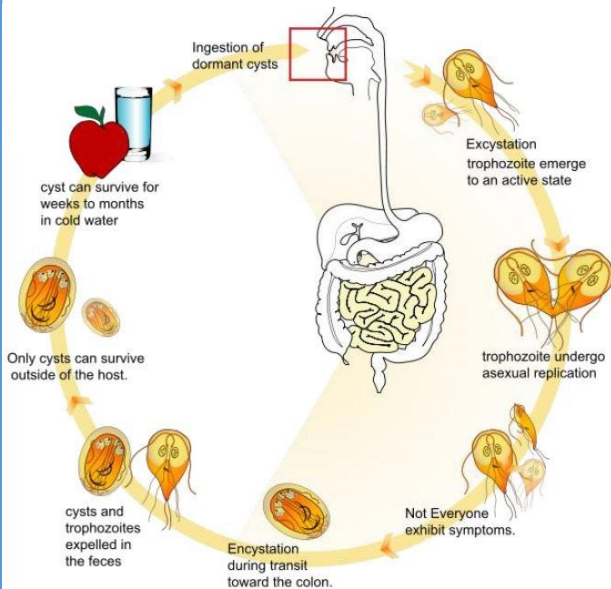


Giardiasis in Vermont

Giardia intestinalis

- ◆ also known as *G. lamblia* and *G. duodenalis*
- ◆ flagellated protozoan parasite
- ◆ most common intestinal parasite in USA
- ◆ associated with untreated surface/groundwater
- ◆ 1.2 million reported infections annually

Giardia Lifecycle



Methods of infection

- ◆ Primarily from ingesting water containing Giardia cysts
- ◆ Person to person or zoonotic transmission
- ◆ transmitted via fecal-oral route
- ◆ Low infectious dose — As few as 10 cysts
- ◆ Infected individuals/animals shed 10^8 – 10^9 cysts in their stool per day and can excrete cysts for months
- ◆ Individual cysts can survive for weeks-months in cold water and are moderately resistant to chlorine treatment

Acute Giardiasis

- ◆ develops after an incubation period of 1-14 days
- ◆ May last for weeks to several months
- ◆ Symptoms include diarrhea, abdominal pain, weight loss, bloating, nausea, and vomiting
- ◆ Approximately 84% will self-resolve over time

Chronic Giardiasis

- ◆ Approximately 16% of all infections result in chronic Giardiasis
- ◆ May last for months, years, or lifetime of patient
- ◆ Symptoms similar to those seen in acute Giardiasis, but can also include development of allergies, lactose intolerance, chronic fatigue, reactive arthritis, irritable bowel syndrome (IBS) and malabsorption
- ◆ Can mimic IBS, peptic ulcer disease (PUD), gallbladder and biliary tract disorders, and some types of cancer

Asymptomatic Giardiasis

- ◆ Approximately 20% of infections will be asymptomatic
- ◆ All infected patients will still release cysts

Giardiasis-related Facts & Data

Confirmed Giardiasis Cases by Vermont county:

	AD	BE	CA	CH	EX	FR	GI	LA	OR	OL	RU	WA	WD	WS	Total
2010	14	3	7	54	5	9	0	9	12	4	14	20	16	18	185
2011	12	14	10	74	3	3	0	6	7	6	11	42	20	15	223
2012	15	4	3	70	1	8	1	9	9	7	8	22	12	14	183
2013	11	5	13	38	4	10	3	9	13	9	6	19	17	16	173
2014	7	6	8	57	3	5	0	9	2	4	9	12	7	11	140

- ◆ Giardia was a reportable disease in Vermont until March 26, 2015
- ◆ The CDC identified Vermont as having the highest incidence rate for Giardiasis in the nation in the most recent Giardiasis report
- ◆ At the time of the last CDC report, the Incidence rate for Vermont (35.6 per 100,000) was approximately triple that of the state with the second highest incidence rate, Maine (12.9 per 100,000)
- ◆ The Health Center (Plainfield, VT) treated a total of 39 patients in 2016
 - 7 of these 39 patients were tested for Giardiasis with 1 patient testing positive
 - 34 were treated with Tindazole, 4 with Metronidazole, and 1 with Albendazole

Testing for Giardiasis

- ◆ Bright field microscopy
- ◆ ELISA tests available have sensitivity of 88-98% and a specificity of 87-100%
- ◆ Three stool specimens collected on separate days increase test sensitivity due to cysts being shed intermittently
- ◆ Per CDC: three separate tests with negative results should be obtained before declaring a patient free of infection
- ◆ Central Vermont Medical Center utilizes "Alere Quik Chek" Enzyme Immunoassay (EIA) - Specificity 99.2%, Sensitivity 99.6%

Treatment of Giardiasis

- ◆ For Symptomatic infections, consider prescribing Metronidazole (Flagyl) or Tinidazole (Tindamax)
- ◆ For children over the age of one who need a liquid form, consider Nitazoxanide (Alinia)
- ◆ During pregnancy, consider prescribing Paromomycin during first trimester, and Paromomycin or Metronidazole in second and third trimesters
- ◆ Mean efficacy of Metronidazole (Flagyl) and Tinidazole (Tindamax) is 92%
- ◆ Mean efficacy of Nitazoxanide (Alina) is 85%

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