat droppings. Patients become ill following inhalation of soil contaminated with *H. capsulatum*. The majority of persons infected are asymptomatic or develop mild illness not detected as histoplasmosis. Symptoms usually develop 3–14 days following exposure. Clinical presentations range from self-limited pneumonia to severe disseminated disease requiring antifungal therapy.

In the United States, *H. capsulatum* is endemic to the Mississippi and Ohio River valleys. The recognized endemic region is not known to include the Rocky Mountain region (e.g., Montana).

Histoplasmosis is not a nationally notifiable condition, nor is it reportable to the state of Montana. As a result, the burden of disease in Montana is not well understood. However, of interest were unrelated cases of histoplasmosis reported in Montana during 2013 (5) and 2014 (2).¹³ Of the individuals that were able to be interviewed, none reported travel to recognized endemic regions. This serves as a reminder for clinicians to consider histoplasmosis in patients presenting with compatible signs and symptoms of the disease.

Legionellosis

Legionellosis is an infection caused by the bacterium, *Legionella*. The disease presents as pneumonia and can become severe. An estimated 8,000–10,000 cases are reported in the United States each year. An average of five cases of legionellosis are reported each year in Montana. *Legionella* is a bacteria that is found in the environment, usually in water. The bacteria grow well in warm water and have been isolated from environments such as hot tubs, cooling towers, hot water tanks, large plumbing systems, and decorative fountains. Home oxygen tubing and water supplied by old piping have also been implicated as vehicles for transmission. In 2014, five cases of legionellosis were reported in Montana. The median age of cases was 58 years. Four of the five cases were hospitalized.

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Appendix I: Cases and comparative statistics for reportable communicable diseases — Montana, 2014*†

Condition	2014 cases	5 year median	2014 rate per 100,000
Botulism, infant	1‡	0	0.1
Campylobacteriosis	216	205	21.1
Chlamydia	4193	3412	409.6
Coccidioidomycosis	10	3	1.0
Colorado tick fever	1	1	0.1
Cryptosporidiosis	66	69	6.4
Dengue Fever	2	2	0.2
Giardiasis	89	91	8.7
Gonorrhea	434	101	42.4
<i>Haemophilus influenzae</i> , invasive	14	3	1.4
Hantavirus	1	2	0.1
Hemolytic uremic syndrome (HUS)	5	1	0.5
Hepatitis A, acute	5	6	0.5
Hepatitis B, chronic	32	21	3.1
Hepatitis C, chronic	1413	1142	138.0
Hepatitis C, acute	13	9	1.3
Histoplasmosis	2	0	0.2
HIV	14	22	1.4
Legionellosis	5	5	0.5
Listeriosis	1	1	0.1
Lyme disease	6	7	0.6
Malaria	2	3	0.2
Meningococcal disease	4	4	0.4
Mumps	1	0	0.1
Pertussis	494	134	48.3
Q fever	4	2	0.4
Rabies, animal	16	25	1.6
Salmonellosis	145	110	14.2
Shiga toxin-producing <i>Escherichia coli</i> (STEC)	39	43	3.8
Shigellosis	44	12	4.3
Spotted Fever Rickettsiosis	4	3	0.4
<i>Streptococcus pneumoniae</i> , invasive	41	24	4.0
Syphilis	9	5	0.9
Transmissible Spongiform Encephalopathies (TSE)	3	2	0.3
Tuberculosis	6	6	0.6
Tularemia	1	3	0.1
Typhoid fever	3	0	0.3
Varicella	72	163	7.0
Vibriosis	2	1	0.2
West Nile	5	6	0.5

*Confirmed and probable cases only. †Conditions for which there were zero (0) cases in 2014 are not reflected in this table.

‡Case was an out of state resident with exposure in Montana.

Appendix II: Cases of reportable communicable diseases by disease group and jurisdiction — Montana, 2014

Table I. Case counts of enteric diseases by jurisdiction of residence — Montana, 2014

County/Tribal Jurisdiction	Campylobacteriosis	Cryptosporidiosis	Cyclosporiasis	Giardiasis	HUS*	Listeriosis	STEC†	Salmonellosis	Shigellosis	Typhoid Fever	Vibriosis
Beaverhead	3	--	--	--	--	--	--	3	1	--	--
Big Horn/Crow	3	1	--	--	--	--	--	1	--	--	--
Blaine/Ft. Belknap	1	--	--	--	--	--	--	1	--	--	--
Broadwater	--	1	--	--	--	--	--	1	--	--	--
Carbon	4	--	--	1	--	--	--	1	--	--	--
Carter	--	--	--	--	--	--	--	--	--	--	--
Cascade	23	6	--	12	--	--	2	12	32	--	--
Chouteau	--	--	--	1	--	--	--	--	--	--	--
Custer	6	--	--	--	--	--	--	--	--	--	--
Daniels	1	--	--	--	--	--	--	--	--	--	--
Dawson	3	--	--	2	3	--	3	--	--	--	--
Deer Lodge	--	--	--	--	--	--	--	2	--	--	--
Fallon	2	1	--	--	--	--	--	1	--	--	--
Fergus	4	--	--	--	--	--	--	1	--	--	--
Flathead	11	16	--	11	--	--	4	14	1	--	--
Gallatin	34	10	2	19	--	--	5	14	1	--	--
Garfield	3	--	--	--	--	--	--	--	--	--	--
Glacier/Blackfeet	1	3	--	1	--	--	2	2	--	--	--
Golden Valley	--	--	--	--	--	--	--	--	--	--	--
Granite	1	--	--	1	--	--	--	--	--	--	--
Hill/Rocky Boy	3	--	--	--	--	--	--	1	2	--	--
Jefferson	2	1	--	1	--	--	--	2	--	--	--
Judith Basin	3	--	--	--	--	--	--	1	--	--	--
Lake/CSKT	6	1	--	1	--	--	--	5	--	--	--
Lewis & Clark	13	--	--	1	--	--	6	23	1	--	--
Liberty	2	--	--	--	--	--	--	--	--	--	--
Lincoln	2	1	--	1	--	--	3	--	--	--	--
Madison	2	--	--	2	1	--	--	1	--	--	--
McCone	--	--	--	--	1	--	1	--	--	--	--
Meagher	3	--	--	--	--	--	--	4	--	--	--
Mineral	--	1	--	--	--	--	--	--	--	--	--
Missoula	16	9	--	13	--	--	5	7	--	3	--
Musselshell	--	--	--	--	--	--	--	--	--	--	--
Park	6	1	--	4	--	--	--	2	1	--	--
Petroleum	--	--	--	--	--	--	--	--	--	--	--
Phillips	--	--	--	--	--	--	--	1	--	--	--
Pondera	2	2	--	--	--	--	1	--	--	--	--
Powder River	1	--	--	--	--	--	--	--	--	--	--
Powell/MSP	1	4	--	1	--	--	--	1	--	--	--
Prairie	2	--	--	1	--	--	--	--	--	--	--
Ravalli	6	2	--	2	--	--	--	3	1	--	--
Richland	--	1	--	2	--	--	--	5	--	--	--
Roosevelt/Ft. Peck	--	1	--	--	--	--	--	2	--	--	--
Rosebud/N. Cheyenne	--	--	--	--	--	--	1	3	--	--	--
Sanders	2	--	--	3	--	--	--	--	--	--	--
Sheridan	--	--	--	--	--	--	--	--	--	--	--
Silver Bow	2	--	--	--	--	--	4	6	--	--	--
Stillwater	6	--	--	1	--	--	--	1	--	--	--
Sweet Grass	4	--	--	--	--	--	--	--	--	--	--
Teton	3	1	--	--	--	--	1	--	--	--	--
Toole	1	--	--	1	--	--	--	1	--	--	--
Treasure	1	--	--	--	--	--	--	--	--	--	--
Valley	--	--	--	1	--	--	--	--	--	--	--
Wheatland	1	--	--	--	--	--	--	--	--	--	--
Wibaux	2	--	--	--	--	--	--	1	--	--	--
Yellowstone	24	3	--	6	--	1	1	22	4	--	2
TOTAL 2014	216	66	2	89	5	1	39	145	44	3	2

*Hemolytic Uremic Syndrome †STEC = Shiga toxin-producing *Escherichia coli*

Table 2. Case counts of selected vaccine-preventable diseases by jurisdiction — Montana, 2014

County/Tribal Jurisdiction	Mumps	Pertussis	Varicella
Beaverhead	--	--	--
Big Horn/Crow	--	3	--
Blaine/Ft. Belknap	--	6	2
Broadwater	--	2	--
Carbon	--	7	--
Carter	--	--	--
Cascade	--	30	5
Chouteau	--	--	--
Custer	--	3	2
Daniels	--	--	--
Dawson	--	--	6
Deer Lodge	--	7	1
Fallon	--	--	--
Fergus	--	10	1
Flathead	--	79	8
Gallatin	--	39	8
Garfield	--	--	--
Glacier/Blackfeet	--	--	1
Golden Valley	--	--	--
Granite	--	--	--
Hill/Rocky Boy	--	4	1
Jefferson	--	6	--
Judith Basin	--	--	--
Lake/CSKT	--	7	9
Lewis & Clark	--	74	4
Liberty	--	--	--
Lincoln	--	55	1
Madison	1	--	--
McCone	--	--	1
Meagher	--	--	1
Mineral	--	3	--
Missoula	--	19	4
Musselshell	--	1	--
Park	--	2	--
Petroleum	--	--	--
Phillips	--	--	--
Pondera	--	--	--
Powder River	--	--	--
Powell/MSP	--	24	2
Prairie	--	--	--
Ravalli	--	7	2
Richland	--	--	3
Roosevelt/Ft. Peck	--	2	1
Rosebud/N. Cheyenne	--	--	1
Sanders	--	33	2
Sheridan	--	1	--
Silver Bow	--	26	1
Stillwater	--	3	--
Sweet Grass	--	1	--
Teton	--	--	--
Toole	--	--	--
Treasure	--	--	--
Valley	--	3	4
Wheatland	--	1	--
Wibaux	--	--	--
Yellowstone	--	36	1
TOTAL 2014	1	494	72

Table 3. Case counts of invasive diseases by jurisdiction — Montana, 2014

County/Tribal Jurisdiction	Cruetzfeldt Jakob Disease	<i>Haemophilus influenzae</i> , all serotypes	Meningococcal Disease	<i>Streptococcus pneumoniae</i>
Beaverhead	1	--	--	--
Big Horn/Crow	--	1	--	--
Blaine/Ft. Belknap	--	--	--	--
Broadwater	--	1	--	--
Carbon	--	--	--	--
Carter	--	--	--	--
Cascade	--	--	--	2
Chouteau	--	--	--	--
Custer	--	--	--	--
Daniels	--	--	--	--
Dawson	--	--	--	--
Deer Lodge	--	--	--	2
Fallon	--	--	--	--
Fergus	--	--	--	--
Flathead	1	2	--	4
Gallatin	--	--	--	2
Garfield	--	--	--	--
Glacier/Blackfeet	--	--	--	1
Golden Valley	--	--	--	--
Granite	--	--	--	--
Hill/Rocky Boy	--	--	--	--
Jefferson	--	1	--	2
Judith Basin	--	--	--	--
Lake/CSKT	--	--	--	--
Lewis & Clark	--	1	--	9
Liberty	--	--	--	--
Lincoln	--	1	--	--
Madison	--	--	--	--
McCone	--	--	--	--
Meagher	--	--	--	--
Mineral	--	--	--	--
Missoula	--	1	1	--
Musselshell	--	--	--	--
Park	--	1	--	--
Petroleum	--	--	--	--
Phillips	--	--	--	--
Pondera	--	--	--	--
Powder River	--	--	--	--
Powell/MSP	--	--	--	1
Prairie	--	--	--	--
Ravalli	--	--	--	--
Richland	--	--	--	--
Roosevelt/Ft. Peck	--	2	--	1
Rosebud/N. Cheyenne	--	--	--	2
Sanders	--	--	--	--
Sheridan	--	--	--	--
Silver Bow	--	--	--	2
Stillwater	--	--	--	--
Sweet Grass	--	--	--	--
Teton	--	--	--	--
Toole	--	--	--	--
Treasure	--	--	--	--
Valley	--	1	--	--
Wheatland	--	--	--	--
Wibaux	--	--	--	--
Yellowstone	1	2	3	13
TOTAL 2014	3	14	4	41

Table 4. Case counts of sexually transmitted diseases by jurisdiction — Montana, 2014

County/Tribal Jurisdiction	Chlamydia	Gonorrhea	Syphilis	HIV
Beaverhead	37	--	--	--
Big Horn/Crow	159	33	--	--
Blaine/Ft. Belknap	45	4	--	--
Broadwater	12	1	--	--
Carbon	7	--	--	--
Carter	1	--	--	--
Cascade	452	24	--	--
Chouteau	3	--	--	--
Custer	56	--	--	--
Daniels	2	--	--	--
Dawson	25	--	--	--
Deer Lodge	38	--	--	--
Fallon	4	--	--	--
Fergus	17	--	--	1
Flathead	299	8	5	2
Gallatin	348	10	--	--
Garfield	1	--	--	--
Glacier/Blackfeet	178	32	--	--
Golden Valley	1	--	--	--
Granite	7	--	--	--
Hill/Rocky Boy	108	8	--	--
Jefferson	29	1	--	--
Judith Basin	--	--	--	--
Lake/CSKT	152	47	--	--
Lewis & Clark	228	4	--	--
Liberty	4	--	--	--
Lincoln	27	2	--	2
Madison	9	1	--	--
McCone	--	--	--	--
Meagher	1	1	--	--
Mineral	7	--	--	--
Missoula	550	22	--	5
Musselshell	6	--	--	--
Park	29	2	--	--
Petroleum	--	--	--	--
Phillips	10	--	--	--
Pondera	8	--	--	--
Powder River	4	1	--	--
Powell/MSP	16	3	--	--
Prairie	1	--	--	--
Ravalli	80	3	--	--
Richland	33	3	--	--
Roosevelt/Ft. Peck	175	94	1	1
Rosebud/N. Cheyenne	101	17	--	--
Sanders	27	2	--	--
Sheridan	17	--	--	--
Silver Bow	127	3	--	--
Stillwater	23	1	--	--
Sweet Grass	1	--	--	--
Teton	5	--	--	--
Toole	8	--	--	--
Treasure	4	--	--	--
Valley	14	4	--	--
Wheatland	2	--	--	--
Wibaux	1	--	--	--
Yellowstone	694	101	3	3
TOTAL 2014	4193	434	9	14

Table 5. Case counts of viral hepatitis by jurisdiction — Montana, 2014

County/Tribal Jurisdiction	Hepatitis A, Acute	Hepatitis B, Chronic*	Hepatitis C, Acute	Hepatitis C, Chronic*
Beaverhead	--	--	--	7
Big Horn/Crow	--	--	--	12
Blaine/Ft. Belknap	--	--	--	8
Broadwater	--	--	--	5
Carbon	--	--	1	9
Carter	--	--	--	--
Cascade	--	4	--	124
Chouteau	--	--	--	2
Custer	--	--	1	6
Daniels	--	--	--	3
Dawson	--	--	--	10
Deer Lodge	--	1	--	13
Fallon	--	--	--	1
Fergus	--	--	--	8
Flathead	1	2	--	110
Gallatin	--	3	--	52
Garfield	--	--	--	1
Glacier/Blackfeet	--	--	1	77
Golden Valley	--	--	--	--
Granite	--	--	--	--
Hill/Rocky Boy	--	--	1	26
Jefferson	--	--	1	16
Judith Basin	--	--	--	--
Lake/CSKT	--	--	--	55
Lewis & Clark	--	3	--	52
Liberty	--	--	--	1
Lincoln	--	2	--	45
Madison	--	--	--	7
McCone	--	--	--	--
Meagher	--	--	--	--
Mineral	--	--	--	8
Missoula	1	3	--	91
Musselshell	--	--	--	5
Park	--	2	--	18
Petroleum	--	--	--	--
Phillips	--	--	--	1
Pondera	--	--	--	2
Powder River	--	--	--	2
Powell/MSP	--	--	1	95
Prairie	--	--	--	--
Ravalli	--	1	1	36
Richland	--	2	1	11
Roosevelt/Ft. Peck	--	--	--	106
Rosebud/N. Cheyenne	--	--	1	17
Sanders	--	--	--	34
Sheridan	--	--	--	1
Silver Bow	1	--	--	51
Stillwater	--	--	--	5
Sweet Grass	--	--	2	1
Teton	--	--	--	2
Toole	--	1	--	14
Treasure	--	--	--	1
Valley	--	--	--	7
Wheatland	--	--	--	--
Wibaux	--	--	--	--
Yellowstone	2	7	3	255
TOTAL 2014	5	32	14	1413

*Counts are confirmed and probable cases that were newly reported to DPHHS in 2014.

Table 6. Case counts of zoonotic and vector--borne diseases by jurisdiction — Montana, 2014

County/Tribal Jurisdiction	Colorado Tick Fever	Hantavirus Pulmonary Syndrome	Q Fever	Rabies, Animal	Spotted Fever Rickettsiosis	Tularemia	West Nile
Beaverhead	--	--	--	--	--	--	--
Big Horn/Crow	--	--	--	2	--	--	
Blaine/Ft. Belknap	--	--	--	--	--	--	--
Broadwater	--	--	--	--	--	--	--
Carbon	--	--	--	--	--	--	--
Carter	--	--	--	--	--	--	--
Cascade	--	--	--	--	--	--	--
Chouteau	--	--		--	--	--	--
Custer	--	--	--	--		--	--
Daniels	--	--	--	--	--	--	--
Dawson	--	--	--		--	--	--
Deer Lodge	--	--	--	--	--	--	--
Fallon	--	--	--	--	--	--	--
Fergus	--	--	--		--	--	--
Flathead	--	--	--		--	--	--
Gallatin	--	--		2	2	--	--
Garfield	--	--	--	--	--	--	--
Glacier/Blackfeet	--	--	--	--	--	--	--
Golden Valley	--	--	--	--	--	--	--
Granite	--	--	--	--	--	--	--
Hill/Rocky Boy	--	--	--		--	--	
Jefferson	--	--	--	--	--	--	--
Judith Basin	--	--	--	--	--	--	--
Lake/CSKT	--	--		--	--	--	--
Lewis & Clark	--	--	--	2		--	--
Liberty	--	--	--	--	--	--	--
Lincoln	--	--	--	3	--	--	--
Madison	--	--	--	--	--	--	--
McCone	--	--	--	--	--	--	--
Meagher	--	--	--	--	--	--	--
Mineral	--	--	--	--	--	--	--
Missoula		--	--		--	--	--
Musselshell	--	--	--	--	--	--	--
Park	--	--	--	--	--	--	--
Petroleum	--	--	--	--	--	--	--
Phillips	--	--	--	--	--	--	--
Pondera	--	--	--	--	--	--	--
Powder River	--	--	--	--	--	--	--
Powell/MSP	--	--		--	--	--	--
Prairie	--	--	--	--	--	--	--
Ravalli	--	--	--	--	--	--	--
Richland	--	--	--	--	--	--	--
Roosevelt/Ft. Peck	--	--	--	--	--	--	--
Rosebud/N. Cheyenne	--	--	--		--	--	--
Sanders	--	--	--	--	--		--
Sheridan	--	--	--	--	--	--	--
Silver Bow	--	--	--	--	--	--	--
Stillwater	--		--		--	--	--
Sweet Grass	--	--	--	--	--	--	--
Teton	--	--	--	--	--	--	
Toole	--	--	--	--	--	--	--
Treasure	--	--	--	--	--	--	--
Valley	--	--	--	--	--	--	
Wheatland	--	--	--	--	--	--	--
Wibaux	--	--	--	--	--	--	--
Yellowstone	--	--	--	--	--	--	
TOTAL 2014	 	 	4	16	4	 	5

Table 7. Case counts of tuberculosis by jurisdiction — Montana, 2014

County/Tribal Jurisdiction	Tuberculosis
Beaverhead	--
Big Horn/Crow	--
Blaine/Ft. Belknap	--
Broadwater	--
Carbon	--
Carter	--
Cascade	
Chouteau	--
Custer	--
Daniels	--
Dawson	--
Deer Lodge	--
Fallon	--
Fergus	--
Flathead	--
Gallatin	--
Garfield	--
Glacier/Blackfeet	--
Golden Valley	--
Granite	--
Hill/Rocky Boy	--
Jefferson	--
Judith Basin	--
Lake/CSKT	
Lewis & Clark	--
Liberty	--
Lincoln	--
Madison	--
McCone	--
Meagher	--
Mineral	--
Missoula	--
Musselshell	--
Park	--
Petroleum	--
Phillips	--
Pondera	--
Powder River	--
Powell/MSP	--
Prairie	--
Ravalli	--
Richland	--
Roosevelt/Ft. Peck	
Rosebud/N. Cheyenne	3
Sanders	--
Sheridan	--
Silver Bow	--
Stillwater	--
Sweet Grass	--
Teton	--
Toole	--
Treasure	--
Valley	--
Wheatland	--
Wibaux	--
Yellowstone	--
TOTAL 2014	6

Table 8. Case counts of travel-associated diseases by jurisdiction — Montana, 2014

County/Tribal Jurisdiction	Coccidioidomycosis	Dengue Fever	Histoplasmosis	Legionellosis	Lyme Disease	Malaria
Beaverhead	2	--	--	--	--	--
Big Horn/Crow	--	--	--	--	--	--
Blaine/Ft. Belknap	--	--	--	--	--	
Broadwater	--	--	--	--	--	--
Carbon	--	--	--	--	--	--
Carter	--	--	--	--	--	--
Cascade		--		2	--	--
Chouteau	--	--	--	--	--	--
Custer	--	--	--	--	--	--
Daniels	--	--	--	--	--	--
Dawson	--	--	--	--	--	--
Deer Lodge	--	--	--	--	--	--
Fallon	--	--	--	--	--	--
Fergus	--	--	--	--	--	--
Flathead		--	--	--	2	--
Gallatin	--	--	--		2	
Garfield	--	--	--	--	--	--
Glacier/Blackfeet	--	--	--	--	--	--
Golden Valley	--	--	--	--	--	--
Granite	--	--	--	--	--	--
Hill/Rocky Boy	--	--	--	--	--	--
Jefferson	--	--	--	--	--	--
Judith Basin	--	--	--	--	--	--
Lake/CSKT		--		--	--	--
Lewis & Clark		--	--		--	--
Liberty	--	--	--	--	--	--
Lincoln	--	--	--		--	--
Madison	--	--	--	--	--	--
McCone	--	--	--	--	--	--
Meagher	--	--	--	--	--	--
Mineral	--	--	--	--	--	--
Missoula	--	--	--	--	--	--
Musselshell	--	--	--	--	--	--
Park	--	--	--	--	--	--
Petroleum	--	--	--	--	--	--
Phillips		--	--	--	--	--
Pondera	--	--	--	--	--	--
Powder River	--	--	--	--	--	--
Powell/MSP	--	--	--	--		--
Prairie	--	--	--	--	--	--
Ravalli	--	--	--	--	--	--
Richland	--	--	--	--	--	--
Roosevelt/Ft. Peck	--	--	--	--	--	--
Rosebud/N. Cheyenne	--	--	--	--	--	--
Sanders	--	--	--	--	--	--
Sheridan	--	--	--	--	--	--
Silver Bow		--	--	--		--
Stillwater	--	--	--	--	--	--
Sweet Grass	--	--	--	--	--	--
Teton	--		--	--	--	--
Toole	--	--	--	--	--	--
Treasure	--	--	--	--	--	--
Valley	--	--	--	--	--	--
Wheatland	--	--	--	--	--	--
Wibaux	--	--	--	--	--	--
Yellowstone	2	--	--	--	--	--
TOTAL 2014	10	1	2	5	6	2

Appendix III: Montana Demographic Profile 2014

The state of Montana is a geographically large state with a small population. It is the fourth largest state by area in the United States with just over one million residents. There are 51 public health jurisdictions (50 individual counties and one health district composed of six rural counties) as well as seven tribal areas within the state. Over one quarter of the population resides in areas where the population density is categorized as “frontier.” Approximately 60% of all case reports of reportable diseases for Montana were submitted from six counties, all with populations ≥50,000 residents.^{1,2}

<u>Characteristic</u>	<u>Population</u>	<u>Percent²</u>
	1,023,579	100
<u>Geographic Classification</u>		
Urban	155,634	15.2
Rural	578,663	56.5
Frontier	289,312	28.3
<u>Sex</u>		
Male	514,123	50.2
Female	509,456	49.8
<u>Age Group (years)</u>		
<1	12,269	1.2
1-4	48,925	4.8
5-14	126,085	12.3
15-24	138,730	13.6
25-39	187,879	18.4
40-64	338,536	33.1
65+	171,155	16.7
<u>Race</u>		
White	930,226	90.9
American Indian	73,410	7.2
African American	9,626	0.9
Asian	10,317	1.0
<u>Ethnicity</u>		
Non-Hispanic	988,217	96.5
Hispanic	35,362	3.5

¹The Montana Infectious Disease Information System (MIDIS) generated report of 2009-2014 data. The six counties are Yellowstone, Flathead, Missoula, Gallatin, Lewis and Clark, and Cascade.

²Based on 2014 population estimates from the National Center for Health Statistics. Bridged-race intercensal estimates of the July 1, 1990-July 1, 1999; July 1, 2000-July 1, 2009. Postcensal estimates of the resident population of the United States for July 1, 2010-July 1, 2014. United States resident population by year, county, single-year of age, sex, bridged race, and Hispanic origin. Prepared by the U.S. Census Bureau with support from the National Cancer Institute. Available on the Internet at: <http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm> as of April 24, 2004; Oct 26, 2012; June 30, 2015

Appendix IV: Diseases Reportable to Montana DPHHS, 2014

Montana health care providers are required to report cases of the following conditions to their local health department.* This reporting falls within HIPAA medical privacy exceptions for release of information. Reporting patients with the conditions below does not require patient consent. Reporting enables public health officials to conduct follow-up on cases of significance, and to identify outbreaks or emerging health concerns.

Acquired Immune Deficiency Syndrome (AIDS)	Listeriosis
Anaplasmosis	Lyme disease
Anthrax	Lymphogranuloma venereum
Arboviral disease (including California serogroup,	Malaria
Eastern equine encephalitis, Powassan, St. Louis	Measles (rubeola)
encephalitis, West Nile Virus, Western equine	Meningococcal disease (<i>Neisseria meningitidis</i>)
encephalitis)	Mumps
Babesiosis	Pertussis (whooping cough)
Botulism (including infant botulism)	Plague (<i>Yersinia pestis</i>)
Brucellosis	Poliomyelitis
Campylobacter	Psittacosis
Chancroid	Q fever (<i>Coxiella burnetii</i>)
<i>Chlamydia trachomatis</i> infection	Rabies human and animal (including exposure to a
Colorado Tick Fever	human by a species susceptible to rabies
Cryptosporidiosis	infection)
Coccidioidomycosis	Rickettsiosis
Cyclosporiasis	Rubella (including congenital)
Dengue virus	Salmonellosis
Diphtheria	Severe Acute Respiratory Syndrome-associated
Ehrlichiosis	coronavirus (SARS)
<i>Escherichia coli</i> , shiga-toxin producing (STEC)	Shigellosis
Gastroenteritis outbreak	Smallpox
Giardiasis	<i>Streptococcus pneumoniae</i> , invasive disease
Gonococcal infection	Syphilis
<i>Granuloma inguinale</i>	Tetanus
<i>Haemophilus influenzae</i> , invasive disease	Tick-borne relapsing fever
Hansen's disease (leprosy)	Toxic shock syndrome, non-streptococcal
Hantavirus Pulmonary Syndrome/infection	Transmissible Spongiform Encephalopathies
Hemolytic Uremic Syndrome, post-diarrheal	Trichinellosis (Trichinosis)
Hepatitis A	Tuberculosis
Hepatitis B, acute, chronic, perinatal	Tularemia
Hepatitis C, acute, chronic	Typhoid Fever
Human Immunodeficiency Virus (HIV)	Varicella
Influenza (including hospitalizations/deaths)	<i>Vibrio cholerae</i> infection (Cholera)
Lead poisoning (blood levels \geq than 5 micrograms per	Vibriosis
deciliter for children 13 years of age or	Viral Hemorrhagic fevers
younger)	Yellow Fever
Legionellosis	

An up to date list of Reportable Diseases in Montana is maintained on our website. To view the current list, please visit: <http://www.dphhs.mt.gov/publichealth/cdepi/reporting/index.shtml>

*Specific requirements related to reporting, investigation, and control of specific conditions are found in the Administrative Rules of Montana <http://www.mtrules.org/gateway/Subchapterhome.asp?scn=37%2E114%2E2>