

# Gastro-enterologie op reis

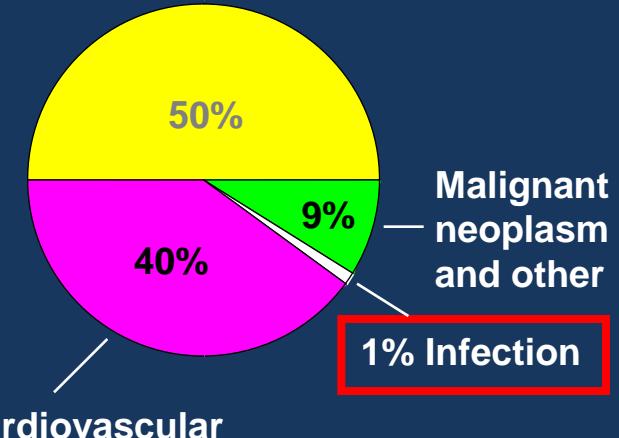
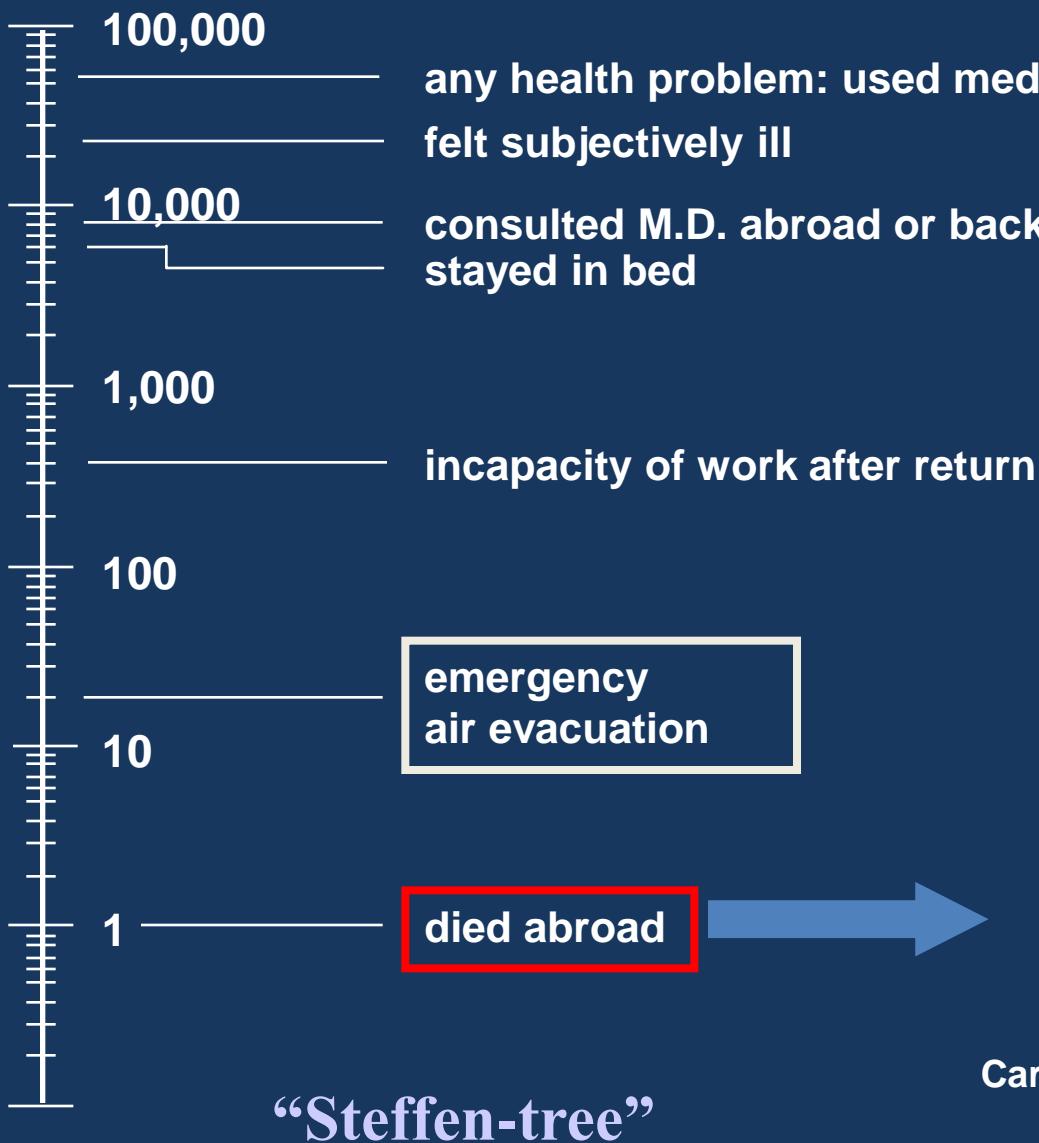


Prof. Dr. Fons Van Gompel

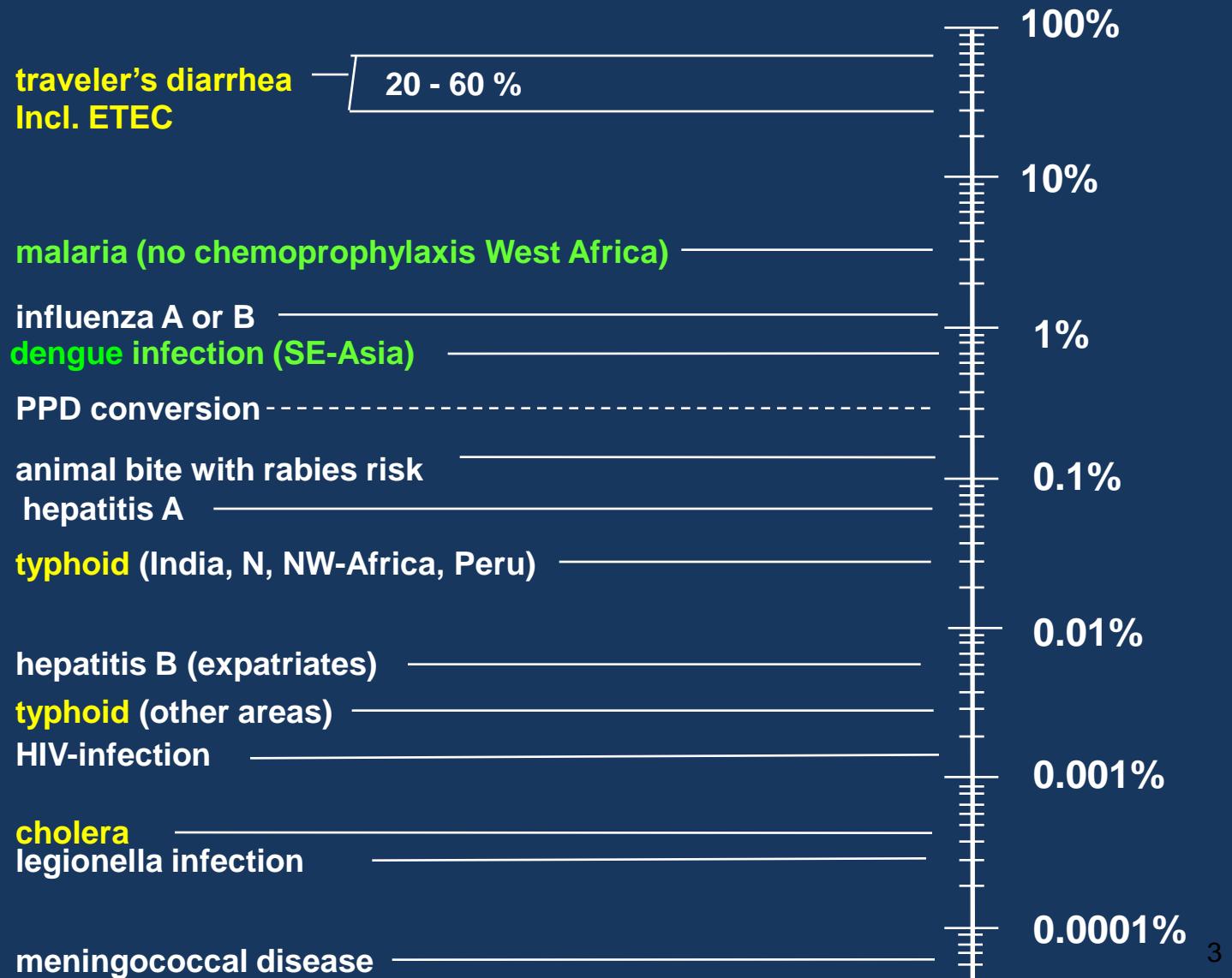
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Dept. of Clinical Sciences  
Institute of Tropical Medicine  
Antwerp

# Monthly incidence rates of health problems during stays in developing countries



## Incidence rate / month of health problems during a stay in developing countries (R.Steffen et al, 2008)





## Incidence of travel related health conditions

Table 16.1 Incidence of various health problems among European travelers during a short stay in various climatic zones<sup>a</sup>

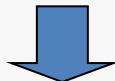
New or worsened disease	% Incidence of health problems during travel		Significance, USA, and Canada used as control group
	Tropics (n=10555)	USA/Canada (n=1300)	
Diarrhea	33.9	5.8	p<0.001
Respiratory infections	13.3	8.5	p<0.001
Insomnia	10.6	7.0	p<0.001
Headache	7.8	7.6	ns
Dermatosis	5.7	3.4	p<0.001
Fever of any origin	3.8	1.2	p<0.001
Cardiovascular disease	1.6	1.2	ns
Accidents	0.3	0.1	ns

<sup>a</sup>Steffen 1983.<sup>b</sup> ns, not significant.

**Diarrhea is by far the most frequent condition associated with travel to the tropics and subtropics**

# DIARRHEA IN THE RETURNED TRAVELER

500 million international travelers/year



50 million travel to tropical or developing areas

(North Americans 27m, Europeans 18m, Japanese 3m, Aussies & Kiwi's 1m)

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## Diarrheal disease

- One third of all travelers to tropical developing areas
- Vast majority either **self-limited** or promptly responsive to short-course antibiotic effective against common enteropathogenic bacteria



- **Low risk (<8%):** North-America, Western Europe, Japan, Australia & NZ,
- **Intermediate risk (8-15%):** S- en E-Europe, Russia, China, Israel, S-Africa
- **High risk (20-90%):** .....all the rest...but some more risky than others.....



.....Food & Beverage catering in the tropics.....



# **Travelers Diarrhea**

## **Clinical Syndromes**

- Acute watery diarrhoea (80 - 90 %)
- Dysenteric disease (10 - 20 %)
- Protracted > 2 weeks (1 - 5%)



# Travelers Diarrhea

## Outcome

<u>± 0 %</u>	will die
< 1 %	hospitalized
20-30 %	stay in bed for a few days
40 %	change their itinerary

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**mean duration :**      4 days (median : 2 days)

                                - 90 % < 1 week

                                - 3 % > 2 weeks

                                - 1 % > 1 month



# Persistent diarrhea in returning travelers

## Prospective studies

-

Travel origin	Total N	Diarrhea > 30d % (n)	Highest risk areas
Swiss travelers	7886	0.9 (73)	West Africa, Far East
Peace Corps volunteers	4607	1.7 (78)	Haiti, Central & West Africa, Nepal
Students	35	2.9 (1)	Latin America

Source:

PERSISTENT DIARRHEA IN THE RETURNED TRAVELER

Nathan M. Thielman MD, MPH and Richard L. Guerrant MD

Infect Dis Clin North Am. 1998 Jun;12(2):489-501.

# Casus Thailand

**PATONG BEACH  
PHUKET  
THAI LAND**

**2001 BOMB ALERT  
2002 SARS  
2003 BIRD FLU  
2004 TSUNAMI  
2005 EARTHQUAKE**

**WHAT'S NEXT ?**

# Casus: “un train peut cacher un autre”

- Man, 32 jaar
- 6 maanden in regio
- terug uit Thailand sedert 2 weken
- Diarrhee sedert 3 weken



# Casus: “un train peut cacher un autre”

- Brijerige stoelgang  
3x/dag
- Wat krampen
- Flatulentie
- Meteorisme
- Geen koorts



# Laboratorium

Faeces      microscopie met verrijking  
                  coprocultuur

Resultaat: geen staal ingeleverd....

Proefbehandeling:  
Tinidazole 2g

Resultaat na 7 dagen:  
Diarrhee is duidelijk minder uitgesproken,  
maar niet geheel verdwenen

# Vervolg...

Drie weken later opnieuw diarree,  
ditmaal met kleine hoeveelheden slijm  
met wat donker bloedbijmenging...

***“(Enterocolitis)”***

Bacterieel?

Parasitair?

Niet-infectieuze colitis?

**TABLE 97-1 -- Differential Diagnosis of Acute Dysentery and Inflammatory Enterocolitis****Specific Infectious Processes**

- Bacillary dysentery (*Shigella dysenteriae*, *Shigella flexneri*, *Shigella sonnei*, *Shigella boydii*; invasive *Escherichia coli*)
- Campylobacteriosis (*Campylobacter jejuni*)
- Amebic dysentery (*Entamoeba histolytica*)
- Ciliary dysentery (*Balantidium coli*)
- Bilharzial dysentery (*Schistosoma japonicum*, *Schistosoma mansoni*)
- Other parasitic infections (*Trichinella spiralis*)
- Vibriosis (*Vibrio parahaemolyticus*)
- Salmonellosis (*Salmonella typhimurium*)
- Typhoid fever (*Salmonella typhi*)
- Enteric fever (*Salmonella choleraesuis*, *Salmonella paratyphi*)
- Yersiniosis (*Yersinia enterocolitica*)
- Spirillar dysentery (*Spirillum spp.*)

**Proctitis**

- Gonococcal (*Neisseria gonorrhoeae*)
- Herpetic (herpes simplex virus)
- Chlamydial (*Chlamydia trachomatis*)
- Syphilitic (*Treponema pallidum*)

**Other Syndromes**

- Necrotizing enterocolitis of the newborn
- Enteritis necroticans
- Pseudomembranous enterocolitis (*Clostridium difficile*)
- Diverticulitis
- Typhlitis

**Chronic Inflammatory Processes**

- Enteropathogenic and enteroaggregative *E. coli*
- Syphilis
- Gastrointestinal tuberculosis
- Gastrointestinal mycosis
- Parasitic enteritis

**Syndromes without Known Infectious Cause**

- Idiopathic ulcerative colitis
- Crohn's disease
- Radiation enteritis
- Ischemic colitis
- Allergic enteritis

# The Usual Suspects...

Bacterieel?

**Shigellose** (*S.dysenteriae*, *S.flexneri*...)

**Campylobacter jejuni**

(*Salmonella*, EPEC, *P.shigelloides*...)

Parasitair?

**Entamoeba histolytica**

(*Balantidium coli*, *Schistosoma mansoni*....)

Niet-infectieuze colitis

**CUH**, (Crohn...)

# Diagnose?

Klassiek

Coprocultuur (Shigella, Salmonella, Campylobacter)  
*negatief*

Feces microscopie rechtstreeks en met verrijking  
WBC++, RBC++, *Blastocystis hominis*

*Wat nu?*

Anorectoscopie:

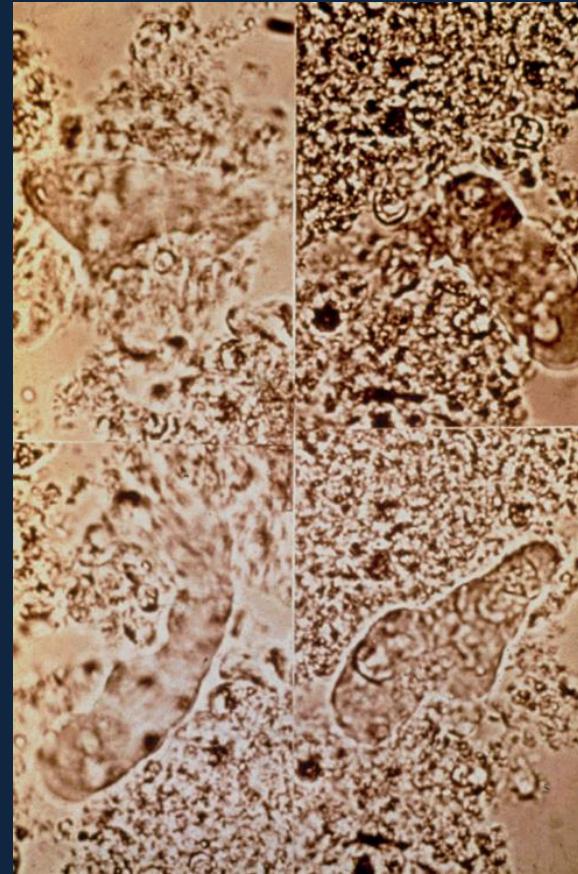
Directe microscopie  
op uitstrijk



# Diagnose?



FIG. 3. Scanning electron micrographs of experimental intestinal amoebiasis in the guinea pig. (A) Trophozoites of *E. histolytica* adhere preferentially to the elevated inter-glandular epithelium. (B) A small interglandular region of micronecrosis is observed in the early invasive lesion with superficial ulceration. (C) In a more advanced stage of invasion, numerous trophozoites are seen penetrating a colonic ulcer.



Entamoeba histolytica colitis

# Diagnose?

Wat indien.....

Aanvullend coprologisch onderzoek

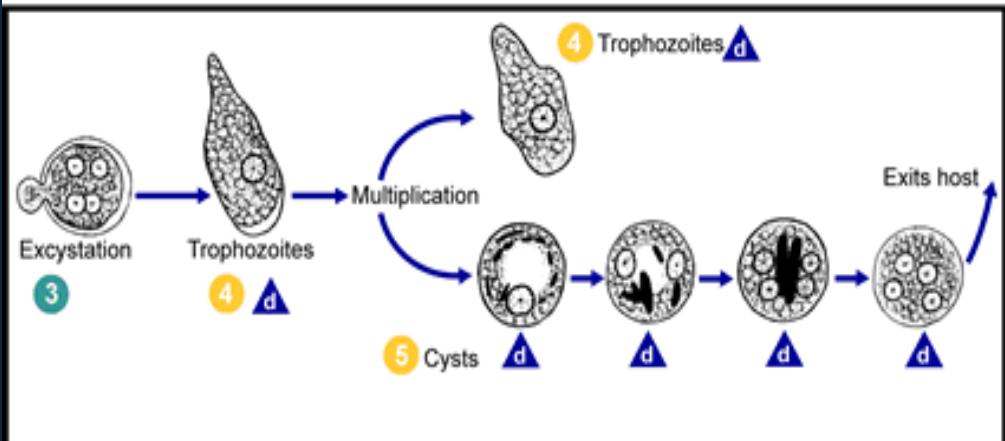
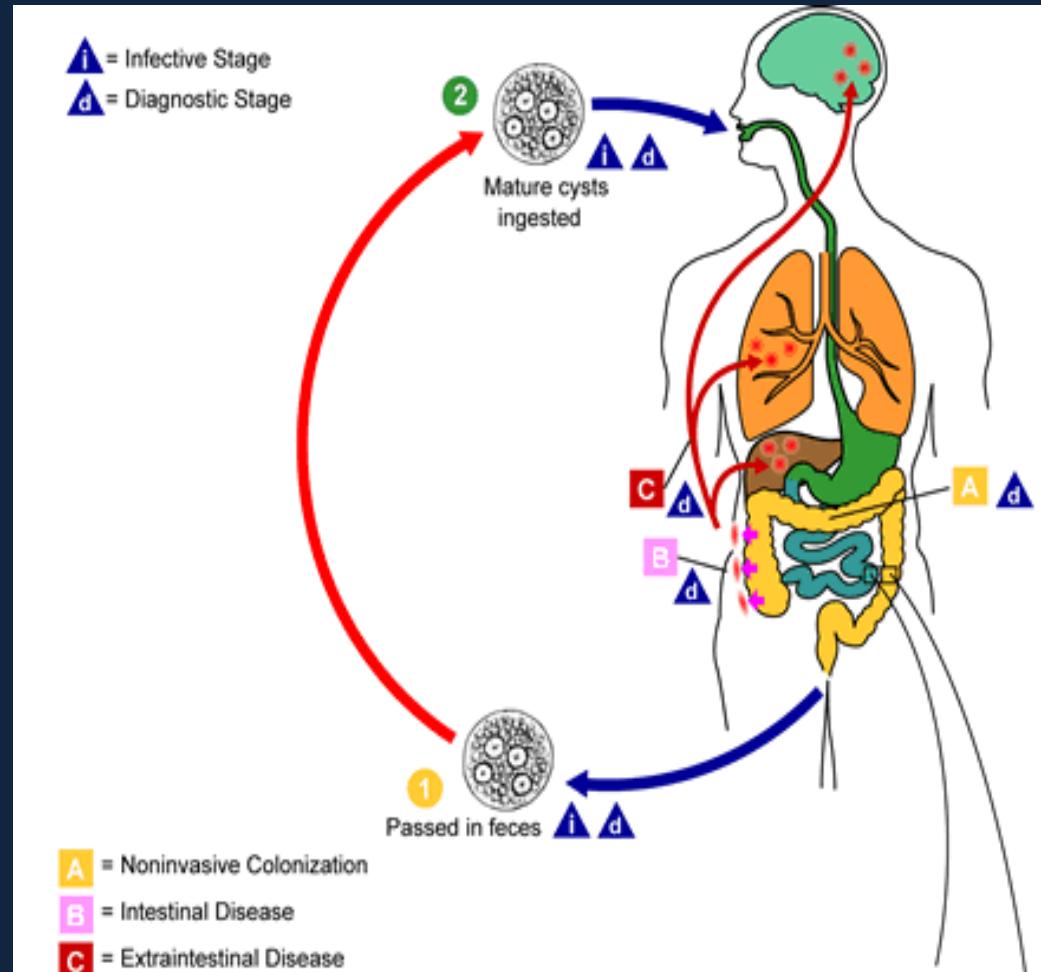


Fig. 1. *Entamoeba histolytica* (large arrow) and *Entamoeba hartmanni* (small arrow) cysts stained with iodine. Scale bar = 10 µm.

**Kysten *E.histolytica***  
vs *E.dispar*  
vs andere nietpathogene  
amoeben

=> PCR *E.histolytica* op feces

# Cyclus

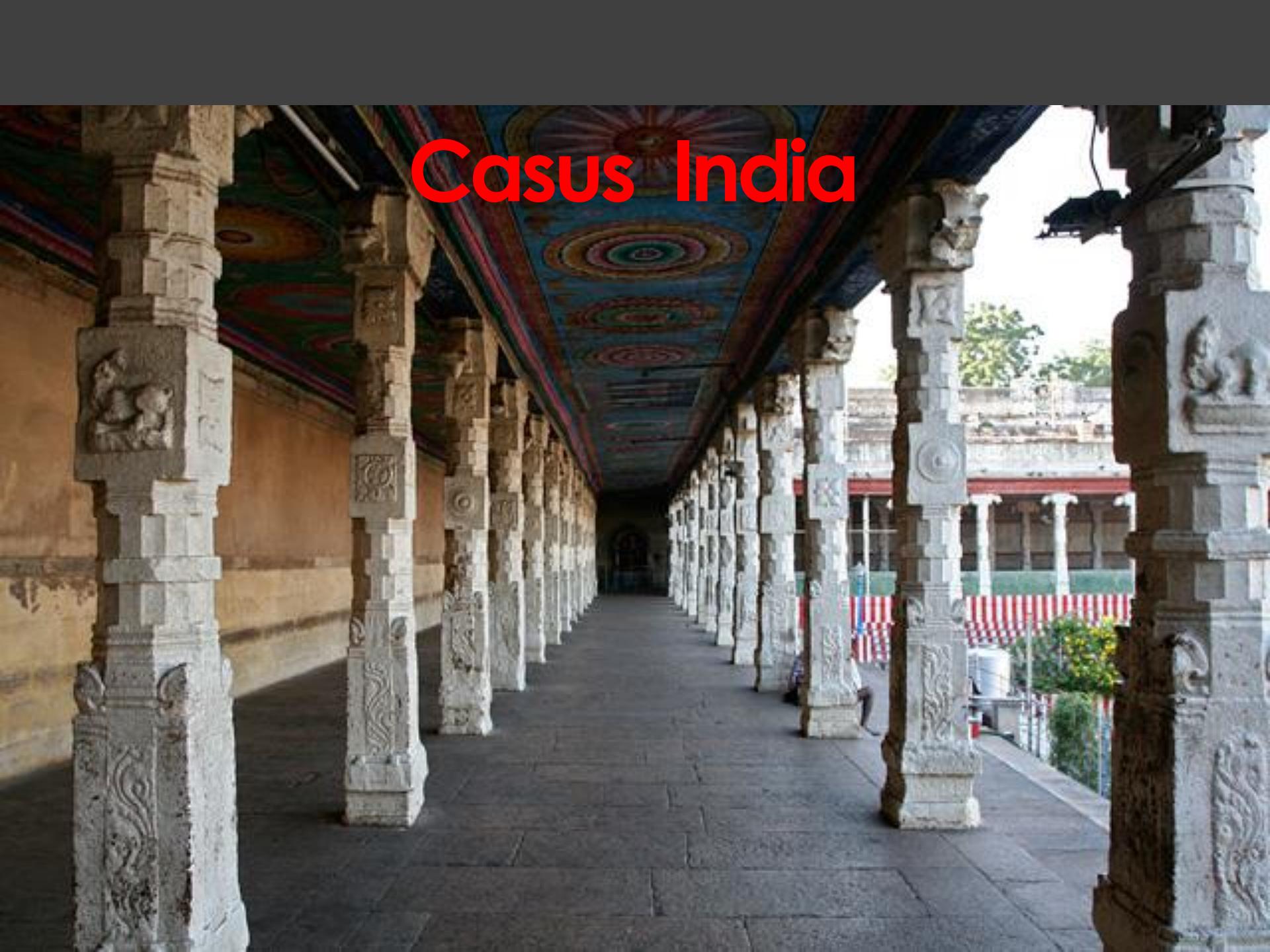


# Amoebiasis

## Hoe behandelen?

- Nitro-imidazolen: heel efficiënt voor weefselamoebiasis
- Contact-amoebicide (paromomycine)

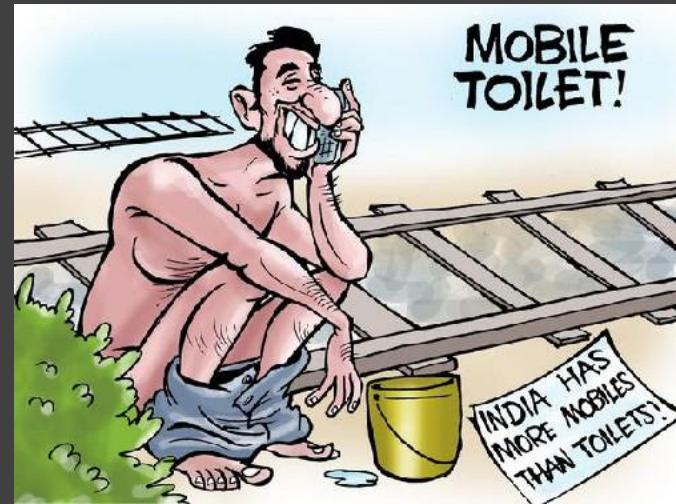
## Opvolging?

A photograph of a long, covered walkway or corridor, likely within a temple complex. The ceiling is a vibrant, multi-colored artwork featuring concentric circles in shades of blue, green, yellow, and red. The floor is made of large, light-colored tiles. The walls and pillars are constructed from light-colored stone and feature intricate carvings. The perspective leads the eye down the length of the corridor towards a bright opening at the far end.

# Casus India

# Casus: “diarrhée simple”

- Jongeman, 26 jaar
- 3 maanden in Zuid India
- terug uit India sedert 2 weken
- Diarrhee sedert 6 weken
- Behandeld in India 4 weken geleden met medicatie gedurende 5 dagen...



# Casus: “diarrhée simple”

- Brijerige & kleverige stoelgang 1 tot 5x/dag
- Flatulentie
- Meteorisme
- Nausea, anorexie
- Geen koorts
- - 5 kg op 4 weken

# Laboratorium

Faeces      microscopie met verrijking  
geen parasieten gevonden....  
coprocultuur  
geen enteropathogene bacteriën

Proefbehandeling??  
Tinidazole 2g

Resultaat na 7 dagen:  
Diarrhee is duidelijk minder uitgesproken,  
maar niet geheel verdwenen

# Vervolg...

Drie weken later opnieuw brijerige  
diarrhee, flatulentie, meteorisme....

Bacterieel?

Parasitair?

Niet-infecteus?

# The Usual Suspects...

Bacterieel?

(*Salmonella*???)

Parasitair?

***Giardia lamblia***

*Cyclospora* sp.

*Isospora* sp.

Worms....

Niet-infectieuze diarrhee

*lactose intolerantie, glutenenteropathie.....*

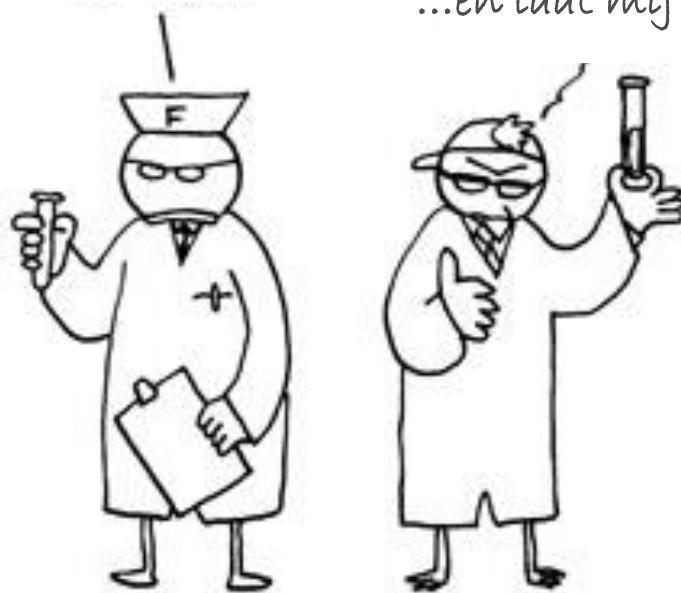
# Vervolg....

## FOKKE & SUKKE

...in het analyselab...

Ik zorg wel voor de bloedtests...

...en laat mij niet de stront zitten!



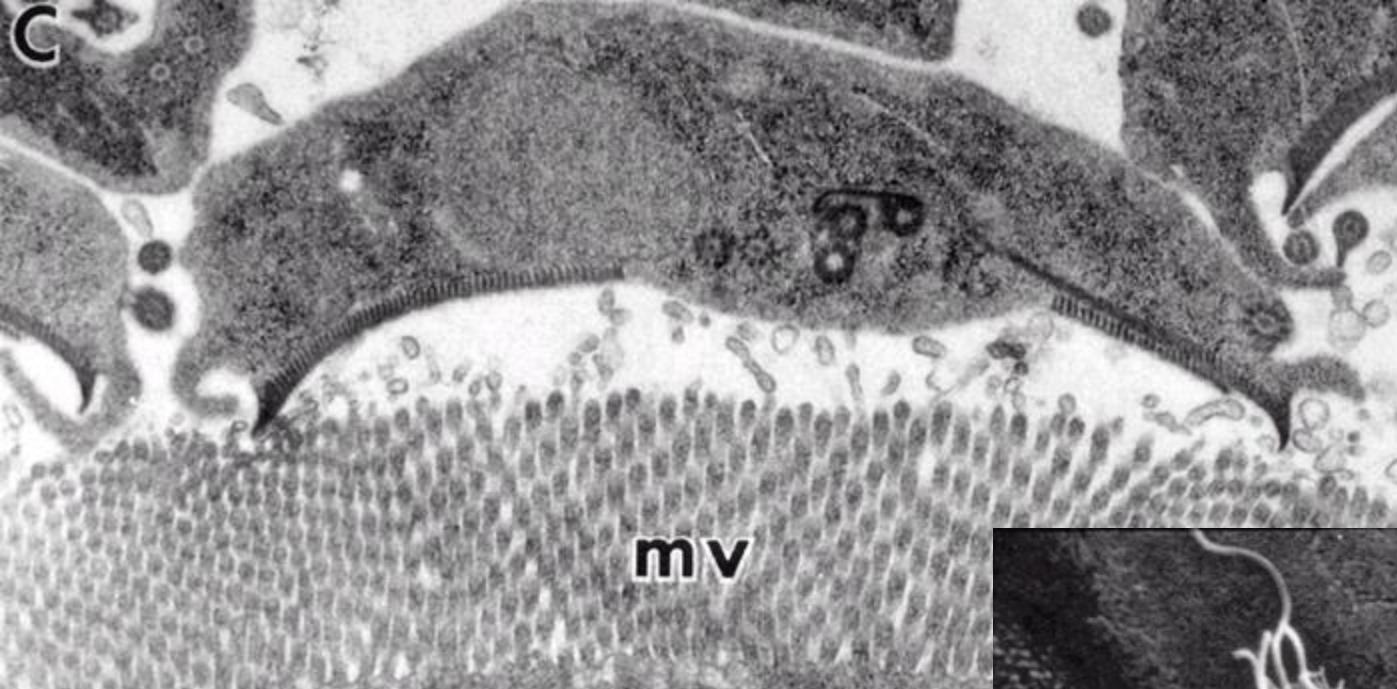
# Diagnose?

Klassiek      Coprocultuur (Shigella, Salmonella,  
                  Campylobacter)  
*negatief*

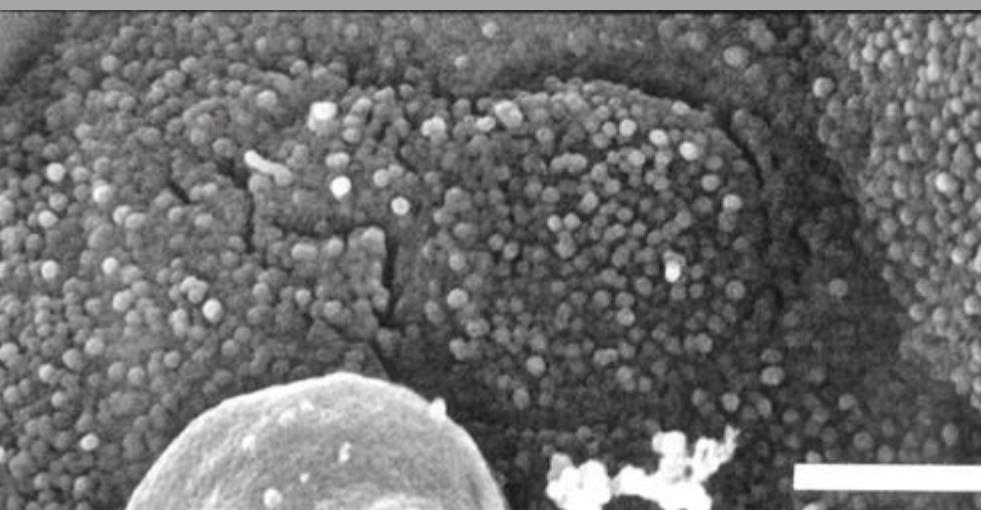
Feces microscopie rechtstreeks  
en met verrijking  
*negatief*

Nieuw      *Giardia lamblia antigeen in feces: pos.*

C



## Giardiasis



Méd Trop Parasitol  
Trop Med Parasitol  
WP & GP

# Giardiasis: behandeling?

Klassiek

Tinidazole 2g éénmalig

Metronidazole 1.5g x 5d

“Resistente giardiasis”

**Tinidazole 2g/d x 3d**

**Mepacrine 100mg tid x 5d**

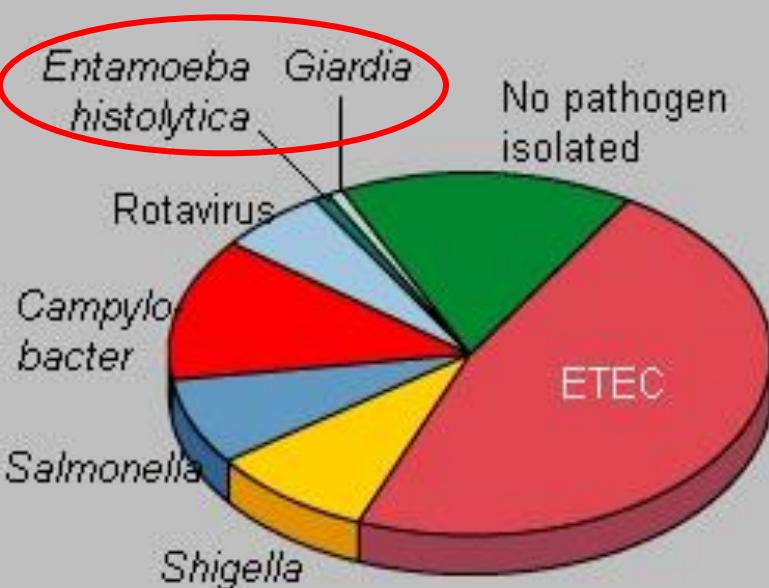
*Albendazole 400mg bid x 5d*

*Nitazoxanide 500mg bid x 5d*

# Diarrhoeal Diseases

## Causes of traveller's diarrhoea.

Data from Hart 1996.



## Clinical features of traveller's diarrhoea

Traveller's diarrhoea is:

- diarrhoea which occurs during or shortly after travel
- most common in people from developed areas visiting developing countries
- acute watery diarrhoea in over 70% of cases
- most commonly caused by ETEC, *C. jejuni*, *Shigella* and *Salmonella* (see pie chart)

# Reizen en ziekte

Tweede herziene druk  
redacteuren:  
A.M.L. Van Gompel  
G.J.B. Soedar

Bohn  
Stafleu  
van Loghum

Tabel 5.1

Oorzaken van reizigersdiarree.

verwekker	percentage
<b>bacteriëen</b>	50-75
<i>E. coli</i>	5-70
<i>Campylobacter spp.</i>	0-30
<i>Salmonella spp.</i>	0-15
<i>Shigella</i>	0-15
<i>Aeromonas</i>	0-10
<i>Plesiomonas</i>	0-5
andere	0-5
<b>protozoën</b>	0-5
<i>G. lamblia</i>	0-5
<i>E. histolytica</i>	0-5
<i>Cryptosporidium spp.</i>	?
<i>C. cayetanensis</i>	?
<b>virussen</b>	0-20
rotavirus	0-20
Calicivirus (o.a. norovirus)	0-10
enterovirussen	?
<i>geen pathogeneen geïsoleerd</i>	10-40

Incl >90% *E.dispar*

Naar Peltola H, Gorbach SL. Travelers diarrhoea. In: Dupont HL, Steffen R., eds. Textbook of travel medicine and health, second edition 2001. Dupont en Steffen (tabel 20.1-4 Causes of travellers' diarrhoea, p.153) (Decker, 2001).

# Aanslepende diarrhea

## Protozoaire parasieten

### Pathogeen

- *Giardia lamblia*
- *Cryptosporidium parvum*
- *Cyclospora cayetanensis*
- *Isospora belli*
- (Microsporidium sp.)
- *Entamoeba histolytica*\*
- (*Balantidium coli*)\*

*Blastocystis hominis* ??

### Apathogeen

- *Iodamoeba butschlii*
- *Entamoeba coli*
- *Endolimax nana*
- *Entamoeba hartmanni*
- *Trichomonas intestinalis*
- *Chilomastix mesnili*
- *Entamoeba dispar*
- *Sarcocystis* sp.

*Dientamoeba fragilis* ??

\* Dysenterie

# Coccidiosen van de darm

“Ookystes”

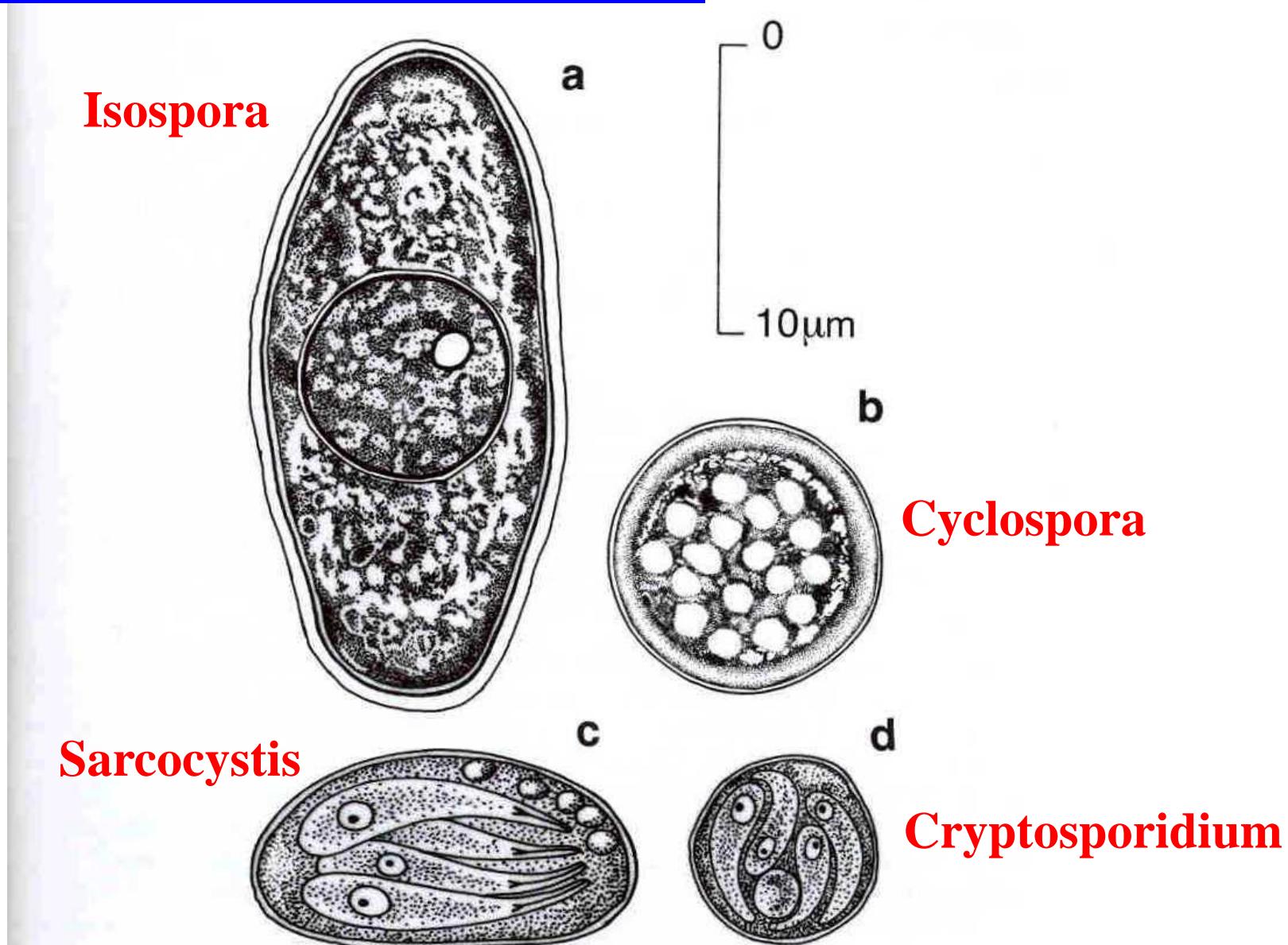


Figure 4 ■ Ookystes de coccidies agents de diarrhées, tels qu'ils apparaissent dans les selles humaines fraîchement émises.

# Persistende reizigersdiarrhee

Pathogeen	Behandeling	Respons
<i>Giardia lamblia</i>	Tinidazole	> 80%
<i>Entamoeba histolytica</i> *	& Paromomycine*	> 95%
<i>Cryptosporidium parvum</i> *	? Paromomycine ?*	
<i>Cyclospora cayetanensis</i>	Cotrimoxazole	> 90%
<i>Isospora belli</i>		
<i>Shigella</i> sp.	Fluoroquinolones	40** à 90%
<i>Campylobacter jejuni</i>	Azithromycine	> 90%

\* intraluminaal amoebicide, zekere activiteit op *C.parvum*

\*\* *C.jejuni*

# Casus Mexico



# Casus: “diarrhée sans fin”



Man, 53 jaar

- 3 weken in Mexico (Yucatan) in februari 2014
- Waterige diarrhea sedert 4 maanden
- Behandeld in Mexico met cotrimoxazole met (tijdelijk) succes
- Nu aanslepende waterige diarrhea, 2 à 5x per dag...

# Casus: “diarrhée sans fin”

- Waterige tot halfvaste stoelgang tot 4/dag
- Borborygmi
- Geen koorts
- Geen krampen
- Niet vermagerd

# Laboratorium

Faeces      microscopie met verrijking  
geen parasieten gevonden....  
coprocultuur  
geen enteropathogene bacteriën

Proefbehandeling

Tnidazole 2g, en ofloxacin 400mg/d x 10d

Resultaat na 7 dagen:

Tijdelijk beter tijdens de inname van ofloxacin

# Vervolg...

Na stoppen behandeling:  
diarrhee....

Bacterieel?

Parasitair?

Niet-infectieus?

# The Usual Suspects...

Bacterieel?

(???)

Parasitair?

**Giardia lamblia**

Cyclospora sp.

Isospora sp.

Worms....

Niet-infectieuze diarree

lactose intolerantie, glutenenteropathie.....

# Diagnose?

Coloscopie met colonbiopten

geen afwijkingen

Gastroscopie met duodenumbiopten

geen afwijkingen

Labtesten

Serum IgA: normaal

anti Transglutaminase IgA: afwezig

Wat nu?

**Table 55.1**

**Differential diagnosis of chronic travelers' diarrhea**

**Post-infectious processes**

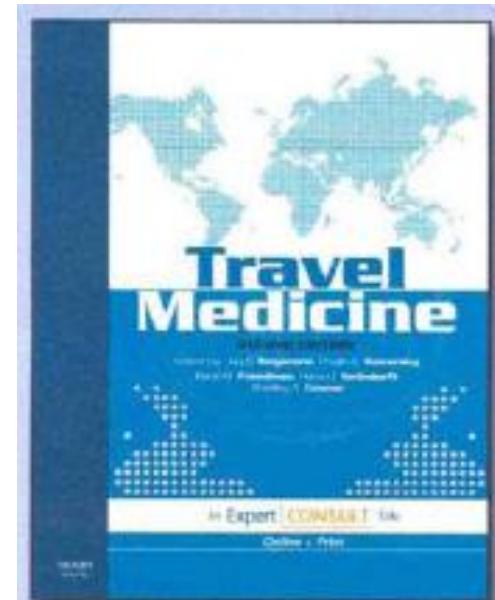
Post-infectious malabsorptive states

Disaccharide intolerance

Bacterial overgrowth

Post-infectious irritable bowel syndrome

**Chapter 55 –  
Persistent Travelers'  
Diarrhea  
Bradley A. Connor**



# Vervolg...

R/ Lactosevrij dieet: geen resultaat

R/ Cholestyramine (Questran) 12g/dag x 3

weken

=> Geen diarrhea meer!