

Carroll County, Ohio
Communicable Disease Report, 2008-2010

Carroll County General Health District
301 Moody Ave SW
Carrollton, Ohio, 44615

Summary

- In 2010, there were a total of 154 cases of communicable diseases reported to the Carroll County Health Department.
- In 2009, there were a total of 134 cases, while in 2008 there were a total of 93 communicable disease cases reported to the health department.
- There was an increase of 67.7% between 2008 and 2010 and an increase of 16.4% between 2009 and 2010 in the overall rates of communicable diseases in Carroll County.
- The increase in the rates of communicable diseases in the county from 2008 to 2010 is attributed to the increase in the rates of Chlamydia and Gonococcal infections, both sexually transmitted infections.
- The number of Chlamydia cases increased from 22 (77.1 per 100,000) in 2008 to 39 (136.7 per 100,000) in 2009 and 70 (245.3 per 100,000) in 2010.
- The number of Gonorrhea cases increased from 7 (24.5 per 100,000) in 2008 to 12 (42.0 per 100,000) and to 14 (49.1 per 100,000) in 2010.
- Of the total 70 Chlamydia cases, 77.1% (54) were among women, while 92.3% (13 out of 14 cases) of Gonorrhea case were among men.
- Majority of Chlamydia (73%) and Gonorrhea (86%) cases are occurring in adolescents and young individuals 24 years or less in Carroll County.
- In 2009 there were 12 reported cases of Cryptosporidiosis, compared to 1 case in 2008. After this dramatic increase in 2009, the number of cases dropped to 2 in 2010.
- Similarly, after a sharp increase in the number of influenza-associated hospitalization in 2009 (a total of 15 compared to none in 2008), there was only 1 case in 2010.
- There were 3 cases of Pertussis reported in 2010 compared to none in 2009 and 1 case in 2008.
- Similarly, there has been an increase in the number of Varicella (Chickenpox) cases from 5 in 2008 to 8 in 2010.

Table 1. Reportable Communicable Disease Rates for Carroll County, Ohio, 2008-2010

Reportable Communicable Disease	2008		2009		2010	
	No of Cases	Rate per 100,000	No of Cases	Rate per 100,000	No of Cases	Rate per 100,000
Campylobacteriosis	6	21.0	3	10.5	8	28.0
Chlamydia infection	22	77.1	39	136.7	70	245.3
Creutzfeldt-Jakob Disease	1	3.5	0	0.0	0	0.0
Cryptosporidiosis	1	3.5	12	42.0	2	7.0
Cytomegalovirus -congenital (CMV)	0	0.0	1	3.5	0	0.0
E. coli - enterohemorrhagic - Not O157:H7	0	0.0	1	3.5	0	0.0
Giardiasis	5	17.5	5	17.5	6	21.0
Gonococcal infection	7	24.5	12	42.0	14	49.1
Haemophilus influenzae (invasive disease)	0	0.0	1	3.5	0	0.0
Hepatitis A	2	7.0	1	3.5	0	0.0
Hepatitis B (including delta) - chronic	2	7.0	1	3.5	2	10.5
Hepatitis C - acute	1	3.5	0	0.0	0	0.0
Hepatitis C - chronic	15	52.6	15	52.6	15	52.6
Influenza-associated hospitalization	0	0.0	15	52.6	1	3.5
Legionellosis - Legionnaires' Disease	1	3.5	1	3.5	2	7.0
Listeriosis	0	0.0	0	0.0	1	3.5
Lyme Disease	2	7.0	2	7.0	3	10.5
Meningitis - aseptic/viral	2	7.0	0	0.0	1	3.5
Mumps	1	3.5	0	0.0	0	0.0
Mycobacterial disease - other than tuberculosis	3	10.5	4	14.0	2	7.0
Pertussis	1	3.5	0	0.0	3	10.5
Q Fever, Chronic	0	0.0	0	0.0	1	3.5
Salmonellosis	5	17.5	5	17.5	7	24.5
Shigellosis	0	0.0	1	3.5	0	0.0
Streptococcal - Group A -invasive	1	3.5	1	3.5	1	3.5
Streptococcus pneumoniae - invasive antibiotic resistance unknown or non-resistant	3	10.5	4	14.0	4	14.0
Streptococcus pneumoniae - invasive antibiotic resistant/intermediate	6	21.0	1	3.5	3	10.5
Tuberculosis	0	0.0	2	7.0	0	0.0
Varicella (Chickenpox)	5	17.5	7	24.5	8	28.0
Yersinosis	1	3.5	0	0.0	0	0.0
Total	93	325.9	134	469.5	154	539.6

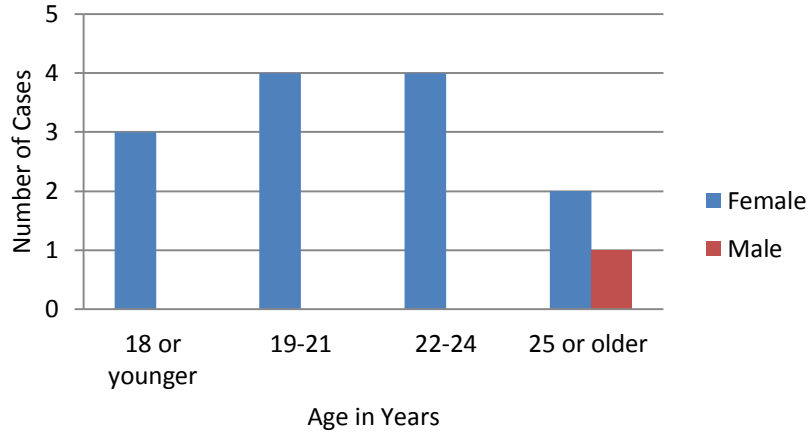
*County population: 28,539 (U.S. Census Bureau Estimate, 2009)

Table 2. Reportable Communicable Disease Count by Township, Carroll County, Ohio, 2010

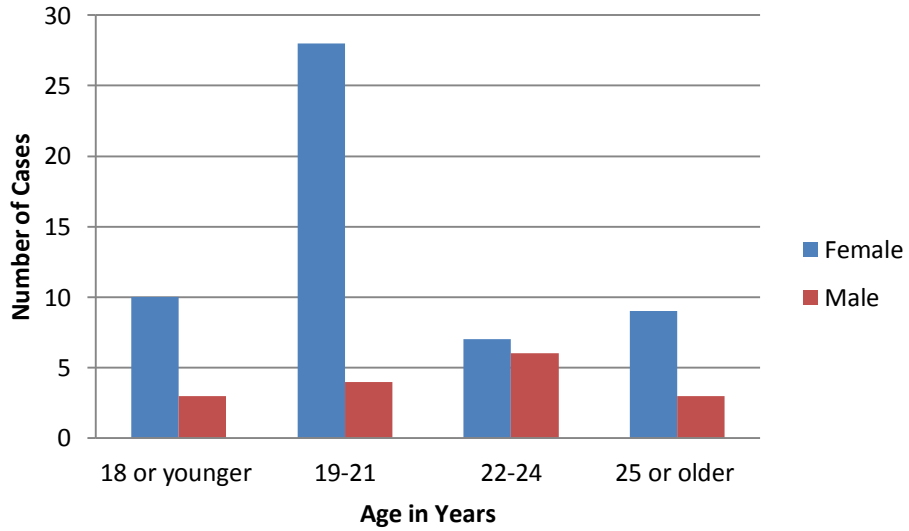
Reportable Condition/Township	A	C	H	L	M	O	P	U	W	TOTAL					
	U	B	R	O	O	R	R	N	A						
	G	E	A	S	E	A	E	A	S						
	R	N	F	O	L	D	R	N	R						
	S	T	S	O	D	R	N	R	O						
	O	A	O	E	O	O	G	R	S						
	T	E	O	O	O	O	R	S	O						
	W	S	X	N	E	E	Y	E	N						
	A	R							N						
Campylobacteriosis	0	4	3	0	0	1	0	0	0	0	8				
Chlamydia infection	1	26	13	1	2	3	3	2	4	5	3	70			
Cryptosporidiosis	0	2	0	0	0	0	0	0	0	0	0	2			
Cytomegalovirus -congenital (CMV)	0	0	0	0	0	0	0	0	0	0	0	0			
E. coli – enterohemorrhagic - not O157:H7	0	0	0	0	0	0	0	0	0	0	0	0			
Giardiasis	1	3	0	0	0	0	0	0	1	0	0	6			
Gonococcal infection	1	4	5	0	0	0	0	1	0	0	0	1	14		
Haemophilus influenzae (invasive disease)	0	0	0	0	0	0	0	0	0	0	0	0			
Hepatitis A	0	0	0	0	0	0	0	0	0	0	0	0			
Hepatitis B (including delta) - chronic	0	1	0	0	0	0	0	0	0	0	0	0	1		
Hepatitis C - chronic	1	5	2	0	0	0	2	1	2	0	0	1	1	15	
Influenza-associated hospitalization	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
Legionellosis - Legionnaires' Disease	0	0	0	0	0	0	0	0	0	0	0	1	1	2	
Lyme Disease	0	2	0	0	1	0	0	0	0	0	0	0	0	3	
Meningitis - aseptic/viral	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
Mycobacterial disease - other than tuberculosis	0	1	1	0	0	0	0	0	0	0	0	0	0	2	
Pertussis	0	1	1	0	0	1	0	0	0	0	0	0	0	3	
Q Fever, Chronic	1	0	0	0	0	0	0	0	0	0	0	0	0	1	
Salmonellosis	0	1	0	0	0	0	0	0	2	0	1	3	0	7	
Shigellosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Streptococcal - Group A -invasive	0	0	0	0	0	0	0	0	1	0	0	0	0	1	
Streptococcus pneumoniae - antibiotic resistant	1	2	0	0	0	0	0	0	0	0	0	0	0	3	
Streptococcus pneumoniae - antibiotic non-resistant	0	2	0	0	0	0	0	1	1	0	0	0	0	4	
Tuberculosis	0	0	0	0	0	0	0	0	1	0	0	0	0	1	
Varicella (Chickenpox)	0	3	0	0	0	0	0	1	1	2	0	0	1	8	
	6	58	25	1	3	5	5	6	13	7	4	11	3	5	154

1 Case of Chronic Hepatitis B, Township not known

Figure 1. Distribution of Gonococcal Infections by Age and Sex, Carroll County, Ohio, 2010



Distribution of Chlamydia Infection by Age and Sex, Carroll County, Ohio, 2010



Basic Information on Reportable Communicable Diseases Observed in Carroll County, 2008-2010

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 is 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 influenzae*

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...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 pneumoniae* (*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.