Communicable Disease in Montana: 2013 Annual Report

Prepared by the Communicable Disease Epidemiology Section

Public Health and Safety Division
Montana Department of Public Health and Human Services

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Contents

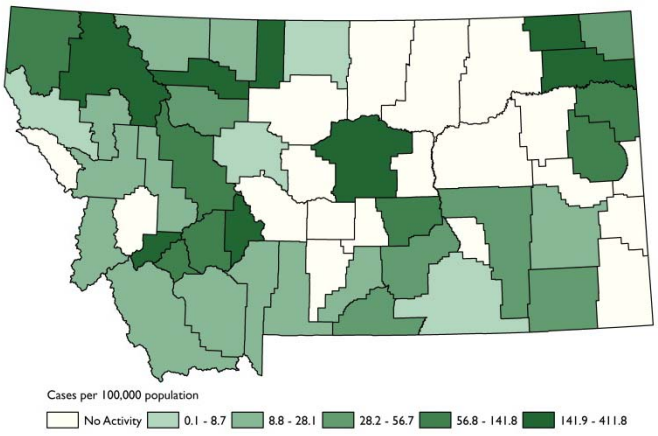
This report was prepared by the Communicable Disease Epidemiology Section (CDEpi) at the Montana Department of Public Health and Human Services (DPHHS). It summarizes communicable diseases reported by the state of Montana in 2013. These reportable conditions met the 2013 case definitions provided by the Centers for Disease Control and Prevention (CDC) and the Council of State and Territorial Epidemiologists (CSTE).[1] Communicable diseases that must be reported by diagnostic laboratories and health care professionals to public health authorities are specified by the Administrative Rules of Montana (ARM 37.114.203). Communicable disease data are maintained in the Montana Infectious Disease Information System (MIDIS), HIV data are maintained in the enhanced HIV/AIDS Reporting System (eHARS), and STD data are maintained in STD*MIS. Population data[2] as well as reportable communicable disease statistics are found in Appendix I. Small numbers of reported cases may result in unstable rates and should be interpreted with caution. Please contact CDEpi at 406-444-0273 or hhsepi@mt.gov with questions or comments.

Notable Events of 2013

Pertussis statewide outbreak

In 2013, 663 cases of pertussis were reported to the Department of Public Health and Human Services (DPHHS), compared with 549 cases in 2012. This is the highest number of pertussis cases since 2005, when 586 cases were reported. Montana's incidence rate was the highest in the nation at 65.3 per 100,000 Montana residents compared with a provisional rate of 7.7 per 100,000 in the United States. Montana case counts were above baseline (six cases per month) for most of the year. Among the 36 counties reporting cases of pertussis in 2013, the number of cases ranged from 1 to 251 with incidence rates ranging from 3.7 to 411.8 per 100,000 population (Figure 1).

Figure 1. Incidence of pertussis by county of residence — Montana, 2013



Of the 663 cases, 48% were female. Sixty-four percent of pertussis cases occurred among children aged 5–17 years. Of the 630 cases with a documented race, 599 (95%) were identified as white, 22 (3.5%) as American Indian, and 9 (1.5%) as African American, Asian or Native Hawaiian/Pacific Islander. Twenty-five infants aged less than one year were reported as having pertussis and six were hospitalized. Five of the hospitalized infants were aged less than three months. There were no reported deaths due to pertussis in 2013.

Immunization records for 507 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.[3] Overall, 123 (19%) cases eligible by age had not received any doses of pertussis-containing vaccine. Of these, the greatest percentage of unvaccinated cases (29%) occurred among children aged 13–17 years. In addition, 71 (14%) cases in all pediatric age categories had not received the total recommended number of doses of pertussis-containing vaccine appropriate for age.

ACIP recommends the administration of tetanus, diphtheria, acellular pertussis vaccine (Tdap) at age 11–12 years. In this age group, which includes 26% of all pediatric cases, 50% received a Tdap before diagnosis. Cases in the 13–17 year age group had a higher percentage of Tdap vaccination (66%).

Factors contributing to the increased pertussis incidence in 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 possibly, genetic changes in circulating strains of the bacteria.[4]

Gonorrhea statewide outbreak

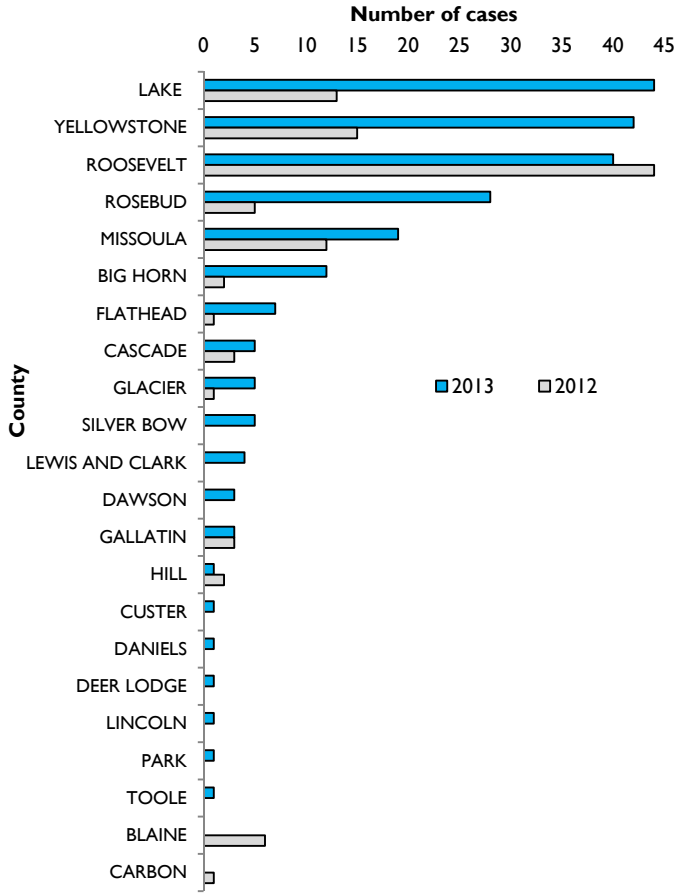
Two hundred twenty-four gonorrhea cases were reported in 2013, more than twice the number reported in 2012. The increase in cases from 2012 to

2013 was reported from several counties statewide. Figure 2 displays the cases reported by each county in 2012 and 2013.

The 224 cases (22.1 cases per 100,000 population) reported exceeds the recent high of 191 cases (20.1) reported in 2006. Montana's American Indian population was disproportionately impacted, accounting for 50% of the 224 cases in 2013. While there was an increase in cases among all races, the largest and steepest increase occurred among American Indians (AI) (Figure 3).

Figure 4 displays the distribution of cases by sex and age group. Most of the cases continue to occur in the 20–24 and 25–29 year age groups, which account for more than 60% of the cases but only 13% of the general population.

Figure 2. Gonorrhea cases by county — Montana, 2012–2013*



*County cases may include cases among persons residing in tribal jurisdictions that are within the county's borders.

Figure 3. Gonorrhea cases by race — Montana, 2004–2013

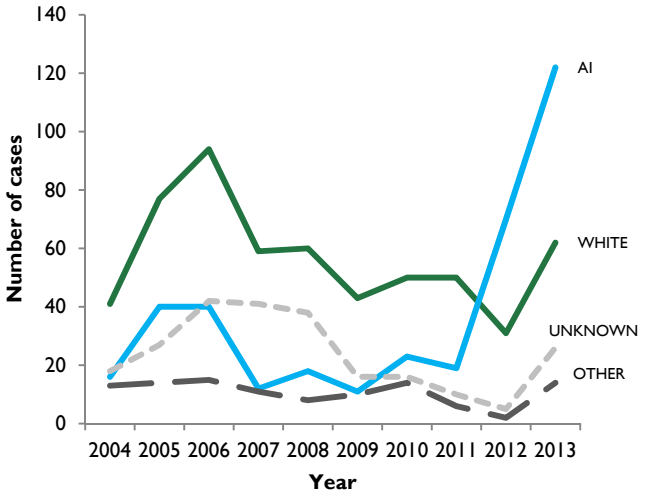
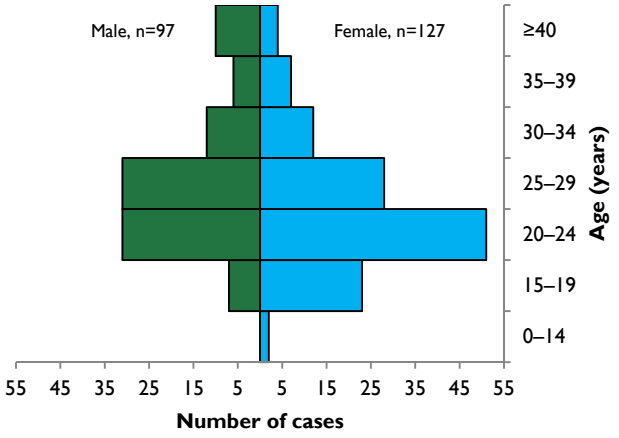


Figure 4. Gonorrhea cases by sex and age — Montana, 2013



Foodborne outbreaks

An outbreak of norovirus that occurred in Yellowstone National Park and Grand Teton National Park sickened over 540 visitors and employees from over 30 states, including Montana, and 3 foreign countries. The outbreak began when multiple tour buses with sick passengers on board visited the parks in early June.

Over 200 persons became ill from a norovirus outbreak linked to a church camp during the summer. Large gatherings, crowded living conditions, and increased mingling of persons contributed to this large outbreak. Investigation efforts linked the outbreak to the arrival of several ill individuals and due to lack of prevention efforts and notification to the camp director, the virus

spread among attendees before control measures could be implemented.

A third notable outbreak occurred for several months in the southeastern part of the state caused by *Shigella*, an enteric pathogen. *Shigella* is easily spread from person-to-person, especially among young children. The outbreak began in May of 2013 and continued through the fall, sickening over 50 persons, mostly children aged 4–7 years. Epidemiological investigations were not able to identify a point source, and findings revealed that person-to-person transmission was the most likely route of exposure during that outbreak.

Waterborne outbreaks are rarely reported in Montana. However, in 2013 several Montanans were infected with C*ryptosporidium*, a parasite that is highly resistant to chlorine and can survive in treated water. During August and September of 2103, 23 persons, mostly children, became ill after swimming in pools and splash parks. Local health departments worked closely with environmental health and pool operators to ensure the health and safety of swimmers. Increased numbers of cryptosporidiosis cases were reported in nearby states as well during 2013.

These outbreaks serve as reminders that the health of the community largely depends on individual participation, including hand hygiene and staying home while ill. These actions help protect those around them. Many outbreaks could have been avoided if ill persons had remained at home while ill with a diarrheal illness. Once illnesses spread among susceptible populations, it becomes increasingly difficult to contain outbreaks. Vigorous application of control measures, environmental cleaning, and extreme hand hygiene are often the most effective control measures public health can offer during acute gastrointestinal illness (AGI) outbreaks.

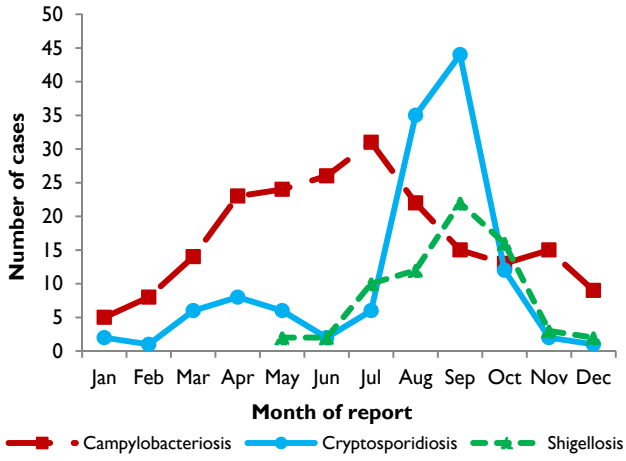
Foodborne and Diarrheal Diseases

Enteric illnesses are more commonly reported during spring and summer months (Figure 5). Campylobacteriosis is often associated with farming and ranching, as cattle and poultry are the most common reservoirs for the bacteria (*Campylobacter* spp.). Other likely sources of transmission can include undercooked foods, unpasteurized milk, and non-chlorinated water. Pets are often likely sources of infection as well.

Cryptosporidiosis and giardiasis, caused by the parasites *Cryptosporidium* and *Giardia*, respectively, are often associated with waterborne exposures, usually in recreational waters and untreated natural waters. Both protozoan organisms are highly resistant to chlorine treatment, allowing them to survive in swimming pools even after routine chemical treatment has been applied. In 2013, an outbreak of cryptosporidiosis was associated with several pools and splash parks, but an overall increase in cases contributed to the spike in reports as well. The reservoir for these organisms is usually humans, but cattle and other animals can also serve as reservoirs.

Shigella is an organism found only in humans and has a high infectivity rate. After a large outbreak of shigellosis in 2011, Montana experienced another outbreak in 2013, sickening over 60 individuals. Neighboring states reported a similar increase in incidence and laboratory pulse-field gel electrophoresis (PFGE) results confirmed that many of those cases were linked.

Figure 5. Select enteric illness cases by month — Montana, 2013



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 death. No cases of HUS were reported in Montana in 2013.

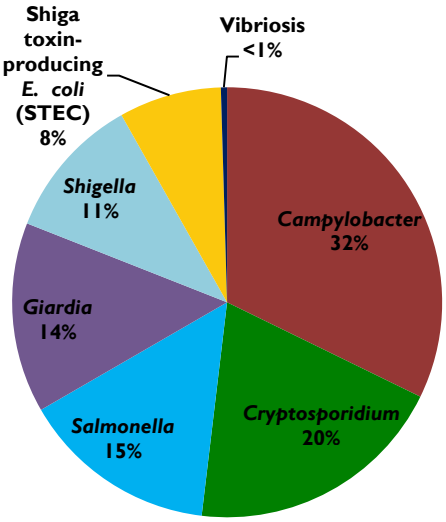
Salmonellosis can be acquired from infected birds, especially chicks, but can also be acquired through ingestion of contaminated foods and contact with reptiles, other pets, or humans. Vibriosis is new on the list of reportable conditions in Montana in 2013 but is rare. When it occurs, this illness is often foodborne and

often linked to seafood, such as oysters, clams, and shellfish.

A total of 635 enteric illnesses were reported in Montana in 2013. The most common agent was *Campylobacter* spp., accounting for 205 (32%) of all reportable enteric cases (Figure 6). Cryptosporidiosis was the second most common reported enteric condition with 125 (20%) cases reported in 2013. This is a 100% increase from cases reported in 2012, and was largely due to an outbreak associated with recreational water. However, many non-water associated cases were also reported during the year.

Also in 2013, ninety-four (15%) salmonellosis and 91(14%) giardiasis cases were reported. In addition, 69(11%) cases of shigellosis were reported. This was a significant increase, as in recent years an average of 11 cases has been reported in Montana annually. Additionally, 49 (8%) cases of STEC and 3 (<1%) cases of vibriosis were reported in the state (Figure 6).

Figure 6. Reported enteric pathogens — Montana, 2013



As noted in Table 1, campylobacteriosis carries the greatest burden of enteric illnesses in Montana with an incidence rate of 20.2 cases per 100,000 population, a slight reduction from 2012. However, campylobacteriosis continues to be a major burden of illness especially when compared to the 2012 national rate of 14.3 cases per 100,000 population. Cryptosporidiosis was reported at almost twice the rate compared to 2012 (12.3 cases vs. 6.9 per 100,000 population). Salmonellosis rates have been steady at 9.3 cases per 100,000 population. Giardiasis increased 30% from the previous year (9.0 cases per 100,000 population). The rate for shigellosis in 2013 is much higher than average due to a five month-long outbreak (6.8 vs. 1.1 cases per 100,000 population). Even though STEC is reported in low numbers, the rate in Montana is higher than the national average (4.8 vs. 1.1 cases per 100,000 population). Other enteric illnesses are reported at rates less than 1 case per 100,000 population.

Table 1. Enteric illnesses — Montana, 2013

Condition	Cases per 100,000
Campylobacteriosis	20.2
Cryptosporidiosis	12.3
Salmonellosis	9.3
Giardiasis	9.0
Shigellosis	6.8
Shiga-toxin producing *E. coli* (STEC)	4.8
Vibriosis	0.3

Montana cases were linked to several multistate outbreaks in 2013. Most were caused by *Salmonella* and linked to exposures to chicks. A few were part of larger foodborne outbreaks at restaurants out of state. A large norovirus outbreak affecting Yellowstone National Park and Grand Teton National Park impacted Montana residents as well. Over 540 individuals from several states became ill during the outbreak.

Forty-four enteric illness outbreaks were reported in 2013; of these, 26 (59%) were caused by norovirus and five others caused by *Campylobacter, Cryptosporidium, Shigella, Legionella* and histamines; 13 (30%) were categorized as acute gastroenteritis illness (AGI) as a pathogen could not be confirmed. Three-quarters of norovirus outbreaks that were sequenced, confirmed that the new strain GII.4 Sidney was the most prevalent strain of norovirus in Montana that year. Over 1300 Montanans became ill in those outbreaks, 53 of them were hospitalized and six died.

The majority of outbreaks (60%) occurred in long-term care facilities, assisted living centers, or similar institutions. 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 child daycares and schools (16%) and restaurants (5%).

CDEpi continues to improve methods for state-wide surveillance and outbreak investigation. Reducing the burden of enteric illnesses in Montana is continually a key focus. Several prevention campaigns aimed towards high risk situations for enteric illness are planned for 2014.

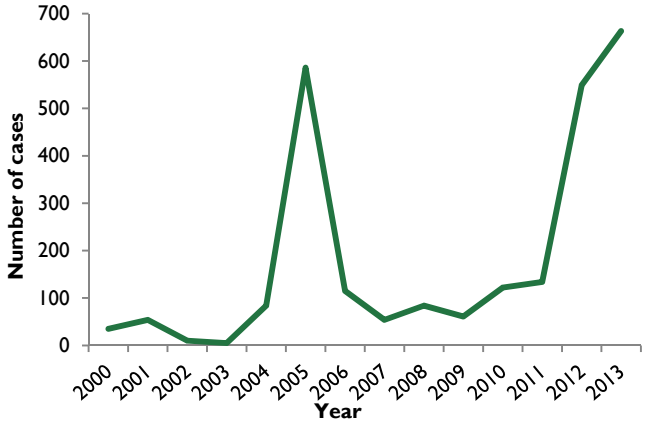
Vaccine Preventable Diseases

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. In Montana, such peaks occurred in 2005 and 2012, when 586 and 549 pertussis cases were reported, respectively. Despite that, case counts have remained consistent over the last 10 years (Figure 7). However, in 2013, the highest number of pertussis cases since 2005 were reported in Montana. The number of reported cases remained above baseline (6 cases per month) for the entire year as several counties experienced localized outbreaks. The majority of cases (43%) occurred among children aged 11–17 years.

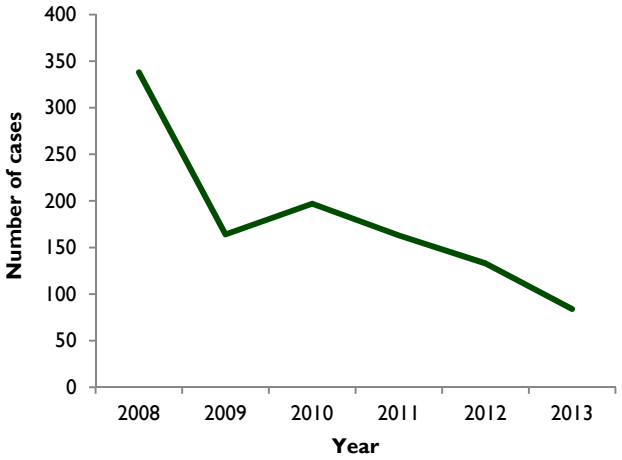
Figure 7. Reported pertussis cases — Montana, 2000–2013



Varicella

Varicella-zoster virus is the causative agent of chickenpox, which was the second most frequently reported vaccine preventable disease in 2013. The number of varicella cases reported in Montana has decreased from a peak of 337 cases in 2008 to 84 cases in 2013 (Figure 8). In 2013, cases were reported from 21 counties 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, 78% of children in this age group had received one dose of the varicella vaccine compared to 85% in 2012.

Figure 8. Reported varicella cases by year — Montana, 2008–2013

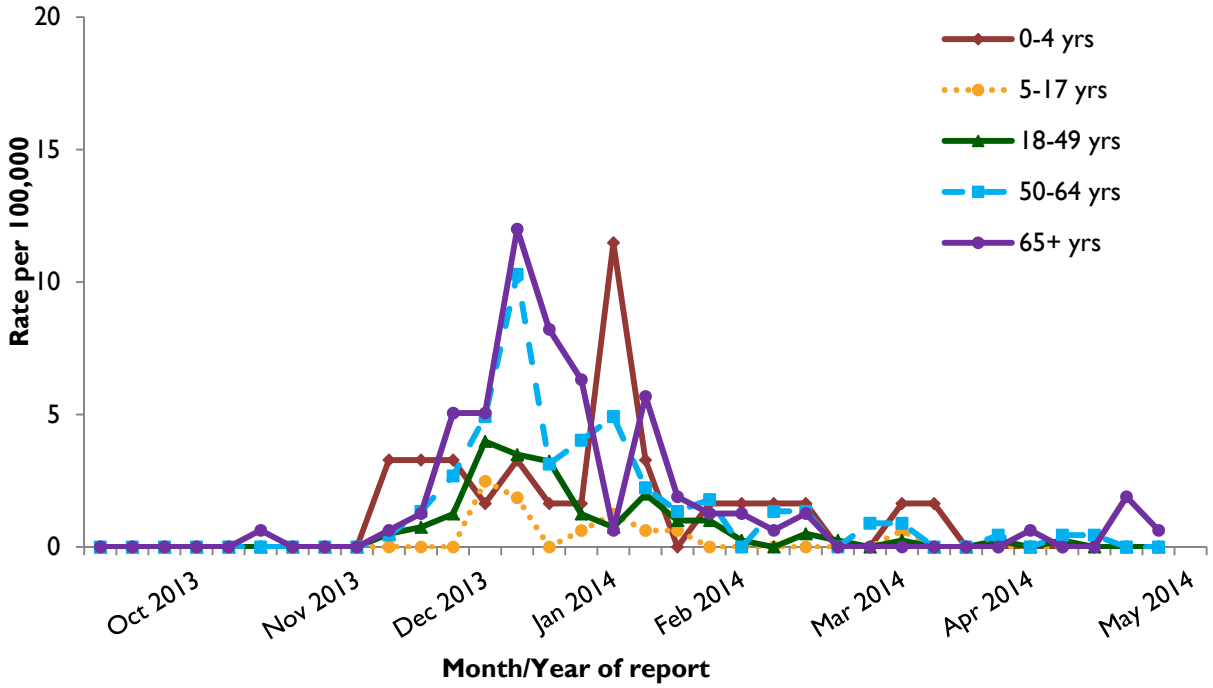


Influenza

A typical influenza season extends from October through mid-May. Nationally, the 2013–14 influenza season was similar to the previous season, with a peak of activity occurring at the end of December. In Montana, the reported number of influenza cases varied greatly across the state, including nine counties with <5 reported influenza cases (range: 0–508 cases). The cumulative influenza-related hospitalization rate in Montana (30.8 per 100,000 population) was lower than that of the United States (35.6 per 100,000 population).

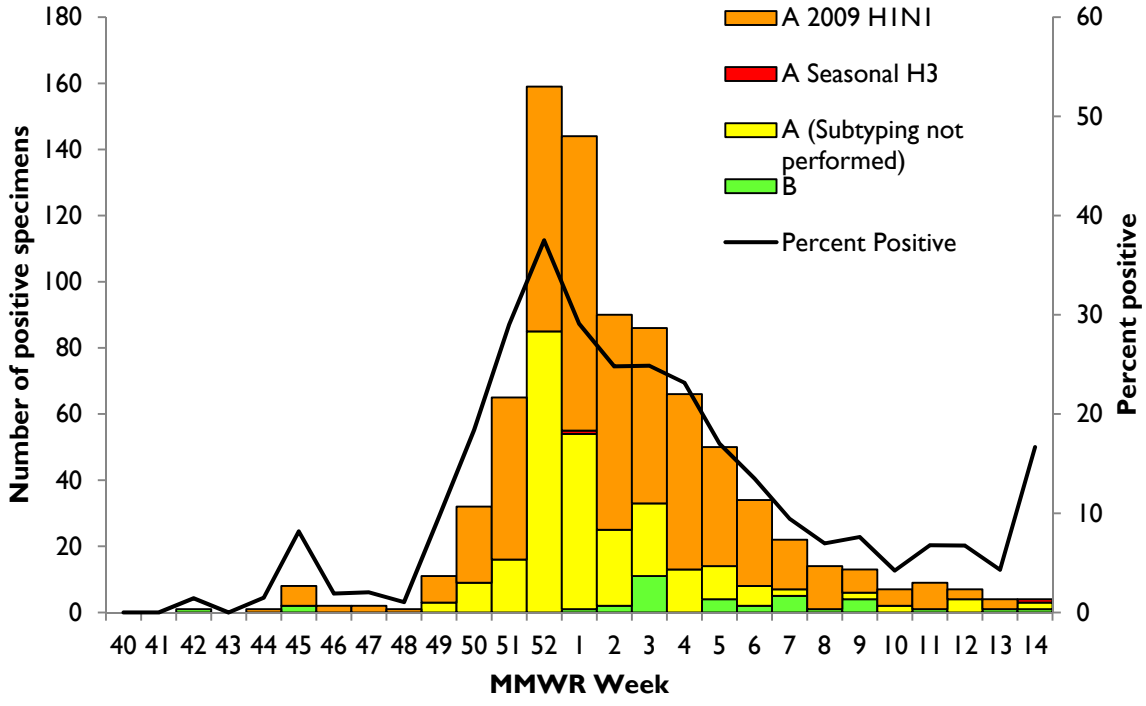
Influenza-related hospitalizations peaked in early January. By the end of the season, 313 Montanans were hospitalized due to influenza. The highest rate of hospitalizations was among adults aged ≥65 years (55.2/100,000 population, Figure 9). However, the 18-64 year age group accounted for 59% of all reported influenza-related hospitalizations. Of the 8 influenza-related deaths reported, 4 (50%) occurred among adults aged ≥65 years. No pediatric (aged 0–17 years) deaths were reported.

Figure 9. Influenza hospitalization rates by age group — Montana, 2013–14 Season



The Montana Public Health Laboratory (MTPHL) and five partner laboratories (Benefis Health System, Bozeman Deaconess Hospital, Kalispell Regional Medical Center, Missoula Community Hospital, and St. Patrick's Hospital) 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 2009 H1N1 subtype (Figure 10).

Figure 10. Influenza positive tests reported by the Montana Public Health Laboratory and partners — Montana 2013–2014



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, crossing the blood-brain barrier, causing serious invasive disease including meningitis and septicemia. There are 13 serotypes of *N. meningitidis*; 5 (A, B, C, W135, Y) are clinically important. In 2013, one meningococcal disease case was reported in Montana. An isolate from this case was identified as serogroup C.

Other Bacterial Invasive Diseases

During 2013, 31 cases of invasive *Streptococcus pneumoniae* were reported in Montana. The median age of patients was 55 years (range: 3–93 years). Six cases of *Haemophilus influenzae* were reported. Two-thirds of the *Haemophilus* cases were in children aged less than 5 years. No cases of invasive *H. influenzae* type B infection were reported in 2013.

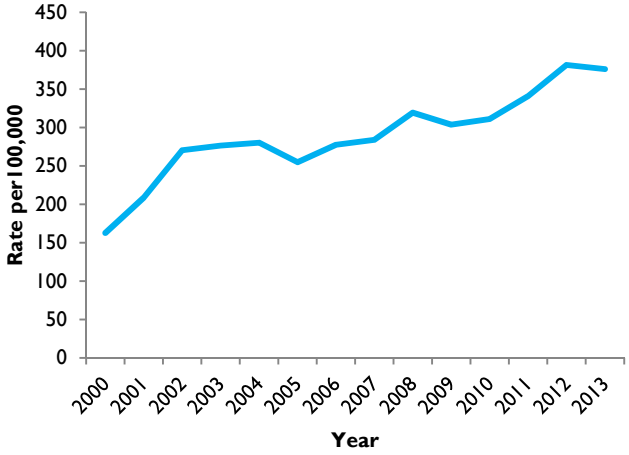
Sexually Transmitted Diseases

Sexually transmitted diseases (STDs) continue to be the most frequently reported communicable diseases in Montana. Nearly 4,100 STD cases were reported in 2013. All but three Montana counties reported at least one STD case.

Chlamydia

Chlamydia is a 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 ≤25 years, older women (>25 years) with risk factors, and all pregnant women. *C. trachomatis* infection is the most commonly reported communicable disease in Montana and the United States. Since 2000, cases and case rates have more than doubled in Montana. However, 16 fewer cases were reported in 2013 (3,818 cases) than in 2012, and the case rate remained stable (Figure 11).

Figure 11. Chlamydia case rate — Montana, 2000–2013



In Montana, 2,702 chlamydia cases (71%) 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 12).

Figure 12. Chlamydia cases by sex and age — Montana, 2013

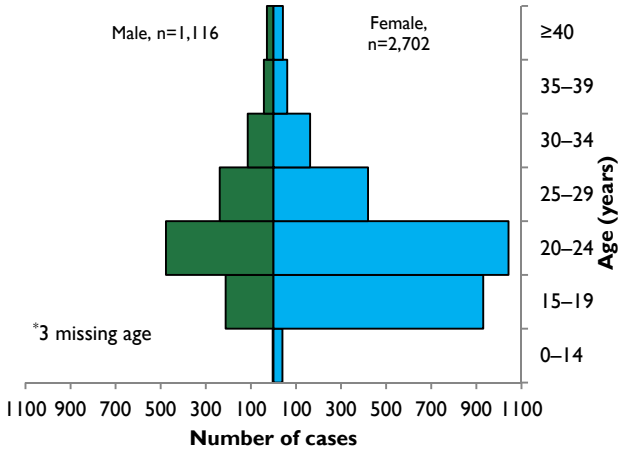


Figure 13 displays the age-adjusted case rate. The 15–19 years and 20–24 years age groups had the highest incidence rates. While the disease burden is probably highest among these age groups, the high rate is also attributable to screening recommendations that all sexually active females aged ≤25 years who present for

routine healthcare visits receive screening for chlamydia and gonorrhea.

Table 2 outlines the cases of chlamydia reported to DPHHS in 2013 by age, sex, and race. In 2013, the chlamydia incidence rate for persons reported as American Indian was more than five 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.

Figure 13. Chlamydia incidence rate by age — Montana, 2013

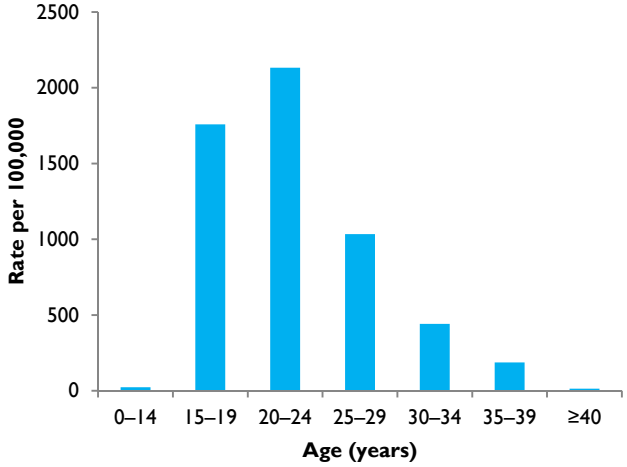


Table 2. Chlamydia cases by age, sex, and race — Montana, 2013*

	Female					Male					Total
Age (years)	White	American Indian	Other†	Missing	Total	White	American Indian	Other†	Missing	Total	
0–14	20	15		5	40	1	1	1		3	43
15–19	595	261	22	53	931	113	78	5	16	212	1143
20–24	714	244	22	63	1043	301	112	28	36	477	1520
25–29	266	129	2	23	420	167	47	8	16	238	658
30–34	93	54	7	9	163	74	23	6	11	114	277
35–39	35	23	1	2	61	26	11		5	42	103
≥ 40	28	11		3	42	24	2	1	2	29	71
unknown	1	1			2	1				1	3
Total	1752	738	54	158	2702	707	274	49	86	1116	3818

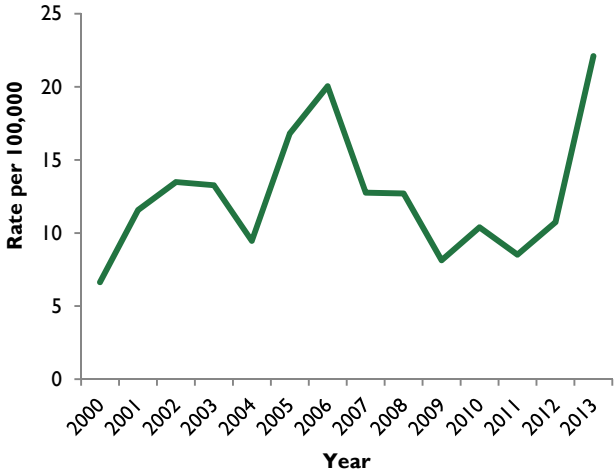
* Race classification is irrespective of ethnicity (Hispanic or non-Hispanic)
† Other includes persons of more than one race, black, and Asian/Pacific Islander

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.

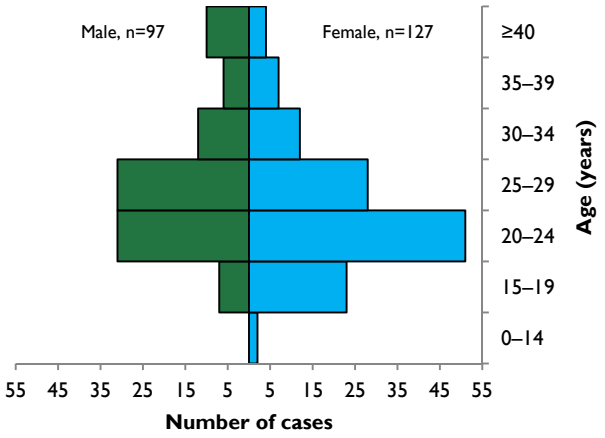
In 2013, 224 gonorrhea cases from 20 counties were reported in Montana, surpassing a recent high of 191 cases in 2006. The 224 cases correspond to an incidence rate of 22.1 cases per 100,000 population, more than a 100% increase from 2012 when 108 cases (10.7 cases/100,000 population) were reported. Since 2007, Montana's rate of gonorrhea cases had stabilized, averaging 10.5 cases per 100,000 population, until 2013 when 22.1 cases per 100,000 population were reported (Figure 14). The increase in cases in 2013 from 2012 was much steeper than the increases from 2004 to 2005 or 2005 to 2006.

Figure 14. Gonorrhea incidence rate — Montana, 2000–2013



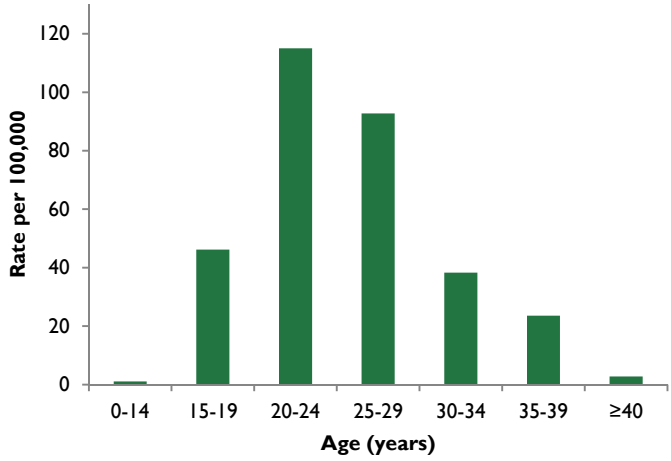
In Montana, 127 gonorrhea cases (57%) were reported in females. Figure 15 displays the distribution of cases by sex and age group. Figure 16 displays the age-adjusted case rate in 2013. Most of the cases continue to occur in the 20–24 and 25–29 year age groups, which account for more than 60% of the cases and only 13% of the general population. As with chlamydia, this may be related to routine STD screening practices for sexually active women ≤25 years of age. Of the 141 cases of gonorrhea diagnosed in the 20–24 year age group, 78 (55%) occurred among females.

Figure 15. Gonorrhea cases by sex and age — Montana, 2013



While there was an increase in cases among all races, American Indians disproportionately accounted for the 224 cases in 2013. The largest and steepest increase occurred among American Indians. Table 3 outlines the demographics of gonorrhea cases in 2013 by age, sex, and race.

Figure 16. Gonorrhea case rate by age — Montana, 2013



In 2013, the gonorrhea incidence rate was highest among American Indians (171 cases per 100,000 population). This rate is nearly 25 times greater than those reported as white (6.8 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 likely 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, 2013*

	Female					Male					
Age (years)	White	American Indian	Other†	Missing	Total	White	American Indian	Other†	Missing	Total	Total
0–14	1	1	--	--	2	--	--	--	--	0	2
15–19	3	19	1	--	23	1	5	--	1	7	30
20–24	12	35	3	1	51	12	13	--	6	31	82
25–29	7	15	1	5	28	9	13	1	8	31	59
30–34	2	6	2	2	12	4	4	3	1	12	24
35–39	1	5	1	--	7	3	2	1	--	6	13
≥ 40	1	3	--	--	4	6	1	1	2	10	14
Total	27	84	8	8	127	35	38	6	18	97	224

* Race classification is irrespective of ethnicity (Hispanic or non-Hispanic)
† Other includes persons of more than one race, black, and Asian/Pacific Islander

Syphilis

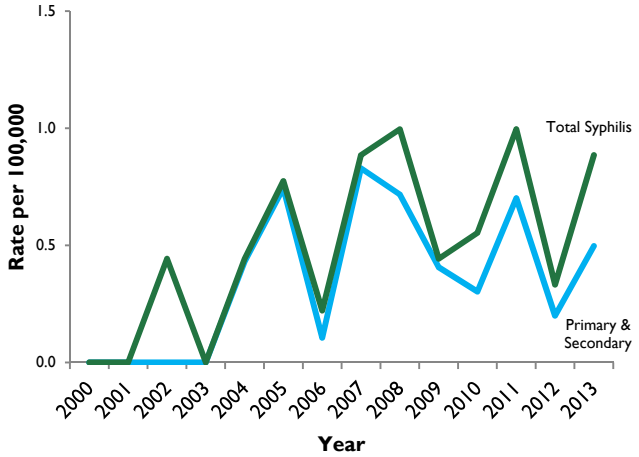
Syphilis is a genital ulcerative STD caused by the bacterium *Treponema pallidum*. It has often been called "the great imitator" because so many of the signs and symptoms of illness are indistinguishable from those of other diseases. *T. pallidum* is passed from person-to-person through direct contact 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 2000, 10 or fewer cases of syphilis (all stages) have been reported in Montana each year. In 2013, eight cases of syphilis were reported; five were staged as primary or secondary. This was an increase from the three cases, two primary or secondary, reported in 2012.

Montana's primary and secondary syphilis rate increased to 0.5 cases per 100,000 population in 2013 from 0.2 in 2012. The U.S. rate has been much higher, around 5.0 cases per 100,000 population in the last five years (2008–2012). Figure 17 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.[5] In 2013, four of the five cases of syphilis diagnosed among men were at the primary or secondary stage. All of the male patients reported having sex with men (MSM). Moreover, among the male patients, one was previously diagnosed with HIV infection and one was concurrently diagnosed.

Figure 17. Syphilis case rate — Montana, 2000–2013



HIV/AIDS

In 2013, 22 newly diagnosed cases of HIV infection were reported, an incidence rate of 2.2 cases per 100,000 population compared with an estimated U.S. incidence rate of 15.8 cases per 100,000 population in 2011 (Figure 18).[6] During 2000–2013, 15–32 cases of HIV infection were diagnosed each year, mostly among males (Figure 19).

The majority of HIV infections in Montana continue to be diagnosed among white men, with 12 (55%) in 2013. Fifteen (75%) of the 20 men diagnosed with HIV infection reported sexual contact with another man (MSM) as a risk factor, including one that also reported injection drug use (IDU). Both of the women reported high-risk heterosexual contact as a risk factor. Four patients did not have a risk factor reported.

Figure 18. Case rate of newly diagnosed HIV infection — Montana, 2000–2013

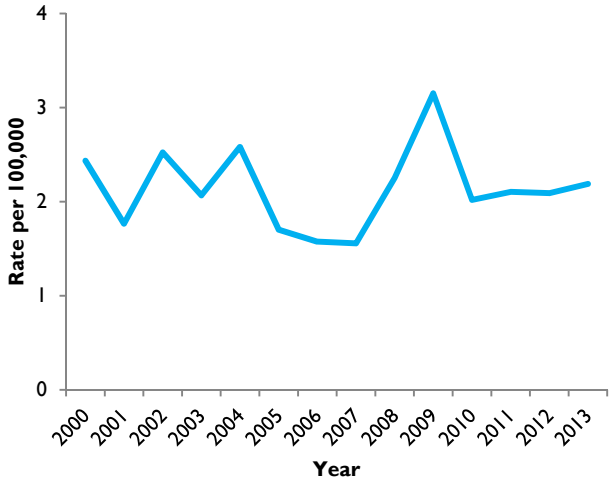
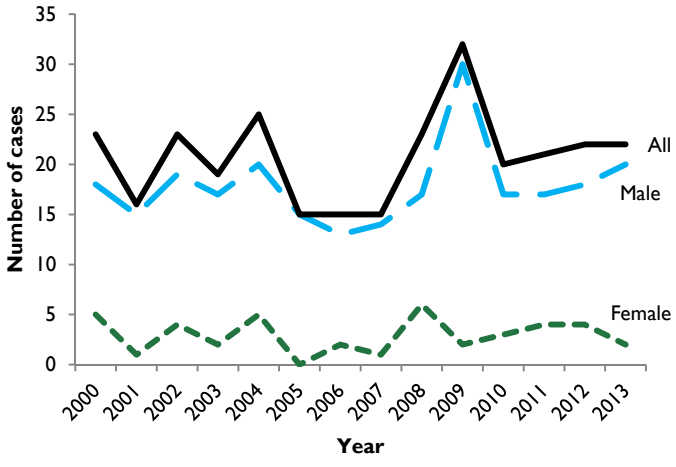


Figure 19: Newly diagnosed HIV infections by year and sex — Montana, 2000–2013



Five (22%) of the 22 cases were diagnosed with 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 2013.

Since 1985, more than 1,200 HIV cases have been reported to DPHHS. Fifty-six percent (682) of the cases reported were first 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. Newly reported persons diagnosed with HIV infection (N=22) — Montana, 2013*

Characteristics	Number
Sex	
Male	20
Female	2
Disease progression	
HIV only	16
HIV and later AIDS	1
HIV & AIDS diagnosed simultaneously*	5
Age at diagnosis (years)	
13–19	1
20–29	5
30–39	6
40–49	5
50–59	4
>59	1
Ethnicity, race	
Non-Hispanic, white	13
Non-Hispanic, American Indian/Alaska Native	2
Hispanic, any race	1
Non-Hispanic, black/African American	1
Non-Hispanic, other†	4
Unknown	1
Risk category by sex‡	
Male only:	
Male sexual contact w/ another male (MSM)	14
Injection drug use (IDU)	1
MSM & IDU	1
Heterosexual contact§	--
No identified risk	4
Female only:	
Heterosexual contact§	2

* 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 mixed 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

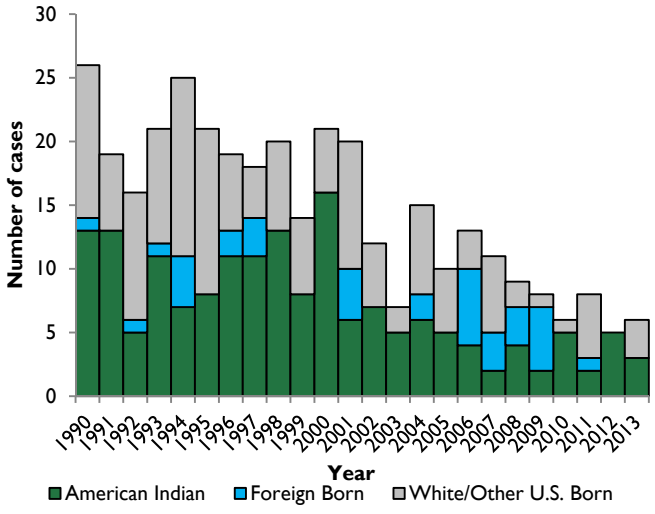
As of December 31, 2013, more than 600 HIV-infected persons were known to be living in Montana. Eighty-five percent (n=519) of HIV-infected persons are male and 83% (n=500) are non-Hispanic white. Nearly 80% of HIV-infected men were identified as (MSM) or (IDU), and nearly 80% of HIV-infected women reported 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 aged ≤5 years.

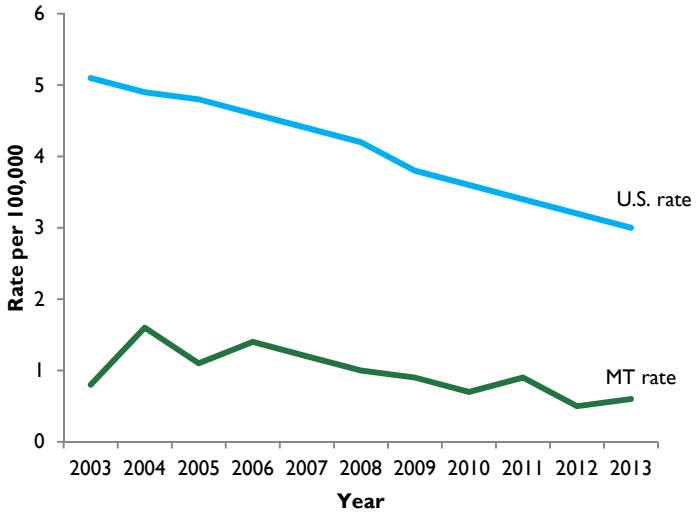
The number of TB cases reported annually in Montana has steadily decreased (Figure 20). During the 1990s, an average of 20 cases was reported annually. From 2000–2013, an average of 10.8 cases per year was reported, with a range of 6 cases in 2013 to 21 cases in 2000 (Figure 21). TB cases among American Indians have declined from an average of 9.7 cases per year in the 1990s to 5.1 cases per year during 2000–2013. TB among foreign-born persons has increased to an average of 1.7 cases per year during 2000–2013 compared with an average of one case per year during the 1990s (Range: 0–6 cases per year).

Figure 20. Reported active tuberculosis cases — Montana, 1990–2013



Six active cases of TB were reported in Montana in 2013. Counties of residence included Big Horn, Dawson, Hill, Lincoln, Richland, and Roosevelt. The 2013 Montana TB incidence rate was 0.6 cases per 100,000 population, significantly lower than the 2013 U.S case rate of 3.0 per 100,000 (Table 5). Two of the TB cases reported in 2013 were identified as white, three as American Indian, and one as black/African American. None of the 2013 cases 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 2013, three completed tuberculosis therapy, one is currently on therapy, and two died prior to therapy completion. Six pediatric cases (aged <15 years) have been reported since 2000; none were reported in 2013. Pediatric TB cases are considered a sentinel public health event because they provide evidence of recent TB transmission.

Figure 21. Tuberculosis incidence rate — Montana and United States, 2000–2013



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.

Table 5. Tuberculosis case summary — Montana, 2013

Characteristics	Number
New TB Cases	6
Incidence Rates	
Montana (total)	0.6/100,000
American Indian	4.2/100,000
Sex	
Male	5
Female	1
Age at diagnosis (years)	
<5	0
5-14	0
15-24	0
25-44	1
45–64	3
≥65	2
Ethnicity, race	
Non-Hispanic, White	2
Non-Hispanic, American Indian	3
Non-Hispanic, Black/African American	1
Site of Disease	
Pulmonary/Pleural	4
Extrapulmonary	1
Pulmonary & Extrapulmonary	1
Drug Resistance	
No resistance	5
Isoniazid resistance	1
Multiple-drug resistant	0
Country of Origin	
U.S.-born	6
Foreign-born	0

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 2013, six cases of acute HAV infection were reported from three counties in Montana. The median age of cases was 28 years. Four patients 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 2013, four acute and 25 chronic HBV infections were

reported in Montana. All of the acute cases occurred among adult males with a median age of 57 years. Case investigation revealed no known risk factors reported for the disease.

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 50–70 years of age. Recently revised CDC recommendations include one-time testing of persons born during 1945–1965, regardless of risk history.

In 2013, approximately 1,100 confirmed cases of HCV were reported in Montana. The median age of patients was 45 years (range: 4 months–86 years). In 2013, nearly 30% of newly reported cases of HCV infection were in persons aged 50–59 years, the most common age group.

Of the HCV cases reported, 16 (1.4%) were acute diagnoses (1.6 cases/100,000), an increase from 2012.

The acute hepatitis C patients had a median age of 24 years (range: 4 months–54 years) and eight (50%) were female. Less than half (44%) reported recent intravenous drug use (IVDU) prior to onset of symptoms.

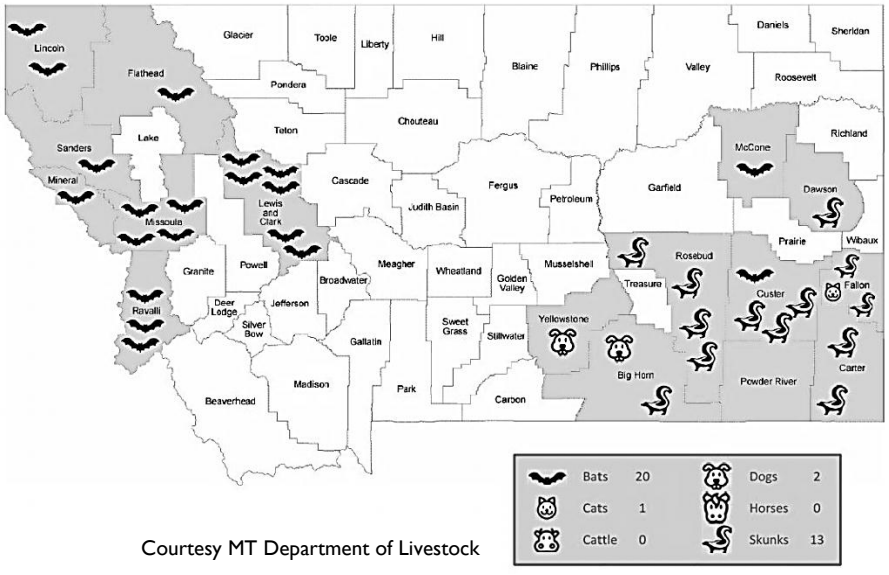
Zoonotic and Vector-borne Diseases

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. From June through December 2013, 79 human exposures to a species susceptible to rabies were reported.

During 2013, 36 animals from 17 counties in Montana tested positive for the rabies virus. Among those animals tested, 20 (11%) of 176 bats, 13 (41%) of 32 skunks, 1 (1%) of 94 cats, and 2 (2%) of 100 dogs were positive for rabies virus. The proportion of all positive tests by species is shown in Figure 22. Zero human cases of rabies were reported in 2013.

Figure 22. Number of positive rabies tests by species — Montana, 2013



Courtesy MT Department of Livestock

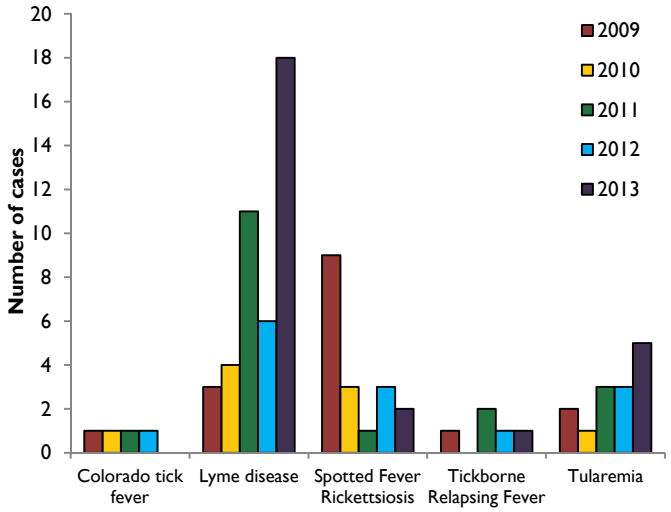
Tickborne Diseases

Additional vector-borne pathogens present in Montana and transmissible to humans include those that cause Rocky Mountain spotted fever (*Rickettsia rickettsii*), Colorado tick fever (*Coltivirus* spp.), tick-borne relapsing fever (*Borrelia hermsii*), tularemia (*Francisella tularensis*), and plague (*Yersinia pestis*). In addition to vector-borne transmission (e.g., through ticks or fleas), *F. tularensis* and *Y. pestis* can be transmitted through direct contact, or water contaminated with blood or tissues from infected wild animals that serve as disease carriers (e.g., rabbits and rodents).

Five cases of tularemia were reported in 2013. The median age of cases was 37 years (range: 3–80 years). Three of the five cases (60%) reported a tick bite prior to onset of symptoms. Zero cases of Colorado tick fever were reported in 2013. The last reported case of plague in Montana was in 1987.

Eighteen cases of Lyme disease were reported in Montana during 2013 (Figure 23); however, these cases were travel-associated and acquired out of state. To date, the Lyme disease tick vector (*Ixodes* spp.) has not been detected in Montana.

Figure 23. Reported cases of tickborne diseases — Montana, 2009–2013



West Nile Virus

West Nile virus (WNV) is an arthropod-borne virus (arbovirus) that is transmitted by infected mosquitoes. The majority of persons infected with WNV do not exhibit symptoms. Less than 1% of human cases develop West Nile neuroinvasive disease (WNND), a serious and potentially life-threatening condition. In 2013, 2,469 human cases of WNV infection and 1,267 cases of WNND were reported from 48 states in the United States.

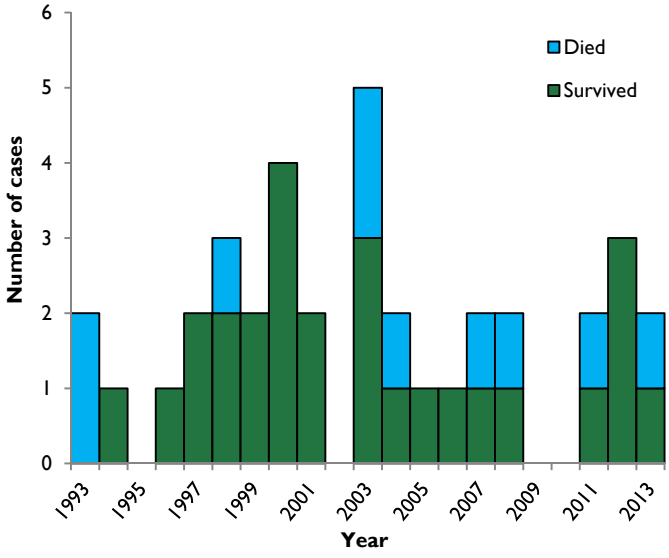
Thirty-eight cases of WNV infection were reported in Montana during 2013. Cases were reported from 18 counties with dates of illness onset ranging from August–September. Ten cases (26.3%) of WNND, including two deaths, were reported.

Associations have been demonstrated between WNV activity and environmental conditions, such as temperature and rainfall, which commonly fluctuate year-to-year. Environmental and other factors such as animal reservoir populations, contribute to seasonal variability in WNV activity. Therefore, the level of WNV activity during one year is not indicative of WNV activity during subsequent years. While the incidence of WNV disease has decreased in Montana since 2007, appropriate precautions should still be taken to minimize mosquito exposure, especially from the time mosquitoes emerge through the first frost. In Montana, this typically occurs between June–September. Each summer should be approached with mosquito-bite prevention in mind.

Hantavirus

Hantavirus is transmitted to humans through exposure to infected rodent tissues or excrement, including dried feces. The rodent hosts that transmit hantavirus to humans are widespread in Montana. Since 1993 Montana has reported 37 cases of Hantavirus Pulmonary Syndrome, including ten deaths (Figure 24). Two human cases, including one death, were reported in Montana in 2013.

Figure 24. Reported hantavirus cases and outcome — Montana, 1993–2013



Other Diseases

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 during 2013 were five unrelated cases of histoplasmosis reported in Montana residents[7]. None of the individuals reported recent 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.

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Appendix I: Cases and comparative statistics for reportable communicable diseases — Montana, 2013*†

Condition	2013 cases	5 year median	2013 rate per 100,000
Campylobacteriosis	205	190	20.2
Chlamydia trachomatis infection	3818	3104	376.1
Coccidioidomycosis	3	4	0.3
Cryptosporidiosis	125	58	12.3
Dengue Fever	5	2	0.5
Ehrlichiosis chaffeensis‡	1	N/A	0.1
Giardiasis	91	93	9.0
Gonorrhea	224	101	22.1
Haemophilus influenzae, invasive	6	3	0.6
Hantavirus pulmonary syndrome	2	2	0.2
Hepatitis A, acute	6	4	0.6
Hepatitis B virus infection, Chronic	21	4	2.1
Hepatitis B, acute	4	2	0.4
Hepatitis C Virus Infection, chronic or resolved	1141	945	112.5
Hepatitis C, acute	16	4	1.6
Histoplasmosis	5	N/A	0.5
HIV	22	22	2.2
Legionellosis	10	4	1.0
Leishmaniasis	1	N/A	0.1
Lyme disease	18	7	1.8
Meningococcal disease	1	6	0.1
Pertussis	663	122	65.3
Q fever	2	1.5	0.2
Rabies, animal	36	18	3.6
Salmonellosis	94	112	9.3
Shiga toxin-producing *Escherichia coli* (STEC)	49	39	4.8
Shigellosis	69	11	6.8
Spotted Fever Rickettsiosis	2	3	0.2
Streptococcus pneumoniae, invasive	31	23	3.1
Syphilis	8	5	0.8
Tickborne Relapsing Fever	1	1	0.1
Transmissible Spongiform Encephalopathies (TSE)	3	1.5	0.3
Tuberculosis	6	8	0.6
Tularemia	5	2.5	0.5
Varicella (Chickenpox)	84	164	8.3
Vibriosis‡	3	2	0.3
West Nile	38	5.5	3.7

*Confirmed and probable cases only. †Conditions for which there were zero (0) cases in 2013 are not reflected in this table. ‡New to the Montana list of reportable diseases beginning in 2013.

Appendix II: Cases of reportable communicable diseases by disease group and jurisdiction— Montana, 2013

Table 1. Case counts of enteric diseases by jurisdiction of residence — Montana, 2013

County/Tribal Jurisdiction	Campylobacteriosis	Cryptosporidiosis	Giardiasis	Salmonellosis	Shigellosis	STEC*	Vibriosis
Beaverhead	3	--	--	2	--	--	--
Big Horn/Crow	4	3	--	1	23	--	--
Blaine/Ft. Belknap	1	--	1	--	--	--	--
Broadwater	--	2	--	--	--	--	--
Carbon	6	1	--	1	--	1	--
Carter	--	--	--	--	--	--	--
Cascade	16	18	11	12	1	3	--
Chouteau	1	8	--	--	--	--	--
Custer	5	1	1	1	3	--	--
Daniels	1	1	2	--	--	--	--
Dawson	--	--	1	--	--	--	--
Deer Lodge	--	--	2	1	--	--	--
Fallon	1	1	--	--	--	1	--
Fergus	4	1	1	1	--	--	--
Flathead	10	16	14	8	--	3	2
Gallatin	25	10	18	15	5	11	1
Garfield	2	--	--	--	--	--	--
Glacier/Blackfeet	1	--	--	--	--	1	--
Golden Valley	1	--	--	--	--	--	--
Granite	1	--	1	--	--	--	--
Hill/Rocky Boy	3	--	1	2	--	--	--
Jefferson	--	--	--	1	--	--	--
Judith Basin	1	--	--	--	--	--	--
Lake/CSKT	5	1	3	1	--	1	--
Lewis & Clark	16	--	7	11	1	1	--
Liberty	2	--	1	1	--	--	--
Lincoln	11	1	--	--	2	--	--
Madison	2	1	--	1	--	1	--
McCone	1	--	--	--	--	--	--
Meagher	4	1	--	--	--	--	--
Mineral	1	--	1	1	--	--	--
Missoula	14	7	11	9	1	5	--
Musselshell	1	1	--	--	--	--	--
Park	3	3	1	2	1	1	--
Petroleum	--	--	--	--	--	--	--
Phillips	1	--	--	--	--	--	--
Pondera	1	1	--	--	--	--	--
Powder River	--	--	--	--	--	--	--
Powell/MSP	6	1	2	--	--	--	--
Prairie	--	--	--	--	--	--	--
Ravalli	8	1	2	1	--	2	--
Richland	1	1	--	1	--	--	--
Roosevelt/Ft. Peck	4	1	1	1	1	--	--
Rosebud/N. Cheyenne	2	1	2	--	14	1	--
Sanders	4	--	1	--	--	--	--
Sheridan	2	--	1	--	--	--	--
Silver Bow	1	--	1	1	1	5	--
Stillwater	2	1	--	--	--	--	--
Sweet Grass	1	1	--	--	--	--	--
Teton	--	--	1	--	--	--	--
Toole	--	1	--	3	--	--	--
Treasure	--	--	--	--	--	--	--
Valley	--	--	--	--	--	--	--
Wheatland	1	--	--	--	--	--	--
Wibaux	1	--	--	--	--	--	--
Yellowstone	24	39	3	16	16	10	--
TOTAL 2013	205	125	91	94	69	49	3

*STEC = Shiga toxin-producing *Escherichia coli*

Table 2. Case counts of selected vaccine-preventable diseases by jurisdiction — Montana, 2013

County/Tribal Jurisdiction	Pertussis	Varicella (Chickenpox)
Beaverhead	2	6
Big Horn/Crow	1	--
Blaine/Ft. Belknap	--	--
Broadwater	11	1
Carbon	4	--
Carter	--	--
Cascade	3	1
Chouteau	--	1
Custer	2	3
Daniels	3	--
Dawson	7	--
Deer Lodge	38	3
Fallon	--	--
Fergus	18	--
Flathead	252	6
Gallatin	25	8
Garfield	--	--
Glacier/Blackfeet	3	--
Golden Valley	--	2
Granite	--	--
Hill/Rocky Boy	1	6
Jefferson	8	--
Judith Basin	--	--
Lake/CSKT	7	1
Lewis & Clark	92	10
Liberty	4	--
Lincoln	16	1
Madison	1	--
McCone	--	--
Meagher	--	--
Mineral	--	2
Missoula	14	2
Musselshell	4	--
Park	2	4
Petroleum	--	--
Phillips	--	--
Pondera	11	--
Powder River	1	6
Powell/MSP	2	--
Prairie	--	--
Ravalli	6	1
Richland	10	3
Roosevelt/Ft. Peck	18	1
Rosebud/N. Cheyenne	4	--
Sanders	1	--
Sheridan	2	--
Silver Bow	29	--
Stillwater	1	--
Sweet Grass	--	--
Teton	2	1
Toole	1	6
Treasure	--	--
Valley	--	5
Wheatland	--	--
Wibaux	--	--
Yellowstone	57	4
TOTAL 2013	663	84

Table 3. Case counts of invasive diseases by jurisdiction — Montana, 2013

County/Tribal Jurisdiction	*Haemophilus influenzae*, all serotypes	Meningococcal Disease	*Streptococcus pneumoniae*	Transmissible Spongiform Encephalopathies
Beaverhead	--	--	--	--
Big Horn/Crow	--	--	--	--
Blaine/Ft. Belknap	--	--	--	--
Broadwater	--	--	1	--
Carbon	--	--	--	--
Carter	--	--	--	--
Cascade	--	--	--	1
Chouteau	--	--	--	--
Custer	--	--	--	--
Daniels	--	--	--	--
Dawson	--	--	--	--
Deer Lodge	--	--	--	--
Fallon	--	--	--	--
Fergus	--	--	--	--
Flathead	--	--	3	--
Gallatin	--	--	--	--
Garfield	--	--	--	--
Glacier/Blackfeet	1	--	--	--
Golden Valley	--	--	--	--
Granite	--	--	--	--
Hill/Rocky Boy	2	--	2	--
Jefferson	--	1	--	--
Judith Basin	--	--	--	--
Lake/CSKT	--	--	7	--
Lewis & Clark	2	--	3	--
Liberty	--	--	--	--
Lincoln	--	--	1	--
Madison	--	--	--	--
McCone	--	--	--	--
Meagher	--	--	--	--
Mineral	1	--	1	--
Missoula	--	--	1	--
Musselshell	--	--	--	--
Park	--	--	--	--
Petroleum	--	--	--	--
Phillips	--	--	--	--
Pondera	--	--	--	1
Powder River	--	--	--	--
Powell/MSP	--	--	--	--
Prairie	--	--	--	--
Ravalli	--	--	2	--
Richland	--	--	--	--
Roosevelt/Ft. Peck	--	--	2	--
Rosebud/N. Cheyenne	--	--	1	1
Sanders	--	--	1	--
Sheridan	--	--	--	--
Silver Bow	--	--	--	--
Stillwater	--	--	--	--
Sweet Grass	--	--	--	--
Teton	--	--	--	--
Toole	--	--	--	--
Treasure	--	--	--	--
Valley	--	--	1	--
Wheatland	--	--	--	--
Wibaux	--	--	--	--
Yellowstone	--	--	5	--
TOTAL 2013	6	1	31	3

Table 4. Case counts of sexually transmitted diseases by jurisdiction — Montana, 2013

County/Tribal Jurisdiction	Chlamydia	Gonorrhea	Syphilis	HIV
Beaverhead	44	--	--	--
Big Horn/Crow	167	12	1	--
Blaine/Ft. Belknap	47	--	--	--
Broadwater	7	--	--	--
Carbon	13	--	--	--
Carter	1	--	--	--
Cascade	438	5	1	2
Chouteau	2	--	--	--
Custer	50	1	--	1
Daniels	--	1	--	--
Dawson	28	3	--	--
Deer Lodge	29	1	--	--
Fallon	6	--	--	--
Fergus	11	--	--	--
Flathead	257	7	1	3
Gallatin	327	3	--	1
Garfield	--	--	--	--
Glacier/Blackfeet	164	5	--	--
Golden Valley	1	--	--	--
Granite	5	--	--	--
Hill/Rocky Boy	142	1	--	--
Jefferson	13	--	--	--
Judith Basin	--	--	--	--
Lake/CSKT	142	44	1	1
Lewis & Clark	165	4	1	--
Liberty	1	--	--	--
Lincoln	37	1	--	--
Madison	14	--	--	1
McCone	3	--	--	--
Meagher	2	--	1	--
Mineral	7	--	--	--
Missoula	387	19	1	4
Musselshell	7	--	--	--
Park	19	1	--	--
Petroleum	--	--	--	--
Phillips	6	--	--	--
Pondera	3	--	--	1
Powder River	5	--	--	--
Powell/MSP	12	--	--	--
Prairie	3	--	--	--
Ravalli	58	--	--	--
Richland	64	--	--	1
Roosevelt/Ft. Peck	173	40	--	1
Rosebud/N. Cheyenne	140	28	--	--
Sanders	14	--	--	--
Sheridan	5	--	--	--
Silver Bow	106	5	--	2
Stillwater	6	--	--	--
Sweet Grass	2	--	--	--
Teton	8	--	--	--
Toole	7	1	--	--
Treasure	1	--	--	--
Valley	14	--	--	--
Wheatland	3	--	--	--
Wibaux	4	--	--	--
Yellowstone	648	42	1	4
TOTAL 2013	3818	224	8	22

Table 5. Case counts of viral hepatitis by jurisdiction — Montana, 2013

County/Tribal Jurisdiction	Hepatitis A, Acute	Hepatitis B, Acute	Hepatitis B, Chronic*	Hepatitis C, Acute	Hepatitis C, Chronic*
Beaverhead	--	--	--	1	7
Big Horn/Crow	--	--	--	1	15
Blaine/Ft. Belknap	--	--	1	--	8
Broadwater	--	--	--	--	--
Carbon	--	--	--	--	9
Carter	--	--	--	--	--
Cascade	--	--	1	2	91
Chouteau	--	--	--	--	1
Custer	--	--	--	2	8
Daniels	--	--	--	--	3
Dawson	--	--	--	--	3
Deer Lodge	--	--	--	--	8
Fallon	--	--	--	--	--
Fergus	--	--	1	--	16
Flathead	--	1	2	--	103
Gallatin	--	1	1	--	43
Garfield	--	--	--	--	--
Glacier/Blackfeet	--	--	--	1	52
Golden Valley	--	--	--	--	1
Granite	--	--	--	--	--
Hill/Rocky Boy	--	--	--	--	16
Jefferson	--	--	--	1	6
Judith Basin	--	--	--	--	2
Lake/CSKT	--	--	--	--	37
Lewis & Clark	--	1	--	--	56
Liberty	--	--	--	--	1
Lincoln	--	--	1	2	22
Madison	--	--	--	--	1
McCone	--	--	--	--	--
Meagher	--	--	--	--	--
Mineral	--	--	--	--	7
Missoula	1	1	5	1	125
Musselshell	--	--	--	--	2
Park	--	--	--	--	28
Petroleum	--	--	--	--	--
Phillips	--	--	--	--	1
Pondera	--	--	--	--	1
Powder River	--	--	--	--	--
Powell/MSP	--	--	--	1	50
Prairie	--	--	--	--	--
Ravalli	3	--	--	--	14
Richland	--	--	--	--	10
Roosevelt/Ft. Peck	--	--	--	--	96
Rosebud/N. Cheyenne	--	--	--	--	10
Sanders	2	--	--	--	6
Sheridan	--	--	--	--	5
Silver Bow	--	--	3	--	38
Stillwater	--	--	--	--	3
Sweet Grass	--	--	--	--	--
Teton	--	--	--	--	2
Toole	--	--	1	--	4
Treasure	--	--	--	--	--
Valley	--	--	--	--	3
Wheatland	--	--	--	--	2
Wibaux	--	--	--	--	--
Yellowstone	--	--	5	4	225
TOTAL 2013	6	4	21	16	1141

*Counts are confirmed and probable cases that were newly reported to DPHHS in 2013.

Table 6. Case counts of zoonotic and vector--borne diseases by jurisdiction — Montana, 2013

County/Tribal Jurisdiction	*Ehrlichiosis chaffeensis*	Hantavirus Pulmonary Syndrome	Q Fever	Rabies, Animal	Spotted Fever Rickettsiosis	Tickborne Relapsing Fever	Tularemia	West Nile
Beaverhead	--	--	--	--	--	--	--	--
Big Horn/Crow	--	--	--	2	--	--	1	1
Blaine/Ft. Belknap	--	--	--	--	--	--	--	1
Broadwater	--	--	--	--	--	--	--	--
Carbon	--	1	--	--	--	--	--	1
Carter	--	--	--	2	--	--	--	--
Cascade	--	--	--	--	--	--	--	1
Chouteau	--	--	--	--	--	--	--	--
Custer	--	--	--	4	--	--	1	6
Daniels	--	--	--	--	--	--	--	--
Dawson	--	--	--	1	--	--	--	--
Deer Lodge	--	--	2	--	--	--	--	--
Fallon	--	--	--	3	--	--	--	--
Fergus	--	--	--	--	--	--	--	--
Flathead	1	--	--	1	--	--	--	--
Gallatin	--	1	--	--	--	--	--	--
Garfield	--	--	--	--	--	--	--	--
Glacier/Blackfeet	--	--	--	--	--	--	--	--
Golden Valley	--	--	--	--	--	--	--	--
Granite	--	--	--	--	--	--	--	--
Hill/Rocky Boy	--	--	--	--	--	--	--	4
Jefferson	--	--	--	--	--	--	--	--
Judith Basin	--	--	--	--	--	--	--	--
Lake/CSKT	--	--	--	2	--	--	1	--
Lewis & Clark	--	--	--	6	1	--	--	--
Liberty	--	--	--	--	--	--	--	1
Lincoln	--	--	--	2	--	--	--	--
Madison	--	--	--	--	--	--	--	--
McCone	--	--	--	1	--	--	--	1
Meagher	--	--	--	--	--	--	--	--
Mineral	--	--	--	1	--	--	--	--
Missoula	--	--	--	2	--	--	--	--
Musselshell	--	--	--	--	--	--	--	--
Park	--	--	--	--	--	--	--	--
Petroleum	--	--	--	--	--	--	--	--
Phillips	--	--	--	--	--	--	--	--
Pondera	--	--	--	--	--	--	--	--
Powder River	--	--	--	--	--	--	--	2
Powell/MSP	--	--	--	--	--	--	--	--
Prairie	--	--	--	--	--	--	--	--
Ravalli	--	1	--	3	1	1	1	1
Richland	--	--	--	--	--	--	--	--
Roosevelt/Ft. Peck	--	--	--	--	--	--	--	--
Rosebud/N. Cheyenne	--	--	--	4	--	--	--	--
Sanders	--	--	--	1	--	--	--	--
Sheridan	--	--	--	--	--	--	--	1
Silver Bow	--	--	--	--	--	--	--	1
Stillwater	--	--	--	--	--	--	--	1
Sweet Grass	--	--	--	--	--	--	--	--
Teton	--	--	--	--	--	--	--	--
Toole	--	--	--	--	--	--	--	1
Treasure	--	--	--	--	--	--	--	1
Valley	--	--	--	--	--	--	--	2
Wheatland	--	--	--	--	--	--	--	--
Wibaux	--	--	--	--	--	--	--	1
Yellowstone	--	--	--	1	--	--	1	11
TOTAL 2013	1	2	2	36	2	1	5	38

Table 7. Case counts of tuberculosis by jurisdiction — Montana, 2013

County/Tribal Jurisdiction	Tuberculosis
Beaverhead	--
Big Horn/Crow	1
Blaine/Ft. Belknap	--
Broadwater	--
Carbon	--
Carter	--
Cascade	--
Chouteau	--
Custer	--
Daniels	--
Dawson	1
Deer Lodge	--
Fallon	--
Fergus	--
Flathead	--
Gallatin	--
Garfield	--
Glacier/Blackfeet	1
Golden Valley	--
Granite	--
Hill/Rocky Boy	1
Jefferson	--
Judith Basin	--
Lake/CSKT	--
Lewis & Clark	--
Liberty	--
Lincoln	1
Madison	--
McCone	--
Meagher	--
Mineral	--
Missoula	--
Musselshell	--
Park	--
Petroleum	--
Phillips	--
Pondera	--
Powder River	--
Powell/MSP	--
Prairie	--
Ravalli	--
Richland	1
Roosevelt/Ft. Peck	1
Rosebud/N. Cheyenne	--
Sanders	--
Sheridan	--
Silver Bow	--
Stillwater	--
Sweet Grass	--
Teton	--
Toole	--
Treasure	--
Valley	--
Wheatland	--
Wibaux	--
Yellowstone	--
TOTAL 2013	6

Table 8. Case counts of travel-associated diseases by jurisdiction — Montana, 2013

County/Tribal Jurisdiction	Coccidioidomycosis	Dengue Fever	Histoplasmosis	Legionellosis	Leishmaniasis	Lyme Disease
Beaverhead	--	--	--	--	--	--
Big Horn/Crow	--	--	--	--	--	--
Blaine/Ft. Belknap	--	--	--	--	--	1
Broadwater	--	--	--	--	--	1
Carbon	--	--	--	--	--	1
Carter	--	--	--	--	--	--
Cascade	--	--	--	2	--	1
Chouteau	--	--	--	--	--	--
Custer	--	--	1	--	--	--
Daniels	--	--	--	--	--	--
Dawson	--	--	--	--	--	1
Deer Lodge	--	--	--	--	--	--
Fallon	--	--	--	--	--	--
Fergus	--	--	--	--	--	--
Flathead	2	1	--	2	--	3
Gallatin	--	1	--	--	1	3
Garfield	--	--	--	--	--	--
Glacier/Blackfeet	--	--	--	--	--	--
Golden Valley	--	--	--	--	--	--
Granite	--	--	--	--	--	--
Hill/Rocky Boy	--	--	--	--	--	--
Jefferson	--	--	--	--	--	--
Judith Basin	--	--	--	--	--	--
Lake/CSKT	--	--	--	2	--	--
Lewis & Clark	--	--	2	--	--	--
Liberty	--	--	--	--	--	--
Lincoln	--	--	--	--	--	--
Madison	--	--	--	--	--	--
McCone	--	--	--	--	--	--
Meagher	--	--	--	--	--	--
Mineral	--	--	--	--	--	--
Missoula	--	3	1	--	--	2
Musselshell	--	--	--	--	--	--
Park	--	--	--	--	--	1
Petroleum	--	--	--	--	--	--
Phillips	--	--	--	--	--	--
Pondera	--	--	--	--	--	--
Powder River	--	--	--	--	--	--
Powell/MSP	--	--	--	--	--	--
Prairie	--	--	--	--	--	--
Ravalli	--	--	--	--	--	3
Richland	--	--	1	--	--	--
Roosevelt/Ft. Peck	--	--	--	--	--	1
Rosebud/N. Cheyenne	1	--	--	--	--	--
Sanders	--	--	--	--	--	--
Sheridan	--	--	--	--	--	--
Silver Bow	--	--	--	--	--	--
Stillwater	--	--	--	--	--	--
Sweet Grass	--	--	--	--	--	--
Teton	--	--	--	--	--	--
Toole	--	--	--	--	--	--
Treasure	--	--	--	--	--	--
Valley	--	--	--	1	--	--
Wheatland	--	--	--	--	--	--
Wibaux	--	--	--	--	--	--
Yellowstone	--	--	--	3	--	--
TOTAL 2013	3	5	5	10	1	18

Appendix III: Montana Demographic Profile 2013

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].

Characteristic	Population	Percent[2]
	1,015,165	**100**
Geographic Classification		
Urban	154,162	15.2
Rural	572,521	56.4
Frontier	288,482	28.4
Sex		
Male	509,978	50.2
Female	505,367	49.8
Age Group (years)		
<1	12,140	1.2
1-4	49,132	4.8
5-14	125,000	12.3
15-24	137,992	13.6
25-39	184,420	18.2
40-64	341,713	33.7
65+	164,768	16.2
Race		
White	923,756	91.0
American Indian	72,458	7.1
African American	9,230	0.9
Asian	9,721	1.0
Ethnicity		
Non-Hispanic	981,476	96.7
Hispanic	33,689	3.3

[1] The Montana Infectious Disease Information System (MIDIS) generated report of 2008-2013 data. The six counties are Yellowstone, Flathead, Missoula, Gallatin, Lewis and Clark, and Cascade.

[2]Based on 2013 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, 2013. 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 26,2014

Appendix IV: Diseases Reportable to Montana DPHHS, 2013

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

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