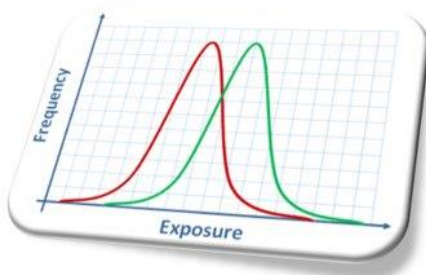


Communicable Disease Report

2016

Tuscarawas County, Ohio

Tuscarawas County



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Summary

This report provides a summary of ‘suspected’ (n=35), ‘probable’ (n=73), and ‘confirmed’ (n=471) cases of communicable diseases reported to Tuscarawas County Health Department and New Philadelphia City Health Department, Ohio in year 2016. The two local health departments report new cases of reportable communicable diseases to Ohio Department of Health using Ohio Disease Reporting System (ODRS)-- the state’s electronic communicable disease surveillance system. The data from ODRS were used to produce statistics presented in this report. This report includes the number of cases and rates of reportable communicable diseases occurring in the entire county, as well as the yearly count of diseases reported to the two jurisdictions separately. In addition, monthly disease count for the entire county is also presented. The following are highlights of the epidemiology of communicable diseases in Tuscarawas County in 2016:

- There were 579 cases (an overall incidence rate of 624 per 100,000 people) of communicable diseases reported to Tuscarawas County Health Department and New Philadelphia City Health Department in 2016. Of the total, 425 cases (73.4%) reported were to Tuscarawas County Health Department while 154 (26.6%) were reported to New Philadelphia City Health Department.
- The overall rate of reportable communicable diseases in the entire county in 2016 was higher than in 2015 (624 vs. 557 per 100,000). This represents 12% increase in reportable communicable disease in 2016 compared to 2015.
- The increase in the overall incidence of communicable disease in Tuscarawas County in 2016 compared to 2015 is likely to be due to an increase in Chlamydia, chronic Hepatitis C, and Pertussis cases in 2016 compared to 2015. The number of Chlamydia cases reported increased from 243 in 2015 to 298 in 2016. This represents 22.6% increase in Chlamydia cases in the county in a year. The number of chronic Hepatitis C increase from 80 to 102, a 27.5% increase from 2015 to 2016. The number of Pertussis cases rose from three in 2015 to twelve in 2016, a 4-fold increase in a year. Pertussis is a vaccine-preventable disease and a rise in the number of cases of Pertussis in the county is of concern.
- Influenza-associated hospitalizations in 2016 were markedly lower in 2016 (n=32) compared to 2015 (n=51). This represents a 37% decline in influenza-associated hospitalization in the county.
- August and September 2016 had the two highest monthly count of reportable communicable diseases in Tuscarawas County (67 and 62 respectively). The most common diseases reporting during these months included Chlamydia, Hepatitis C – chronic infection, Cryptosporidiosis, Gonococcal infection, and salmonellosis.

- Chlamydia infection, a sexually transmitted infection, remains the most common reportable communicable disease in the county accounting for 52% of all the communicable disease cases reported in 2016 (298 cases and an incidence rate of 321 per 100,000 population). Chlamydia rate in the county in 2016 was 22.5% higher than in 2015. Gonococcal infection rate in 2016 was comparable to the 2015 rate.

- The high level of chlamydia infections and continued increase in the incidence of the disease in the county highlight the need for public health programs on sexually transmitted infection prevention targeting adolescents and young adults.

Table 1. Communicable Disease† Count Reported to the Tuscarawas County Health Department, Ohio, 2016

Reportable Communicable Disease	Number of cases	% of all cases
Botulism—Infant	1	0.2
Brucellosis	1	0.2
Campylobacteriosis	10	2.4
Chlamydia infection	216	50.8
Cryptosporidiosis	9	2.1
<i>E. coli</i> , Shiga Toxin-Producing (O157:H7, Not O157, Unknown Serotype), infection	2	0.5
Giardiasis	4	0.9
Gonococcal infection	21	4.9
<i>Haemophilus influenza</i> (invasive disease)	1	0.2
Hepatitis B (including delta) – chronic	9	2.1
Hepatitis B – Perinatal	1	0.2
Hepatitis C - acute	2	0.5
Hepatitis C – chronic	71	16.7
Influenza-associated hospitalization	24	5.7
LaCrosse virus disease (other California serogroup virus disease)	1	0.2
Legionellosis - Legionnaires' Disease	1	0.2
Lyme Disease	8	1.9
Malaria	1	0.2
Meningitis - aseptic/viral	8	1.9
Mycobacterial disease – other than tuberculosis	2	0.5
Pertussis	9	0.8
Salmonellosis	15	3.5
<i>Streptococcus pneumoniae</i> - Group A -invasive	1	0.2
Streptococcal toxic shock syndrome (STSS)	1	0.2
<i>Streptococcus pneumoniae</i> - invasive antibiotic resistance unknown or non-resistant	1	0.2
<i>Streptococcus pneumoniae</i> - invasive antibiotic resistant/intermediate	1	0.2
Tuberculosis	1	0.2
Varicella (Chickenpox)	2	0.5
Vibriosis (not cholera)	1	0.2
Total	425	100.0

†Includes 22 'suspected' cases of: *E. coli*, Shiga Toxin-Producing (O157:H7, Not O157, Unknown Serotype) (n=1); Hepatitis B—chronic (n=5); Hepatitis B- Perinatal (n=1); Hepatitis C—chronic (n=1); Influenza-associated hospitalization (n=2); Lyme disease (n=7); Pertussis (n=3); Salmonellosis (n=1); and Streptococcal toxic shock syndrome (STSS) (n=1). 56 'probable' cases of: Brucellosis (n=1); Campylobacteriosis (n=1); Cryptosporidiosis (n=1); Hepatitis B—chronic (n=3); Hepatitis C—chronic (n=40); Meningitis - aseptic/viral (n=5); Pertussis (n=3); Varicella (n=2). Other 347 cases were 'confirmed'.

Table 2. Communicable Disease† Count Reported to the New Philadelphia City Health Department, Ohio, 2016

Reportable Communicable Disease	No. of cases	% of all cases
Campylobacteriosis	4	2.6
Chlamydia infection	82	53.3
Cryptosporidiosis	2	1.3
<i>E. coli</i> , Shiga Toxin-Producing (O157:H7, Not O157, Unknown Serotype), infection	1	0.7
Giardiasis	3	2.0
Gonococcal infection	5	3.3
Hepatitis B (including delta) - chronic	1	0.7
Hepatitis B – Perinatal Infection	4	2.6
Hepatitis C - chronic	31	20.1
Influenza-associated hospitalization	8	5.2
Listeriosis	1	0.7
Lyme Disease	2	1.3
Mumps	1	0.7
Mycobacterial disease - other than tuberculosis	1	0.7
Pertussis	3	2.1
Salmonellosis	2	1.3
Streptococcal - Group A -invasive	1	0.7
Streptococcus pneumoniae - invasive antibiotic resistance unknown or non-resistant	1	0.7
Varicella	1	0.7
Total	154	100.0

†Includes 13 'suspected' cases of: Hepatitis B—chronic (n=1); Hepatitis B- Perinatal (n=4); Influenza-associated hospitalization (n=1); Lyme Disease (n=2); Pertussis (n=3); and Varicella (n=1); 17 'probable' Campylobacteriosis (n=1); Hepatitis C- chronic (n=16); and 124 cases were 'confirmed'.

Table 3. Reportable Communicable Disease Count† and Percentage, Tuscarawas County, Ohio, 2016

Reportable Communicable Disease	Number of cases	% of all cases
Botulism- Infant	1	0.2
Brucellosis	1	0.2
Campylobacteriosis	14	2.4
Chlamydia infection	298	51.5
Cryptosporidiosis	11	1.9
<i>E. coli</i> , Shiga Toxin-Producing (O157:H7, Not O157, Unknown Serotype), infection	3	0.5
Giardiasis	7	1.2
Gonococcal infection	26	4.5
<i>Haemophilus influenza</i> (invasive disease)	1	0.2
Hepatitis B (including delta) – chronic	10	1.7
Hepatitis B – Perinatal Infection	5	0.9
Hepatitis C - acute	2	0.4
Hepatitis C – chronic	102	17.6
Influenza-associated hospitalization	32	5.5
LaCrosse virus disease (other California serogroup virus disease)	1	0.2
Legionellosis - Legionnaires' Disease	1	0.2
Lesteriosis	1	0.2
Lyme Disease	10	1.7
Malaria	1	0.2
Meningitis - aseptic/viral	8	1.4
Mumps	1	0.2
Mycobacterial disease – other than tuberculosis	3	0.5
Pertussis	12	2.0
Salmonellosis	17	2.9
Streptococcal - Group A -invasive	2	0.4
Streptococcal toxic shock syndrome (STSS)	1	0.2
<i>Streptococcus pneumoniae</i> - invasive antibiotic resistance unknown or non-resistant	2	0.4
<i>Streptococcus pneumoniae</i> - invasive antibiotic resistant/intermediate	1	0.2
Tuberculosis	1	0.2
Varicella (Chickenpox)	3	0.5
Vibriosis (not cholera)	1	0.2
Total	579	100.0

†Includes 'confirmed' (n=47), 'probable' (n=73), or 'suspected' (n=35) cases of diseases reported to both the Tuscarawas County Health Department and the New Philadelphia City Health Department.

35 'suspected' cases include: *E. coli* infection (n=1); Hepatitis B—chronic (n=6); Hepatitis B- Perinatal (n=5); Hepatitis C—chronic (n=1); Influenza-associated hospitalization (n=3); Lyme disease (n=9); Mumps (n=1); Pertussis (n=6); Salmonellosis (n=1); Streptococcal toxic shock syndrome (STSS) (n=1); and Varicella (Chickenpox) (n=1).

73 'probable' cases include: Brucellosis (n=1); Campylobacteriosis (n=2); Cryptosporidiosis (n=1); Hepatitis B—chronic (n=3); Hepatitis C—chronic (n=56); Meningitis - aseptic/viral (n=5); Pertussis (n=3); and Varicella (n=2).

Table 4. Reportable Communicable Disease Rates, Tuscarawas County, Ohio, 2014 - 2016

Reportable Communicable Disease	2014		2015		2016	
	No. of Cases [†]	Rate per 100,000 [*]	No. of Cases ^{††}	Rate per 100,000 ^{**}	No. of Cases ^{††}	Rate per 100,000 ^{***}
Botulism- Infant	0	0	0	0	1	1.1
Brucellosis	0	0	0	0	1	1.1
Campylobacteriosis	16	17.3	16	17.2	14	15.1
Chlamydia infection	238	256.8	243	261.9	298	320.7
Cryptosporidiosis	3	3.2	2	2.2	11	11.8
<i>E. coli</i> , Shiga Toxin-Producing (O157:H7, Not O157, Unknown Serotype), infection	0	0	3	3.2	3	3.2
Giardiasis	3	3.2	5	5.4	7	7.5
Gonococcal infection	38	41.0	25	26.9	26	28.0
<i>Haemophilus influenzae</i> (invasive disease)	1	1.1	1	1.1	1	1.1
Hepatitis A	0	0	1	1.1	0	0
Hepatitis B (including delta) - acute	0	0	4	4.3	0	0
Hepatitis B (including delta) - chronic	1	1.1	12	12.9	10	10.8
Hepatitis B – Perinatal Infection	0	0	0	0	5	5.4
Hepatitis C - acute	1	1.1	2	2.2	2	2.2
Hepatitis C - chronic	40	43.2	80	86.2	102	109.8
Influenza-associated hospitalization	54	58.3	51	54.9	32	34.4
LaCrosse virus disease	1	1.1	0	0	1	1.1
Legionellosis - Legionnaires' Disease	2	2.2	4	4.3	1	1.1
Listeriosis	0	0	0	0	1	1.1
Lyme Disease	1	1.1	8	8.6	10	10.8
Malaria	0	0	0	0	1	1.1
Meningitis - aseptic/viral	3	4.3	2	2.2	8	8.6
Meningitis - bacterial (Not <i>N. meningitidis</i>)	0	0	8	8.6	0	0
Mumps	1	1.1	1	1.1	1	1.1
Meningococcal disease - <i>Neisseria meningitidis</i>	0	0	0	0	0	0
Mycobacterial disease - other than tuberculosis	11	12.9	5	5.4	3	3.2
Other Arthropod-borne Disease	1	1.1	0	0	0	0
Pertussis	10	10.8	3	3.2	12	12.9
Salmonellosis	10	10.8	19	20.5	17	18.3
Shigellosis	1	1.1	1	1.1	0	0
Streptococcal - Group A -invasive	1	1.1	0	0	2	2.2
Streptococcal Toxic Shock Syndrome (STSS)	0	0	0	0	1	1.1
<i>Streptococcus pneumoniae</i> - invasive antibiotic resistance unknown or non-resistant	4	4.3	4	4.3	2	2.2
<i>Streptococcus pneumoniae</i> - invasive antibiotic resistant/intermediate- infection	2	2.2	1	1.1	1	1.1
Tuberculosis	4	4.3	2	2.2	1	1.1
Varicella (Chickenpox)	9	9.7	7	7.5	3	3.2
Vibriosis (not cholera)	0	0	0	0	1	1.1
Yersinosis	1	1.1	7	7.5	0	0
Total	457	493.1	517	557.2	579	624.0

†For 2014 rate calculations only 'confirmed' or 'probable' cases of diseases reported to both the Tuscarawas County Health Department and the New Philadelphia City Health Departments are included.

††For 2015 rate calculations confirmed (n=463), probable (n=21), or suspected (n=33) cases of diseases reported to both the Tuscarawas County Health Department and the New Philadelphia City Health Department are included.

††For 2016 rate calculations confirmed (n=471), probable (n=73), or suspected (n=35) cases of diseases reported to both the Tuscarawas County Health Department and the New Philadelphia City Health Department are included.

*2014 rates based on 2013 population estimates (92,672); **2015 rates based on 2014 county population estimates (92,788) (U.S. Census Bureau); and ***2016 rates based on 2015 county population estimates (92,916) (U.S. Census Bureau).

Table 5. Monthly Count[†] and Percentage of Reportable Communicable Disease Reported to New Philadelphia City and Tuscarawas County Health Departments, Tuscarawas County, Ohio, 2016

Month	New Philadelphia City Health Department		Tuscarawas County Health Department		County Total	
	<i>Number of Cases (n=154)</i>	<i>% (26.6)</i>	<i>Number of Cases (n=425)</i>	<i>% (73.4)</i>	<i>Number of Cases (N= 579)</i>	<i>% (100)</i>
January	14	9.1	29	6.8	43	7.4
February	12	7.8	47	11.1	59	10.2
March	13	8.4	36	8.5	49	8.5
April	18	11.7	34	8.0	52	9.0
May	6	3.9	30	7.1	36	6.2
June	16	10.4	31	7.3	47	8.1
July	8	5.2	27	6.4	35	6.0
August	17	11.0	50	11.8	67	11.6
September	14	9.1	48	11.3	62	10.7
October	6	3.9	28	6.6	34	5.9
November	19	12.3	31	7.3	50	8.6
December	11	7.1	34	8.0	45	7.8

[†]Includes 'confirmed' (n=471), 'probable' (n=73), and 'suspected' (n=35) cases of diseases reported to both Tuscarawas County Health Department and New Philadelphia City Health Department.

Table 6a Reportable Communicable Disease Count† and Percentage, Tuscarawas County, Ohio, January 2016 (n=43)

<i>Disease</i>	<i>No. of Cases</i>	<i>%</i>
Chlamydia infection	35	81.4
Gonococcal infection	1	2.3
Hepatitis C - chronic	3	7.0
Meningitis - aseptic/viral	1	2.3
Salmonellosis	2	4.7

†Includes 'confirmed' (40) and 'probable' (3) cases

Table 6b Reportable Communicable Disease Count† and Percentage, Tuscarawas County, Ohio, February 2016 (n=59)

<i>Disease</i>	<i>No. of cases</i>	<i>%</i>
Campylobacteriosis	1	1.7
Chlamydia infection	30	50.9
Giardiasis	1	1.7
Hepatitis C - acute	2	3.4
Hepatitis C - chronic	13	22.0
Influenza-associated hospitalization	9	15.3
Meningitis - aseptic/viral	1	1.7
Salmonellosis	1	1.7
<i>Streptococcus pneumoniae</i> - Group A -invasive	1	1.7

† Includes 'confirmed' (52), 'probable' (6), and 'suspected' (1) cases

Table 6c Reportable Communicable Disease Count† and Percentage, Tuscarawas County, Ohio, March 2016 (n=49)

<i>Disease</i>	<i>No. of cases</i>	<i>%</i>
Campylobacteriosis	1	2.0
Chlamydia infection	24	49.0
<i>E. coli</i> , Shiga Toxin-Producing (O157:H7, Not O157, Unknown Serotype)	1	2.0
Gonococcal infection	2	4.1
Hepatitis C - chronic	8	16.3
Influenza-associated hospitalization	10	20.4
Listeriosis	1	2.0
Mycobacterial disease - other than tuberculosis	1	2.0
Salmonellosis	1	2.0

†Includes 'confirmed' (45), 'probable' (2), and 'suspected' (2) cases

**Table 6d Reportable Communicable Disease Count† and Percentage,
Tuscarawas County, Ohio, April 2016 (n=52)**

Disease	No. of cases	%
Campylobacteriosis	1	1.9
Chlamydia infection	22	42.3
Giardiasis	2	3.9
Gonococcal infection	2	4.7
Hepatitis C - chronic	10	23.3
Influenza-associated hospitalization	8	21.2
Meningitis - aseptic/viral	2	3.9
Mumps	1	1.9
Salmonellosis	1	1.9
<i>Streptococcus pneumoniae</i> - Group A -invasive	1	1.9

†Includes 'confirmed' (42), 'probable' (8), and 'suspected' (2) cases

**Table 6e Reportable Communicable Disease Count† and Percentage,
Tuscarawas County, Ohio, May 2016 (n=36)**

Disease	No. of Cases	%
Chlamydia infection	21	58.3
Cryptosporidiosis	1	2.8
<i>E. coli</i> , Shiga Toxin-Producing (O157:H7, Not O157, Unknown Serotype)	1	2.8
Hepatitis B (including delta) - chronic	2	5.6
Hepatitis C - chronic	8	22.2
Salmonellosis	2	5.6
<i>Streptococcus pneumoniae</i> - invasive antibiotic resistant/intermediate- infection	1	2.8

†Includes 'confirmed' (27), 'probable' (7), and 'suspected' (2) cases

**Table 6f Reportable Communicable Disease Count† and Percentage,
Tuscarawas County, Ohio, June 2016 (n=47)**

Disease	No. of cases	%
Campylobacteriosis	2	4.3
Chlamydia infection	22	46.8
Gonococcal infection	2	4.3
<i>Haemophilus influenzae</i> (invasive disease)	1	2.1
Hepatitis B (including delta) - chronic	5	10.6
Hepatitis C – chronic	2	4.3
Lyme Disease	2	4.3
Malaria	1	2.1
Meningitis - aseptic/viral	1	2.1
Mycobacterial disease - other than tuberculosis	1	2.1
Salmonellosis	1	2.1
<i>Streptococcus pneumoniae</i> - invasive antibiotic resistance unknown or non-resistant	1	2.1

†Includes 'confirmed' (36), 'probable' (7), and 'suspected' (4) cases

**Table 6g Reportable Communicable Disease Count† and Percentage,
Tuscarawas County, Ohio, July 2016 (n=35)**

Disease	No. of cases	%
Campylobacteriosis	1	2.9
Chlamydia infection	13	37.1
Hepatitis B (including delta) - chronic	1	2.9
Hepatitis C - chronic	8	22.9
Lyme Disease	4	11.4
Pertussis	6	17.1
Salmonellosis	2	5.7

†Includes 'confirmed' (20), 'probable' (6), and 'suspected' (9)cases

Table 6h Reportable Communicable Disease Count† and Percentage, Tuscarawas County, Ohio, August 2016 (n=67)

Disease	No. of cases	%
Campylobacteriosis	1	1.5
Chlamydia infection	31	46.3
Cryptosporidiosis	6	9.0
<i>E. coli</i> , Shiga Toxin-Producing (O157:H7, Not O157, Unknown Serotype)	1	1.5
Giardiasis	2	3.0
Gonococcal infection	5	7.5
Hepatitis C – chronic	10	14.9
Lyme Disease	1	1.5
Meningitis - aseptic/viral	1	1.5
Pertussis	3	4.5
Salmonellosis	5	7.5
Vibriosis (not cholera)	1	1.5

†Includes 'confirmed' (58), 'probable' (5), and 'suspected' (4) cases

Table 6i Reportable Communicable Disease Count† and Percentage, Tuscarawas County, Ohio, September 2016 (n=62)

Disease	No. of cases	%
Campylobacteriosis	4	6.5
Chlamydia infection	31	50.0
Cryptosporidiosis	3	4.8
Giardiasis	1	1.6
Gonococcal infection	5	8.1
Hepatitis C - chronic	7	11.3
Legionellosis - Legionnaires' Disease	1	1.6
Lyme Disease	2	3.2
Meningitis - aseptic/viral	1	1.6
Mycobacterial disease - other than tuberculosis	1	1.6
Pertussis	3	4.8
Salmonellosis	1	1.6
Streptococcal toxic shock syndrome (STSS)	1	1.6
Varicella	1	1.6

†Includes 'confirmed' (49), 'probable' (9), and 'suspected' (4) cases

Table 6j Reportable Communicable Disease Count† and Percentage, Tuscarawas County, Ohio, October 2016 (n=34)

Disease	No. of cases	%
Campylobacteriosis	1	2.9
Chlamydia infection	24	70.6
Cryptosporidiosis	1	2.9
Gonococcal infection	2	5.9
Hepatitis C – chronic	4	11.8
LaCrosse virus disease (other California serogroup virus disease)	1	2.9
Lyme Disease	1	2.9

†Includes ‘confirmed’ (30), ‘probable’ (3), and ‘suspected’ (1) cases

Table 6k Reportable Communicable Disease Count† and Percentage, Tuscarawas County, Ohio, November 2016 (n=50)

Disease	No. of cases	%
Brucellosis	1	2.0
Chlamydia infection	22	44.0
Giardiasis	1	2.0
Gonococcal infection	4	8.0
Hepatitis B (including delta) – chronic	1	2.0
Hepatitis B- Perinatal Infection	5	10.0
Hepatitis C – chronic	13	26.0
Meningitis - aseptic/viral	1	2.0
Salmonellosis	1	2.0
<i>Streptococcus pneumoniae</i> - invasive antibiotic resistance unknown or non-resistant	1	2.0

†Includes ‘confirmed’ (34), ‘probable’ (11), and ‘suspected’ (1) cases

Table 6I Reportable Communicable Disease Count† and Percentage, Tuscarawas County, Ohio, December 2016 (n=45)

Disease	No. of cases	%
Botulism- Infant	1	2.2
Campylobacteriosis	2	4.4
Chlamydia infection	23	51.1
Gonococcal infection	2	4.4
Hepatitis B (including delta) - chronic	1	2.2
Hepatitis C - chronic	9	20.0
Influenza-associated hospitalization	4	8.9
Tuberculosis	1	2.2
Varicella	2	4.4

†Includes 'confirmed' (38), 'probable' (6), and 'suspected' (1) cases

Basic Information on Reportable Communicable Diseases Observed in Tuscarawas County

Botulism

Infectious Agent: *Clostridium botulinum*

Reservoir: soil, agricultural product, marine sediments and intestinal tract of animals including fish

Transmission: Foodborne, waterborne, inhalation and contamination from wound

Incubation Period: 12-36 hours or sometimes several days after eating contaminated food

Prevention Measures: Good preparation of food and hygiene, pasteurization, refrigeration of food combined with control of salt.

Campylobacteriosis

Infectious Agent: *Campylobacter jejuni*, *Campylobacter Coli*.

Reservoir: Poultry, cattle, farm animals. Most raw poultry meat is contaminated.

Mode of Transmission: Ingestion of undercooked poultry, contaminated water or milk from an infected cow, improper hand sanitization after handling farm animals.

Incubation Period: 2-5 day, range 1-10 days.

Prevention Measures: Pasteurize all milk, boil/chlorinate all water. Thoroughly cook meat and sanitize utensils/cutting boards. Implement stringent hand washing practices.

Chlamydia Infection

Infectious Agent: *Chlamydia trachomatis* (subtypes D-K).

Reservoir: Humans.

Mode of Transmission: Sexual Intercourse.

Incubation Period: 7-14 days or longer.

Prevention Measures: Sex education, condom use, screening of at risk populations (>25 years old).

Creutzfeldt - Jakob disease

Infectious Agent: Prion Protein.

Reservoir: Humans – likely from “Mad Cow”/Bovine Spongiform Encephalitis Cattle.

Mode of Transmission: Unknown – Evidence for: Contaminated Pituitary Hormone Infusion, Dura Mater/Corneal Grafts.

Incubation Period: 15 months to >30 years.

Prevention Measures: Strict screening and avoidance of contaminated tissue transplant from infected donors.

Cryptosporidiosis

Infectious Agent: *Cryptosporidium parvum* – a coccidian protozoan parasite.

Reservoir: Humans, cattle, domesticated animals.

Mode of Transmission: Fecal-oral – including person-to-person, animal-to-person, waterborne and foodborne.

Incubation Period: 7 days, range 1-12 days.

Prevention Measures: Personal hygiene education, sanitary handling of feces, stringent hand washing practices and boiling and filtering water.

Cytomegalovirus – Congenital (CMV)

Infectious Agent: Human β -herpesvirus 5 – include 4 unique subtypes - mixing is common.

Reservoir: Humans.

Mode of Transmission: Intimate exposure through mucosal contact with infected tissues, secretions and excretions: *in utero*, at time of delivery, via semen, breast milk and blood transfusions. Also, saliva (day-cares are a common community reservoir) .

Incubation Period: 3-8 weeks following transplant of infected tissue or contact with infected fluids. 3-12 weeks following and infection acquired at birth.

Prevention Measures: Strict screening of transfusion products, sanitary handling of diapers, and implementation of “universal precautions” by adults involved with childcare (nurses, day care employees, teachers)

E. Coli – enterohemorrhagic – Not O157:H7

Infectious Agent: The enterotoxins of most subtypes of *Escherichia Coli* except O157:H7.

Reservoir: Humans.

Mode of Transmission: Contaminated food and, less likely, water.

Incubation Period: As short as 10-12 hours, usually 24-72 hours.

Prevention Measures: Prophylactic antibiotics if traveling to an area where bacteria are endemic. Else, implement universal precautions to minimize fecal-oral food contamination.

Giardiasis

Infectious Agent: *Giardia lamblia*, *Giardia intestinalis*, *Giardia duodenalis*, a flagellate protozoan parasite.

Reservoir: Humans, possibly Beaver and other domesticated animals.

Mode of Transmission: Fecal-oral , hand-to-mouth transfer. Most common at day care centers. Also, anal intercourse, contamination of foodstuffs and unfiltered stream and lake waters (given human or animal fecal contamination).

Incubation Period: 3 to >25 days, median 7-10 days.

Prevention Measures: Protect public water supplies against contamination, implement emergency boiling procedures, and promote stringent hand washing procedures.

Gonococcal Infection

Infectious Agent: *Neisseria gonorrhoeae*

Reservoir: Humans.

Mode of Transmission: Sexual Contact (an indicator of sexual abuse in children).

Incubation Period: 2-7 days.

Prevention Measures: Safe sex practices, monogamy or abstinence.

Haemophilus Influenzae (invasive disease)

Infectious Agent: *Haemophilus influenza*

Reservoir: Humans (asymptomatic carriers).

Mode of Transmission: Person-to-person, direct contact or inhalation of droplets of respiratory tract secretions containing the bacteria.

Incubation Period: Unknown.

Prevention Measures: Vaccine against serotype B available, else, universal precautions and hand washing when in contact with infected respiratory excretions.

Hepatitis A

Infectious Agent: Hepatitis A Virus (HAV), a member of the family Picornaviridae.

Reservoir: Humans, rarely primates.

Mode of Transmission: Fecal-oral, person-to-person. Infected foodstuffs and water.

Incubation Period: 28-30 days, range 15-50 days.

Prevention Measures: Vaccination (with Immunoglobulin/Antibody supplement if needed), education on sanitary practices, thoroughly cook all shellfish and boil all water where disease is endemic.

Hepatitis B (including Delta) – Chronic

Infectious Agent: Hepatitis B Virus (HBV) and Hepatitis Delta Virus (HDV) – Requires existing HBV infection to be virulent.

Reservoir: Humans

Mode of Transmission: Sexual activities, IV drug use, close contact with: blood, saliva, semen, vaginal secretions, cerebrospinal fluid, and amniotic, synovial, peritoneal and pericardial fluids.

Prevention Measures: Immunization of all children, screening of donated blood products. Safe sex practices and eliminate recreational drug use.

Hepatitis C – Acute (chronic cases are prevalent)

Infectious Agent: Hepatitis C Virus (HCV).

Reservoir: Humans.

Mode of Transmission: Usually by skin puncture (needlestick, cut, abrasion, etc). No evidence for oral route.

Incubation Period: 6-9 weeks. Chronic infections may persist up to 20 years before onset of cirrhosis or hepatoma.

Prevention Measures: See HBV prevention.

Influenza

Infectious Agent: Multiple (ex: H1N1, H3N2)

Reservoir: Humans, Birds, Swine.

Mode of Transmission: Airborne spread of droplets or direct contact with mucous membranes of infected individual.

Incubation Period: 1-3 days.

Prevention Measures: Education on sanitization, annual vaccination, universal precautions.

Legionnaires' Disease

Infectious Agent: *Legionella pneumophila*, less commonly *Legionella micdadei*, *Legionella bozemanii*, *Legionella longbeachae* and *Legionella dumoffi*.

Reservoir: Showers, HVAC systems, evaporative condensers, humidifiers, whirlpool spas, respiratory therapy devices and decorative fountains.

Mode of Transmission: Inhalation, aspiration of contaminated water.

Incubation Period: 5-6 days.

Prevention Measures: Sanitize water-using systems regularly to prevent the growth of associated slime molds. All hot water systems should be maintained at temperatures >122°F.

Listeriosis

Infectious Agent: *Listeria monocytogenes*

Reservoir: Soil, forage, water, mud and silage. Also, infected animals, humans and poorly refrigerated foods.

Mode of Transmission: Contaminated, poorly-refrigerated foods, mostly dairy. Also, *in utero* transmission.

Incubation Period: 3 weeks.

Prevention Measures: The pregnant and immunocompromised should avoid ready-to-eat foods, smoked fish and unpasteurized dairy. Thoroughly wash/clean all foods prior to eating. Do not use untreated manure on vegetable crops. If you must, take great care when handling dead animals.

Lyme Disease

Infectious Agent: *Borrelia burgdorferi*, *Borrelia garinii*, *Borrelia afzelii*

Reservoir: Deer Ticks

Mode of Transmission: Tick bite (Experimental evidence shows ticks attached for less than 24 hours may not pass on the disease.)

Incubation Period: 7-10 days.

Prevention Measures: Education on tick habitat, prevention and removal. Avoidance of tick infested areas, application of tick repellent and use of long shirts and pants.

Viral/Aseptic Meningitis

Infectious Agent: Enterovirus, Coxsackievirus (>50% of cases are of unknown etiology)

Reservoir: Vary with viral type; likely Human.

Mode of Transmission: Vary with viral type.

Incubation Period: Vary with viral type.

Prevention Measures: Vary with viral type. Universal precautions.

Mumps

Infectious Agent: Mumps Virus, family Paramyxoviridae genus *Rubulavirus*.

Reservoir: Humans.

Mode of Transmission: Airborne, droplet or direct contact with saliva of infected.

Incubation Period: 16-18 days.

Prevention Measures: Mumps vaccination as part of standard MMR.

Mycobacterial Disease – other than Tuberculosis

Disease/Infectious Agent:

- **Cervical Lymphadenitis** – *Mycobacterium avium*, *M. scrofulaceum*, *M. kansasii*.

- **Skin Ulcers** – *M. ulcerans*, *M. marinum*.

- **Nosocomial (hospital acquired) disease** – *M. fortuitum*, *M. chelonae*, *M. abscessus*

- **Crohn disease** – *M. paratuberculosis*

Reservoir: Contaminated soil, milk, water; Infected Humans.

Mode of Transmission: Contact with ulcerated skin lesions or sputum. (Not common)

Incubation Period: Varies by agent.

Prevention Measures: Avoid the ill if immunocompromised. Take prophylactic antibiotics before undergoing surgery.

Pertussis

Infectious Agent: *Bordetella Pertussis*.

Reservoir: Humans.

Mode of Transmission: Airborne, droplets.

Incubation Period: 9-10 days.

Prevention Measures: Pertussis vaccination as part of standard DPT.

Q Fever

Infectious Agent: *Coxiella burnetii*, a rickettsial bacteria.

Reservoir: Sheep, cattle, goats, cats, dogs, birds, ticks. (Usually asymptomatic and shed massive amounts of bacteria during the birthing process).

Mode of Transmission: Inhalation of dust/particles from dried excreta or afterbirth of infected animals. May also be found in the wool and milk of infected sheep and cows.

Incubation Period: 2-3 weeks, depending on initial exposure dose.

Prevention Measures: Educate those in high-risk occupations (farmers, butchers...etc), pasteurize all milk.

Salmonellosis

Infectious Agent: *Salmonella typhi*, *S. enterica*.

Reservoir: Wild and domestic animals.

Mode of Transmission: Ingestion of contaminated animal products (meat, dairy) or of foodstuffs cross-contaminated (ex: lettuce, tomatoes prepared alongside contaminated meat or dairy).

Incubation Period: 12-36 Hours.

Prevention Measures: Educate food handlers/preparers on sanitary practices, thoroughly cook all foods to specified temperatures, and mandate irradiation of at risk foods (eggs, milk).

Shigellosis

Infectious Agent: *Shigella dysenteriae*, *S. flexneri*, *S. boydii*, *S. Sonnei*.

Reservoir: Humans, primates.

Mode of Transmission: Direct or indirect fecal-oral contact by infected individual. Most commonly, poor hand washing followed by food preparation. Also flies may land on an infected latrine and subsequently on an exposed food.

Incubation Period: 1-3 days.

Prevention Measures: Educate on proper hand-washing techniques, implement fly-proof latrines, pasteurize, refrigerate and thoroughly cook all foods. Enforce quality control measures in food preparation (restaurants and industry).

Streptococcal – Group A (β -Hemolytic)

Infectious Agent: *Streptococci pyogenes* (including >130 distinct serotypes).

Reservoir: Humans.

Mode of Transmission: Airborne or direct contact with respiratory discharges. (Ex: sneeze, tissues). Also contaminated milk and egg salad.

Incubation Period: 1-3 days.

Prevention Measures: Educate public about routes of transmission, proper sanitation...etc, thoroughly cook and refrigerate food products.

Streptococcus pneumoniae

Infectious Agent: *Streptococcus pneumonia* (*pneumococcus*)

Reservoir: Humans.

Mode of Transmission: Droplet spread, oral contact, direct contact with respiratory discharges.

Incubation Period: 1-3 days, not well determined.

Prevention Measures: Avoid crowding, vaccinate, encourage prophylactic ingestion of xylitol, a sugar that inhibits pneumococcal growth.

Note: Some strains, such as MRSA are resistant to antibacterial medication. As such, strict sanitation practices (wiping down most surfaces with antiseptic chemicals) should be implemented as such infections frequently involve hospitalization.

Tuberculosis

Infectious Agent: *Mycobacterium tuberculosis*.

Reservoir: Humans. Less frequently, cattle, swine and other mammals.

Mode of Transmission: Airborne, droplet. (Coughing, sneezing, singing).

Incubation Period: 2-10 weeks.

Prevention Measures: Identify cases, have adequate x-ray facilities for rapid preliminary diagnosis, educate public on awareness and prevention measures.

Varicella (Chickenpox)

Infectious Agent: Human α -Herpesvirus 3 (Varicella-Zoster Virus, VZV).

Reservoir: Humans.

Mode of Transmission: Direct contact, airborne, droplets from spread of vesicle fluid or secretions of the respiratory tract. Indirect contact, surfaces or fabrics contaminated with discharges from vesicles or membranes of the infected.

Incubation Period: 2-3 weeks.

Prevention Measures: Vaccination of children, isolate infected children.

Yersinosis

Infectious Agent: *Yersinia pseudotuberculosis*, *Y. enterocolitica*.

Reservoir: Swine, rodents.

Mode of Transmission: Fecal-oral transmission through contaminated food or water. Consumption of raw pork.

Incubation Period: 3-7 days.

Prevention Measures: Prepare foods in a sanitary manner, protect and sanitize the water supply, control the rodent population, wash hands thoroughly after caring for or slaughtering animals.

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