



Infectious Disease Epidemiology Report

Cryptosporidiosis and Giardiasis Surveillance Report – Maine, 2014



Introduction

Cryptosporidiosis and giardiasis are diarrheal diseases caused by parasites. *Cryptosporidium sp.* (*C. hominis* or *C. parvum*) causes cryptosporidiosis (also referred to as ‘crypto’). Giardiasis is caused by *Giardia intestinalis*, *G. lamblia*, or *G. duodenalis*.

These parasites live in the intestines of infected humans or animals. Both parasites are found in soil, food, water, or surfaces that are contaminated with infected animal or human feces. Infection results from consuming contaminated food or water, person-to-person contact, or animal-to-person contact.

Healthy individuals are known to get sick from ingesting as few as 10 organisms. Infected individuals can shed parasites in feces for weeks after symptoms resolve.

Outbreaks of cryptosporidiosis in the United States are most often due to contaminated recreational water sources such as pools and waterparks. Chlorine does not effectively kill *Cryptosporidium*.

Individuals at greatest risk of infection with *Giardia* include persons swallowing contaminated drinking water (such as backpackers or campers), travelers to endemic countries, and persons sharing close contact with infected individuals (including childcare settings) and/or infected animals.

Methods

Cryptosporidiosis and giardiasis are reportable diseases in Maine. Maine Center for Disease Control and Prevention (Maine CDC) investigates cases of cryptosporidiosis to learn more about the risk factors associated with transmission. The surveillance case definition for a confirmed case of cryptosporidiosis changed during the past years (2009, 2011, and 2012), reflecting changes in diagnostic practices.

Reports of giardiasis were not investigated in Maine until June 2014, through an enhanced surveillance project; prior to this, case counts were likely overestimated since only lab information was collected. Maine cases (January-May 2014) were confirmed using only laboratory test results, without symptom confirmation as required by the national case definition used during enhanced surveillance. This should be kept in mind when interpreting the overall Maine rate for giardiasis in 2014.

Maine’s Health and Environmental Testing Laboratory (HETL) performs a validated *Cryptosporidium* PCR test currently available to clinicians at no charge. *Cryptosporidium* specimens tested at HETL are sent to Federal CDC for speciation and genotyping to learn more about outbreaks and sporadic cases of disease.

Results

In 2014, 51 cryptosporidiosis cases and 154 giardiasis cases were reported to Maine CDC (Figure 1, Table 1).

Figure 1. Rates of cryptosporidiosis and giardiasis, Maine and US, 2010 - 2014.

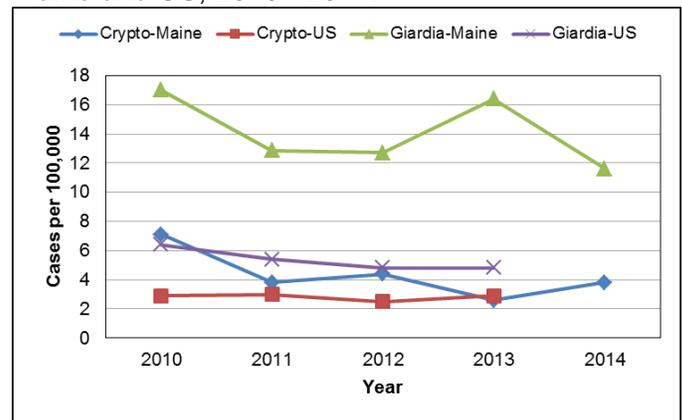


Table 1. Descriptive epidemiology of cryptosporidiosis and giardiasis - Maine, 2014.

	Cryptosporidiosis	Giardiasis
Case count	51	154
Five year median	58	218
Maine rate, 2014	3.8	11.6
US rate, 2013	2.9	4.8
Male	47%	46%
Female	53%	54%
Median age	30 years	42 years
Age range	1-72 years	0-93 years
Travel history	10%	13% [†]
Animal contact	69%	70% [†]
Private well	51%	38% [†]
Natural water exp.	10%	42% [†]

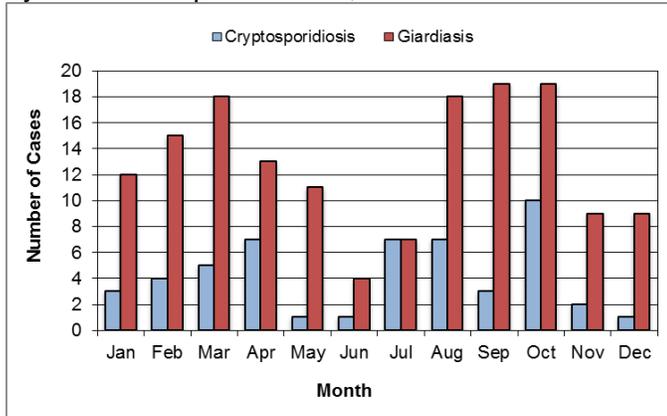
[†]Giardia exposures from Jun-Nov 2014 (n=76)

Cryptosporidiosis and giardiasis reports increased in late summer and fall, indicating that many exposures occur throughout the summer and early

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fall (Figure 2). Again, *Giardia* cases before June are likely overestimated.

Figure 2. Cases of cryptosporidiosis and giardiasis by month of report - Maine, 2014.



Four counties (Franklin, Lincoln, Sagadahoc, and Somerset) experienced rates of giardiasis more than three times the national rate; six counties had giardiasis rates that were over double the national rate (Table 2).

Table 2. Incidence of cryptosporidiosis and giardiasis by county – Maine, 2014.

County	Cryptosporidiosis		Giardiasis	
	Count	Rate*	Count	Rate*
Androscoggin	1	0.9	10	9.3
Aroostook	0	0.0	5	7.2
Cumberland	9	3.1	40	13.9
Franklin	0	0.0	8	26.4
Hancock	5	9.1	6	11.0
Kennebec	7	5.8	9	7.4
Knox	1	2.5	5	12.6
Lincoln	0	0.0	10	29.3
Oxford	0	0.0	6	10.5
Penobscot	14	9.1	17	11.1
Piscataquis	2	11.7	2	11.7
Sagadahoc	2	5.7	8	22.8
Somerset	0	0.0	17	33.2
Waldo	4	10.2	2	5.1
Washington	4	12.6	3	9.4
York	2	1.0	6	3.0
Total	51	3.8	154	11.6

*Rate per 100,000 population

Discussion and Recommendations

Total reports of giardiasis decreased in 2014 compared to previous years due to enhanced surveillance practices beginning in June, where clinically incompatible reports are no longer counted. Due to the high volume of giardiasis,

patient interviews are not routinely completed; therefore, causes for the high rate of giardiasis in Maine are unclear.

The best ways to prevent cryptosporidiosis and giardiasis are to practice good personal hygiene, avoid swimming when ill with diarrhea, and disinfect water that may contain the parasites. The following steps can be taken to prevent infection:

- Wash hands with soap and water:
 - After using the toilet
 - After changing diapers, or assisting an individual using the toilet
 - Before and after preparing or eating food
 - After handling animals and animal waste
 - After gardening, even if wearing gloves
- Do not swim if you have diarrhea. Children in diapers should not be in the water if they have diarrhea. If diagnosed with cryptosporidiosis, wait two weeks after diarrhea ends to swim.
- Do not swallow water when swimming or boating.
- Do not drink untreated water from lakes, streams, ponds, or springs.
- Avoid unpasteurized juices and raw milk products.
- Rinse all fresh fruits and vegetables under clean running water.
- When traveling to countries where water may not be safe and sanitation is poor, do not use ice or tap water and avoid eating uncooked foods.
- Children with diarrhea should be excluded from child-care settings until diarrhea has stopped
- Food handlers should refrain from work until the diarrhea has resolved.

If the safety of drinking water is questionable: use bottled water, disinfect water by heating to a rolling boil for 1 minute, or use an appropriate filter (National Safety Foundation (NSF) Standard 53 or 58). Filtered water will need additional treatment to kill/inactivate bacteria or viruses.

All cases of cryptosporidiosis and giardiasis in Maine must be reported at 1-800-821-5821 or faxing reports to 1-800-293-7534. For more info:

- Maine CDC website: www.maine.gov/idepi
- Federal CDC websites:
 - www.cdc.gov/crypto/
 - www.cdc.gov/giardia
 - www.cdc.gov/healthyswimming