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SHIGELLOSE

Transmissiedag – CLB (14/9/2010) - Leuven

Draaiboek infectieziekten



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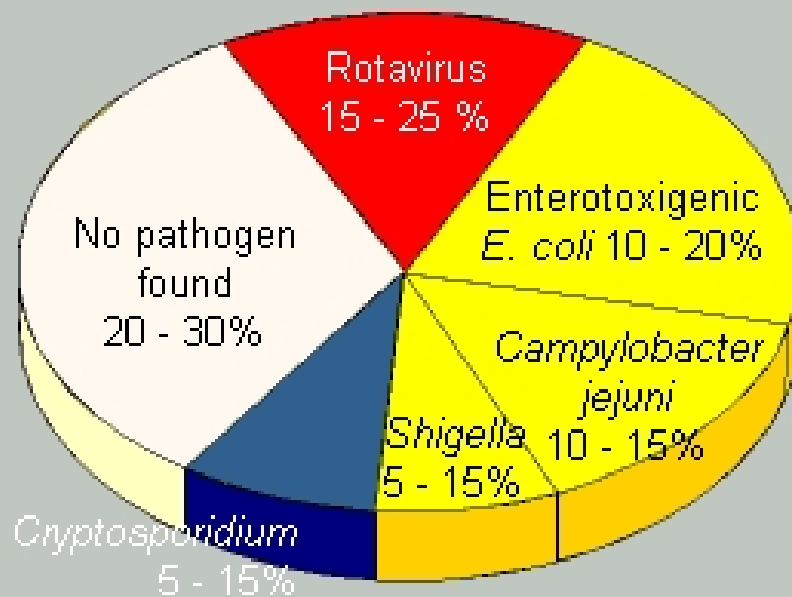
Instituut Tropische Geneeskunde

Antwerpen





Pathogens in the stools of young children with acute diarrhoea in developing countries. Data from WHO 1992.



Aetiological agents of diarrhoea in young children

The five most important diarrhoea pathogens worldwide are shown in the pie chart.

A sixth pathogen, the bacterium *Vibrio cholerae* O1, is not shown but is important because it causes:

- serious epidemics
- 5 - 10% of all cases of acute diarrhoea worldwide

For a table of other commonly isolated pathogens. [Click](#)

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Picture: A stool from a patient with *Shigella* infection. The stool contains blood but very little faecal material.

Diarrhoeal
Diseases



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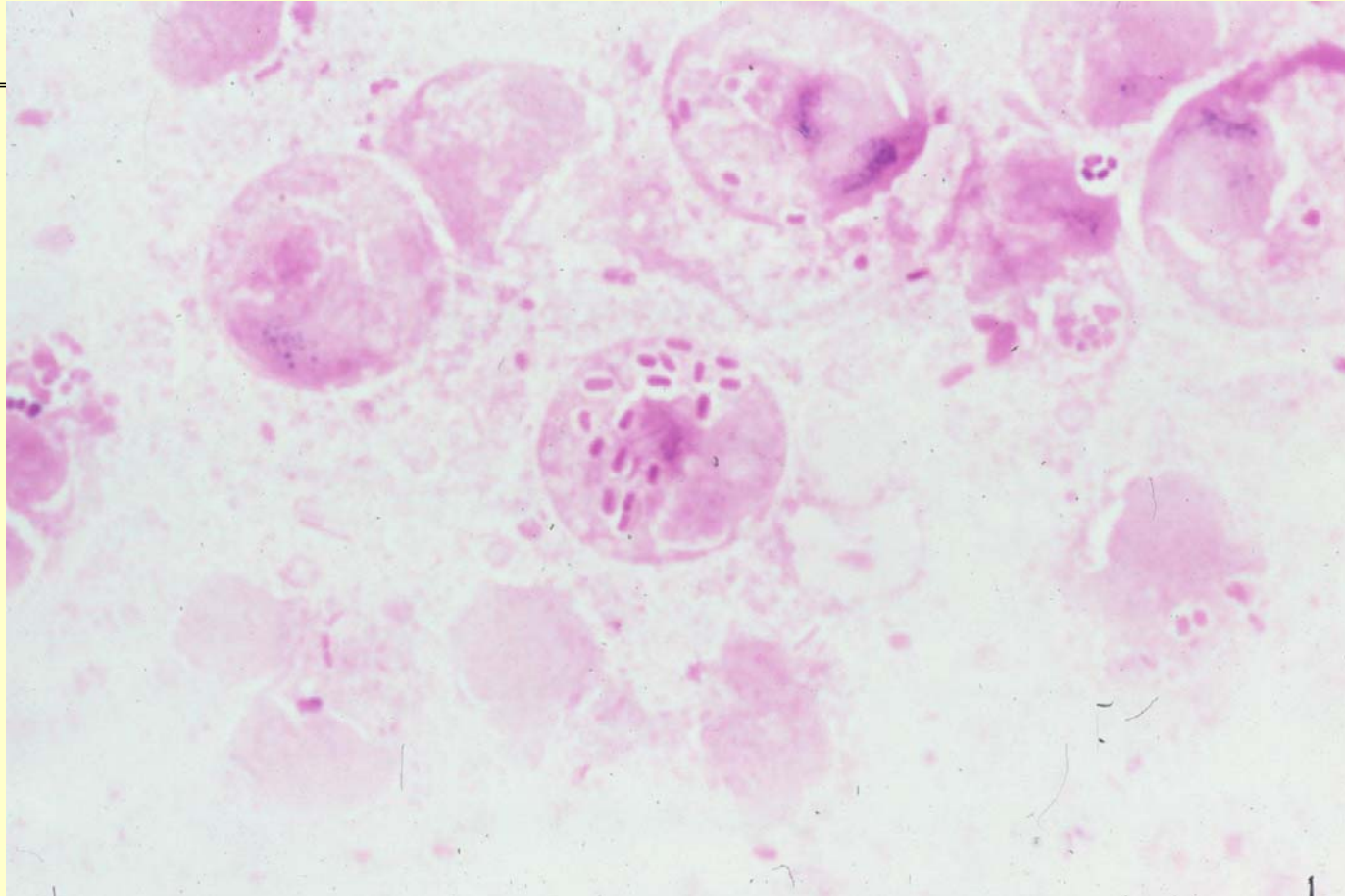


- gramnegatieve, onbeweeglijke, toxineproducerende bacteriën van het geslacht *Shigella*, die in het ileum maar vooral in het colon darmontstekingen veroorzaken.
- Er zijn vier soorten te onderscheiden:

Species	Serogroup designation	Serotypes
<i>S. dysenteriae</i>	Serogroup A	1-13 ^{a,b}
<i>S. flexneri</i>	Serogroup B	1-6
<i>S. boydii</i>	Serogroup C	1-18 ^b
<i>S. sonnei</i>	Serogroup D	1

- *S. dysenteriae* (Tropen) en *S. boydii* (India) worden veel minder vaak geïsoleerd dan de beide andere soorten, en dan vrijwel alleen bij reizigers afkomstig uit de (sub)tropen.
- Zeer verwant met *Escherichia coli*

Shigellosis



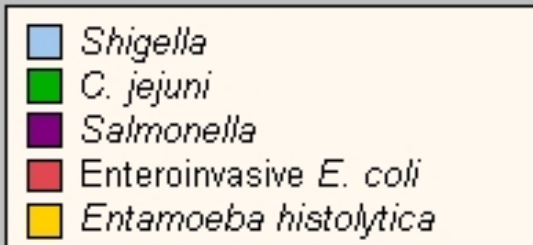
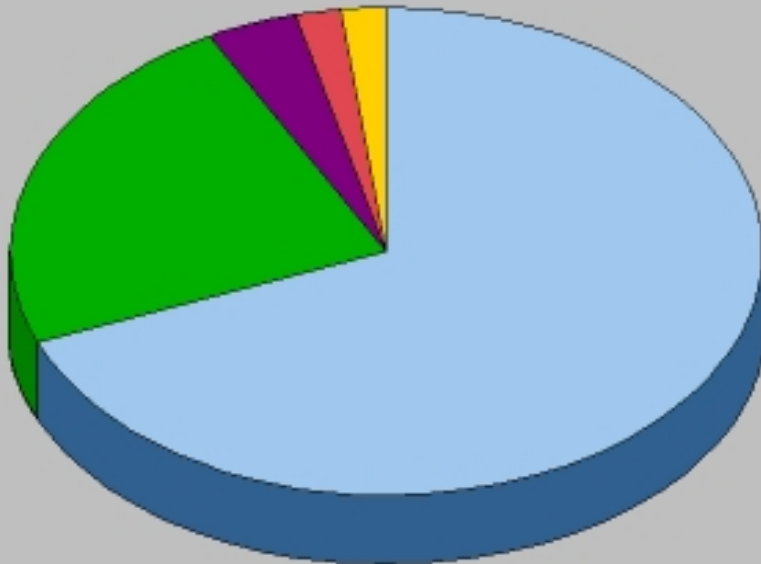
Shigella flexneri

faeces



Aetiological agents of acute bloody diarrhoea

The major causes of acute bloody diarrhoea in children (see pie chart) are:



- *Shigella*
 - *Campylobacter jejuni*
 - non-typhoid *Salmonella*
 - enteroinvasive *Escherichia coli*
 - *Entamoeba histolytica* (amoebic dysentery)
- Less important pathogens.

Pie chart: Causes of acute bloody diarrhoea in young children in developing countries. Data from Huilan et al 1991.



Diarrhoeal
Diseases



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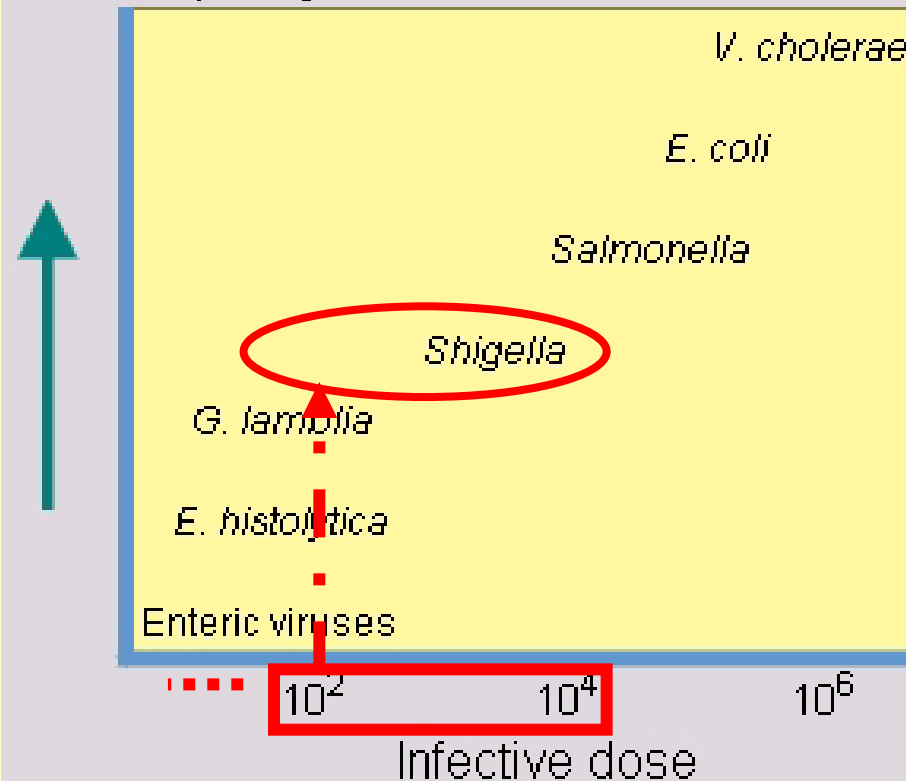
TABLE 97-1 -- Differential Diagnosis of Acute Dysentery and Inflammatory Enterocolitis

Specific Infectious Processes <ul style="list-style-type: none">Bacillary dysentery (<i>Shigella dysenteriae</i>, <i>Shigella flexneri</i>, <i>Shigella sonnei</i>, <i>Shigella boydii</i>; invasive <i>Escherichia coli</i>)Campylobacteriosis (<i>Campylobacter jejuni</i>)Amebic dysentery (<i>Entamoeba histolytica</i>)Ciliary dysentery (<i>Balantidium coli</i>)Bilharzial dysentery (<i>Schistosoma japonicum</i>, <i>Schistosoma mansoni</i>)Other parasitic infections (<i>Trichinella spiralis</i>)Vibriosis (<i>Vibrio parahaemolyticus</i>)Salmonellosis (<i>Salmonella typhimurium</i>)Typhoid fever (<i>Salmonella typhi</i>)Enteric fever (<i>Salmonella choleraesuis</i>, <i>Salmonella paratyphi</i>)Yersiniosis (<i>Yersinia enterocolitica</i>)Spirillar dysentery (<i>Spirillum</i> spp.)
Proctitis <ul style="list-style-type: none">Gonococcal (<i>Neisseria gonorrhoeae</i>)Herpetic (herpes simplex virus)Chlamydial (<i>Chlamydia trachomatis</i>)Syphilitic (<i>Treponema pallidum</i>)
Other Syndromes <ul style="list-style-type: none">Necrotizing enterocolitis of the newbornEnteritis necroticansPseudomembranous enterocolitis (<i>Clostridium difficile</i>)DiverticulitisTyphlitis
Chronic Inflammatory Processes <ul style="list-style-type: none">Enteropathogenic and enteroaggregative <i>E. coli</i>SyphilisGastrointestinal tuberculosisGastrointestinal mycosisParasitic enteritis
Syndromes without Known Infectious Cause <ul style="list-style-type: none">Idiopathic ulcerative colitisCrohn's diseaseRadiation enteritisIschemic colitisAllergic enteritis



Approximate doses of organisms required to cause diarrhoea

Diarrhoea pathogens



For each pathogen there is much variation in infective dose between individual hosts.



Experiment

Volunteers : oral 10.000 *S. flexneri* 2a

- 25% remain asymptomatic
- 25% have transient fever after 24-48h
- 25% fever + self-limiting watery diarrhea
- 25% fever + watery diarrhea => bloody diarrhea



TABLE 224-1 -- Response of Adult Volunteers to Experimental Challenge with Viable Virulent Strains of *Shigella*

<i>Shigella</i> Species	Inoculum (Organisms)	No. of Volunteers	No. of Cases of Clinical Shigellosis (% of total)
<i>S. flexneri</i> (strain 2467T)	≤ 180	7223	(32)
	$\geq 5 \times 10^3$	211124	(59)
<i>S. sonnei</i> (53G)	500	5826	(45)
<i>S. dysenteriae</i> 1*	≤ 200	226	(27)
	$\geq 2 \times 10^3$	2214	(64)

Adapted from DuPont HL, Levine MM, Hornick RB, et al. Inoculum size in shigellosis and implications for expected mode of transmission. *J Infect Dis.* 1989;159:1126-1128.

*Strains A-1 and M-131.

Transmissie



- De minimale infectieuze dosis bedraagt slechts 100- 200 bacteriën.

Incubatieperiode

- Deze bedraagt één tot zeven dagen, maar gewoonlijk één tot drie dagen.

Reservoir

- De mens is het enige reservoir van betekenis. Er zijn wel epidemieën in primatenkolonies beschreven.
- Men blijft enkele dagen tot enkele weken drager, zelden maanden; chronische carriers zijn zeer zeldzaam

Besmettingsweg

- De besmetting verloopt fecaal-oraal – direct of indirect
- De bron is uiteindelijk altijd de mens, maar kan verlopen via bijvoorbeeld voedsel of water dat door een geïnficeerd persoon is besmet of via voorwerpen (toilet!).
- De infectie kan ook via oroanaal seksueel contact worden overgedragen; er is tenminste één explosie onder homoseksuele mannen beschreven. Ook vliegen kunnen de bacterie helpen verspreiden
- Frequent secundaire transmissie binnen huisgezinnen
- Sporadische gevallen ← → massieve epidemien



EPIDEMIOLOGY OF SHIGELLOSIS

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FINGERS FOMITES

FLIES

TABLE 51-4. Viability of Enteric Pathogens in Water © Auerbach; Wilderness Medicine 2007

ORGANISM	CONDITIONS	SURVIVAL	REFERENCES
<i>Vibrio cholerae</i>	Cold	4-5 weeks	60
	Tropical	> 1 year	148
<i>Campylobacter</i>	Cold	3-5 weeks	18
	Temperate stream	3-10 days	186
<i>Escherichia coli</i>	Temperate stream	13 hours	186
	Tropical	> 1 year	148
<i>Salmonella</i>	Temperate stream	Half-life 16 hours	148
<i>Yersinia</i>	Temperate stream	540 days	186
<i>Shigella</i>	Temperate stream	Half-life 22 hours	186
	Freeze/thaw	Yes	54
Enteric pathogens	Freeze/thaw	Yes	52
<i>Salmonella typhosa</i>	Ice/frozen debris	5 months	221
Viruses	Cold	17-130 days	182, 227
Enteric viruses	15°-25° C water	6-10 days	177
	4° C water	30 days	177
Hepatitis A virus	Cold	1 year	16, 203
	Fresh, sea, wastewater	12 weeks	16
	< 0° C	6 months	203
<i>Giardia</i>	Cold	2-3 months	15, 51
	15° C lake, river	10-28 days	51
<i>Entamoeba histolytica</i>	Cold	3 months	34
Microsporidia	4° C	> 1 year	118
<i>Cryptosporidium</i>	Cold	12 months	48
<i>Ascaris</i> eggs	Wet or dry	6-9 years	228
Hookworm larvae	Wet sand	122 days	228

Besmettelijkheid



- Bij weinig licht, een hoge relatieve luchtvochtigheid en gemiddelde temperatuur (toilet!) kunnen shigellae twee tot drie dagen en in sommige gevallen tot meer dan 17 dagen overleven.
- De grootte van het inoculum is hierbij van belang, maar ook de temperatuur: bij 37 °C en bij 12 °C overleven shigellae minder goed dan bij 20° C (kamertemperatuur).
- Op besmette handen kunnen shigellae enkele uren in leven blijven.

The epidemiology of travel-associated shigellosis—regional risks, seasonality and serogroups

Karl Ekdahl^{a,b,*}, Yvonne Andersson^a

Journal of Infection (2005) 51, 222-229



^aDepartment of Epidemiology, Swedish Institute for Infectious Disease Control (SMI), Stockholm, Sweden

^bDepartment of Medical Epidemiology and Biostatistics, Karolinska Institute, Stockholm, Sweden

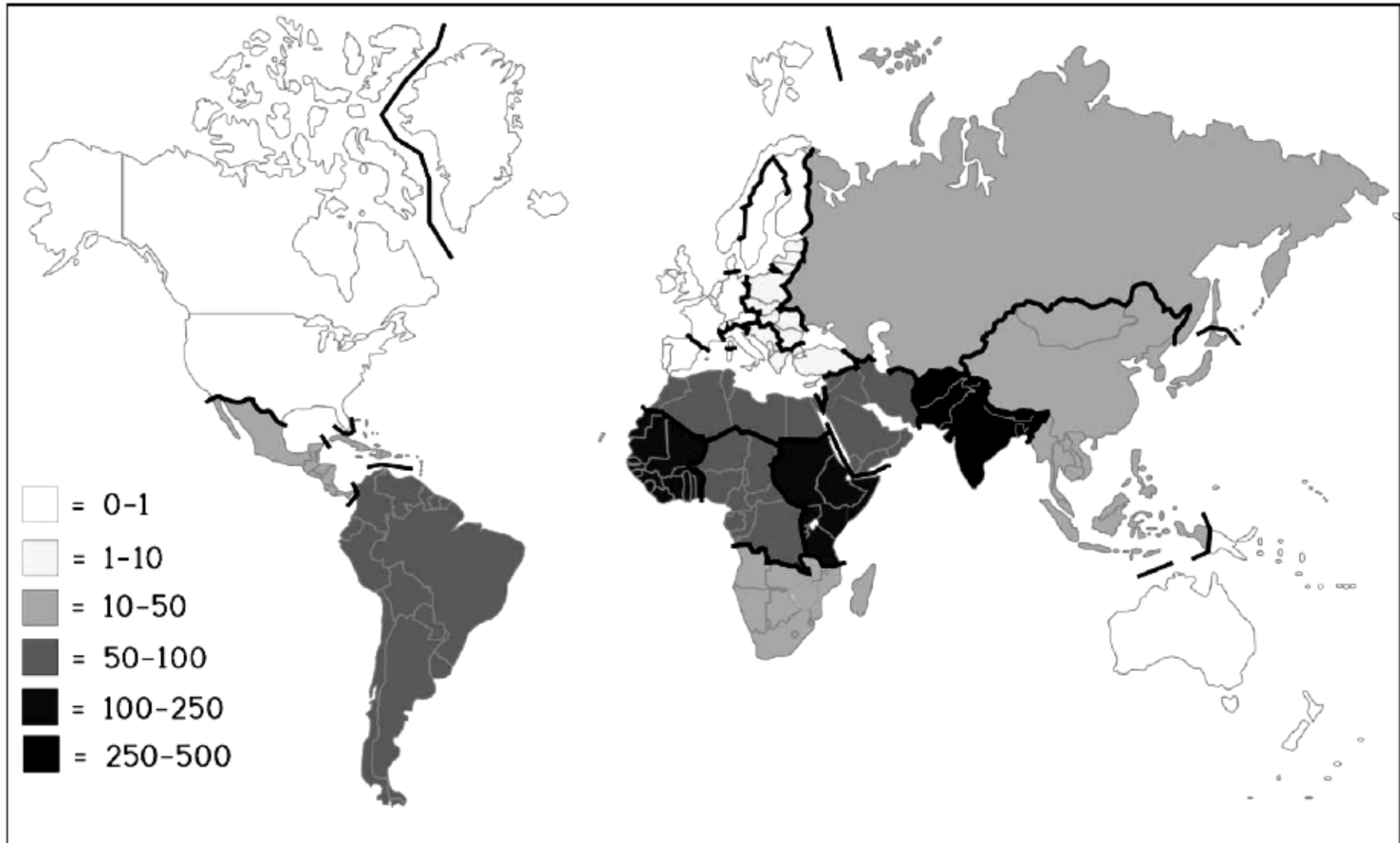


Figure 1 Risk of shigellosis per 100 000 travellers to different regions of the world.

- in vergelijking met 2003 en 2004, stabilisatie van het aantal laboratoria die ten minste 1 infectie registreerden (tabel 2).

Tabel 2 : Shigella : evolutie van het aantal deelnemers (1997-2005)

Jaar	Laboratoria die ten minste 1 geval diagnosticeerden		Jaar	Laboratoria die ten minste 1 geval diagnosticeerden	
	N	%		N	%
1997	52	38,8	2002	56	46,3
1998	59	44,4	2003	53	45,7
1999	56	43,4	2004	54	47,8
2000	39	30,7	2005	54	49,1
2001	60	47,2			

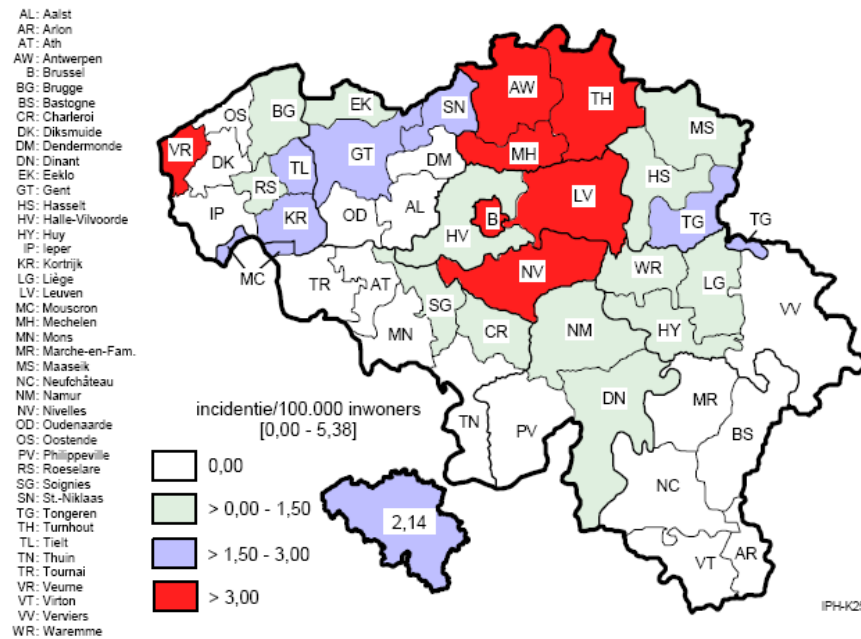
IPH - Epidemiologie k25_12

Voornaamste epidemiologische kenmerken

1. Incidentie en registratiefrequentie in 2005

- incidentie van 2,1/10⁵ inwoners op nationaal niveau,
- opmerkelijk zijn de 46/218 (21%) gevallen gediagnosticeerd in Brussel en de 72/218 (33%) gevallen gediagnosticeerd in de provincie Antwerpen (figuur 1).

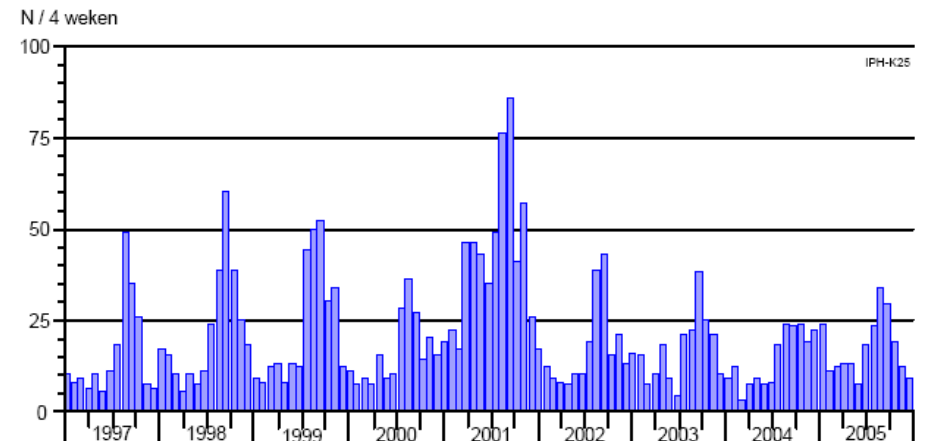
Figuur 1 : Shigella : incidentie per arrondissement (N/10⁵ inw., 2005)



Peillaboratoria

Shigella

Figuur 8 : Shigella : evolutie van het aantal diagnoses per 4 weken (1997-2005)



Besluit

- het aantal gevallen gediagnosticeerd door het netwerk daalt sinds 2000 maar het referentielaboratorium (WIV - afdeling Bacteriologie) bevestigt een toename van het aantal gevallen sinds 2002;
- voor het rapport van 2005, opgesteld door het referentielaboratorium, kan u terecht op: http://www.iph.fgov.be/bacterio/iframes/rapports/2005/Salm_2005_NL_web.pdf

OVERZICHT VAN TE MELDEN INFECTIEZIEKTEN (1, 2, 3)

Anthrax	Malaria ⁵
Botulisme	Mazelen
Brucellose	Meningokokkeninfecties
Buiktyfus	Pertussis
Cholera	Pest
Chikungunya-infectie	Pokken
Dengue	Poliomyelitis
Difterie	Psittacose
EHEC-infecties	Q-koorts
Gastro-enteritis	Rabies
Gele koorts	SARS
Gonorroe	Syfilis
Invasieve H. influenzae b-infectie	Tuberculose
Hepatitis A	Tularemie
Acute hepatitis B	Virale hemorrhagische koorts
Aviaire influenza ⁴	Vlektyfus
Legionellose	Voedselinfectie
	West Nijlevirusinfectie

1 Vermoedelijke en geconfirmeerde gevallen

2 Ministerieel Besluit 19/06/2009, B.S. 20/07/2009

Besluit van de Vlaamse Regering 19/06/2009, B.S. 16/09/2009

3 Alle ziekten die een onmiddellijk gevaar voor de bevolking kunnen betekenen

4 Humane infectie met aviaire (of nieuw subtype) influenza, alleen in de eerste weken

5 Malaria waarbij vermoed wordt dat de besmetting heeft plaatsgevonden op Belgisch grondgebied, inclusief (lucht) havens

NIEUWE WETGEVING MELDINGSPLICHTIGE ZIEKTEN 2009



10 Gastro-enteritis, bij epidemische verheffing in een collectiviteit

Gastro-enteritis wordt veroorzaakt door de brede groep van al of niet toxine producerende microbiële agentia, zoals onder meer norovirus, rotavirus, *campylobacter*, *E.coli*, *S. aureus*, *S. paratyphi*, *S. Typhi*, *Salmonella spp*, *Toxoplasma gondii*, *Shigella*, *Giardia lamblia* en *Trichinella spiralis*. Het ziektebeeld varieert van een intoxicatiebeeld met een korte incubatieperiode en klachten van braken en diarree zonder koorts tot een koortsige ziekte met overvloedig braken en diarree.

Een collectiviteit heeft betrekking op personen die samen verblijven of aan een gemeenschappelijke maaltijd deelnamen of een gemeenschappelijk voedingsmiddel of drank hebben genomen. Dit kan gaan van scholen, internaten tot woon- en zorgcentra. Een gezin wordt niet aanzien als een collectiviteit. De ziekte wordt geregistreerd vanaf twee of meer gevallen.

Verwekkers	Diverse pathogene agentia
Incubatieperiode	Intoxicatiebeeld: tot enkele uren Infectieus beeld: 8 uren tot enkele dagen
Waarom melden	Om bronidentificatie en het nemen van indijkingmaatregelen mogelijk te maken.

The First European Communicable Disease Epidemiological Report

Stockholm, 7 June 2007

European Centre
for Disease Prevention and
Control



Table C. Reported number of cases in the EU and EEA/EFTA Member States 1994–2004

The numbers should be interpreted with caution, as increasing numbers could reflect both a true increase and improved performance in the surveillance systems. For several diseases, a large proportion of the reported diseases are imported.

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Shigellosis	24 568	16 572	16 591	13 605	12 695	13 356	14 064	11 200	10 172	10 645

4.36 Shigellosis

Shigellosis is caused by bacteria belonging to the *Shigella* genus, which includes several species pathogenic to man, with humans as their main reservoir.

Transmission occurs by the oral-faecal route, either directly person to person or spread via contaminated food or water. The infective dose may be very low, but this, as well as the incubation period (12 hours to one week) and the clinical picture which ensues, also depend on the *Shigella* species in question (geographical differences are marked). More recently, sexual transmission among MSM has become a more common cause of outbreaks in several countries.

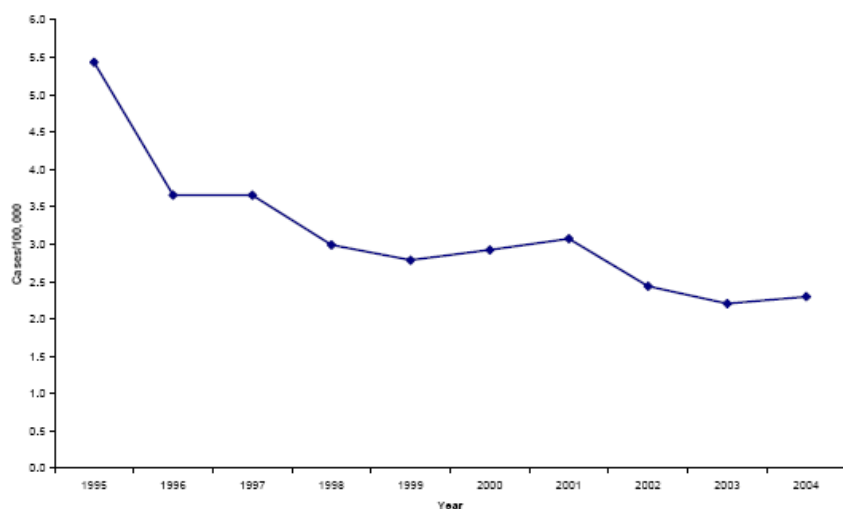
The clinical picture may therefore vary between a mild enteritis (watery, self-limiting diarrhoea) and very serious presentations (high fever, dysentery, megacolon, intestinal perforation, haemolytic-huremic syndrome). Reactive arthritis and Reyer's syndrome can follow the enteric symptoms. Antibiotic therapy and rehydration are effective. Shigellosis is a leading cause of childhood deaths in developing countries.

Prevention measures are based on good general food and waste hygiene and proper hand-washing.

10-year trend

Data from all the 25 EU Member States, Iceland and Norway are available for the period 1995 to 2004 (apart for Luxembourg in 2004). The incidence has been declining over the last 10 years with a slight peak in 2001 (figure 4.36.1).

Figure 4.36.1. Incidence rate of shigellosis cases in EU and EEA/EFTA countries by year reported, 1995–2004



Source: Eurostat. Data missing from Liechtenstein.

The situation in 2005

In 2005, a total of 7 425 human shigellosis cases were reported by 26 countries. The European incidence rate was 1.82 per 100 000, with Lithuania (13.43 per 100 000) followed by Slovakia (9.51 per 100 000) reporting the highest country rates. The overall incidence rate was 1.82 per 100 000.

Table 4.36.1. Number of shigellosis cases in the EU and EEA/EFTA, 2005

Country	Report type*	Reported cases	Incidence /100 000
Austria	C	111	1.35
Belgium	C	425	4.07
Cyprus	C	1	0.13
Czech Republic	C	278	2.72
Denmark	C	162	2.99
Estonia	A	98	7.28
Finland	C	113	2.16
France	C	791	1.27
Germany	C	1 139	1.38
Greece	C	22	0.04
Hungary	C	85	0.84
Ireland	C	36	0.88
Italy	—	—	—
Latvia	C	186	8.06
Lithuania	C	460	13.43
Luxembourg	C	6	1.32
Malta	C	0	0.00
Netherlands	C	420	2.58
Poland	C	79	0.21
Portugal	C	2	0.02
Slovakia	C	512	9.51
Slovenia	C	34	1.70
Spain	C	219	0.51
Sweden	C	571	6.34
United Kingdom	C	1 505	2.51
EU total		7 255	1.80
Iceland	C	5	1.70
Liechtenstein	—	—	—
Norway	C	165	3.58
Total		7 425	1.82

Source: Country reports. *A: Aggregated report; C: Case-based report; 0: No case reported; —: No report.

Age and gender distribution

The data for age groups were available from 17 EU Member States. The highest incidence was in the under fives (3.5 per 100 000), representing 10% of all cases.

Based on the data from 18 EU Member States (n = 3 653) with this variable, there was no major difference between women and men (incidences 0.98 per 100 000 and 0.81 per 100 000, respectively).

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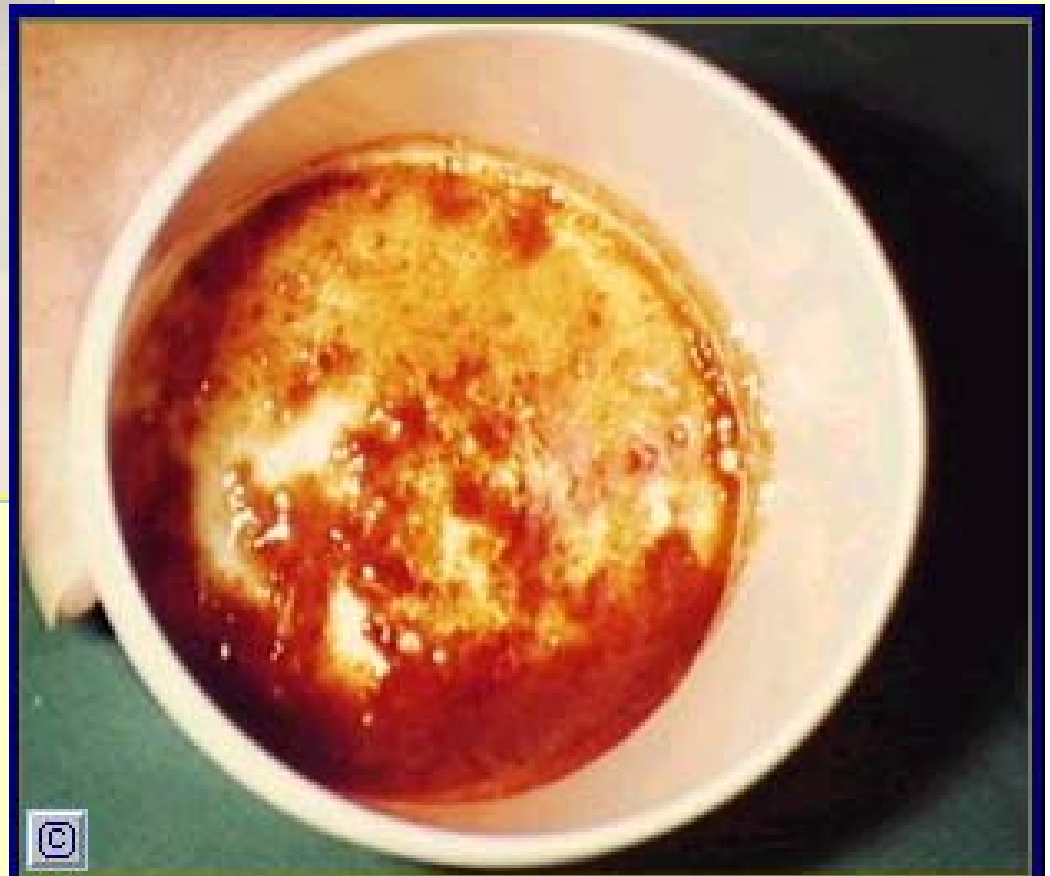
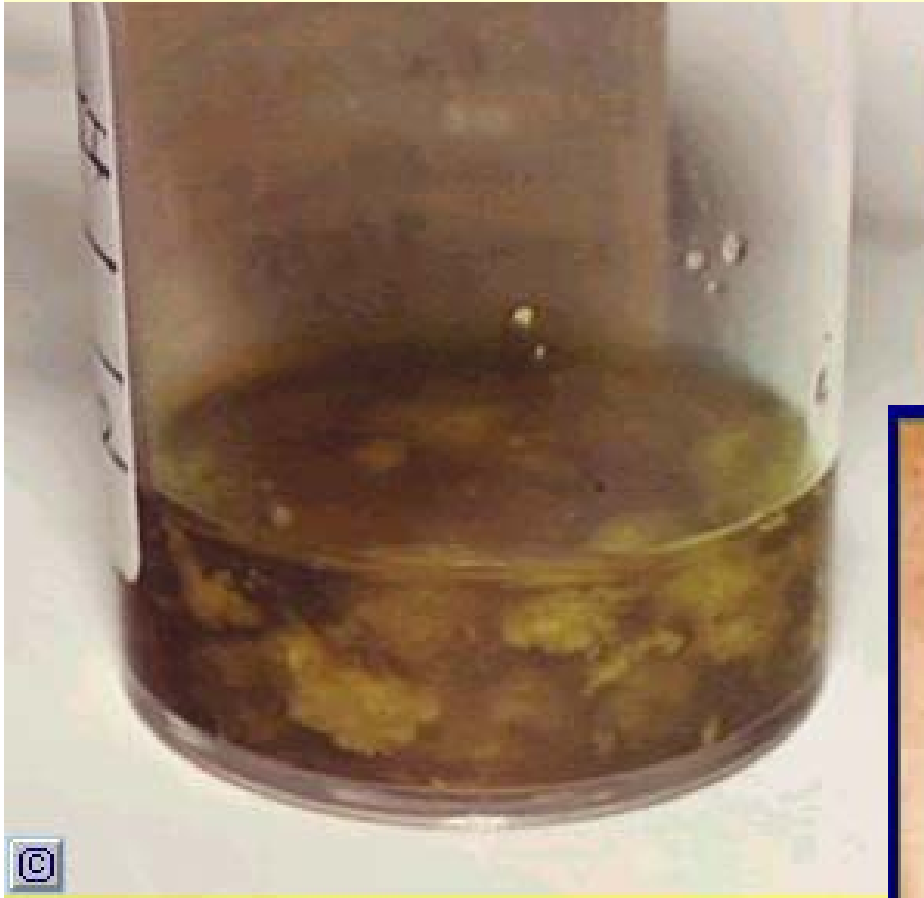


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Diarrhoeal
Diseases



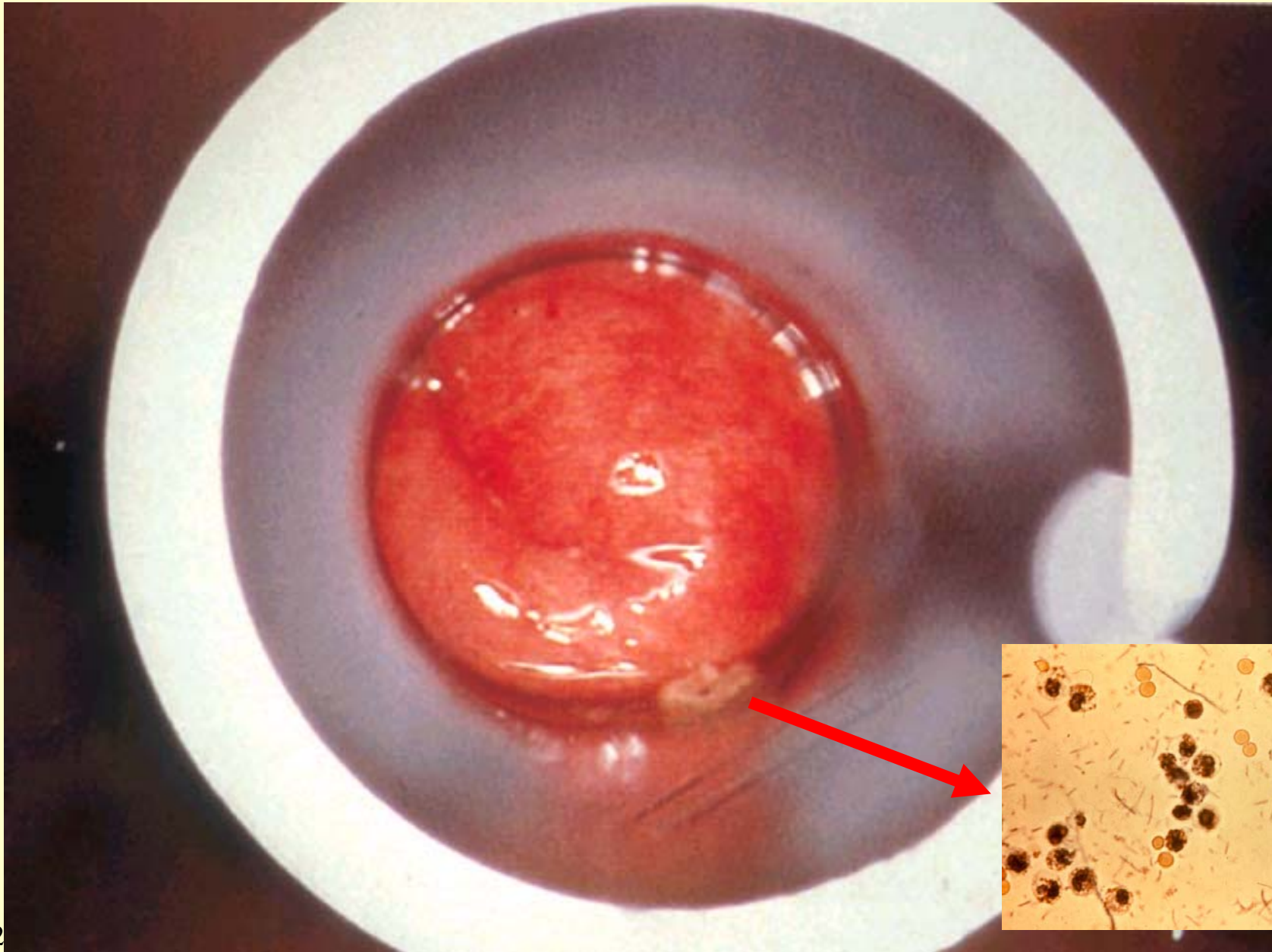
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Shigellosis

- Children : often high fever 40-41°C
- (Febrile) convulsions
- Frequent small-volume stools with pus-blood-mucus
- Abd cramps, tenesmus, rectal prolaps
- Often spontaneous recovery, but can be lethal

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Diarrhoeal
Diseases

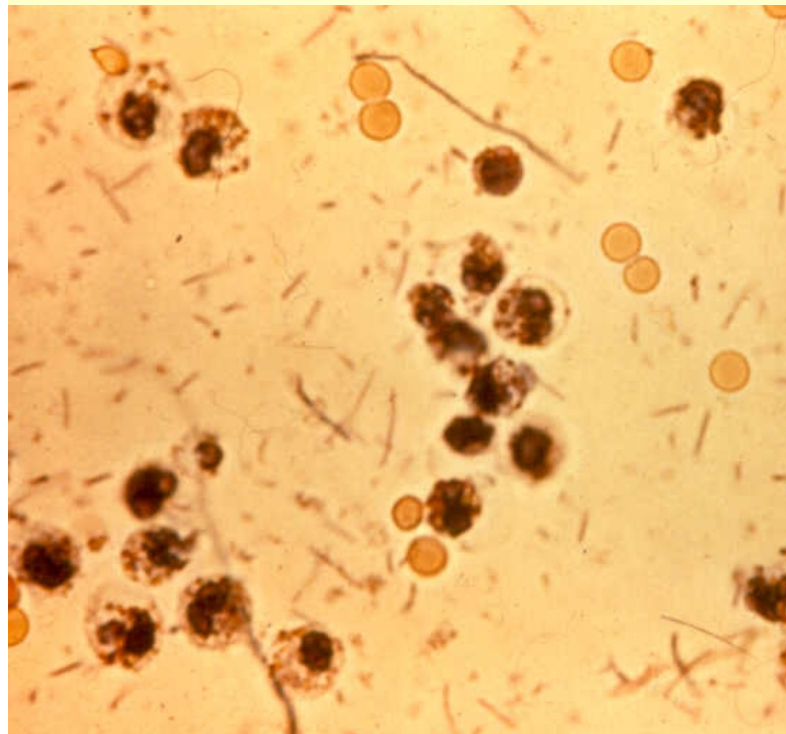


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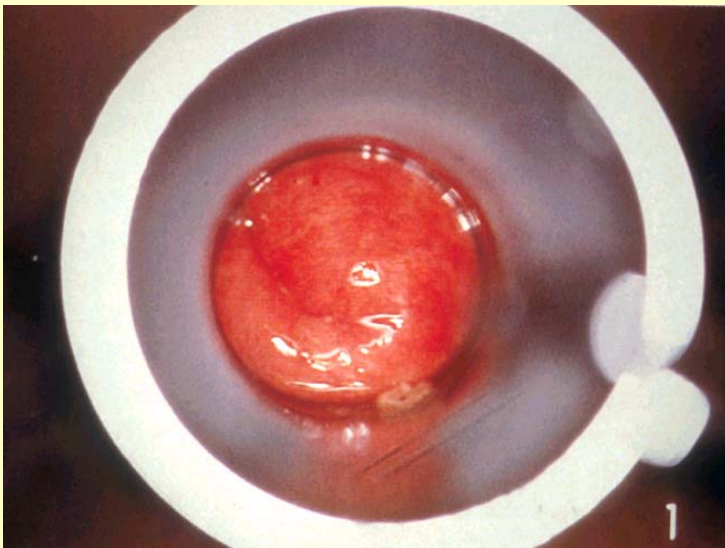
Diarrhoea due to *Shigella* Infection

Species	Typical clinical effects
<i>S. dysenteriae</i> ¹	Likely to cause severe dysentery
<i>S. flexneri</i> ¹	Can cause severe dysentery
<i>S. boydii</i>	Cause relatively mild watery diarrhoea or (less often) bloody diarrhoea
<i>S. sonnei</i>	

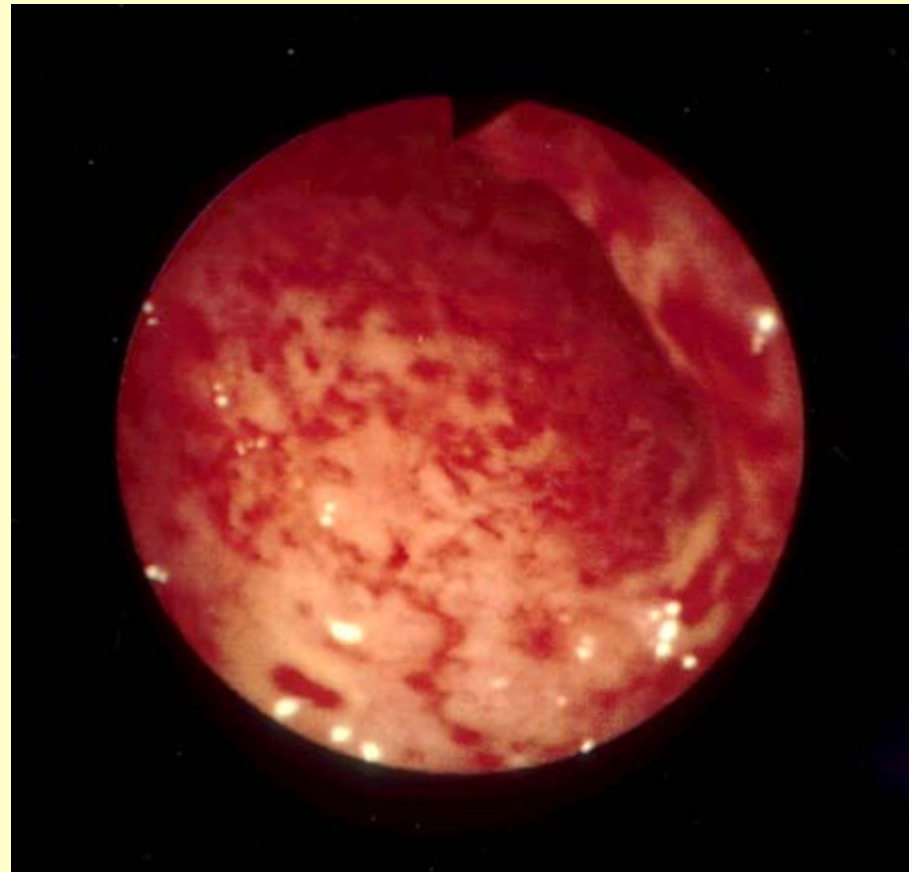
1. These are the most important species in developing countries.



Shigella enterocolitis



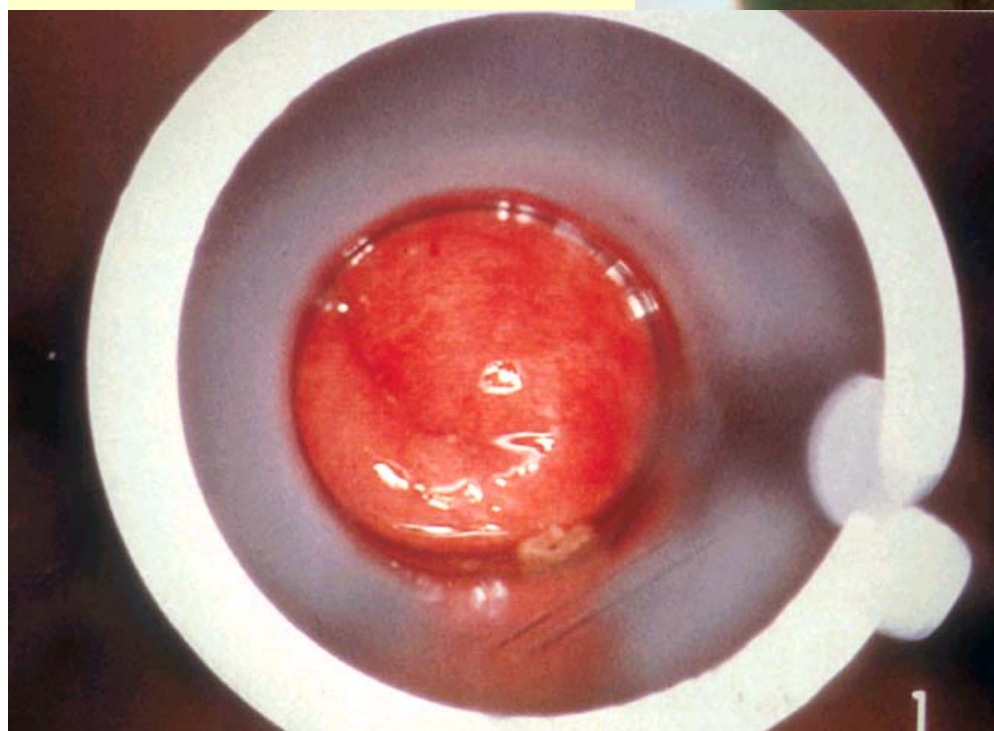
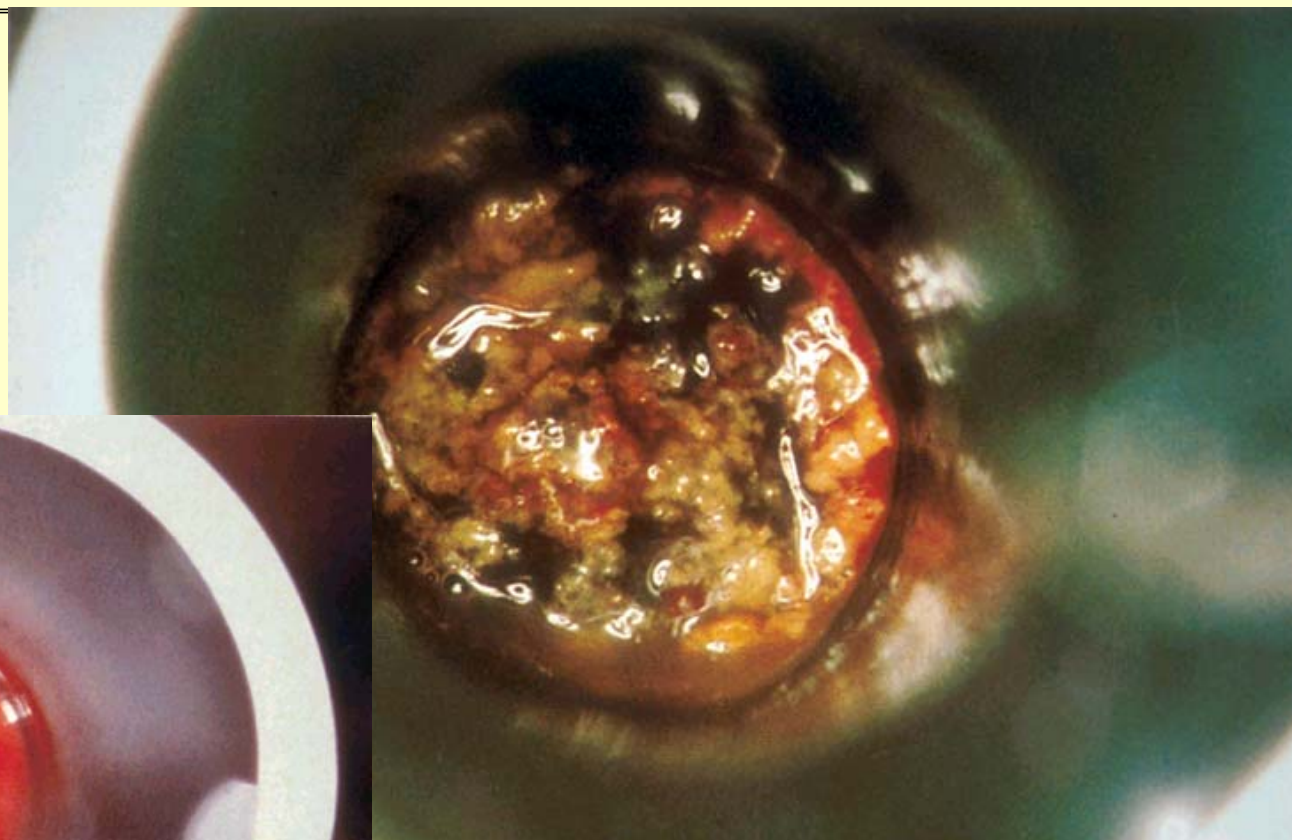
Peters and Pasvol: Atlas of Tropical Medicine and Parasitology 6th edition © 2006 Elsevier Ltd



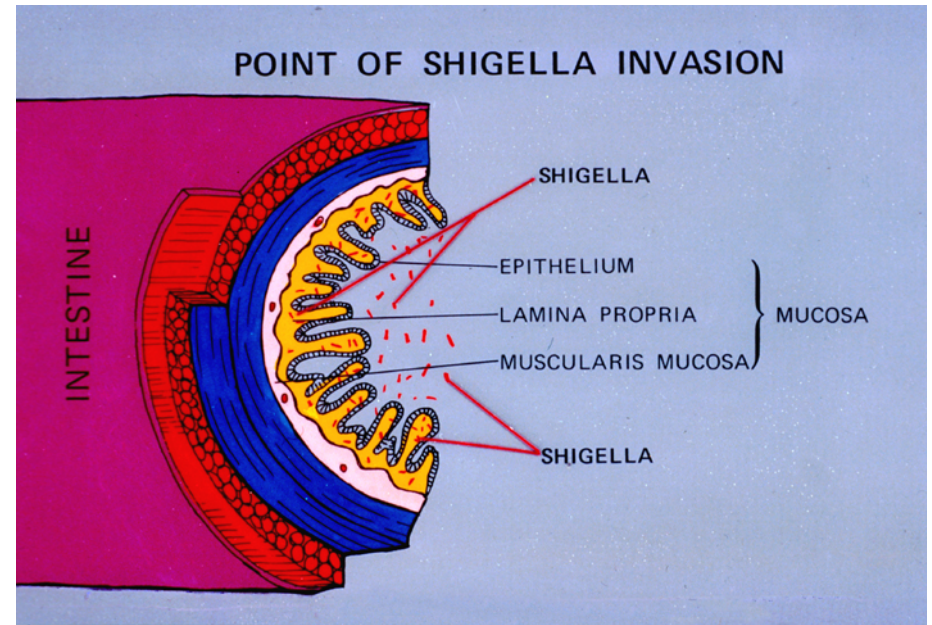
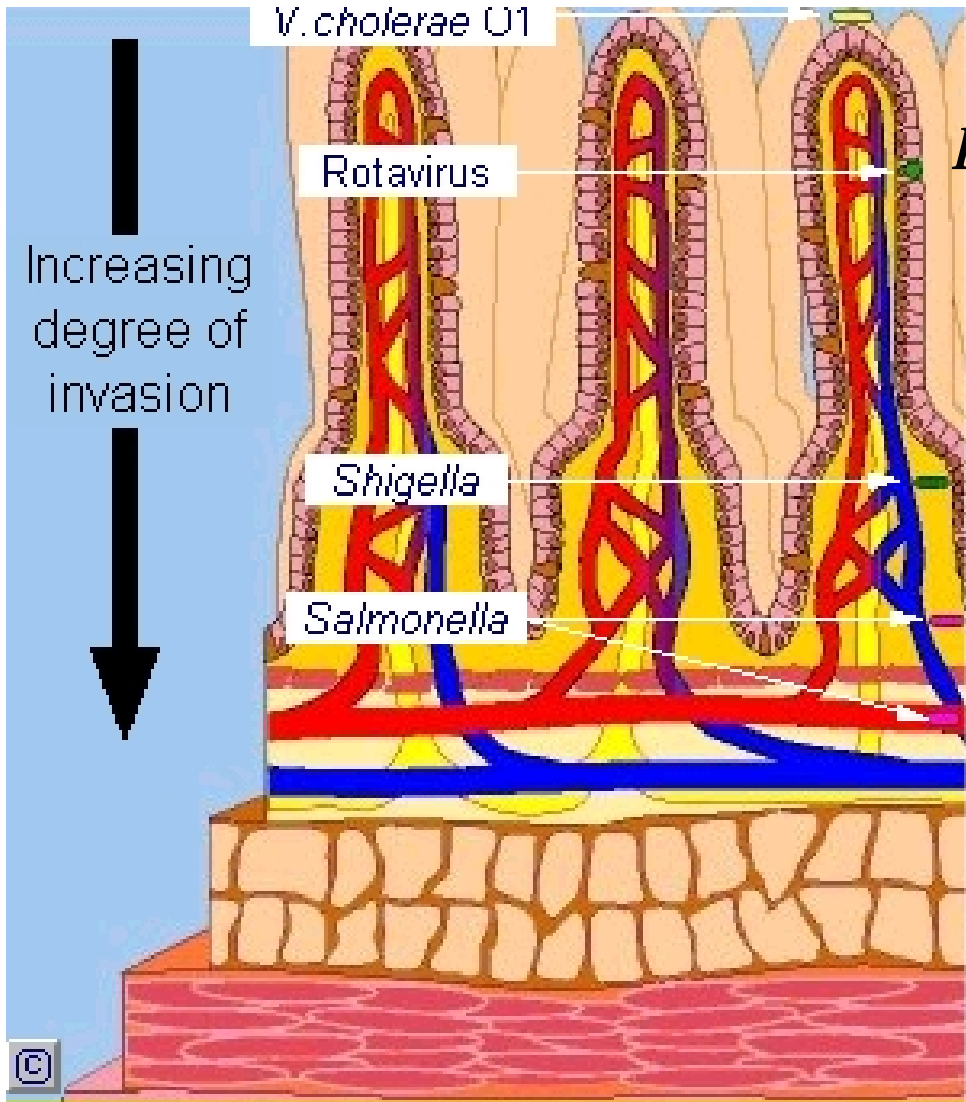
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Shigella enterocolitis – rectaal slijmvlies



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Picture: Structure of the small bowel showing the extent of invasion by four different pathogens. *Shigella* does infect the distal ileum but more typically infects the colon.

Het ziekmakend vermogen van shigellae wordt bepaald door



1. Invasiviteit.

- ✓ Dit is het vermogen om epitheelcellen binnen te dringen, hierin te overleven en zich te vermenigvuldigen. Invasiviteit wordt bepaald door zowel chromosomale als plasmide genen. Als eenmaal een gastheercel is geïnfecteerd, vindt het gehele proces van ontsnapping uit het fagocytoseblaasje, intracellulaire vermenigvuldiging, verspreiding van cel naar cel en dood van nieuw geïnfecteerde cellen plaats zonder blootstelling van de bacterie aan het extracellulaire milieu, waarmee deze zich aan allerlei verdedigingssystemen van de gastheer onttrekt.

2. Toxinen.

- ✓ Hierbij gaat het allereerst om Shigatoxine 1 en 2, die de eiwitsynthese in gastheercellen blokkeren, vooral vóórkomend bij *Shigella dysenteriae* maar ook wel bij andere shigellae; en verder om een aantal andere enterotoxinen. De toxinen spelen een essentiële rol bij de ontwikkeling van hemolytisch uremisch syndroom (HUS). Daarnaast is er altijd sprake van lokale endotoxineproductie die mede verantwoordelijk is voor necrose en ulceratie.

3. Relatieve ongevoeligheid voor een lage pH.

- ✓ Shigellae zijn veel beter bestand tegen een lage zuurgraad dan bijvoorbeeld salmonella, wat mede de lage minimale infectiedosis verklaart.

4. Oplosbare eiwitten en enzymen, zoals bijvoorbeeld superoxide dismutase dat de werking van door de gastheer geproduceerde vrije zuurstofradicalen blokkeert.

Shigellosis : Diagnosis

- Kweek op selectieve bodem (MacConkey e.a.) - verder serology, DNA-analyse etc
- Toxine detectie via enzyme immunoassay Zeer labiel organism => snelle transfer

op agar platen of transport media

- Serologie : geen routine in clinical practice

Shigellosis : behandelning

- ✓ often resistance to cotrimox-chloramphenicol-tetracycline-ampicillin
- ✓ nearly always resistant to amoxy
- ✓ **cipro OK**, but cost !! What about HUS-frequency ??
- ✓ alternative : ?? ceftriaxone
- ✓ loperamide : dangerous ??



DuPont in Mandell 2010 chapter 224

TABLE 224-2 -- Antibacterial Therapy for Patients with Shigellosis

Adults		Children	
Agent	Dosage	Agent	Dosage
Levofloxacin	500 mg qd ? 3 days	Ceftriaxone	50 mg/kg IV once daily (maximum, 2 g/day) ? 5 days
Ciprofloxacin	500 mg bid ? 3 days	Cefixime*	8 mg/kg/day as single daily dose or divided q12h ? 5 days
		Azithromycin	10 mg/kg/day in a single daily dose ? 3 days
Azithromycin	500 mg qd ? 3 days	Ciprofloxacin*	25 mg/kg/day, divided q12h ? 3-5 days

*Not approved for use in children.

Guidelines for the control of shigellosis, including epidemics due to *Shigella dysenteriae* type 1



The Management of Bloody Diarrhoea in Young Children



Guidelines for the control of epidemics due to *Shigella dysenteriae* type 1

WORLD HEALTH ORGANIZATION

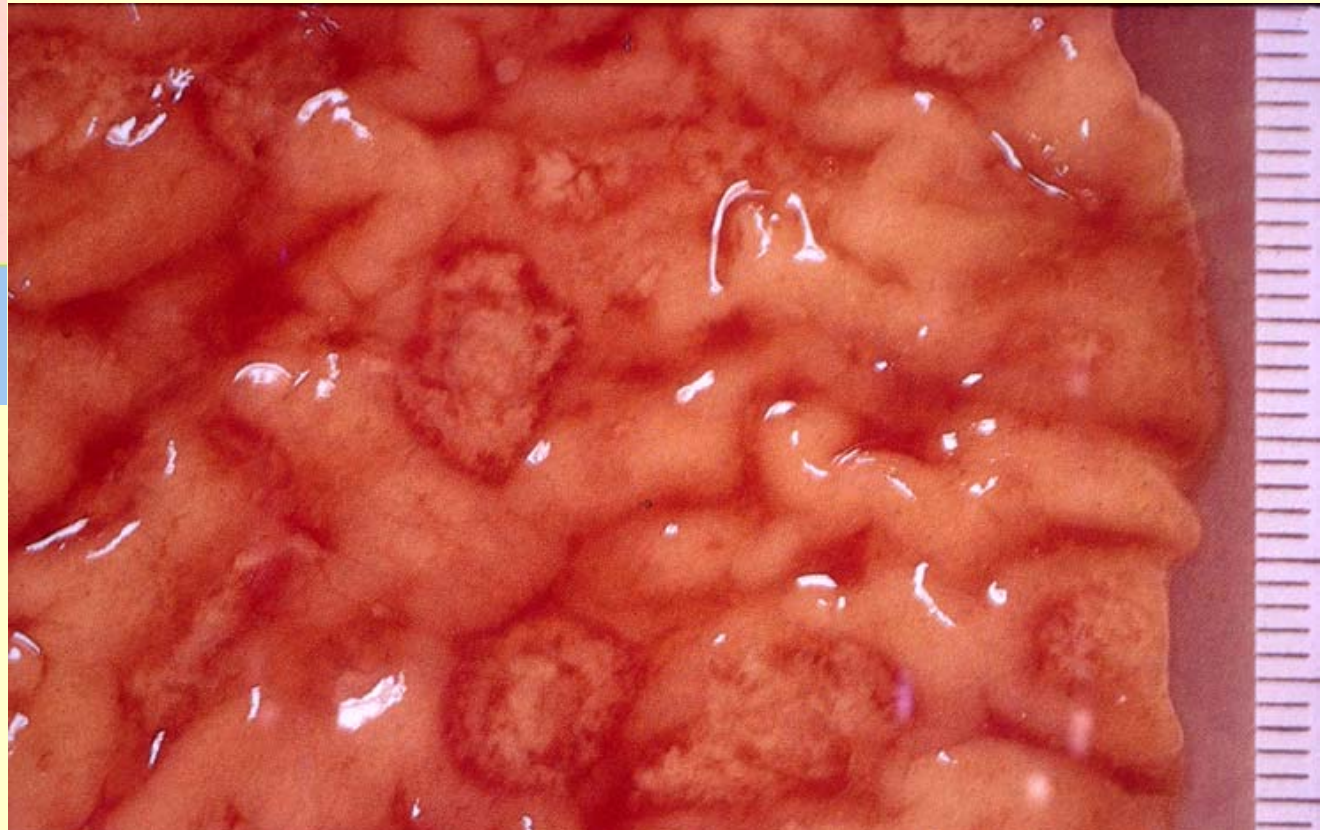
DIVISION OF DIARRHOEAL AND ACUTE RESPIRATORY DISEASE CONTROL



Entamoeba histolytica



Picture: Stool microscopy showing a trophozoite of *Entamoeba histolytica* that contains ingested red blood cells (arrows). This is an indication for treatment against amoebic dysentery.



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Diarrhoeal Diseases

Topics in International Health

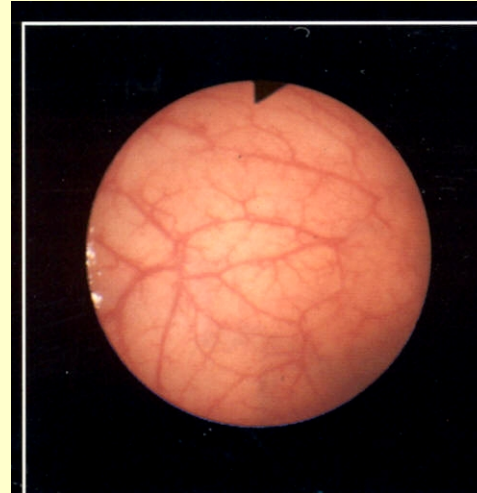
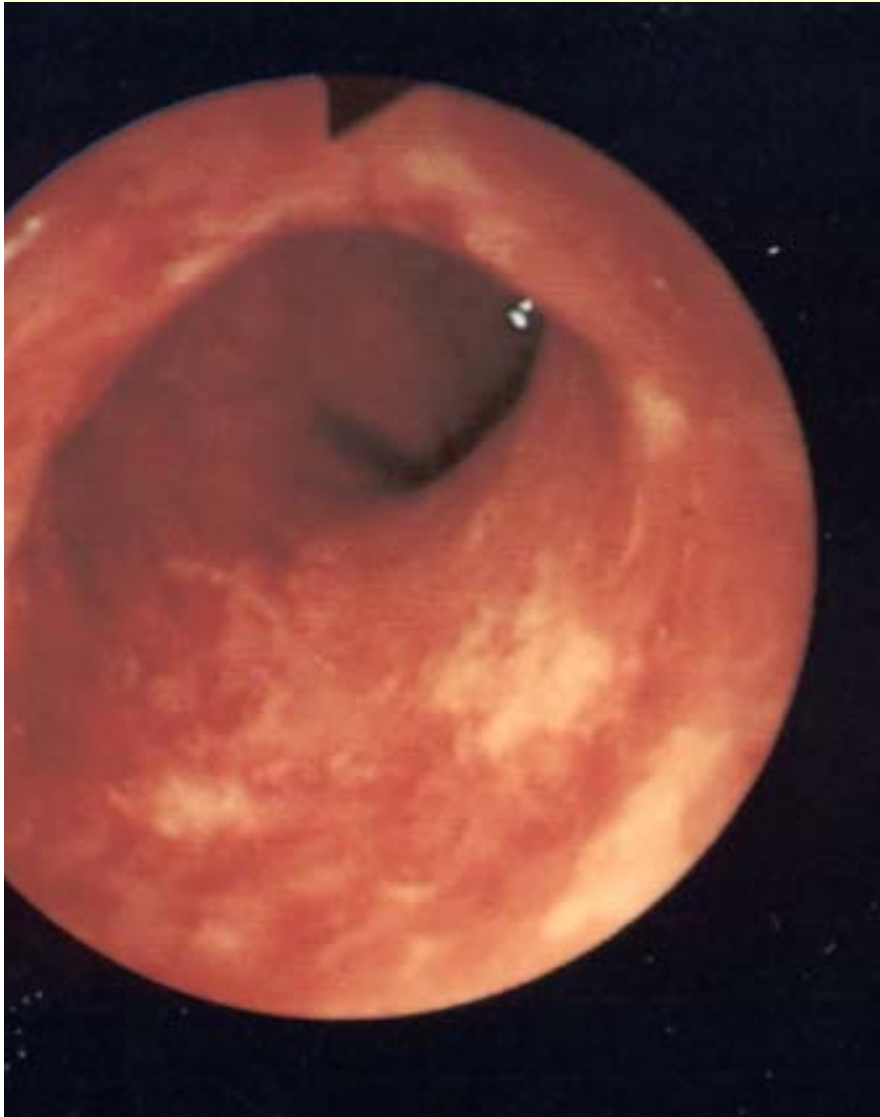
TUTORIALS

Colitis Ulcerosa

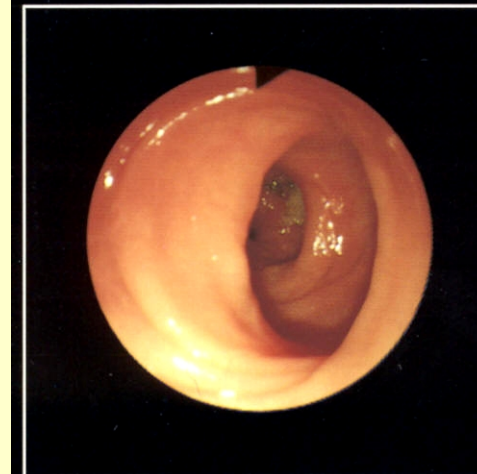
Normal colon



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Before discussing the signs of inflammation, it seems appropriate first to illustrate the normal appearance. The normal appearance of the large intestine is characterized by a pale pink, smooth, slightly glossy, level surface in which the ramifications of the vascular pattern are clearly visible. There is no vulnerability.



In the sigmoid and in the descending colon, the vascular pattern may not be visible under normal circumstances. The surface is smooth and the colour is even. Vulnerability or granularity is absent. Any inflammatory disease of the colon will interfere with the vascular pattern.

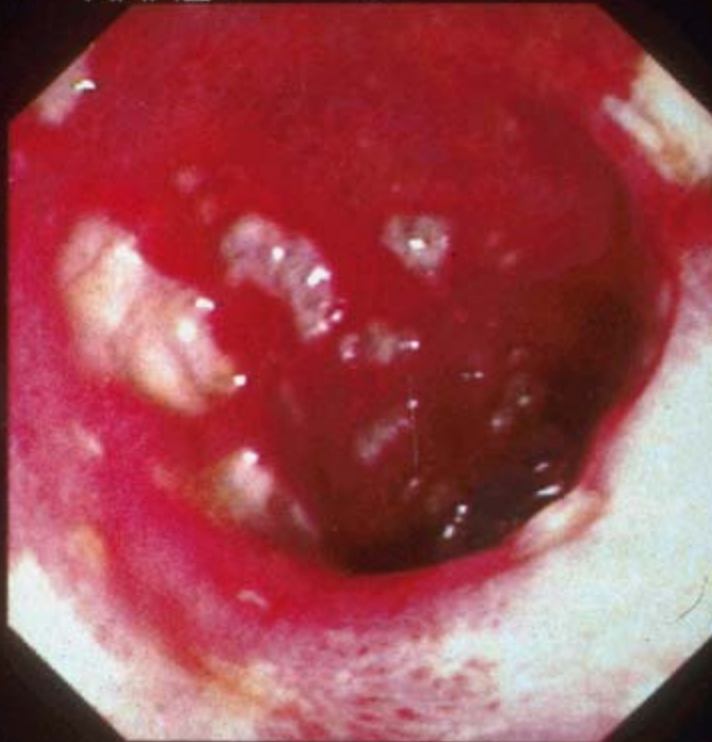
Salmonella enterocolitis



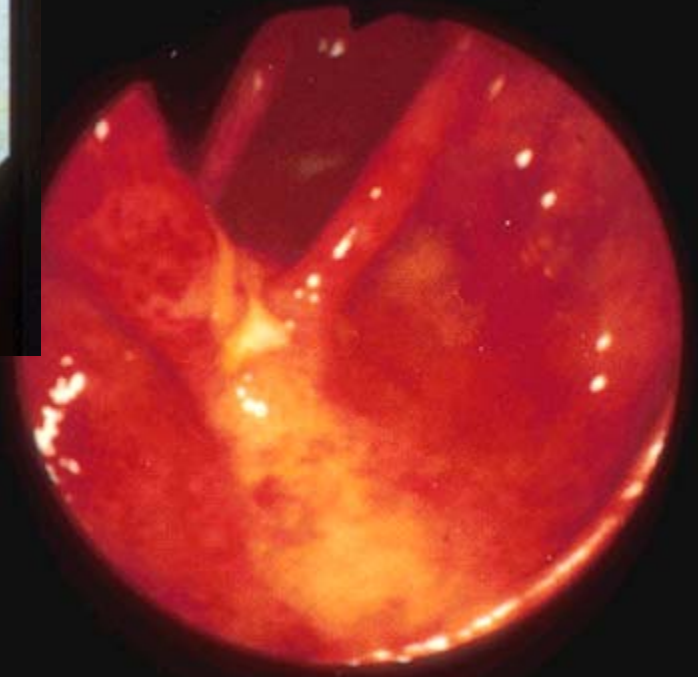
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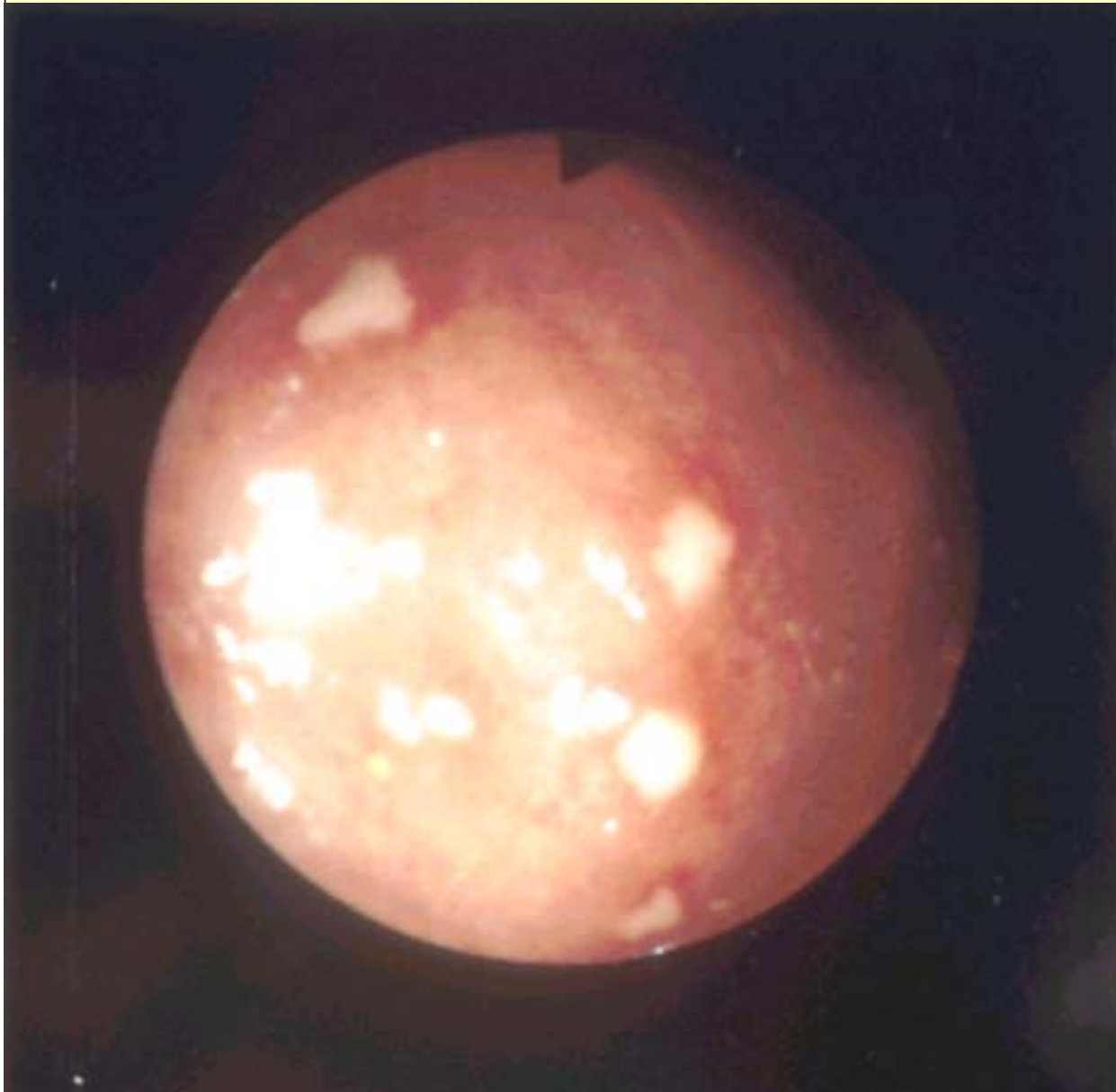


COMMENT :



Campylobacter enterocolitis

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Shigellosis, complications

- Milde dehydratie is frequenter dan ernstige dehydratie
- Fulminante (enterocolitis) necrotiserende enterocolitis
 - Obstructie, Toxisch megacolon
 - Colon perforatie
- Toxemie; Bacteremia & metastatische haarden zeer zelden

Dehydratatie >10%

- ✓ >100 ml/kg te kort
- ✓ kind stil en koud
- ✓ pols moeilijk : circulatoire collaps
- ✓ abdomen ingevallen, huid heel slap
- ✓ ogen heel diep
- ✓ mucosa droog, anurie



Peters and Pasvol: Atlas of Tropical Medicine and Parasitology 6th edition © 2006 Elsevier Ltd



Toxic
megacolon

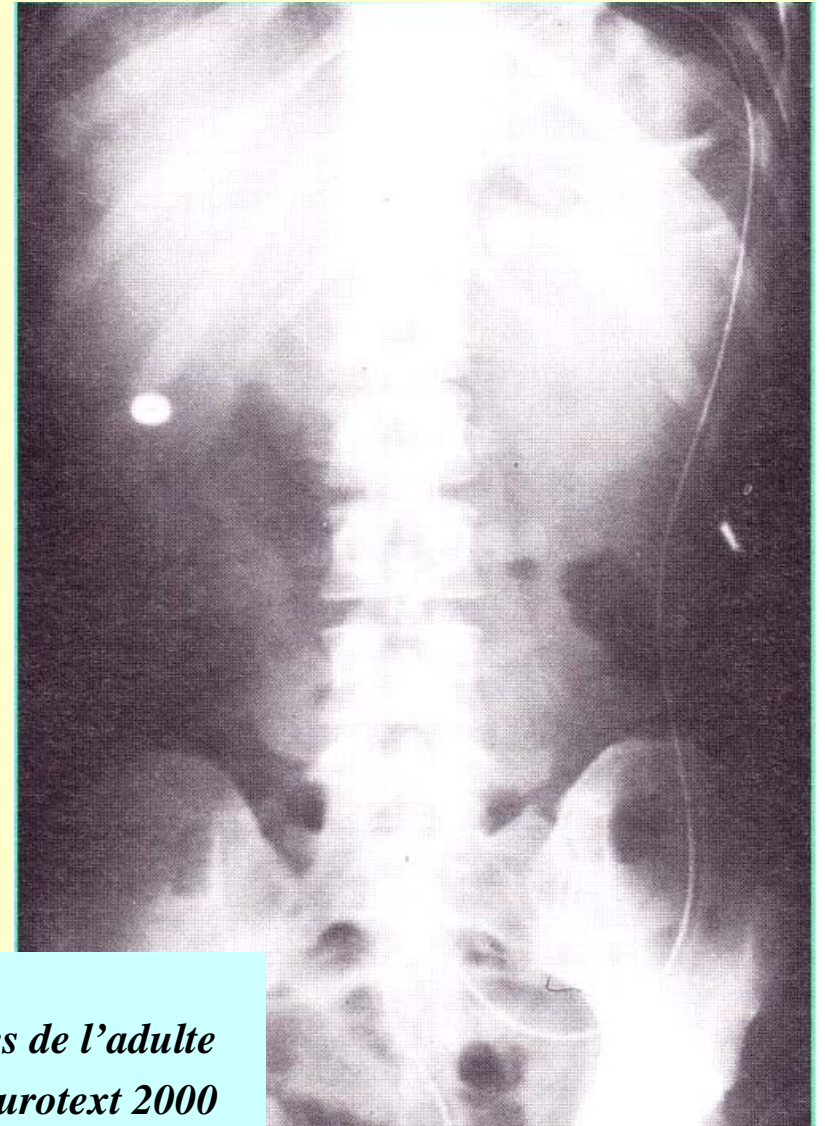
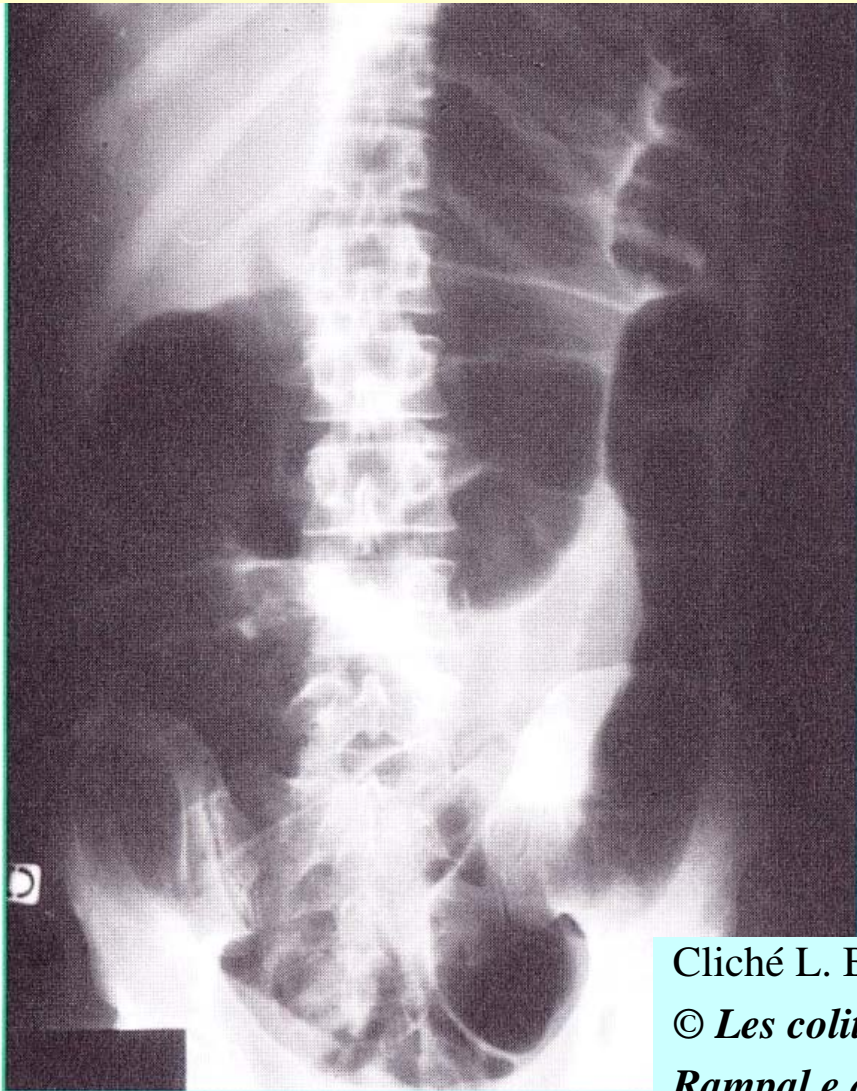
Lancet 1998



Mise en place d'un drainage aspiratif colique pour colite post-antibiotique à *Clostridium difficile* compliquée de dilatation colique aiguë.

Dilatation colique immédiatement avant réalisation de la coloscopie.

Sonde de drainage intracolique en place et affaissement de la dilatation colique immédiatement après réalisation de la coloscopie.



Cliché L. Beaugerie

© *Les colites infectieuses de l'adulte*
Rampal e.a. J Libbey Eurotext 2000

Bacillaire dysenterie, Complicaties

✓ **Hemolytisch Uremisch Syndroom :** op shiga-toxine

na 1 week

zeer zeldzaam (doch frequenter in *E. coli* O157:H7 - verotoxines)

Oliguria - renal failure

Anemia - leukemoid reaction - thrombocytopenia

✓ **Reactieve artritis (Reiter syndroom)** vnl HLA-B27 :

artritis & urethritis & conjunctivitis / uveitis &

handpalm-hyperkeratosis (keratoderma blenorrhagica)

pdf handout = for personal use only



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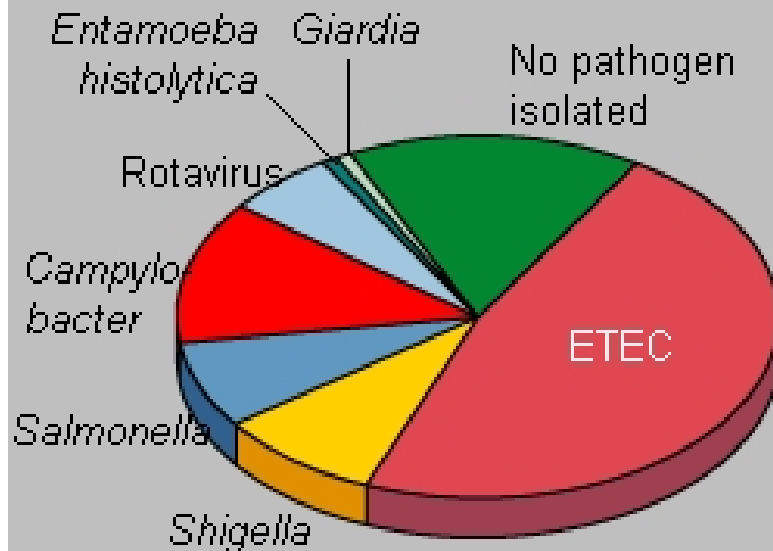
Diarrhoeal Diseases



TUTORIALS

Causes of traveller's diarrhoea.

Data from Hart 1996.

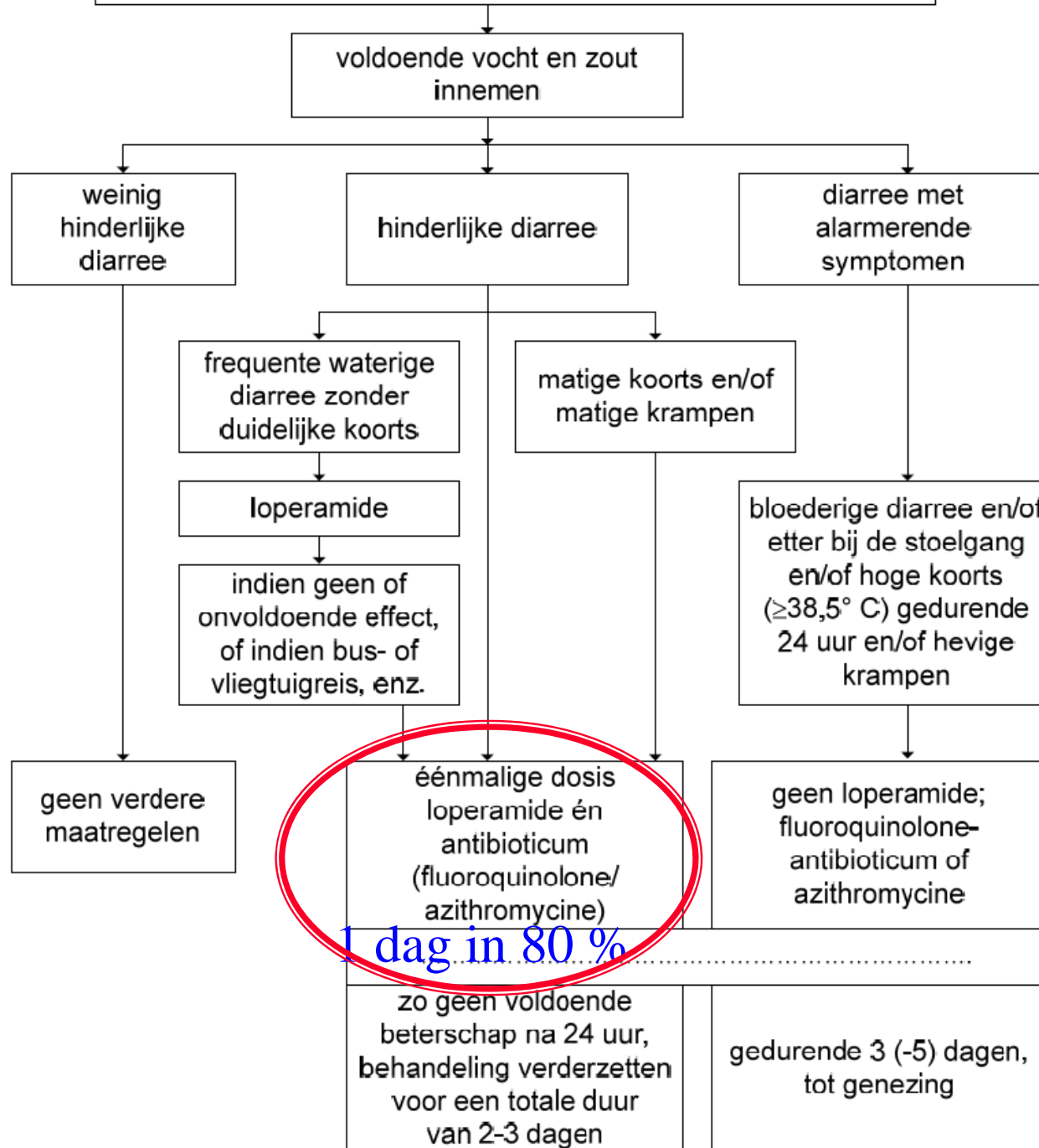


Clinical features of traveller's diarrhoea

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)

DIARREE ZELFBEHANDELING OP REIS



Dit schema is enkel te gebruiken op reis (noodbehandeling).

Gebruik het niet na de terugkomst in België, maar raadpleeg dan steeds uw arts!



Low Risk of Hemolytic Uremic Syndrome after Early Effective Antimicrobial Therapy for *Shigella dysenteriae* Type 1 Infection in Bangladesh

356 • CID 2006:42 (1 February) • Bennish et al.

Michael L. Bennish,^{1,2,3} Wasif A. Khan,⁴ Monira Begum,⁴ Emily A. Bridges,⁵ Sabeena Ahmed,⁴ Debasish Saha,⁴ Mohammad A. Salam,⁴ David Acheson,^{2,4} and Edward T. Ryan^{5,6,7}

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Background. Hemolytic uremic syndrome (HUS) may complicate up to 15% of cases of Shiga toxin (Stx)–expressing enterohemorrhagic *Escherichia coli* (STEC) O157:H7 infections in children. Administration of antimicrobials has been reported to increase the risk of STEC-associated HUS by >10-fold, presumably by increasing the expression and release of Stx by dying STEC bacteria. *Shigella dysenteriae* type 1 also expresses Stx. However, the effect of antimicrobial therapy on Stx release and the risk of HUS in humans is unknown.

Methods. We measured serial stool Stx concentrations before and after administration of antimicrobials in 20 children infected with *S. dysenteriae* type 1 who had frank dysentery of <72 h duration. We also reviewed the results of 7 shigellosis drug trials performed in Bangladesh during 1988–2000 to estimate the risk of HUS. In these studies, antimicrobials were administered within 96 h after the onset of dysentery.

Results. Stx levels decreased in stool samples obtained from 17 of 20 children after administration of antimicrobial agents; none of the 20 children developed HUS. Of 378 individuals infected with *S. dysenteriae* type 1 who were enrolled in drug trials (128 adult men [age, 18–60 years] and 250 children [age, 6 months to 15 years]), 351 (93%) received an antimicrobial agent to which the *S. dysenteriae* organism was susceptible \leq 96 h after the onset of symptoms; HUS developed in 1 child. The risk of developing HUS was 0.0026 for all participants (95% confidence interval, <0.001 to 0.015) and was 0.004 for children (95% confidence interval, 0.001–0.022).

Conclusion. In persons infected with *S. dysenteriae* type 1, early administration of effective antibiotics is associated with decreased Stx concentrations in stool and a low risk of developing HUS.



Bronnen - “Shigellose” in

- **Princeps bron** : Chapter 97 & Chapter 242 door DuPont in **Mandells principles and practices of infectious diseases 2010**
- Wellcome Tutorial on Diarrhoeal Diseases (CD-rom)
- LCI-richtlijnen infectieziektebestrijding Editie 2009, Rijksinstituut voor Volksgezondheid en Milieu (rivm)
- Control of Communicable Diseases Manual, 19e ed, D.L.Heymann
- WHO 2005 Guidelines for the control of shigellosis, including epidemics due to *Shigella dysenteriae* type 1