Epidemiology Report

NORTH DAKOTA DEPARTMENT of HEALTH

April-May-June 2012

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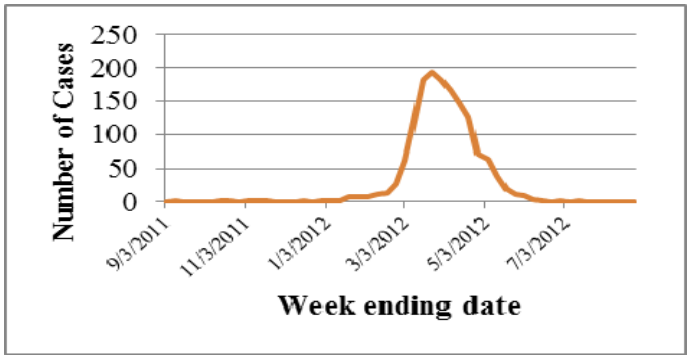
2011-2012 Influenza Summary

Influenza surveillance activities officially started September 1, 2011, for the 2011-12 influenza season. The North Dakota Department of Health (NDDoH) requires that all laboratory identified cases of influenza be individually reported to the NDDoH. In addition, the NDDoH has multiple additional surveillance tools. These systems include (1) influenza-like illness reports from outpatient visits, (2) influenza-like illness syndrome surveillance at eight emergency rooms and one ask-a-nurse call center, (3) laboratory influenza testing reports, (4) school absenteeism due to illness reports and (5) influenza and pneumonia related death reports.

Influenza activity in the state remained inactive to sporadic for a majority of the season. Peak activity was reached during the week ending March 24, 2012 (Figure 1). During the 2011-12 influenza season, a total of 1,487 cases were identified via viral culture, DFA, IFA, PCR or rapid test.

Figure 1: Number of reported influenza cases, North Dakota, 2011-12 season.



The largest number of positive cases was reported in the <10 age range (468). Similar to the year before, type A was the predominant type identified during the 2011-12 flu season. Ninety-six percent of cases were Influenza A (1418). The Division of Laboratory Services subtyped 85 influenza isolates. Thirteen were identified as type A-2009H1N1, 65 identified as type A-H3 and seven identified as type B. Table 1 summarizes all 2011-12 influenza cases by age group and type.

Table 1. Influenza cases by age group and type,

Age Group	Inf A	Inf B	Unspecified	Total
<10	447	18	3	468
10-19	198	11	0	209
20-29	160	11	2	173
30-39	166	6	0	172
40-49	103	2	0	105
50-59	115	6	0	121
60+	229	9	1	239
TOTAL	1418	63	6	1487

North Dakota, 2011-12 influenza season.

As part of the National Notifiable Diseases Surveillance System (NNDSS), the state health department conducts surveillance for influenza-associated pediatric deaths. During the 2011-12 influenza season, zero influenza-associated deaths in children were identified in the state.

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Residents in 47 out of 53 counties were reported to have influenza during the season, indicative of the wide geographical spread of influenza.

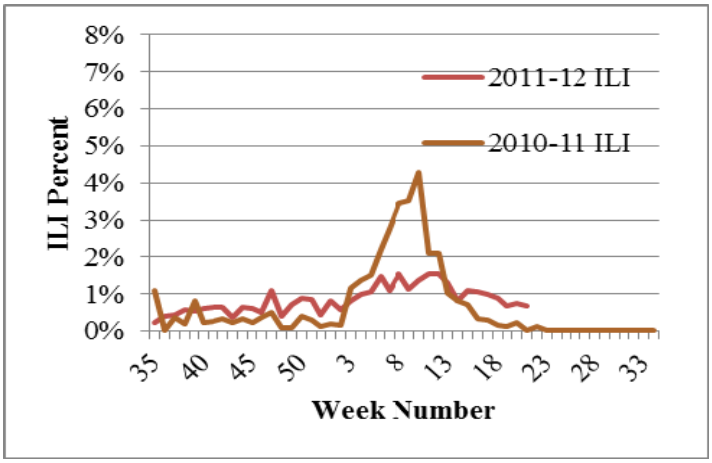
Table 2. Number of Influenza Cases by county, North Dakota, 2011-12 influenza season.

COUNTY	CASES	COUNTY	CASES
Adams	1	McLean	24
Barnes	21	Mercer	70
Benson	1	Morton	95
Billings	1	Mountrail	40
Bottineau	4	Nelson	5
Bowman	11	Oliver	2
Burke	0	Pembina	6
Burleigh	367	Pierce	2
Cass	126	Ramsey	3
Cavalier	0	Ransom	10
Dickey	49	Renville	3
Divide	4	Richland	25
Dunn	13	Rolette	36
Eddy	1	Sargent	10
Emmons	17	Sheridan	5
Foster	5	Sioux	15
Golden Valley	0	Slope	1
Grand Forks	91	Stark	65
Grant	2	Steele	0
Griggs	0	Stutsman	60
Hettinger	2	Towner	0
Kidder	12	Traill	2
LaMoure	2	Walsh	51
Logan	19	Ward	115
McHenry	13	Wells	5
McIntosh	10	Williams	46
Mckenzie	19	**TOTAL**	**1487**

Another surveillance method the NDDoH uses to gauge the burden of influenza in the community is the influenza-like illness sentinel surveillance program. We know that not everyone each year who has influenza seeks care at a doctor's office. Also, even if they do once the influenza season has established in a community, many times physicians rely on clinical diagnosis versus laboratory confirmation to diagnose influenza. ILINet providers report each week the number of patients they see in that week that meet the clinical case definition for influenza. In Figure 2, the trend for the 2011-12 influenza season is compared to the previous influenza season, 2010-11. The 2011-12 season appears to be drastically less prolific than the previous influenza season. This is also reflected in the number of cases reported as well as other surveillance indicators that the 2011-12 influenza season in North Dakota was especially mild.

For more information about influenza and to order influenza educational materials, please visit www.ndflu.com or call the Division of Disease Control at 1.800.472.2180.

Figure 2: Influenza-like Illness Surveillance, 2010-11 & 2011-12 seasons.



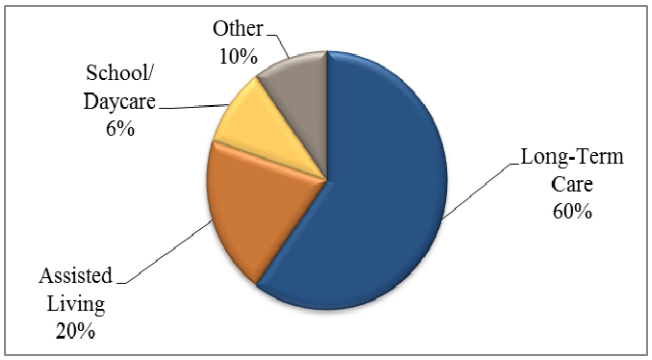
Acute Viral Gastroenteritis

Between October 2011 and June 2012, 10 acute viral gastroenteritis (AGE) outbreaks were reported to the North Dakota Department of Health (NDDoH) from seven counties including Cass, McLean, Pierce, Stark, Stutsman, Walsh and Ward. An AGE outbreak is defined as two or more people associated with a common venue having acute vomiting and/or diarrhea lasting 24 to 48 hours.

Outbreaks of AGE often are reported in long-term care facilities **(Figure 3)**. Eight of the 10 outbreaks reported to the NDDoH in 2011-2012 occurred in health-care settings. More than 225 residents and 80 staff of health-care settings were ill at the time the outbreaks were reported. Two outbreaks outside of health-care settings were reported compared to one reported during the same time period last year.

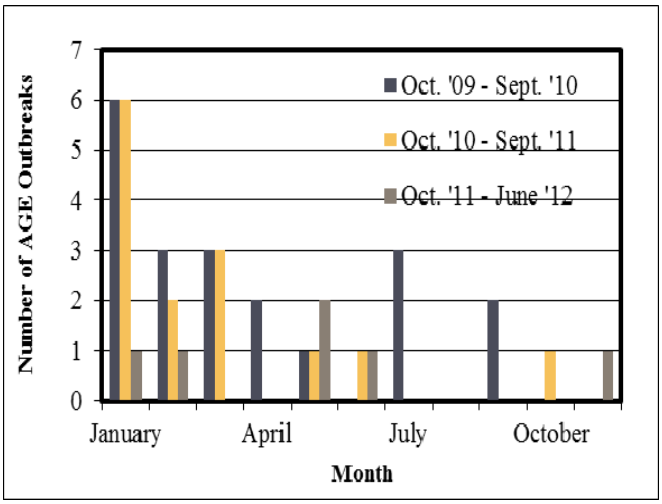
Ill food handlers are a common cause of AGE outbreaks outside of health-care settings that are spread by a common vehicle, such as food, and not via person-to-person contact.

Figure 3. AGE outbreaks by setting in North Dakota, October 1, 2011 to June 30, 2012.



AGE outbreaks are known to be more common during the winter months. More than half (63%) of the AGE outbreaks reported since October 2009 have occurred from December to March **(Figure 4)**.

Figure 4. Number of AGE outbreaks reported in North Dakota by month, October 1, 2009, to June 30, 2012.



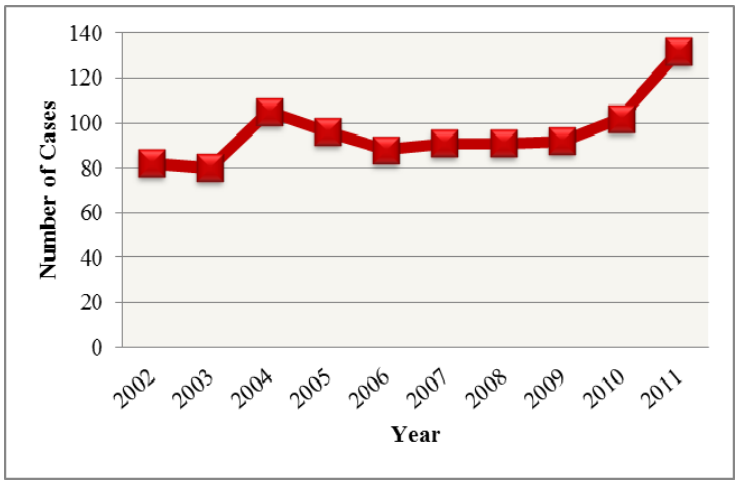
Norovirus is the most common cause of AGE outbreaks and often is called the "stomach flu," although it has no relationship to the influenza virus that causes respiratory infections. The CDC estimates noroviruses cause 21 million cases of acute gastroenteritis each year and are the most common cause of foodborne outbreaks in the United States.

For more information about prevention of viral gastroenteritis or to report an outbreak, visit http://www.ndhealth.gov/disease/GI/norovirus.aspx.

Campylobacteriosis

In 2011, 132 cases of campylobacteriosis were reported to the North Dakota Department of Health (NDDoH), a 29 percent increase from the 102 cases reported in 2010 **(Figure 5)**. Statewide campylobacter incidence was 19.6 cases for every 100,000 people in 2011. Thirty-three counties reported cases with McIntosh (142.4 cases per 100,000 people), Golden Valley (119.0 cases per 100,000 people), Bowman (95.2 cases per 100,000 people) and Benson (90.1 cases per 100,000 people) having the highest incidence of campylobacter.

Figure 5. North Dakota Campylobacter Case Counts by Year, 2002-2011.

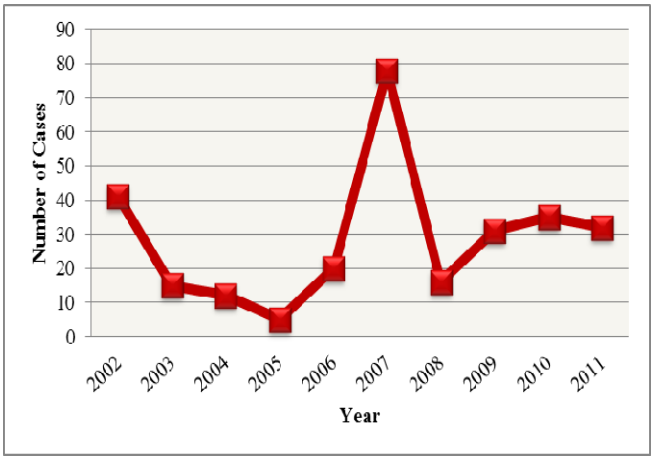


The median age of cases of campylobacteriosis was 37 years (range: 1- 89 years). People ages 40 to 49 had the highest age-specific incidence rate (24.8 cases for every 100,000 people). Eighty-six (65%) of the reported cases were male. Thirty-three (25%) cases were hospitalized, with the median length of hospitalization of two days (range: 1-8 days).

Cryptosporidiosis

In 2011, 32 cases of cryptosporidiosis were reported to the NDDoH, a 9 percent decrease from 35 cases reported in 2010 **(Figure 6)**. Statewide cryptosporidiosis incidence was 4.8 cases for every 100,000 people in 2011. Fourteen counties reported cases with McIntosh (35.6 cases for every 100,000 people), Emmons (28.2 cases for every 100,000 people) and LaMoure (24.2 cases for every 100,000 people) having the highest incidence of cryptosporidiosis.

Figure 6. North Dakota Cryptosporidiosis Case Counts by Year, 2002-2011.

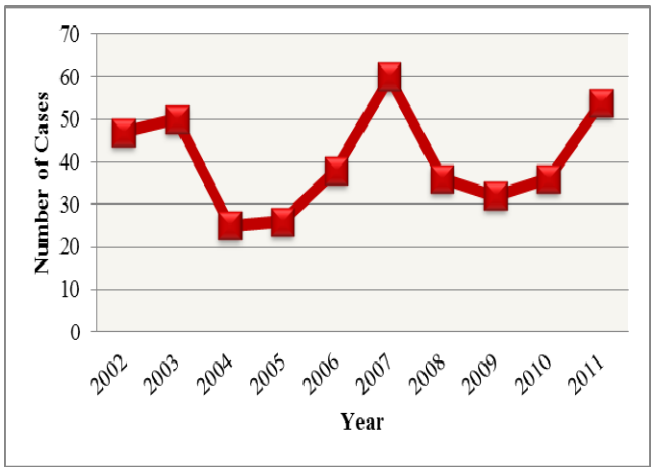


The median age of cases of cryptosporidiosis was 38 years (range: 5-86 years). People ages 30 to 39 had the highest age-specific incidence rate (7.7 cases for every 100,000 people). Twenty-one (66%) of the reported cases were female. Three (9%) cases were hospitalized, with the median length of hospitalization of four days (range: 4-5 days).

Giardiasis

In 2011, 54 cases of giardiasis were reported to the NDDoH, a 50 percent increase from 36 cases reported in 2010 **(Figure 7)**. Statewide giardiasis incidence was 8.0 cases for every 100,000 people in 2011. Nineteen counties reported cases with Logan (100.5 cases for every 100,000 people), Sargent (52.2 cases for every 100,000 people) and Steele (50.6 cases for every 100,000 people) having the highest incidence of giardiasis.

Figure 7. North Dakota Giardiasis Case Counts by Year, 2002-2011.

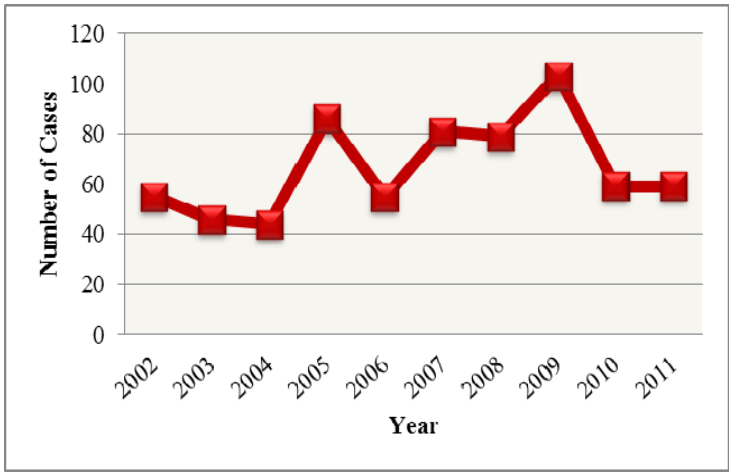


The median age of cases of giardiasis was 34 years (range: 1-88 years). People ages zero to 4 had the highest age-specific incidence rate (282.9 cases for every 100,000 people). Twenty-seven (50%) were male. Three (6%) cases were hospitalized, with the median length of hospitalization of three days (range: 1-4 days).

Salmonellosis

In 2011, 59 cases of salmonellosis were reported to the NDDoH. In 2010, 59 cases also were reported **(Figure 8)**. Statewide salmonellosis incidence was 8.8 cases for every 100,000 people in 2011. Twenty-four counties reported cases with Bowman (63.5 cases for every 100,000 people), Foster (59.8 cases for every 100,000 people) and Golden Valley (59.5 cases for every 100,000 people) having the highest incidence of salmonellosis.

Figure 8. North Dakota Salmonellosis Case Counts by Year, 2002-2011.

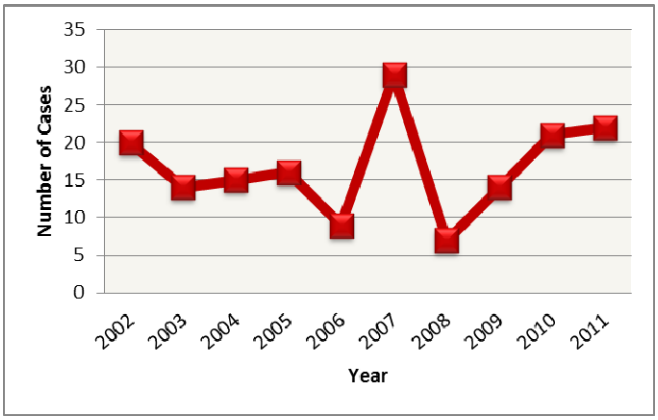


The median age of cases of salmonellosis was 40 years (range: 1-86 years). People ages 40 to 49 had the highest age-specific incidence rate (15.4 cases for every 100,000 people). Thirty-four (58%) were male. Eleven cases were hospitalized, with the median length of hospitalization of four days (range: 1-7 days).

Shiga-toxin Producing E. coli (STEC)

In 2011, 22 cases of STEC were reported to the NDDoH. Of those 22 cases, three were *E. coli* 0157:H7. In 2010, 21 cases of STEC were reported with seven of those cases being *E. coli* 0157:H7 **(Figure 9)**. Statewide STEC incidence was 3.3 cases for every 100,000 people in 2011. Eleven counties reported cases with Golden Valley (59.5 cases for every 100,000 people), Bowman (31.7 cases for every 100,000 people) and Stark (24.8 cases for every 100,000 people) having the highest incidence of STEC.

Figure 9. North Dakota STEC Case Counts by Year, 2002-2011.



The median age of cases of STEC was 29 years (range: 1-92 years). People ages 0 to 4 had the highest age-specific incidence rate (11.2 cases for every 100,000 people). Fourteen (64%) were female. Six cases were hospitalized, with a median length of hospitalization of four days (range: 2-10 days).

Preventing Enteric Diseases

By following these four steps, you can prevent many enteric diseases that occur from unsafe food handling and preparation.

1) Clean!

Wash hands , countertops, cutting boards, utensils and produce before and after handling food.

2) Separate!

Use separate plates or surfaces for raw foods and ready-to-eat foods.

3) Cook!

Use a food thermometer to measure internal temperatures of cooked foods. Visit www.foodsafety.gov for safe minimum cooking temperatures.

4) Chill!

Refrigerate perishable foods within 2 hours of cooking or purchasing, or within 1 hour if the temperature outside is above 90 degrees Fahrenheit.

Table 3. Potential Risk Factors Among Enteric Cases, North Dakota, 2011.

Risk Factor (not mutually exclusive)	Number of Campylobacteriosis Cases (%)	Number of Cryptosporidiosis Cases (%)	Number of Giardiasis Cases (%)	Number of Salmonellosis Cases (%)	Number of STEC Cases (%)
Contact with animals	95 (72)	20 (63)	27 (50)	31 (53)	7 (32)
Contact with similarly ill person	10 (8)	5 (16)	4 (7)	4 (7)	4 (18)
Travel	7 (5)	5 (16)	13 (24)	13 (22)	7 (32)
Recreational water exposure	6 (5)	1 (3)	9 (17)	1 (2)	1 (5)
Drink untreated water	15 (11)	5 (16)	8 (15)	5 (8)	4 (18)

Knowledge of winter warnings and disaster preparedness in Burleigh County

On April 10 and 11, 2012, the North Dakota Department of Health (NDDoH) in conjunction with the Centers for Disease Control and Prevention and the National Weather Service conducted a community assessment on the knowledge of winter weather warnings and disaster preparedness in Burleigh County.

To conduct the assessment, NDDoH used the Community Assessment for Public Health Emergency Response (CASPER), a useful tool for obtaining household-based information about the community quickly and reliably in both non-disaster and post-disaster settings. The first objective of this CASPER was to assess whether the community has heard of the new "Extreme Cold" (EC) warning, which has replaced the "Wind Chill" (WC) warning this past winter in North Dakota. Issuance of the WC warning required wind conditions of ≥3mph as well as cold temperatures, resulting in a gap where no warnings can be issued in low temperatures with little or no wind. This gap is filled by the EC warnings, which can be issued regardless of wind conditions. The second objective was to assess community disaster preparedness to ensure effective response.

We used a multi-stage stratified cluster sampling methodology to select a representative sample of 210 households to be interviewed in Burleigh county.

Table 4. Key findings from CASPER

	Projected Household	Weighted % (95% CI)
Winter weather warnings and actions following hearing warnings		
Heard EC warning	29,763	86.6 (80.7 – 92.5)
Took action after warning*	23,483	78.9 (71.1 – 86.7)
Heard WC warning	34,371	100.0 (100.0 – 100.0)
Took action after warning*	29,105	84.7 (78.8 – 90.6)
Main source of information for severe winter weather and emergency		
Winter weather information		
Television	27,839	81.0 (73.8 – 88.1)
Internet	2,036	5.9 (1.8 – 10.1)
NOAA weather radio	1,717	5.0 (0.6 – 9.4)
Commerical radio station	1,627	4.7 (1.4 – 8.0)
Disaster/ emergency information		
Television	27,814	80.9 (73.9 – 87.9)
Radio	3,315	9.6 (4.1 – 15.2)
Internet	2,298	6.7 (2.5 – 10.9)
Household emergency plans in place		
Had one or more plans	31,238	90.9 (85.6 – 96.2)
Multiple routes away from home	22,794	66.3 (56.8 – 75.9)
Emergency communication plan	20,213	58.8 (51.8 – 65.9)
Copies of important documents	19,005	55.3 (46.3 – 64.3)
Meeting place outside home	10,727	31.2 (25.2 – 37.2)
Meeting place outside area	10,438	30.4 (21.2 – 39.6)
Response to mandatory evacuation		
Likely response		
Will evacuate	30,358	88.3 (80.1 – 96.5)
Will not evacuate	1,695	4.9 (0.9 – 8.9)
Don't know if will evacuate	2,318	6.7 (0.7 – 12.8)
Shelter locations		
Friends/ family/ second home	30,075	87.5 (81.9 – 93.1)
Hotel or motel	1,584	4.6 (1.8 – 7.5)
Community shelter	1,220	3.5 (0.0 – 7.1)

The county was stratified into urban and rural areas based on the 2010 Census data, then 23 clusters in the urban area and seven clusters in the rural area were selected with a probability proportional to the number of households in each cluster. The interview teams then randomly selected seven households for interview within each cluster. We conducted weighted analysis to report the projected number and percentage of households in the county with a particular response.

Twelve interview teams approached 483 households and conducted 188 of the target 210 interviews in two days (completion rate = 89.5%). As illustrated in Table 4, we found that the majority of the households heard the cold weather warnings and took action, regardless of the name of the warning. Television was the main information source for severe winter weather and emergencies for the majority of the households. The majority of households had a disaster preparedness plan, but many did not have all the recommended components of a plan. The majority of households will evacuate if there is a mandatory evacuation and will stay with family or friends.

Based on these findings, we recommend: 1) using the EC warning to capture all the dangerous cold weather events for all wind conditions; 2) utilizing television as an important medium to inform the community regarding emergencies and severe weather, supplemented by other media to ensure full population coverage; and 3) raising awareness for all the essential components of a disaster preparedness plan.

This CASPER demonstrated that the NDDoH has the capacity to successfully conduct a CASPER within a short time frame and is now more prepared to conduct one in the event of a disaster.

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Knowledge of winter warnings and disaster preparedness in Burleigh County
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2011-12 Influenza Summary
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Summary of Selected Reportable Conditions				
North Dakota, 2011-2012				
Reportable Condition	**April-June 2012***	**January-June 2012***	**April - June 2011**	**January-June 2011**
Campylobacteriosis	36	49	52	69
Chickenpox	12	15	16	31
Chlamydia	659	1,381	583	1,186
Cryptosporidiosis	10	18	12	19
E. coli, shiga toxin positive (non-O157)	11	15	8	13
E. coli O157:H7	3	4	0	0
Enterococcus, Vancomycin-resistant (VRE)	106	255	113	230
Giardiasis	6	17	19	30
Gonorrhea	59	136	59	121
Haemophilus influenzae (invasive)	4	8	5	9
Acute Hepatitis A	0	0	0	0
Acute Hepatitis B	0	0	0	0
Acute Hepatitis C	0	0	0	0
HIV/AIDS[1]	3	5	3	3
Influenza	666	1,484	204	2,043
Legionellosis	1	1	0	1
Listeria	0	0	1	1
Lyme Disease	3	3	8	9
Malaria	0	0	0	0
Meningococcal disease[2]	1	1	0	1
Mumps	1	1	2	5
Pertussis	18	49	14	33
Q fever	0	0	0	0
Rabies (animal)	12	20	4	9
Rocky Mountain spotted fever	1	1	2	2
Salmonellosis	10	25	18	28
Shigellosis	1	2	0	0
Staphylococcus aureus, Methicillin-resisitant (MRSA)	23	53	16	42
Streptococcal pneumoniae[3], (invasive, children < 5 years of age)	1	1	2	2
Syphilis, Primary and Secondary	1	2	0	0
Trichinosis	0	0	0	0
Tuberculosis	3	5	4	6
Tularemia	0	0	1	1
Typhoid fever	0	0	0	0
West Nile Virus Infection	0	0	0	0
*Provisional data				
[1] Includes newly diagnosed cases and cases diagnosed previously in other states that moved to North Dakota.				
[2] Includes confirmed, probable and suspect meningococcal meningitis cases.				
[3] Includes invasive infections caused by streptococcal disease not including those classified as meningitis.				