

Oct – Nov – Dec 2006

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2006 Year in Review

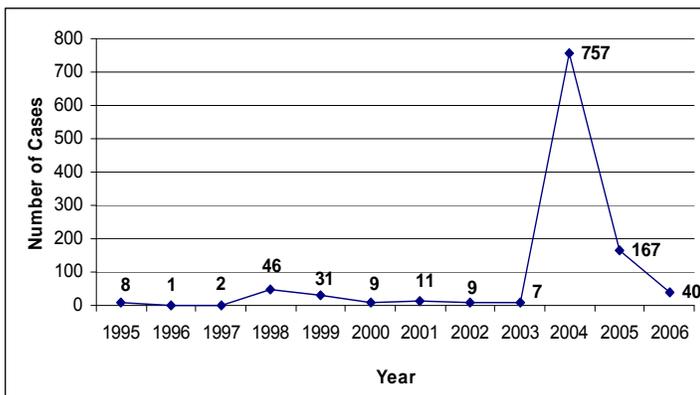
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Selected Vaccine-Preventable Disease Surveillance 2006

Pertussis

Preliminary data indicates that 40 cases of pertussis were reported from 11 counties in 2006, three of which were hospitalized. In comparison, 167 cases of pertussis were reported in 2005 and 757 cases in 2004. (Figure 1) However, most of the cases in 2004 were attributed to a large outbreak that occurred between June and October.

Figure 1. Pertussis Cases by Year, North Dakota, 1995-2006.*



*Preliminary 2006 data

Tetanus

In 2006, one case of tetanus was reported in North Dakota.

In 2006, recommendations were published in the Morbidity and Mortality Weekly Report for Tdap (tetanus,

diphtheria and acellular pertussis vaccine) administration in adolescents and adults. Currently, the North Dakota Immunization Program makes Tdap available to all children. To view the published recommendations, visit www.cdc.gov/nip/recs/provisional_rec/default.htm.

Mumps

In 2006, 14 cases of mumps were reported in North Dakota in nine counties, compared to four cases reported in 2005. The cases were not epidemiologically linked. Ages ranged from 1 to 72 years. Of the 14 cases, seven had a history of receiving two doses of MMR (measles, mumps and rubella vaccine), three cases had a history of receiving one dose of MMR, three cases had not received any doses of a mumps vaccine and one case had an unknown vaccination history.

Two vaccines that protect against the mumps virus are available. MMR is recommended at 12 to 15 months of age and 4 to 6 years of age. A new combination vaccine, MMRV (MMR and varicella vaccine) was approved by the Food and Drug Administration in 2005. MMRV should be used when both MMR and varicella vaccine are recommended to be given.

Health-care workers born before 1957 are recommended to receive at least one dose of MMR, and health-care workers born on or after 1957 to receive two doses of MMR if they are not already immune to mumps. Proof of immunity includes documentation of previous vaccination, documented history of mumps that was diagnosed by a physician, or laboratory evidence of immunity to mumps. Health-care workers born on or after 1957 who have received only one dose should be given the second dose. It is also recommended that during an outbreak situation, two doses of MMR should be considered for health-care workers born before 1957 if they don't have proof of immunity.

Chickenpox

Preliminary data for 2006 estimates 112 cases of chickenpox were reported in North Dakota, compared to

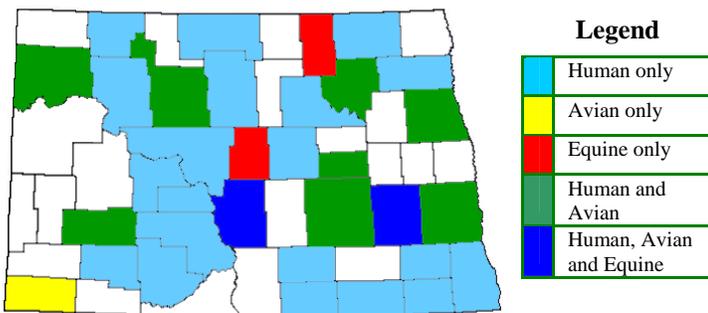
120 reported in 2005. Although health-care providers, schools, day cares and local public health units are mandated to report all cases of chickenpox to the North Dakota Department of Health (NDDoH), chickenpox continues to be under-reported in North Dakota.

In June 2006, the Advisory Committee on Immunization Practices updated varicella vaccination recommendations to include administration of a second dose of varicella vaccine to be given at 4 to 6 years of age. For more information about the new varicella vaccination recommendations, visit www.cdc.gov/nip/recs/provisional_rec/default.htm.

West Nile Virus Summary

On June 1, 2006, the NDDoH West Nile virus (WNV) surveillance program initiated its fifth season of human arboviral surveillance. In 2006, the Division of Laboratory Services conducted WNV testing on 963 human samples. One-hundred thirty-seven positive human cases from 30 counties were reported. (Figure 2)

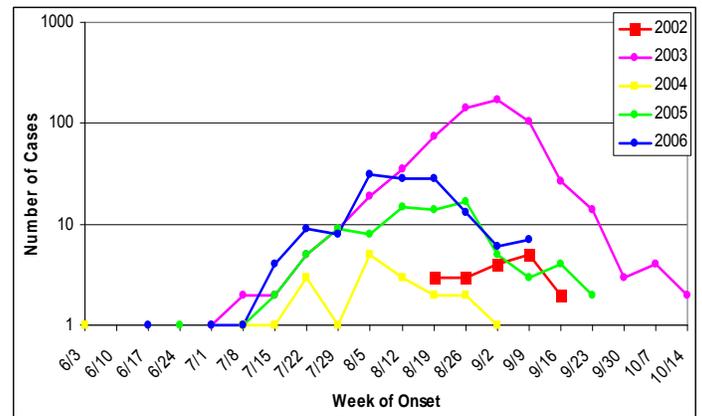
Figure 2. WNV Positive Human, Avian (sentinel and dead bird) and Equine Cases by County, North Dakota, 2006.



Of the 137 reported cases, 20 (15 percent) met the case definition of West Nile encephalitis, with the remaining 117 (85 percent) cases classified as West Nile fever. Thirty-four of the 137 cases were hospitalized, of which one was fatal. One symptomatic and 10 asymptomatic North Dakota blood donors were identified with WNV in 2006. The peak of illness onset occurred during the week ending Aug. 5, 2006. This peak was about three weeks earlier than in 2005, when the peak illness occurred during the week ending Aug. 27, 2005. (Figure 3)

The North Dakota Veterinary Diagnostic Laboratory (NDVDL) tested 23 horses for WNV infection. Of the 23 samples submitted, four (17 percent) tested positive from four counties. (Figure 2) In 2006, 33 dead birds were collected and sent to the NDVDL for WNV testing. Of those, 10 tested positive from six counties. In addition to dead bird testing, 754 sentinel chicken serums were sent to the NDVDL for WNV testing. Thirty-six chicken serums from eight counties tested positive for WNV. (Figure 2)

Figure 3. WNV Cases by Date of Onset, North Dakota, 2002-2006.



Statewide mosquito monitoring was conducted weekly from June through August using 100 New Jersey light traps stationed around the state. Female *Culex tarsalis* counts peaked the first week in August, the same week human WNV illness onset peaked. In addition, 34 mosquito pools were tested for WNV by Grand Forks Public Health and the University of North Dakota, with four pools testing positive.

For additional information about WNV and surveillance, visit the NDDoH website at www.ndwnv.com.

Rabies

In 2006, 414 animals were tested for rabies in North Dakota. Thirty-two (7.7 percent) tested positive. (Table 1)

The NDDoH Division of Laboratory Services provides free animal rabies testing if human exposure to the animal has occurred. An exposure is defined as a bite that breaks the skin or saliva that comes in contact with an open cut, sore or wound or to a mucous membrane such as the mouth, nose or eyes. Call the NDDoH at 701.328.2378 or 800.472.2180 for consultation about animal exposure.

Table 1. Number of Positive Animal Rabies Tests by Species, North Dakota, 2005-2006.

Animal Type	Number Positive		
	2006 [†]	2005	5-Year Median
Bat	1	1	1
Cat	4	6	5
Cow	5	2	5
Dog	4	5	4
Skunk	15	22	38
Total	32	36	57

[†]Provisional data

More information about rabies in North Dakota is available at www.health.state.nd.us/disease/Rabies/.

Monkey Bites and Rabies Post-Exposure Prophylaxis

In 2006, two reports of animal bites involving trained, pet monkeys performing at local events resulted in rabies post-exposure prophylaxis for both exposed individuals. One occurred in Cass County, where a resident was bitten on the finger while holding a monkey during a television broadcast. The monkey was owned by a traveling entertainer who was performing an animal show at a local event. The owner did not have in his possession the proper health permits for the animal to enter North Dakota. The animal was voluntarily quarantined and not allowed contact with the general public while in North Dakota.

The second instance occurred in Ward County when a teen-aged child was bitten by a monkey at a fair. An order was issued by the state veterinarian to quarantine the monkey. The child was seen by a health-care professional who indicated that the wound on the child's finger was consistent with a monkey bite. As with the previous incident, the animal was not accompanied by its proper health permits when crossing the state's border.

There is no approved rabies vaccine for any species of monkey. The viral shedding period in primates is also unknown. Therefore, it was recommended that these exposed individuals receive rabies post-exposure prophylaxis.

Two key elements highlighted during these incidences were the importance of educating city event planners, animal trainers and the public about health requirements for animals imported across state lines and the risks involved when allowing the public to handle these animals.

Foodborne and Gastroenteritis Outbreaks

In 2006, the NDDoH investigated seven foodborne gastroenteritis outbreaks. Five of the seven were laboratory-confirmed norovirus outbreaks. Table 2 on page 6 describes foodborne gastroenteritis outbreaks investigated by the NDDoH from 2002 to 2006. Possible cross contamination by sick food handlers was the contributing factor most commonly identified.

Other gastroenteritis outbreaks investigated in 2006 include a *Shigella* outbreak of more than 200 cases beginning in July. In addition, several norovirus outbreaks were reported in long-term care and basic health-care facilities. Person-to-person transmission was determined to be the primary contributing factor of these events.

Collecting stool specimens and timely reporting to public health authorities are important factors in identifying and preventing further spread of illness. To report gastroenteritis outbreaks, call the NDDoH at 701.328.2378 or toll free at 800.472.2180.

Select gastroenteritis outbreaks occurring in 2006 are summarized below:

Norovirus Outbreak at a North Dakota Hotel

In January 2006, the NDDoH received a report of gastrointestinal illness involving individuals who attended a conference at a hotel in Minot, N.D. Forty-six (78 percent) of the 59 conference goers and kitchen staff available for interview reported being ill. Symptoms included abdominal cramps, nausea, vomiting, diarrhea, fever and chills. The duration of illness ranged from five hours to 48 hours, with a median duration of 18 hours.

Two stool samples submitted to the Division of Laboratory Services tested positive for norovirus. A possible source of contamination in food or drink of lunch menu items and snack items served at the conference could not be determined statistically. The food service staff may have been the source, as at least one food worker had a history of norovirus-like symptoms within seven days of when the outbreak occurred.

Norovirus Associated With Catered Events

Thirty-six people ill with vomiting and diarrhea were reported to the NDDoH between June 2 and June 7. All of the cases were associated with eating at various catered events in Bismarck, N.D. One local restaurant catered the food to all implicated events.

Five stool specimens were collected from ill individuals and tested positive for norovirus.

Eight food workers at the restaurant were reported to be ill during the same week. Chopped fresh fruit was the probable source of contamination. The fruit was prepared by one of the sick food workers who reported being symptomatic when working. The fruit from this batch was distributed to the different catered events around town and served on buffet lines at the restaurant.

2006 Shigella Outbreak

As of Dec. 31, 2006, 224 cases of shigellosis have been reported in North Dakota since July 1, 2006. All of the cases were laboratory identified as *Shigella sonnei*, the most common cause of shigellosis in the United States and the least severe of the *Shigella* species.

Eighteen North Dakota counties reported cases of *Shigella* during the outbreak period, including Spirit Lake and Turtle Mountain Reservations. **(Figure 4)** The majority of cases occurred among American Indians residing on these reservations. Information gathered during patient interviews indicated primarily person-to-person transmission. One hundred and fifty-two cases (almost 70 percent) are children younger than 10. **(Figure 5)**

Figure 4. Number of Shigellosis Cases by County, North Dakota -- July 1 to Dec. 31, 2006, North Dakota.

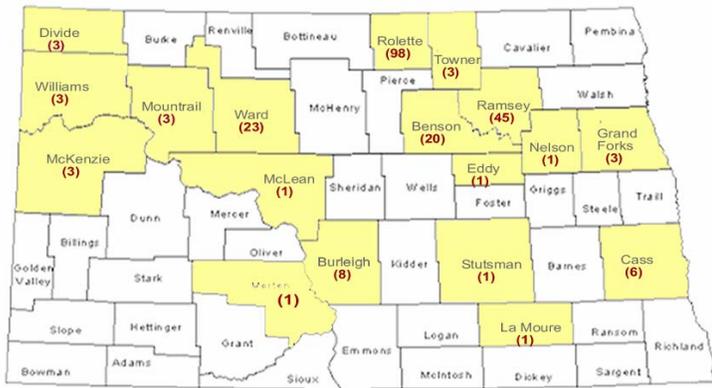
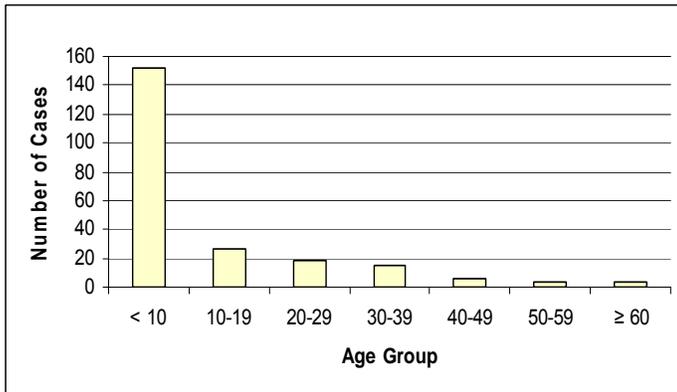
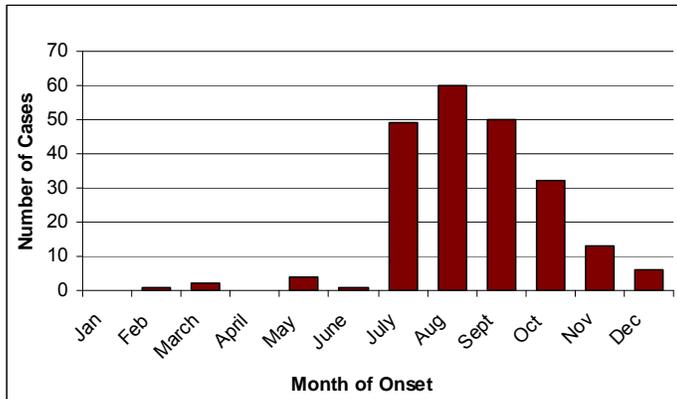


Figure 5. Lab-Confirmed Shigellosis Cases by Age Group -- July 1 to Dec. 31, 2006, North Dakota.



The frequency of *Shigella* cases in 2006 decreased significantly at the end of October. (Figure 6)

Figure 6. Number of Lab-Confirmed Shigellosis Cases by Month of Onset, North Dakota, 2006.



If diagnosed with shigellosis, health-care workers, food handlers and children and staff of day-care centers should stay home until diarrhea has ceased and two consecutive stool cultures (taken at least 24 hours following completion of antibiotic treatment and collected at least 24 hours apart) test negative for the bacteria.

For information about shigellosis and North Dakota statistics, visit www.health.state.nd.us/disease/Shigella/default.htm or call 701.328.2378.

Viral Gastroenteritis Outbreaks: Non-Foodborne

Since October 2006, 22 outbreaks of viral gastroenteritis have been reported in North Dakota health-care settings in 14 counties, including Adams, Barnes, Cass, Foster, Grand Forks, Griggs, McHenry, McLean, Nelson, Pierce, Stark, Stutsman, Walsh and Ward.

A viral gastroenteritis outbreak is defined as two or more people associated with a common venue having vomiting and/or diarrhea lasting 24 to 48 hours. Sixteen long-term care facilities (nursing homes), two assisted-living homes, two basic-care facilities and one developmental-care facility have been affected. One foodborne outbreak occurred at a restaurant associated with an ill food handler who also worked at the local nursing home where residents and staff had previously been reported ill.

More than 300 residents and 180 staff were ill at the time the outbreaks were reported. Twelve of 15 total stool specimens collected from nine facilities reporting outbreaks tested positive for norovirus.

Significant Disease Control Case Investigations

Meningococcal Contact Tracing

Four confirmed or probable cases of meningococcal were reported in North Dakota this year. One of the four, a young, previously healthy adult, died. The NDDoH investigated numerous contacts of the meningococcal-related death. The case worked at a day care, and almost 300 people were identified by the NDDoH as potential close contacts with the case. Of these, about 200 were determined to need post-exposure prophylaxis and were referred to their health provider. PCR testing performed on the isolate indicated the infection was caused by *Neisseria meningitidis* serogroup B.

Tularemia

Two cases of tularemia were investigated by the NDDoH in 2006. The first case, reported in May in Sioux County, involved a young child who had an insect bite-like wound on the scalp. The child exhibited fever, headache, muscle pain, red eyes and swollen lymph nodes. A swab of the wound tested positive for the bacteria *Francisella tularensis*, the causative agent of the disease tularemia. The wound on the scalp may have been a tick bite, which is a risk factor for disease transmission.

In June, a teen-age resident of Ward County presented to the doctor with conjunctivitis described as erythema, pain and green discharge from the eye. A culture of the infected eye tested positive for *Francisella tularensis*. The case reported moving a rabbit from the road about two months before becoming sick. Rabbits can also be a vector of the disease, which is sometimes referred to as “rabbit fever.” Both cases were treated with antibiotics and made a full recovery. Since 2000, a total of six cases of tularemia have been identified in North Dakota.

Hantavirus Pulmonary Syndrome

Nine cases of hantavirus pulmonary syndrome (HPS) have been reported in North Dakota since 1993, of which five were fatal. Two cases (one fatality) were reported in 2006. The epidemiology of these two cases is described below. (Due to low incidence and the sensitivity of these cases, information about county of residence is not released.):

The first case of HPS in 2006 was reported to the NDDoH in January 2006. The patient was hospitalized with symptoms of fever and acute respiratory distress syndrome, requiring supplemental oxygen. The patient was discharged from the hospital about one week later and has since recovered.

The case reported contact with mouse droppings while cleaning at work during the months of November and December 2005. No other employees were found ill. Local environmental health personnel investigated the work scene. Although rodent infestation was not apparent, management was consulted on proper disinfection and pest control. A certified pest control professional inspected the place of employment and placed proper trapping equipment to prevent further possible spread of the disease. No other risk factors were identified during the case investigation.

The second case, reported in December 2006, arrived at the hospital by ambulance presenting with fever, chills, malaise, shortness of breath and abnormal chest X-ray. A blood sample tested positive for HPS. The patient died shortly after arriving at the hospital. The month prior, the patient had swept out an outbuilding on the property. No apparent rodent exposure was reported.

Meet the Epidemiologist



Name: Darcey Tysver, RN

NDDoH Position: immunization VFC/AFIX coordinator

Education Background: B.S. in Nursing obtained from Medcenter One College of nursing in Bismarck, N.D.

Past Experience: I worked as a staff nurse at Glendive Medical Center in Glendive, Mont., and on the ortho-neuro floor at Medcenter One.

Family/Hobbies: I've been married seven years and have three sons, ages 11 and 5 years and 4 months. Hobbies include music, reading, playing cards and keeping all my boys in line!

Name: Stacy Lovelace

NDDoH Position: immunization surveillance coordinator

Education Background: B.A. in biology and medical technology obtained at Concordia in Moorhead, Minn.

Past Experience: I worked 5 ½ years at Mayo Clinic in the Clinical Bacteriology Lab.

Family/Hobbies: I am married and have one daughter, age 2. I enjoy reading and spending time with family.

Name: Krissie Mayer

NDDoH Position: HIV/AIDS surveillance and Ryan White coordinator

Education Background: B.S. in community health education from Minnesota State University, Moorhead, Minn. I am continuing work on a master's of health science with an emphasis in community health from Minnesota State University, Mankato, Minn.

Past Experience: I was a health education intern for Clay County Public Health in Moorhead, Minn.

Family/Hobbies: I am originally from Bismarck, so I enjoy being close to my family again. I love spending time with my fiancé Brian and our cat Squigg.



NDDoH Disease Fact Sheets: What Do I Need To Know?

Disease fact sheets are available in printable format on the NDDoH Division of Disease Control website at www.ndhealth.gov/disease/. On the right side of the screen, under “Frequently Requested,” click the “Disease Fact Sheets” link.



Archived issues of the NDDoH *Epidemiology Report* are available at

www.ndhealth.gov/Disease/NewsLetters/EpiReport.htm.

(Click “archives.”)

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Table 2. Foodborne Gastroenteritis Outbreaks in North Dakota, 2002-2006.

Date	County	Facility	Number Ill	Number Exposed	Suspected Food	Suspected Agent	Contributing Factors
04/2002	Ward	Restaurant/ banquet	119	280	Roast turkey and gravy	<i>Clostridium perfringens</i>	Improperly prepared and reheated turkey/gravy
12/2002	Mercer	Private business	About 100	400	Deep-fried turkey	<i>Clostridium perfringens</i>	Improper food handling and hand- washing
12/2002	Ward	Motel	225	465	Unknown	norovirus	Sick food handlers, person- to-person transmission
12/2002	Pembina	Public school	97	326	Unknown	norovirus	None identified
6/2003	Ward	Restaurant/ golf course	34	~ 70	Potato salad	norovirus	Cross contamination
7/2003	Burleigh	Processing plant	3	Unknown	Frozen beef patties	<i>E.coli</i> O157:H7	None identified
10/2003	Grand Forks	Restaurant	14	Unknown	Unknown	<i>E.coli</i> O157:H7	None identified
11/2003	Stark	Wedding	31	75 – 90	Unknown	norovirus	None identified
12/2003	Ward	Hotel restaurant	24	57	Unknown	Probable food intoxication	None identified
11/2004	Ward	Hotel restaurant	15	43	Unknown	Unknown	Possible sick food handler
11/2004	Bottineau	Restaurant	11	32	Unknown	Unknown	None identified
12/2004	Stark	Local meat store	2	12	Smoked turkey	<i>Salmonella Newport</i>	Inadequate cooking instructions/under cooked
4//2005	Burleigh	Private Home	14	71	Unknown	Unknown	Unknown
5/2005	Stark	High School	52	249	Lettuce	norovirus	Cross contamination from ill food handler
6/2005	Williams	Unknown	15	Unknown	Unknown	<i>Salmonella Typhimurium</i>	Unknown
7/2005	Ramsey	Private home/ rehearsal	5	14	Unknown	Unknown	Unknown
8//2005	Burleigh	Unknown	11	Unknown	Unknown	<i>E.coli</i> O157:H7	Unknown
1/23/2006	Ward	Hotel Restaurant	48	73	Unknown	Norovirus	Sick food handlers
4/15/2006	Cass	Restaurant/ golf course	27	62	Chicken	Norovirus	Possible environmental contamination
4/26/2006	Morton	Restaurant	10	25	Unknown	Unknown	Unknown
6/2/2006	Burleigh	Restaurant and Catering	36	Unknown	Fresh fruit	Norovirus	Ill food handlers
6/20/2006	Out-of-state	Hotel Restaurant	(4 ND) 25	Unknown	Unknown	Norovirus	Possible ill food handlers
8/17/2006	Bowman	Construction work site	11	60	Possible water	Unknown	Suspect contamination of water coolers
9/14/2006	Burleigh	picnic/ rehearsal dinner	21	65	Unknown	Norovirus	Unknown

Summary of Selected Reportable Conditions

North Dakota, 2005-2006

Reportable Condition	October-December 2006*	January-December 2006*	October-December 2005	January-December 2005
Campylobacteriosis	9	88	11	96
Chlamydia	495	1,885	476	1,670
Cryptosporidiosis	2	21	0	5
<i>E. coli</i> , shiga toxin positive (non-O157)	0	10	4	7
<i>E. coli</i> O157:H7	0	9	0	16
Enterococcus, Vancomycin-resistant (VRE)	33	167	9	29
Giardiasis	9	37	6	26
Gonorrhea	55	159	52	128
Haemophilus influenzae (invasive)	8	12	3	6
Hantavirus	1	2	0	0
Acute Hepatitis A	0	3	0	3
Acute Hepatitis B	0	1	0	0
Acute Hepatitis C	0	0	0	1
HIV/AIDS ¹	10	25	6	19
Legionellosis	1	1	0	3
Lyme Disease	0	4	2	3
Malaria	1	3	1	1
Meningitis, bacterial ² (non meningococcal)	1	2	0	4
Meningococcal disease ³	0	4	1	2
Mumps	0	15	1	3
Pertussis	6	45	35	168
Q fever	0	1	0	0
Rabies (animal)	6	29	6	36
Salmonellosis	13	59	19	86
Shigellosis	70	228	1	6
Streptococcal disease, Group A ⁴ (invasive)	4	17	8	18
Streptococcal disease, Group B ⁴ (infant < 3 months of age)	0	3	2	5
Streptococcal disease, Group B ⁴ (invasive ⁵)	11	38	10	35
Streptococcal disease, other ⁴ (invasive)	3	13	3	19
Streptococcal pneumoniae ⁴ , (invasive, children < 5 years of age)	2	7	2	9
Streptococcal pneumoniae ⁴ (invasive ⁶)	20	73	21	61
Streptococcus pneumoniae ⁴ , drug-resistant	0	0	1	3
Tuberculosis	3	5	0	6
Tularemia	0	2	9	0
West Nile Virus Infection	0	137	0	86

*Provisional data

¹ Includes newly diagnosed cases and cases diagnosed previously in other states that moved to North Dakota.

² Meningitis caused by *Staphylococcus aureus* and *Streptococcus pneumoniae*.

³ Includes confirmed, probable and suspect meningococcal meningitis cases.

⁴ Includes invasive infections caused by streptococcal disease not including those classified as meningitis.

⁵ Includes invasive infections of streptococcal, Group B, disease in persons \geq 3 months of age.

⁶ Includes invasive infections caused by *Streptococcus pneumoniae* in persons \geq 5 years of age.