

Darmparasieten

SKML deelnemersdag 3 maart 2011

2010

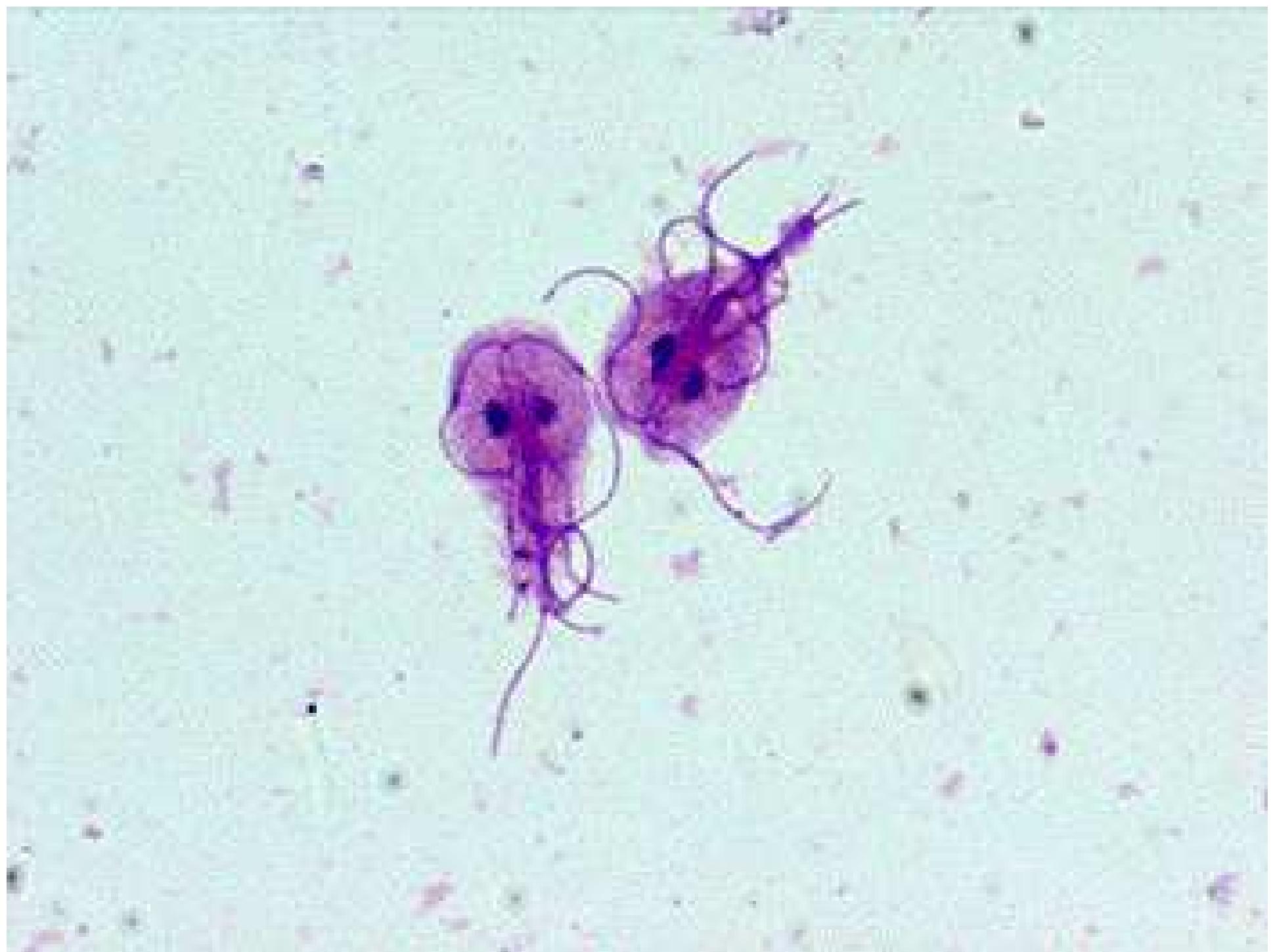
- *Hymenolepis nana*
- Mijnworm
- *S stercoralis*
- *Taenia* spp
- *B hominis*
- *C cayetanensis*
- *E coli*
- *E histo/dispar*
- *E nana*
- *Giardia lamblia*
- *Iodamoeba bütschlii*

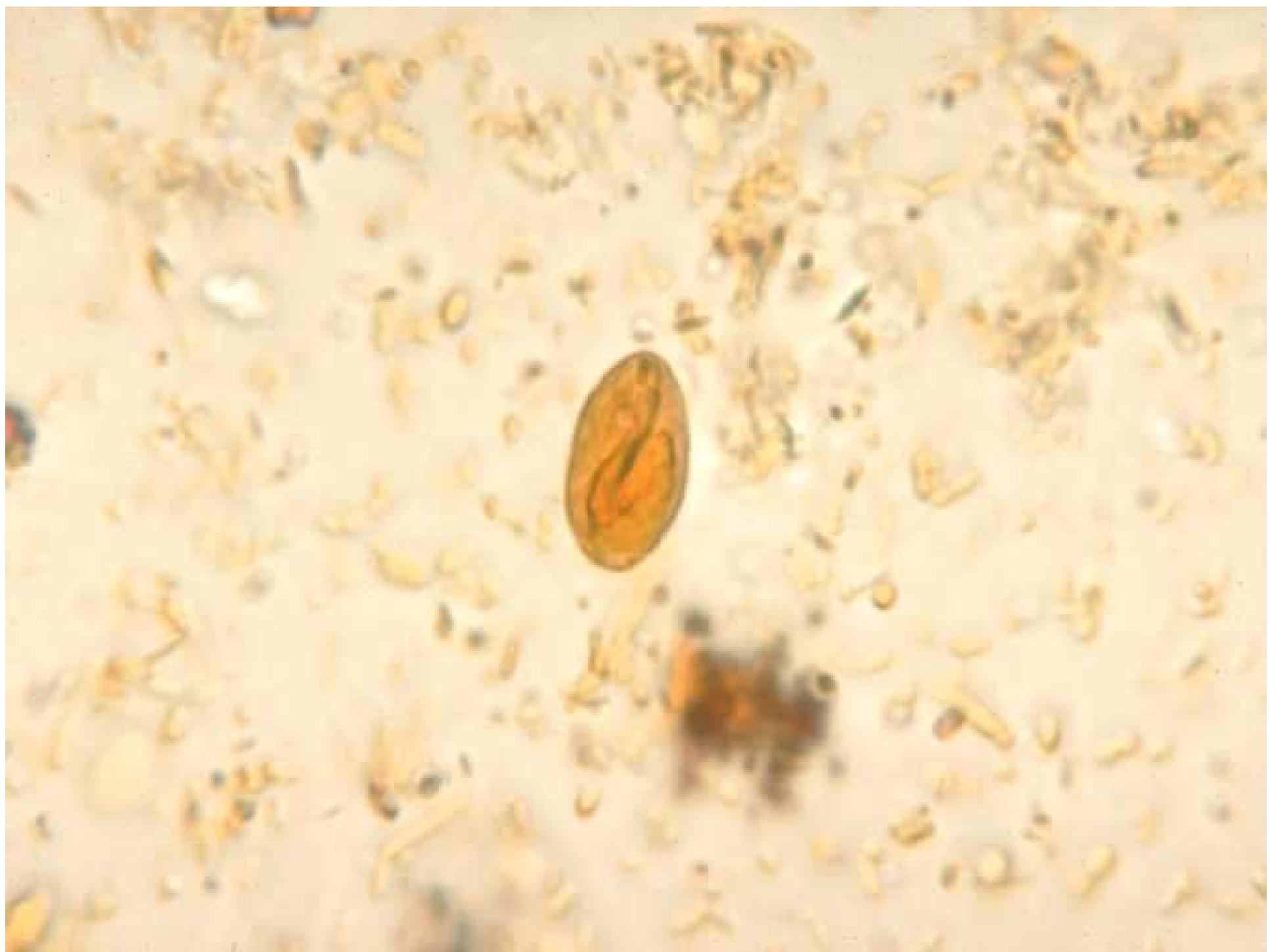
Giardia lamblia

“het” blijft je verbazen

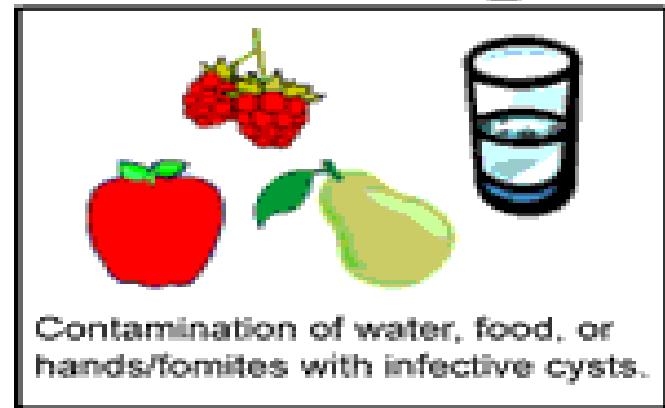
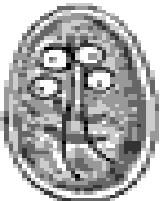


ANOFEL

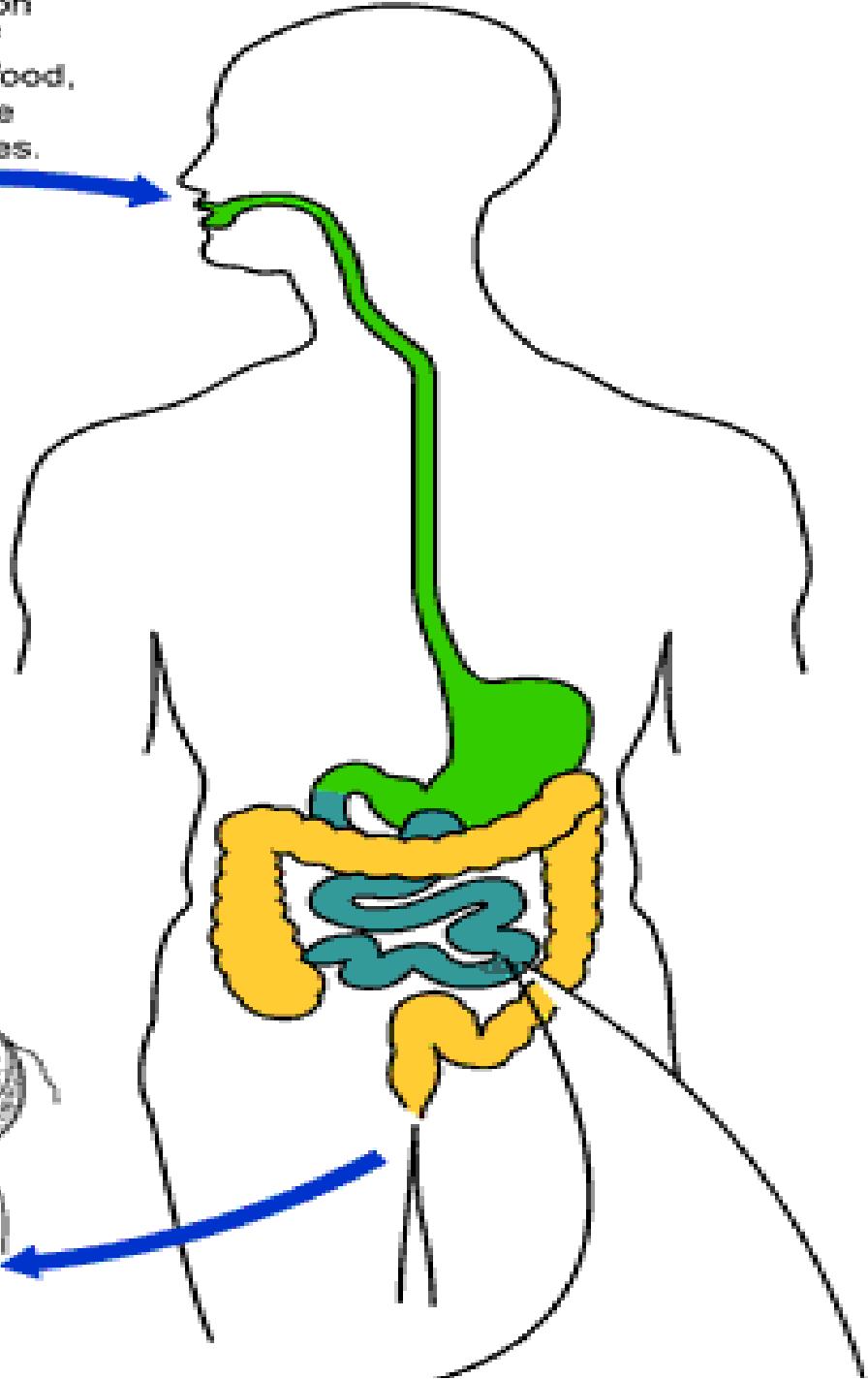




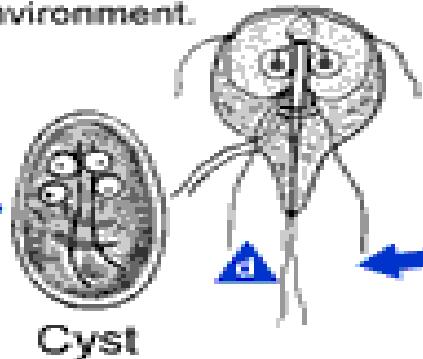
Humans acquire infection through consumption of contaminated water or food, or by the fecal-oral route on or by hands or fomites.



Contamination of water, food, or hands/fomites with infective cysts.



Trophozoites are also passed in stool but they do not survive in the environment.



Cyst

= Infective Stage

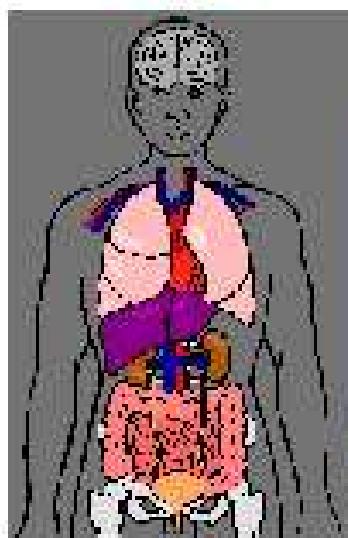
= Diagnostic Stage

The life-cycle of *Giardia lamblia*

Person-to-person
spread



Cysts ingested with
contaminated food or water



Cysts excyst;
trophozoites adhere to
epithelium of small
intestine and multiply
by binary fission

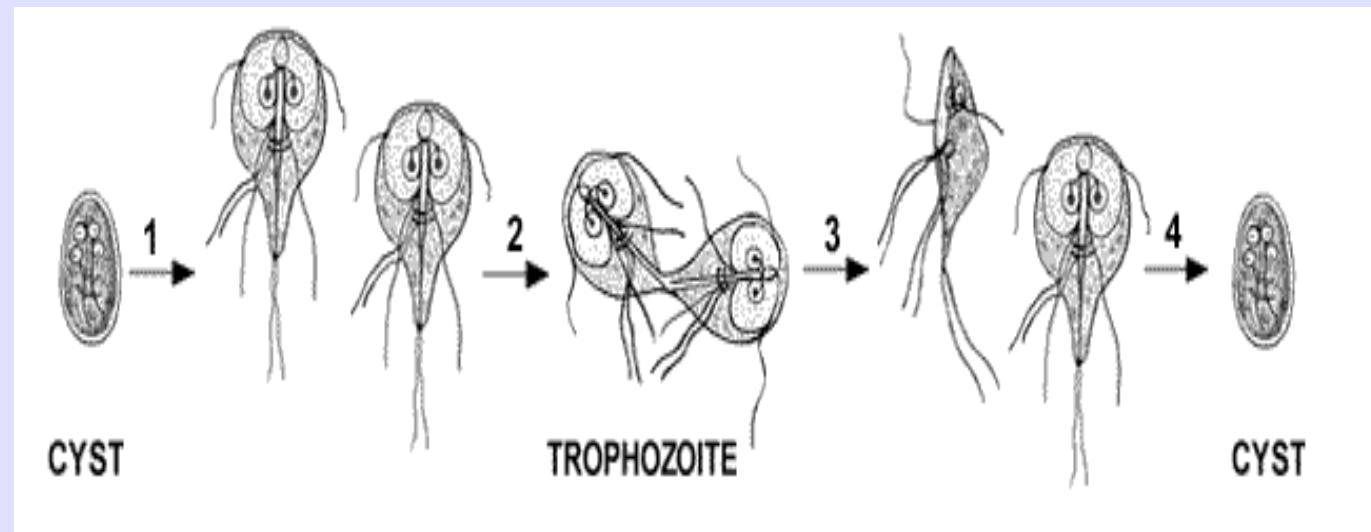


Cysts passed
in faeces

? Zoonotic
disease

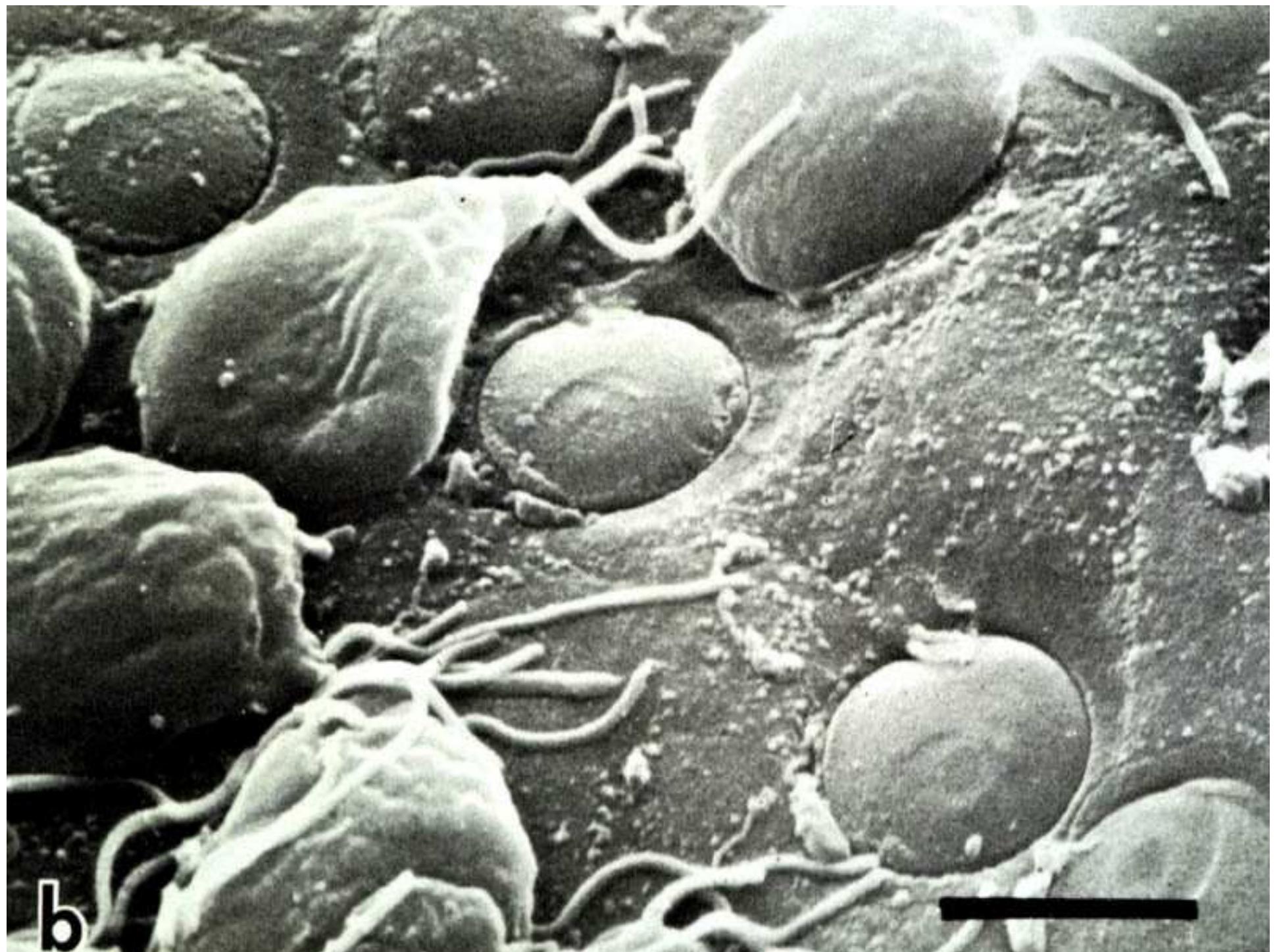


Water-associated
hosts (if endemic)

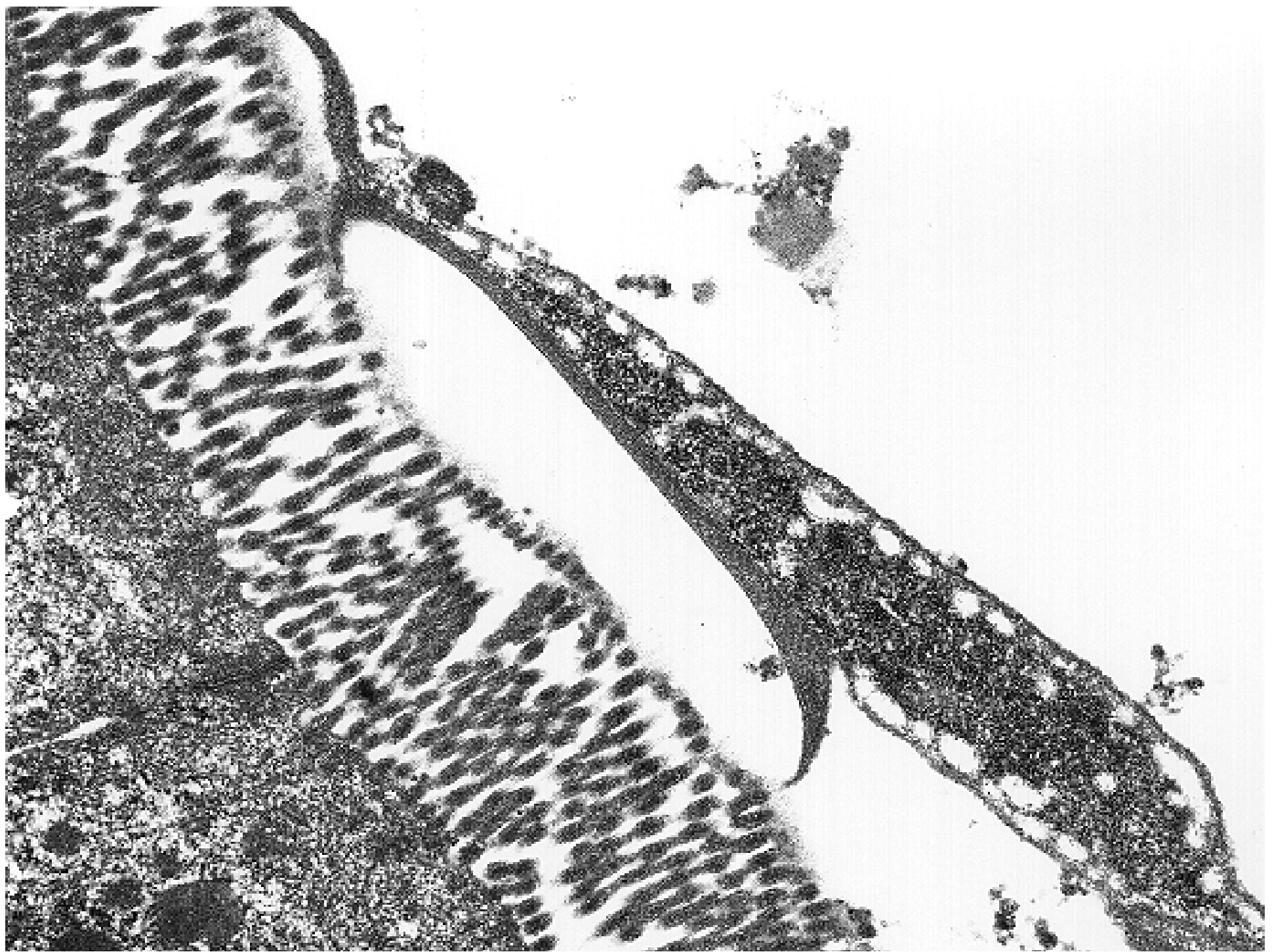




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b



Prevalentie

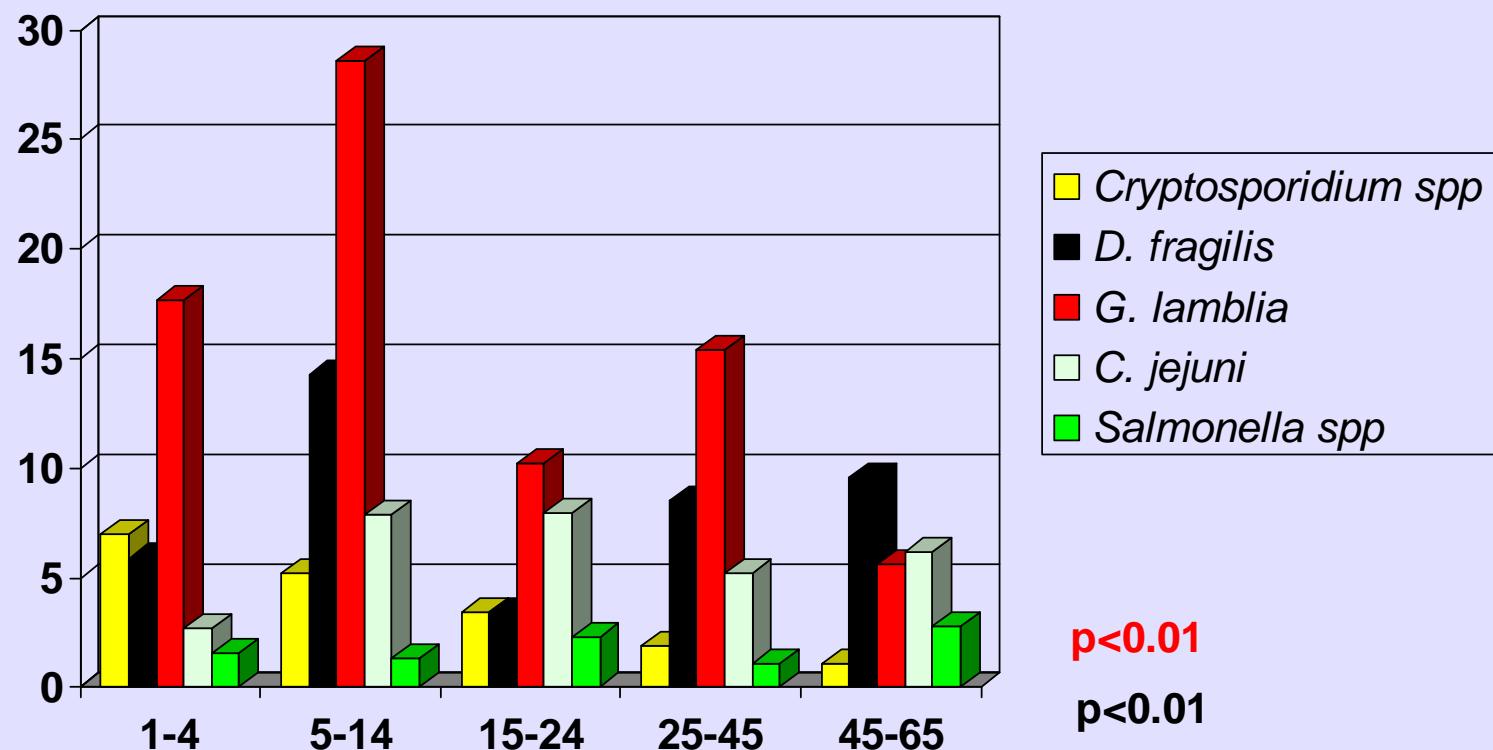
- Afhankelijk van onderzochte populatie
 - Hoger bij slechte sanitaire voorzieningen
 - Drinkwaterkwaliteit
 - Zich ontwikkelende landen
 - Kinderdagverblijven
 - Persoonlijke hygiene

Prevalentie NL

- Afhankelijk van onderzochte populatie
 - Asymptomatisch dragerschap 2-3%
 - Duur klachten
 - Acute GI in huisartspraktijk \pm 5%
 - Diarreeklachten in huisartspraktijk \geq 1 week \pm 14%
 - Ziekenhuispopulatie < huisartspopulatie

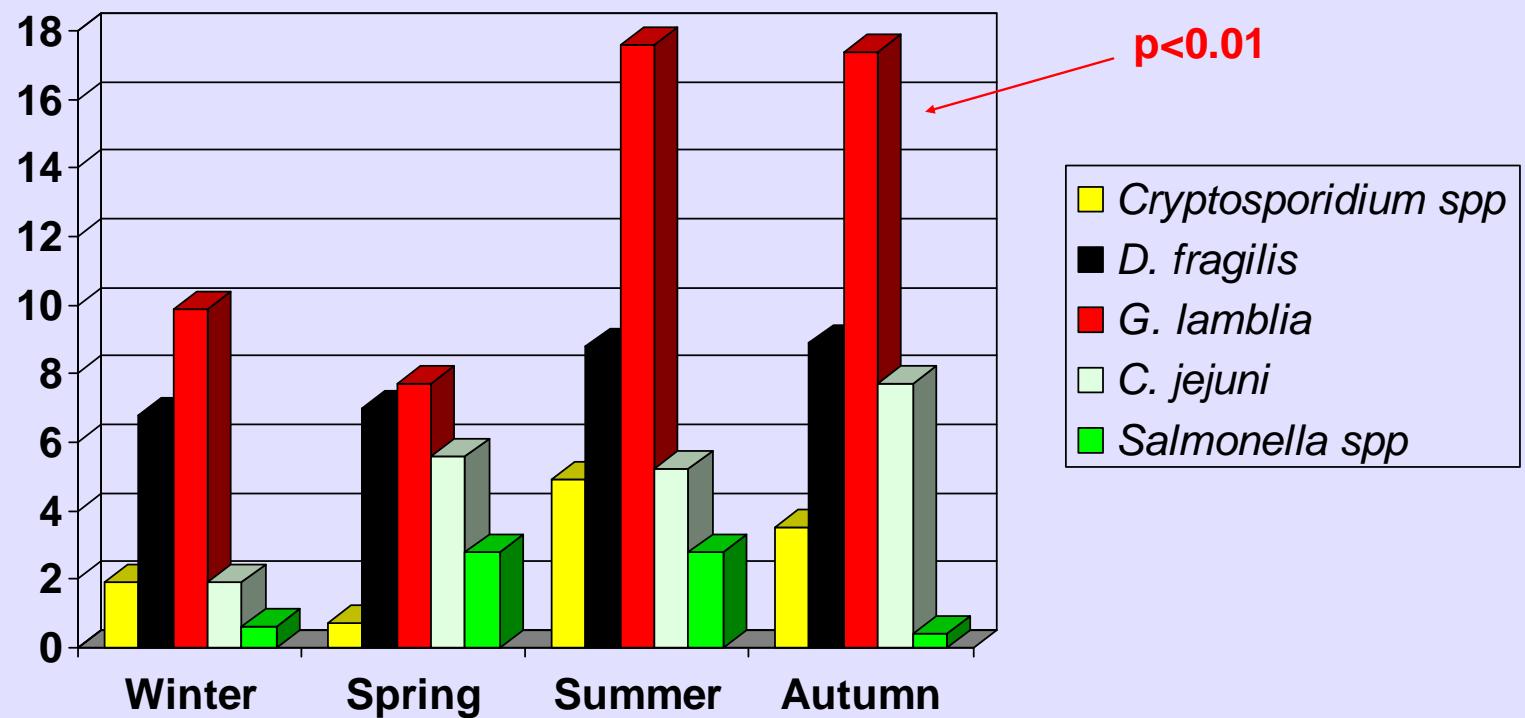
Age-distribution

(N=892 patients; numbers represent percentages)



Seasonal distribution

(N=892 patients; numbers represent percentages)



Diagnostiek

- Microscopie
 - JKJ
 - Ridley concentratie
 - SAF fixatie / permanente kleuring
 - TFT
- ELISA (96 wells)
- 2th generatie ELISA (dipstick-like)
- PCR

The “natural course“ of Giardia

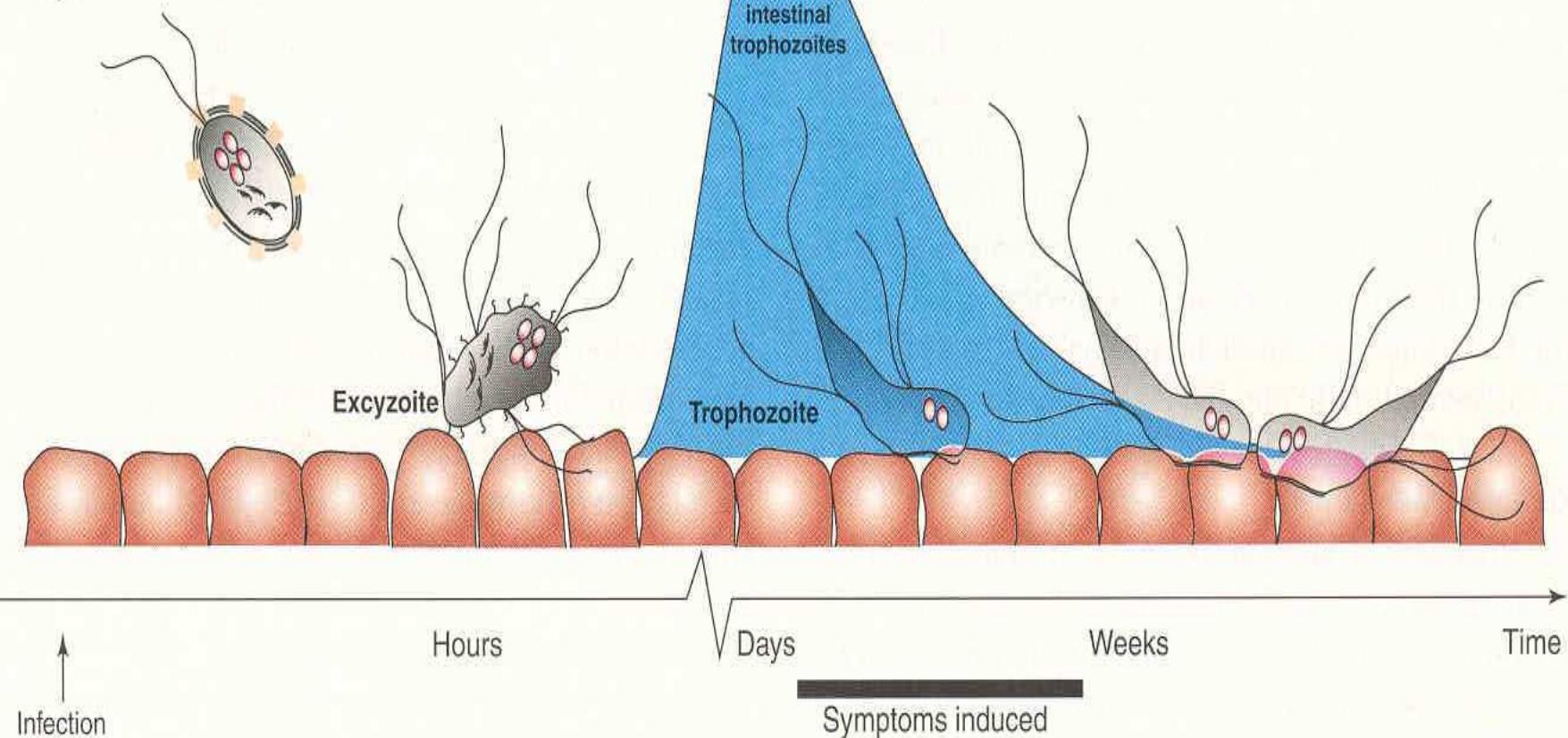
What happens after ingestion of the cysts?

Cyst

Natural barriers
Mucus
Peristalsis
Proteases
Lipases
Bile salts
Intestinal microbiota
Paneth cells

Innate immune responses
Nitric oxide
Reactive oxygen species
Lactoferrin
Defensins
Phagocytes
Mast cells
Dendritic cells

Adaptive immune responses
Antibodies (IgA)
T-cell responses



Clinical presentation

Spectrum disease

- Asymptomatic / beneficial
- Mild; intermittent, not comfortable
- Acute diarrhea (travellers)
- Chronic; persistent diarrhea, brush border abnormalities, malabsorption (children: failure to thrive)

Clinical presentation

Spectrum disease

- Extra intestinal manifestations include:
 - Arthritis
 - Aphtous ulcerations
 - Biliary tract disease
 - Urticaria
 - Sensitisation towards food allergens

Hill et al; Inf Dis Clin North Am 1998;7:503-25

“risk factors” chronic giardiasis

- Host related factors
 - Immune status
 - Hypogammaglobulinemia (IgA def)
 - Age
 - Nutritional status
- Parasite related
 - Genotype / Strains

Therapy

Metronidazol (500 mg tid x 7-10d)

Albendazol al dan niet in combinatie met
Metronidazol

Paromomycine (zwangeren)

Effecten

- Snelle respons zonder sequelae
- Niet effectief
 - al dan niet met aanhoudende sequelae
 - dosering/ compliance / resistentie
 - tijdelijk lactase deficiëntie
 - post infectieuze IBS
 - bacteriële overgroei

“Bergen” uitbraak

- Bergen / Noorwegen
- Herfst 2004
- Contaminatie drinkwater reservoir
- N= 1262
- vervolg na 2 jaar
 - chron vermoeidheid 41% (419 van 1017)
 - darmklachten 38% (389 van 1017)

Robertson *et al* Giardiasis – why do the symptoms sometimes never stop?
Trends in Parasitology 2010; 26(2):75-82

Research

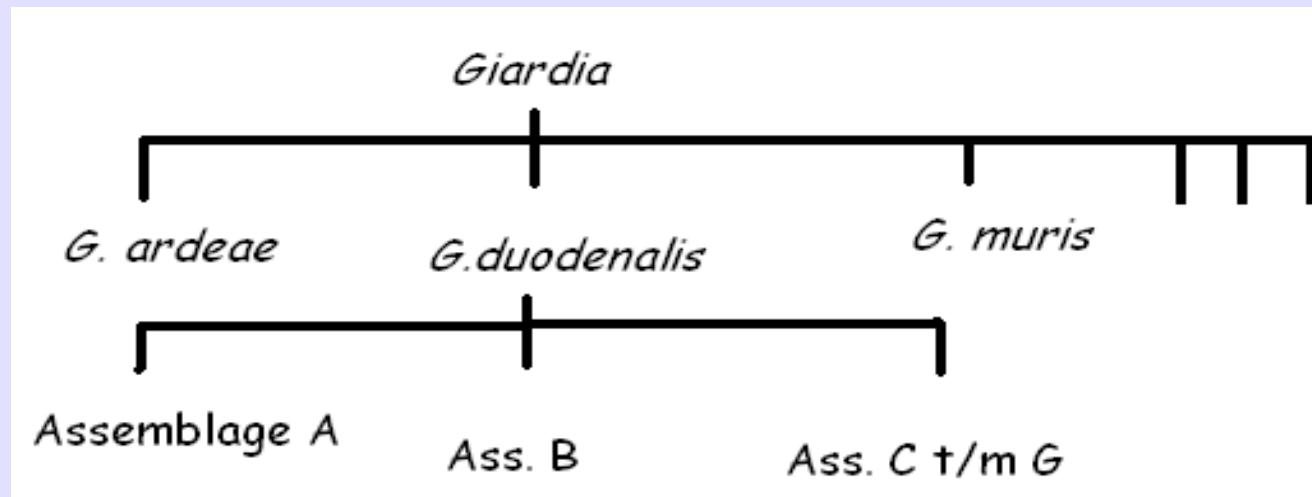
- Moleculaire (geno)typering
- Transmissie routes
(zoonose / gastheerspecificiteit)
- Klinische presentatie / associatie genotype
klachtenpatroon
- Sexuele voortplanting
- Resistentie

Molecular characterization of Giardia

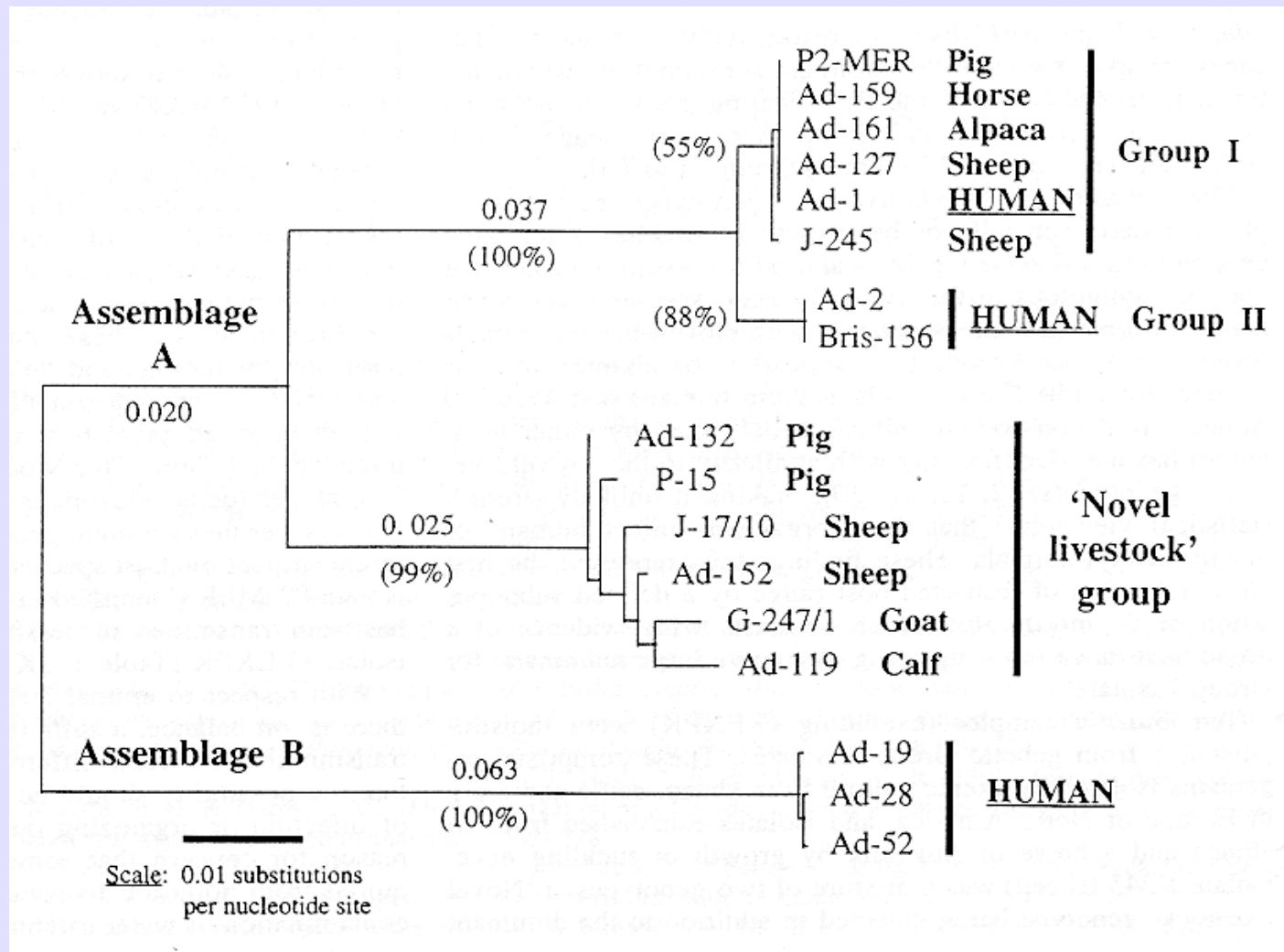
Targets (PCR-RFLP / sequencing / micro array / MLST)

- 18s rDNA
- GdH (glutamate dehydrogenase)
- β -giardine
- tpi (triose phosphate isomerase)
- Elongationfactor-1 α
- GLORF-C4 (G lamblia open reading frame C4)

Species and genotypes of *Giardia* spp



Relationship of *Giardia* based on GDH locus

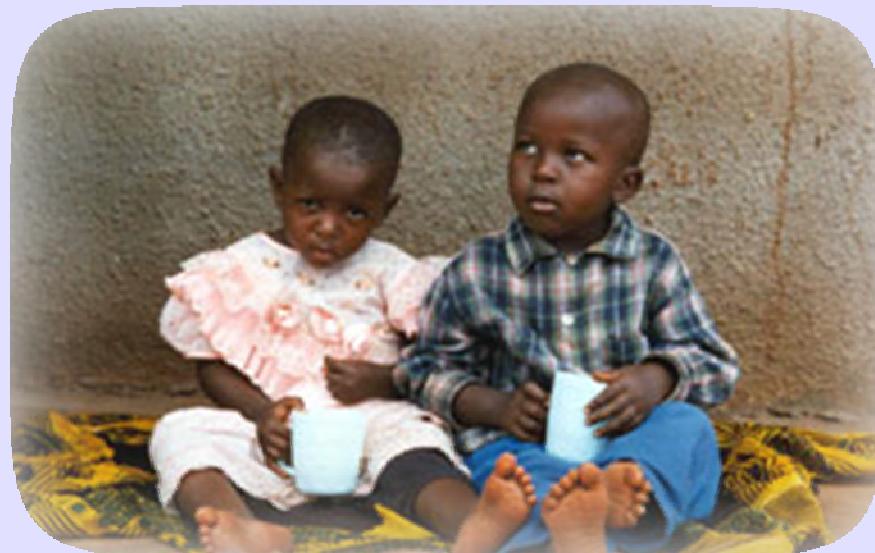


Ey et al, 1997

Research

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Effect of Supplementation with Zinc and Other Micronutrients on the Health, Development and Well being of African Children



Study Population and Design

Study period: February 2008 - March 2009

Location: Kwedizinga ward, Tanzania (malaria endemic)

Study population: children aged 6-60 months

They randomly received daily oral supplement:

- Zinc
- Multinutrients with zinc
- Multinutrients without zinc
- Placebo

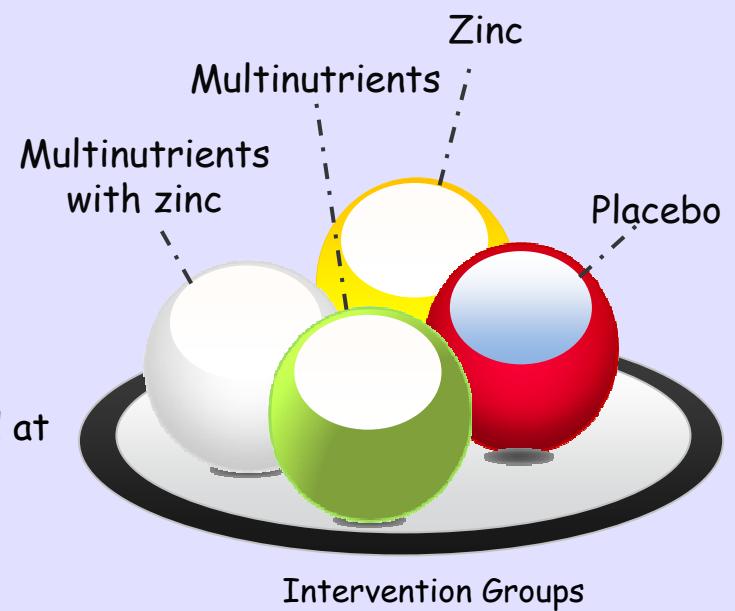
Parents or caretakers were asked to bring their children immediately to the research dispensatory when they observed fever, diarrhoea or any other signs of illness.

Blood sample collection:

at the start and at the end of the intervention, and at the time of fibrile attack.

Stool sample collection:

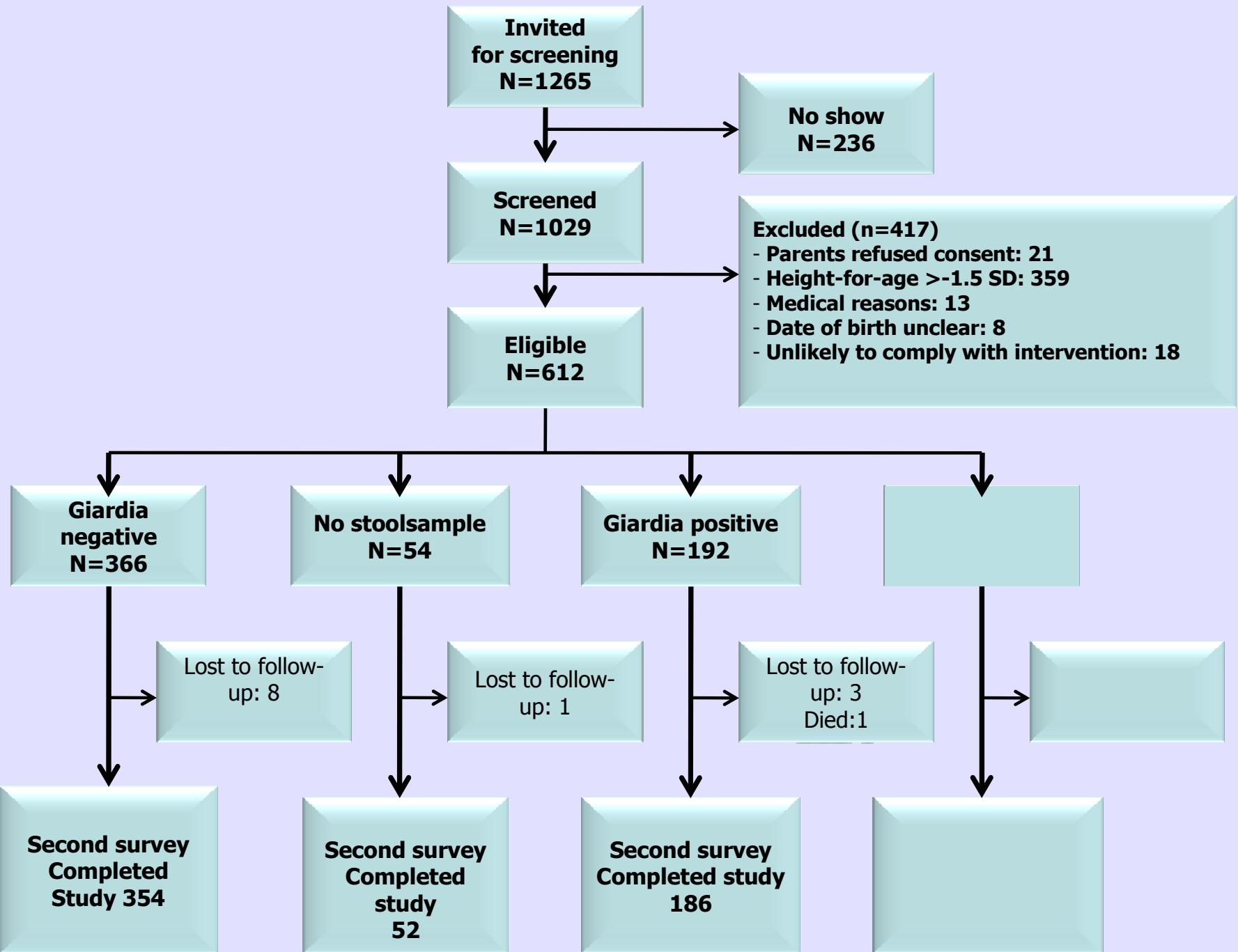
at the start and at a median of 251 days of intervention.



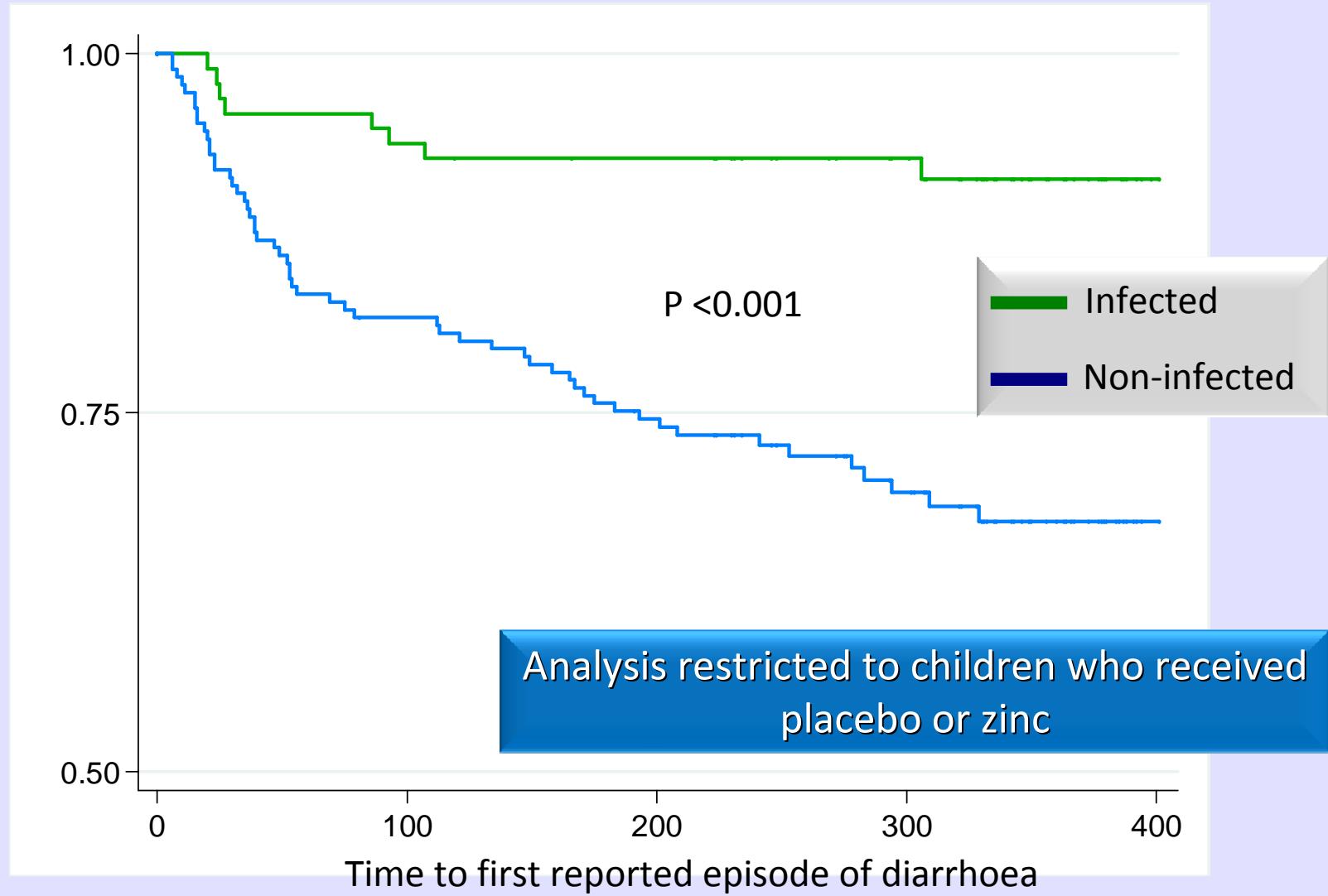
Location of the Study Area



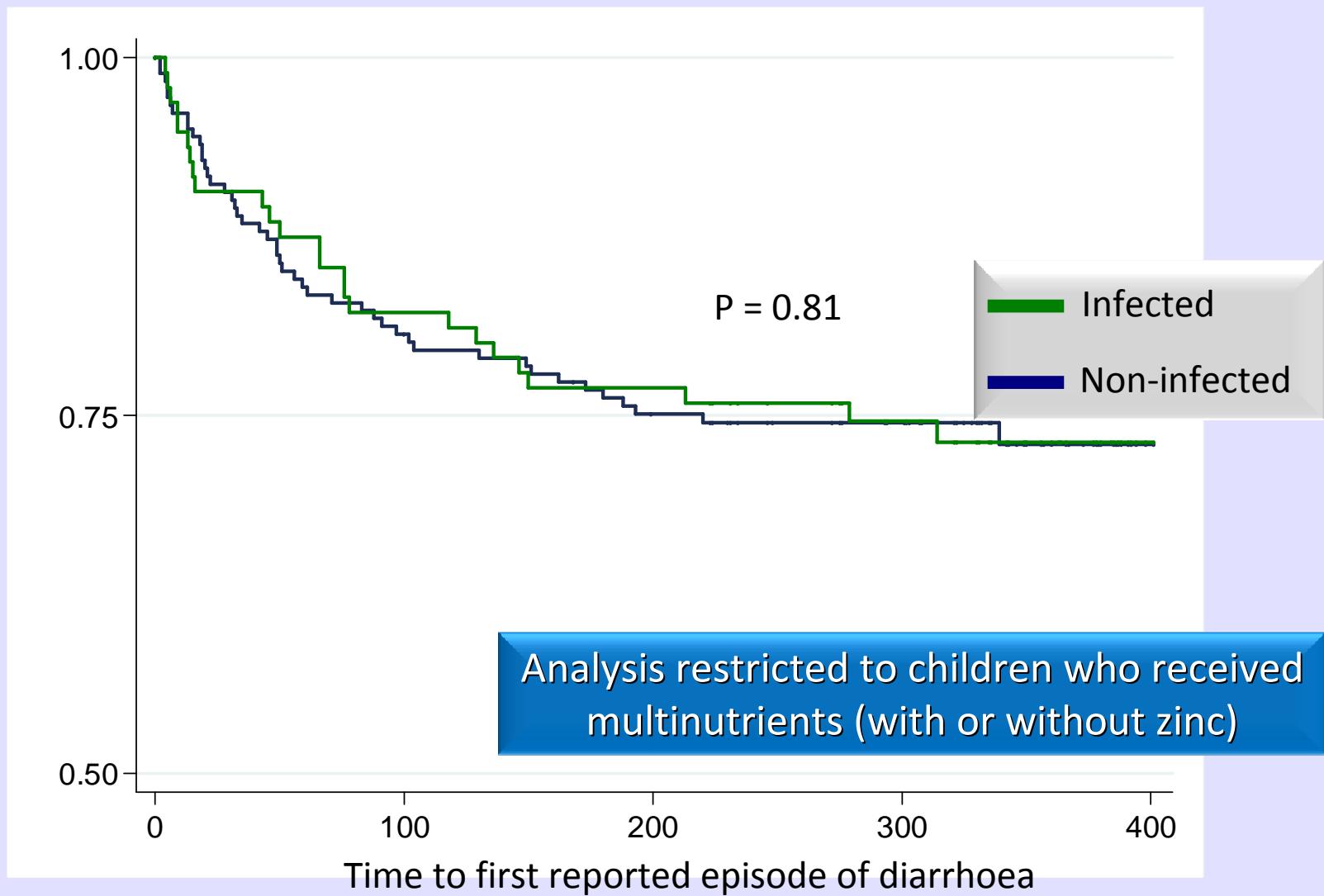
Giardia lamblia infection may influence the effect of zinc and micronutrients supplementation on indicators of nutritional status. The confounding effect may be associated with the genotype of *Giardia lamblia*.



Giardia infection at baseline protects against subsequent diarrhoea...



...but not when receiving multinutrients



?????

- er is nog een hoop werk aan de winkel ☺
- U hoort meer
- Dank voor Uw aandacht
- Zijn er vragen?