Campylobacter concisus

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Table 1 | *Campylobacter* species colonize a diverse number of sites in humans

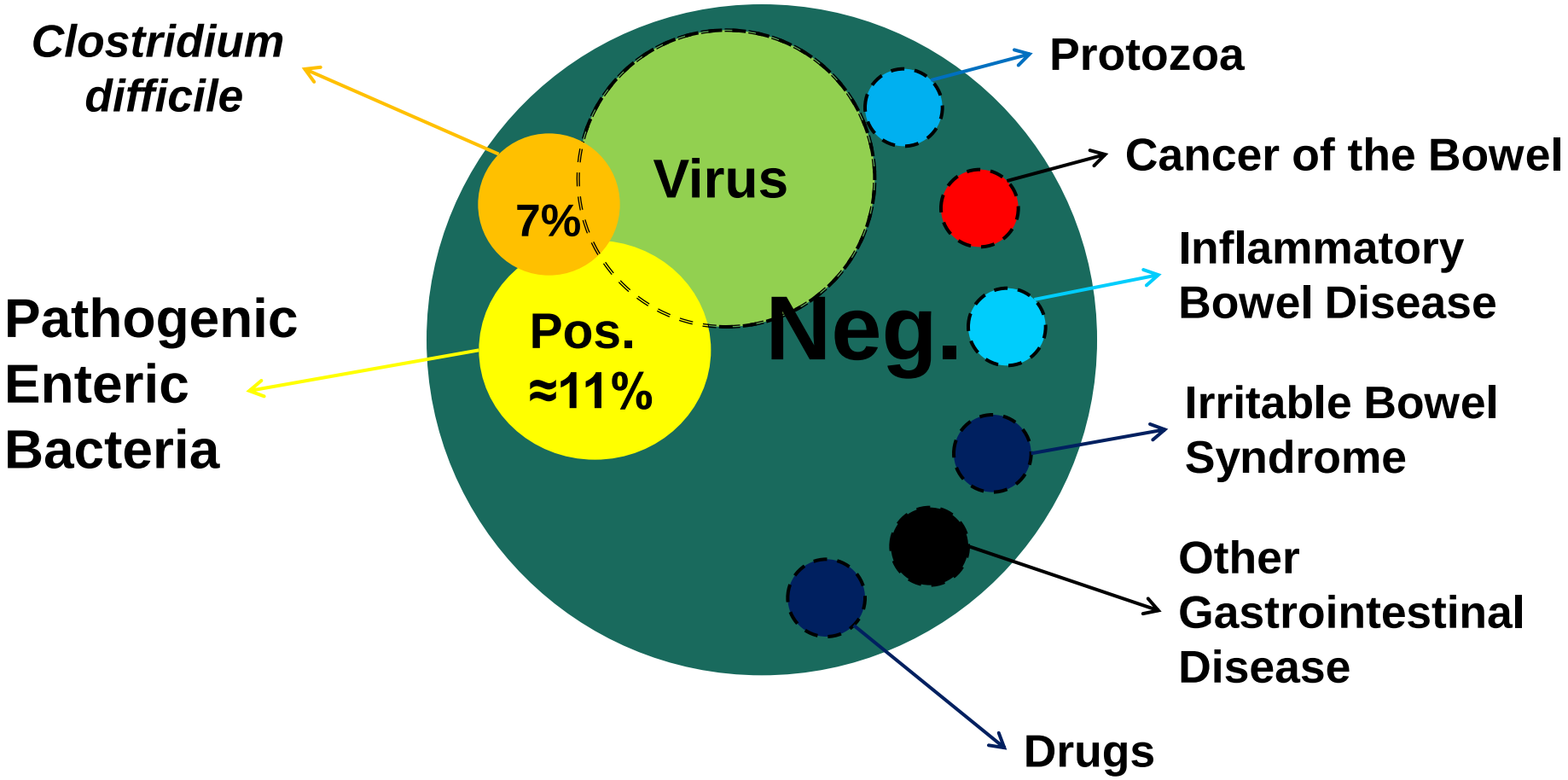
Campylobacter spp.*	Site of detection or isolation in humans
C. coli	Blood;[152] cerebrospinal fluid;[152] feces or intestinal tract;[41,153] gallbladder;[152] retroperitoneal abscess[152]
C. concisus	Blood;[8] brain abscess;[69] duodenal biopsy sample;[8] feces or intestinal tract;[18,41,45,46] oral cavity[51,153,154]
C. curvus	Oral cavity;[51,154] feces;[41] alveolar abscess[153]
C. fetus subsp. *fetus*	Blood;[129,155,156] cerebrospinal fluid;[157,158] feces;[7,129,153,156] gastric aspirate;[156] subcutaneous aspirate;[129] abscess;[153] vagina;[156,159] liver, lungs, skin and spleen of an aborted fetus[159]
C. fetus subsp. *venerealis*	Blood[153]
C. gracilis	Brain abscess;[69] oral cavity;[51,153,154] feces[41,46]
C. hominis	Blood;[160] feces or intestinal tract[41,45,46]
C. helveticus	Feces[41]
C. hyointestinalis	Blood;[161] feces[41,120,141,153]
C. insulaenigrae	Feces[41]
C. jejuni	Blood;[152,153] cerebrospinal fluid;[152,153] feces or intestinal tract;[41] gallbladder;[152] gastric biopsy;[153] thoracic wall;[152] peritoneal fluid;[152] urine[152]
C. lanienae	Feces[162]
C. lari	Blood;[163] feces;[153] oral cavity[154]
C. mucosalis	Feces;[41] oral cavity[154]
C. peloridis	Dialysis fluid; feces[144]
C. rectus	Oral cavity;[51,154] intestinal tract;[46] vertebral abscess[69]
C. showae	Feces/intestinal tract;[41,45,46] intraorbital abscess;[69] oral cavity[51,154]
C. sputorum	Biovar sputorum: axillary, lung, and scrotal abscesses;[164] blood;[165] feces;[18,41,153] oral cavity;[153,154] pus[166] Biovar paraureolyticus: feces[166]
C. upsaliensis	Blood;[167] breast abscess;[168] feces[18,41,134,167]
C. ureolyticus	Amniotic fluids;[153] feces;[169] intestinal tract;[41,45,46,153] oral abscesses, perineum, genitalia, perianal abscesses, soft tissue abscesses, ulcers or gangrenous lesions of the lower limb;[170] urine[153]

**C. avium*, *C. canadensis*, *C. cuniculorum*, *C. subantarcticus*, *C. troglodytis*, *C. volucris*, '*Campylobacter* sp. Dolphin DP', and '*Campylobacter* sp. Prairie Dog' have not been reported in humans (as of July 2011).

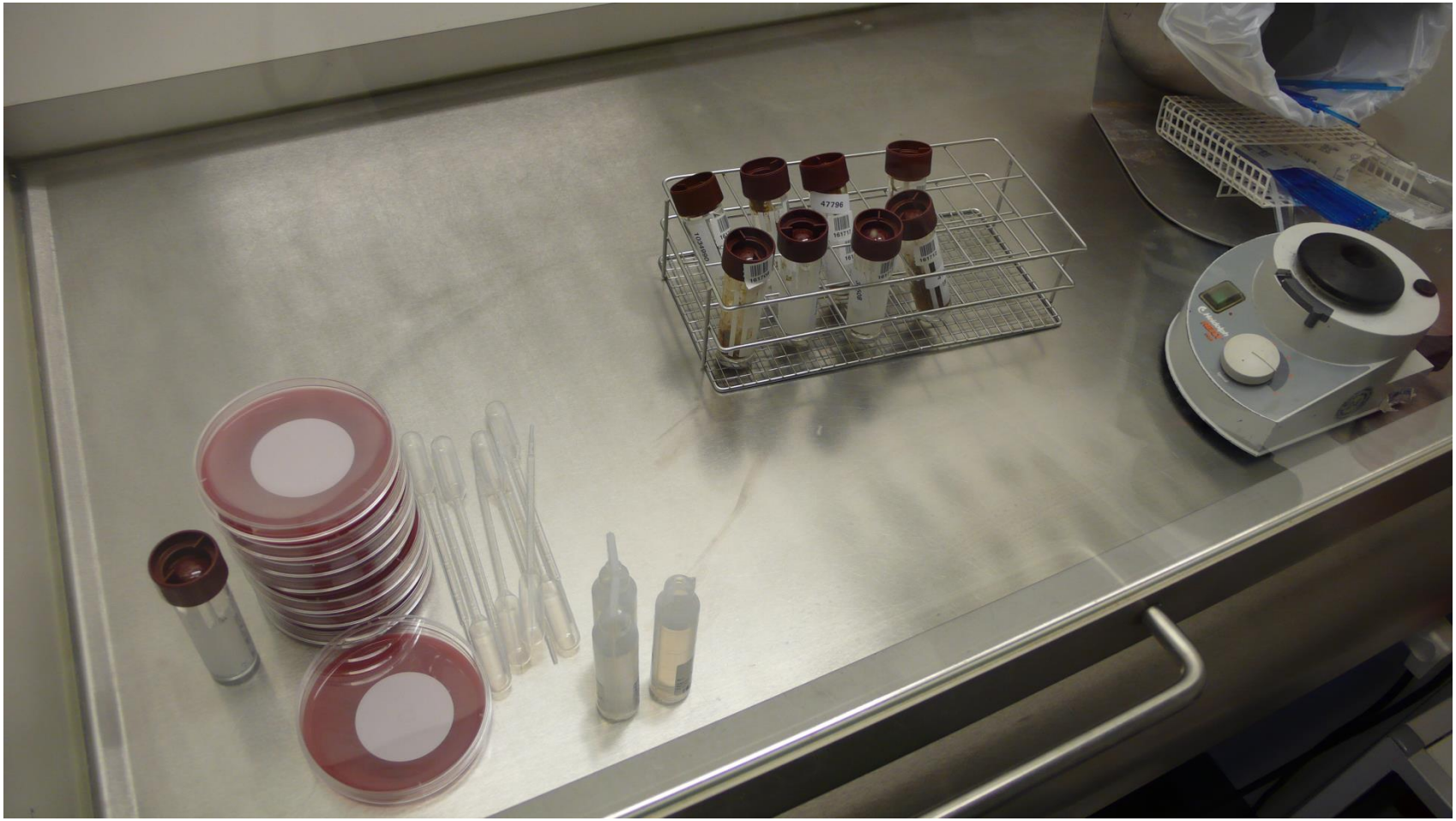
Introduction to *Campylobacter concisus*

- First isolated in 1981 from the human oral cavity
- No primary animal reservoirs have been found
- Has been detected in diarrheic faecal samples from domestic dogs
- Reports have described *C. concisus* in human diarrheic stool samples (especially in a tertiary hospital setting)
- *C. concisus* has also been reported in healthy stool samples, especially children
- *C. concisus* has been associated to Inflammatory Bowel Disease

All faecal samples sent to the Department of Clinical Microbiology



Isolation of *Campylobacter concisus*



Isolation of *Campylobacter concisus*

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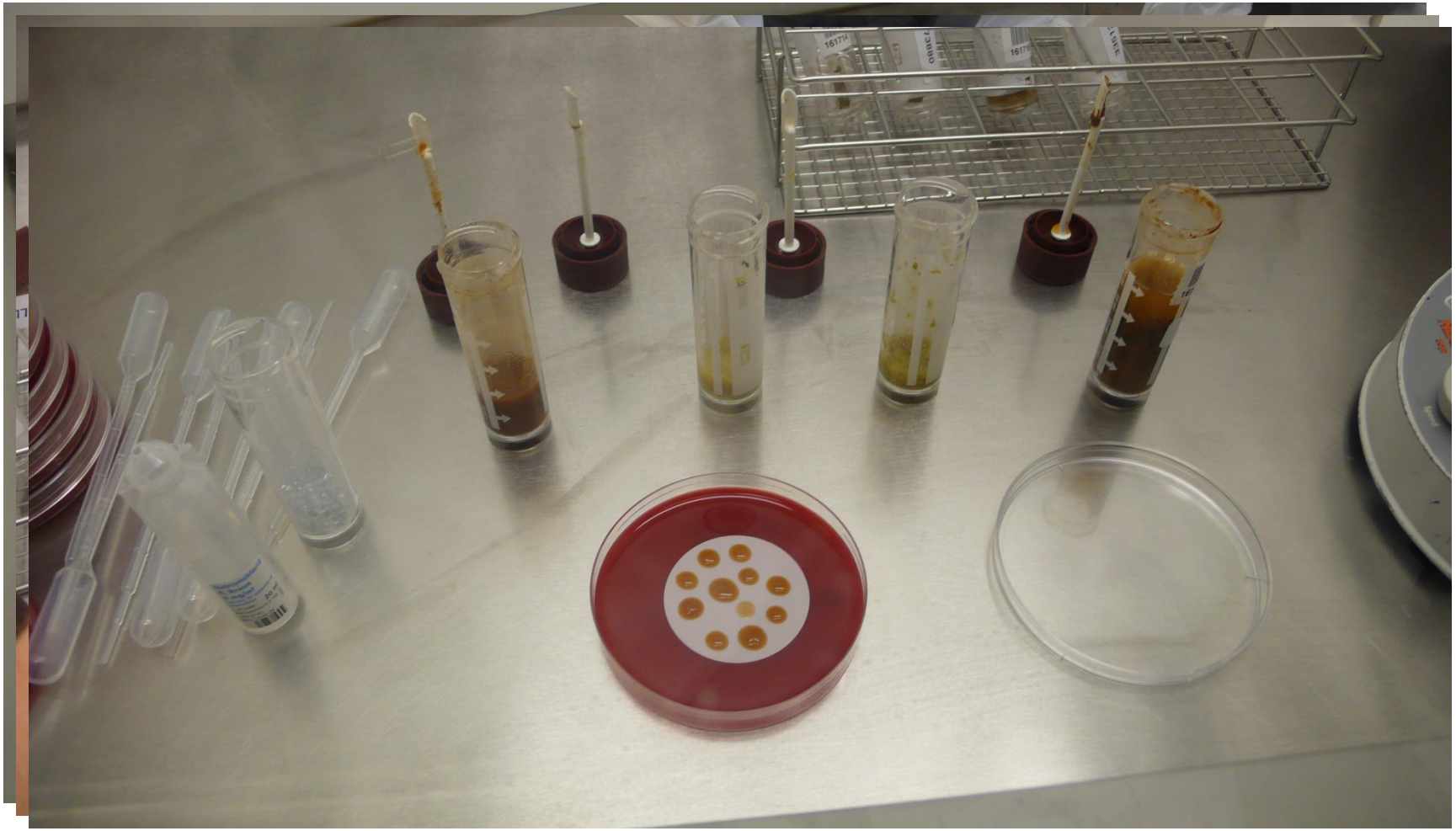
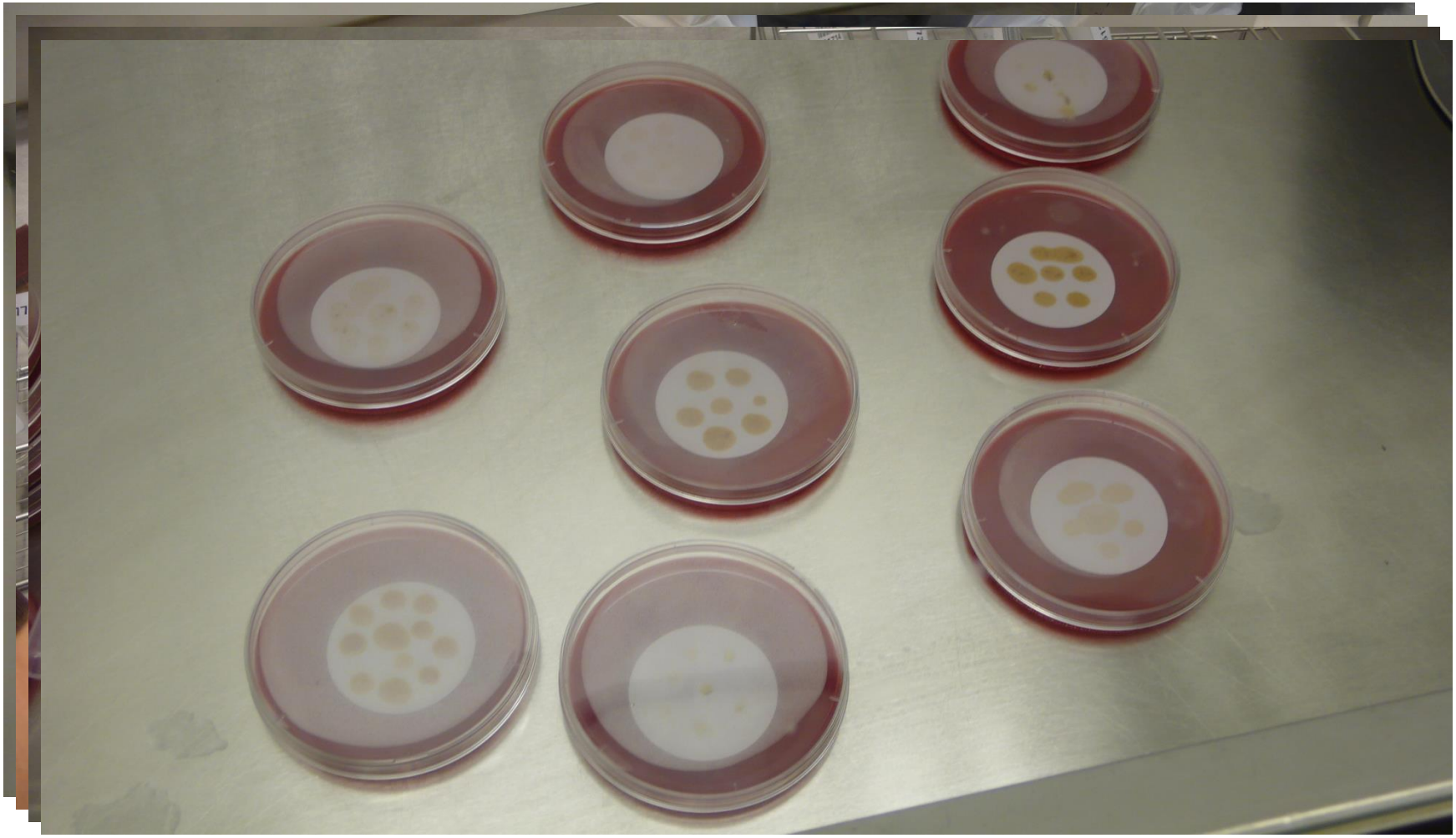
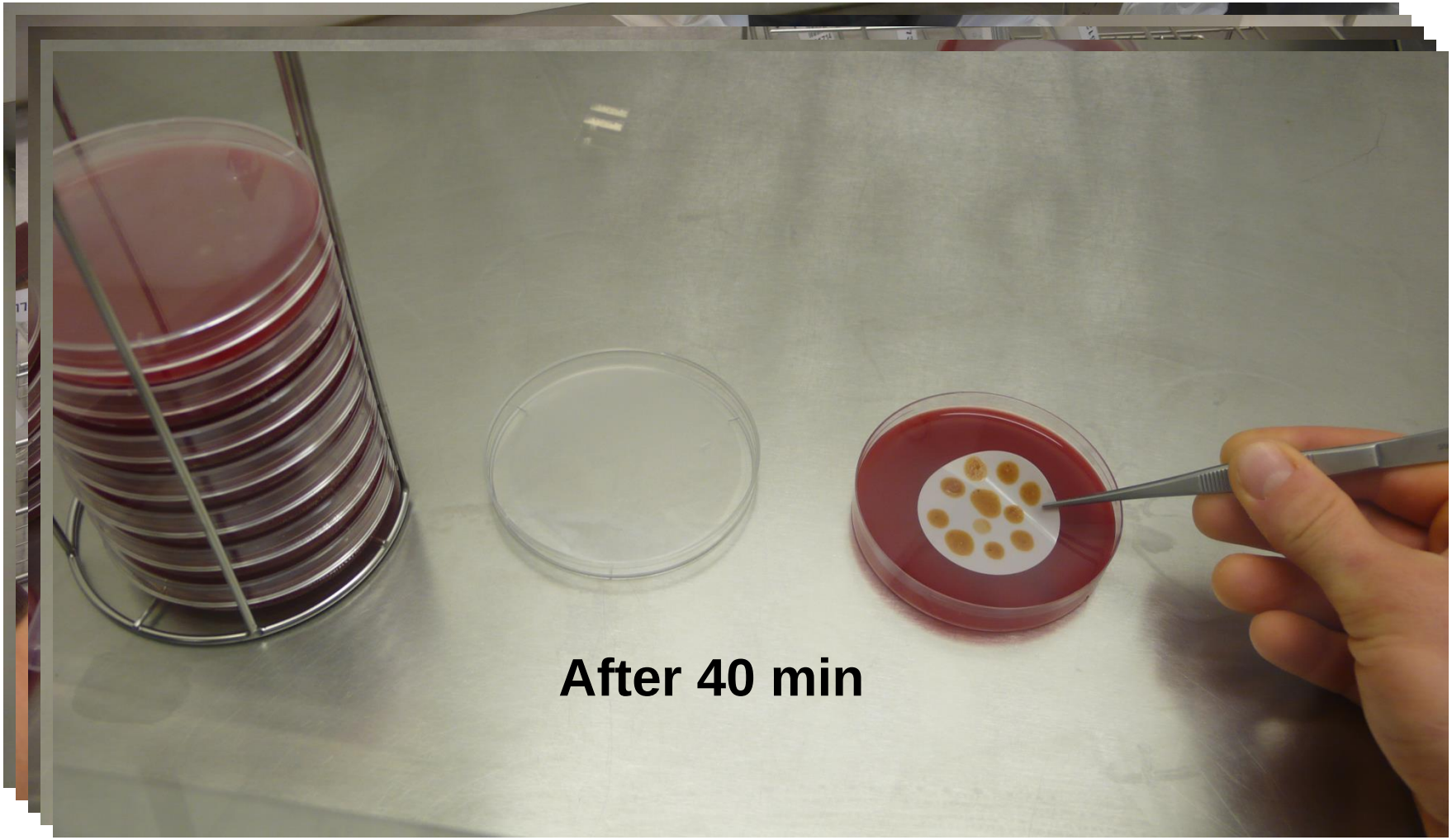


Isolation of *Campylobacter concisus*



Isolation of *Campylobacter concisus*



Isolation of *Campylobacter concisus*

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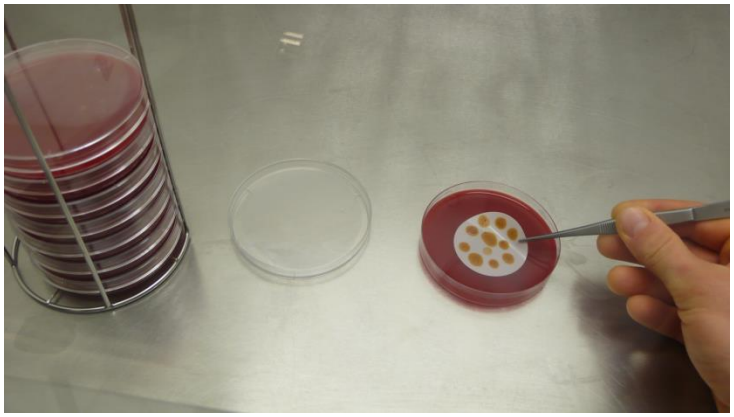
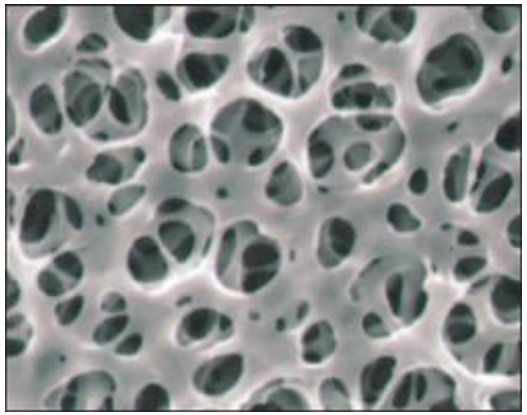
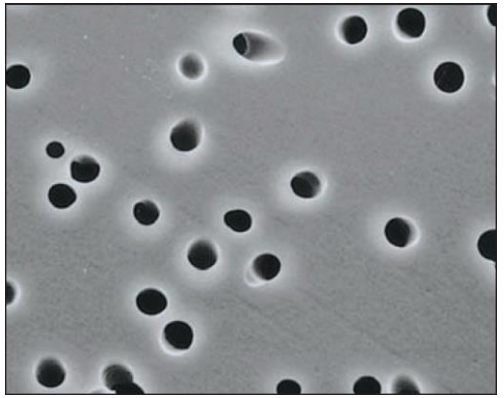




cellulose acetat filter



polycarbonat filter

Table 1. Number of *Campylobacter* spp. in 1,791 diarrheic stool samples from 1,377 patients using a polycarbonate (PC) and cellulose acetate (CA) membrane filter from February 2012 till June 2012 at the Department of Clinical Microbiology, Aalborg University Hospital, Denmark.

Taxon	No. of culture-positive isolates on:			
	PC only	CA only	Both PC and CA	P-value[a]
Campylobacter jejuni/coli	3	0	51	-
Campylobacter concisus	55	20	59	<0.0001
Campylobacter upsaliensis	0	0	1	-
Arcobacter cryaerophilus[b]	0	0	2	-

[a]The comparative efficacies of filters for the recovery of *Campylobacter concisus* were tested by McNemar's test.

[b]Identified with use of the MALDI-TOF biotyper.

TABLE 1. Number of patients and isolates with pathogenic enteric bacteria in 11 314 diarrhoeic stool samples from 8302 patients, North Jutland, Denmark , 2009 - 2010

Microorganism	Patients	Isolates
Campylobacteraceae		
Campylobacter jejuni/coli	489	541
Campylobacter concisus	400	441
Campylobacter curvus	5	5
Campylobacter upsaliensis	2	2
Arcobacter cryaerophilus[a]	1	1
Other bacteria		
Clostridium difficile[b]	379	546
Salmonella enterica serovar Typhimurium	75	93
Salmonella enterica	72	81
Salmonella enterica serovar Enteritidis	64	76
Shigella species	20	29
Yersinia enterocolitica	15	21
Escherichia coli, (EHEC)	6	6
Other[c]	4	5
Total	1532	1847

[a]Identified with use of the MALDI-TOF (matrix-assisted laser desorption/ionization-time of flight) biotyper.
[b]Samples were not cultured for *Clostridium difficile* if they were from children <2 years of age or patients with a travel exposure.
[c]*Plesiomonas shigelloides, Yersinia enterocolitica* and *Aeromonas sobria.*

Clin Microbiol Infect, 2013 May;19(5):445-50

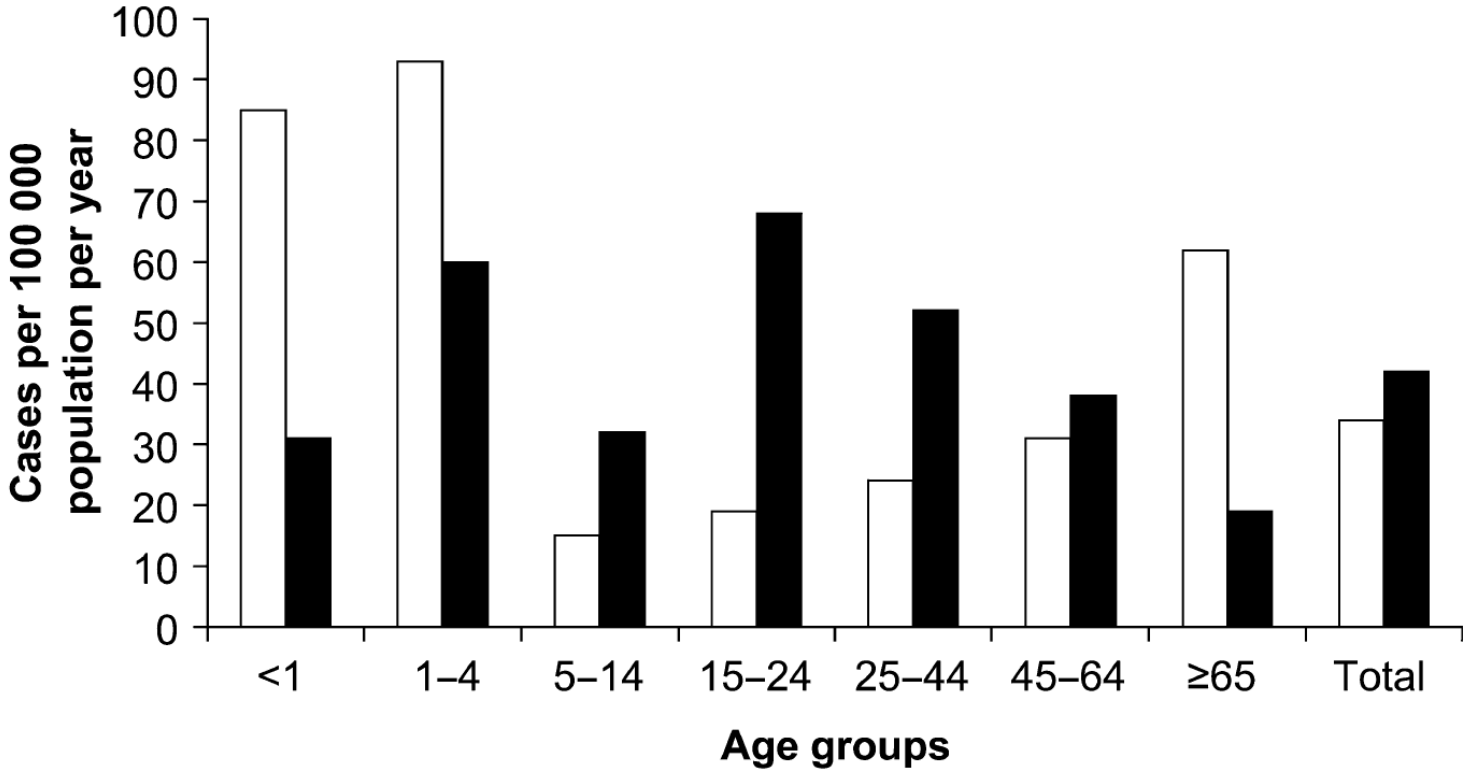


FIG. 1. Age-related annual incidence of *Campylobacter concisus* (white) and *Campylobacter jejuni/coli* (black) gastroenteritis in North Jutland, Denmark.

Pirofski and Casadevall *BMC Biology* 2012, **10**:6
http://www.biomedcentral.com/1741-7007/10/6

BMC Biology
incorporating Journal of Biology

QUESTION & ANSWER Open Access

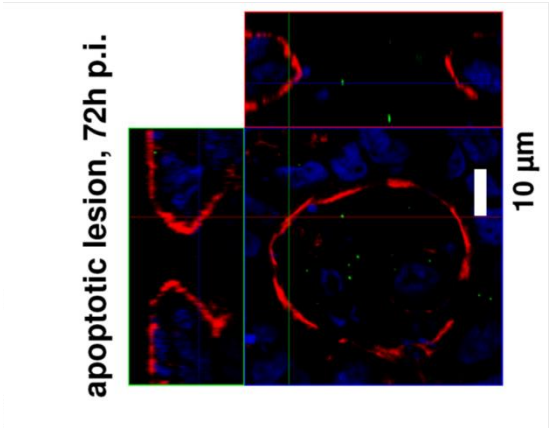
Q&A: What is a pathogen? A question that begs the point

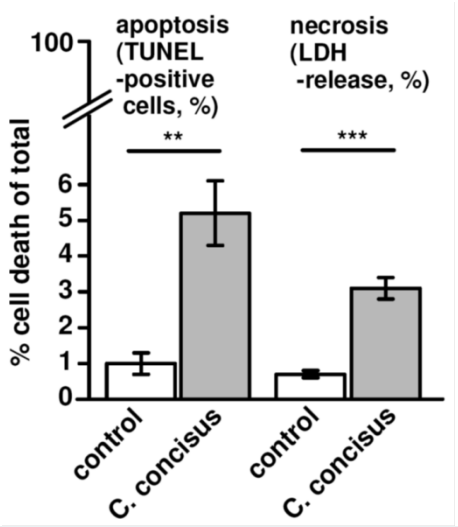
- ***C. concisus*** **is "walking" the line between commensalism and pathogenesis**
- **It may be explained by the enormous diversity within strains of *C. concisus***
- **Does it have the capacity**

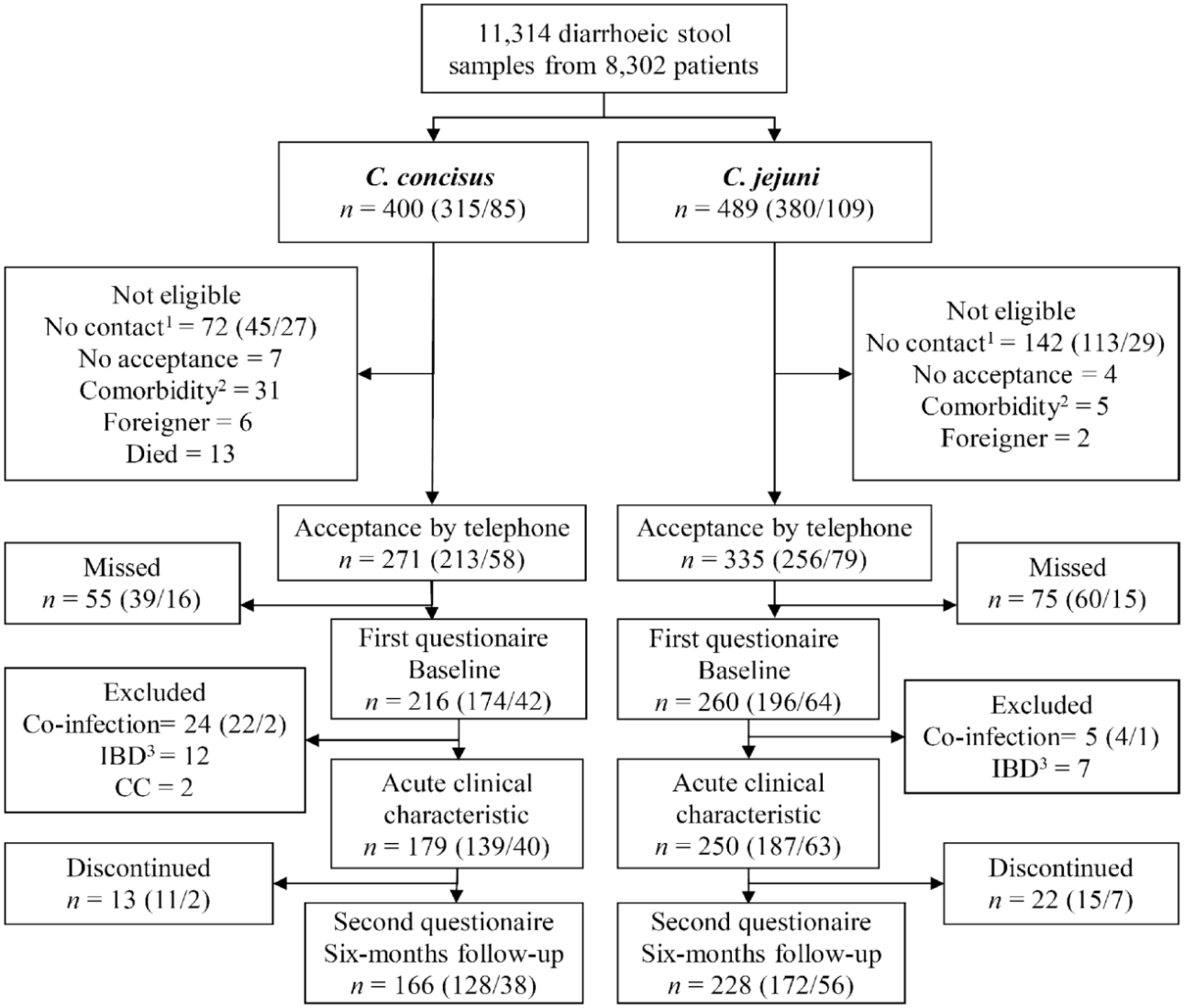
  to cause damage in a

  (susceptible) host?

  = pathogenecity







[1]No telephone number available or attempted unsuccessfully.
[2]Dementia, stroke, cancer.
[3]One IBD patient with *C. concicus* and two *C. jejuni* patients with IBD had a co-infection.

TABLE 2. **Clinical characteristics of patients with *Campylobacter concisus* and *Campylobacter jejuni/Campylobacter coli* gastroenteritis; only patients with no co-infection and no prior gastrointestinal disease (inflammatory bowel disease or microscopic colitis) are shown**

Variable	*C. concisus* (*n* = 139)	*C. jejuni/C. coli* (*n* = 187)	RR (95% CI)[a]	p-value	Adjusted RR (95% CI)[b]	p-value
Symptoms						
Fever	23.9	69.7	0.34 (0.25–0.47)	<0.001	0.39 (0.28–0.54)	<0.001
Chills	34.1	71.0	0.48 (0.37–0.62)	<0.001	0.50 (0.39–0.66)	<0.001
Nausea	67.4	73.6	0.92 (0.79–1.06)	0.2	0.94 (0.81–1.09)	0.4
Vomiting	40.6	35.9	1.13 (0.85–1.51)	0.4	1.19 (0.85–1.66)	0.2
Headache	50.8	61.8	0.82 (0.67–1.01)	0.06	0.92 (0.75–1.13)	0.4
Dizziness	50.8	59.9	0.85 (0.69–1.05)	0.1	0.88 (0.70–1.09)	0.2
Abdominal pain	81.6	79.0	1.03 (0.92–1.16)	0.6	1.13 (1.00–1.26)	0.05
Muscle aches	51.5	63.0	0.82 (0.67–1.00)	0.05	0.85 (0.69–1.05)	0.1
Consistency of stools						
Watery	91.7	98.4	0.93 (0.88–0.98)	<0.05	0.94 (0.89–0.99)	<0.05
Mucus in stool	47.4	67.2	0.70 (0.57–0.87)	<0.01	0.73 (0.59–0.90)	<0.01
Blood in stool	9.9	24.7	0.40 (0.22–0.71)	<0.01	0.45 (0.25–0.82)	<0.05
Weight loss	71.6	87.1	0.82 (0.73–0.93)	<0.01	0.83 (0.73–0.94)	<0.01
Duration of diarrhoea (days)[c]						
≤7	6.2	30.4	0.20 (0.10–0.41)	<0.001	0.22 (0.10–0.47)	<0.001
8–14	13.9	37.6	0.37 (0.23–0.59)	<0.001	0.43 (0.26–0.71)	<0.001
>14	79.9	32	2.49 (1.98–3.14)	<0.001	2.26 (1.77–2.90)	<0.001

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Scandinavian Journal of Gastroenterology. 2013; 48: 633–635

Table I. The distribution of age, sex and f-CP (mg/kg) among patients infected with *Campylobacter concisus* and *Campylobacter jejuni/coli*.

	C. concisus (n = 99)	*C. jejuni/coli* (n = 140)	p-value[a]
Age (median, IQR)	40 (10–65)	29 (17–50)	
Age, mean (range)	41 (0–89)	33 (1–83)	0.01
Sex (female/male)	54/45	73/67	0.79
f-CP, mean (range)	188 (3–1820)	786 (2–2343)	<0.0001
f-CP, median (IQR)	53 (20–169)	631 (221–1274)	

Abbreviations: f-CP = fecal calprotectin; IQR = interquartile range.
[a]Statistical analysis was performed using the Student's t-test for continuous data and Fisher's exact test for categorical data.

TABLE 4. **Overall clinical outcome after 6 months follow-up in adult patients with gastroenteritis with *Campylobacter concisus* or *Campylobacter jejuni/Campylobacter coli***

Variable	*C. concisus* (*n* = 128)	*C. jejuni/C. coli* (*n* = 172)	p-value
Enteric symptoms[a]			
Abdominal pain	34.4	25.3	0.1
Loose stools	54.6	52.4	0.8
Pain on defecation	11	11	1
Different consistency of stools from day to day	63.3	46.4	<0.01
Mucus in stools	9.7	8.1	0.7
Visiting GP with GI disorder	12.5	6.3	0.1
Visiting GP because of arthralgia	4.7	3.5	0.8
Hospitalized with GI disorder	25	8.1	<0.001
Lower endoscopy	23.4	5.8	<0.001
Diagnoses[b]			
Inflammatory bowel disease[c]	2.3	0	0.08
Microscopic colitis[d]	12.5	0	<0.001
Irritable bowel syndrome	4.7	1.2	0.08
Other	5.5	6.9	0.6

Clinical Microbiology and Infection, Volume 18 Number 11, November 2012

Antibiotic treatment?

A Randomized, Double-Blind, Placebo-Controlled Trial of Azithromycin in Diarrheic Patients with *Campylobacter concisus*, EudraCT: 2011-000808-18

Klinisk forsøg: Campylobacter concisus
EUdraCT nr. 2011-000808-18

Periode 1

Patientnummer: **xx**

Azithromycin Sandoz® 500 mg/ placebo i kapsler 3 stk.

1 kapsel daglig i 3 dage. Synkes hele.

Batch nr.
Anvendes før:

Investigator: Læge Hans Linde Nielsen,
Aalborg Sygehus, tlf. 99 32 65 32

Må ikke opbevares over 25°
Opbevares utilgængeligt for børn
Glostrup Apotek

Klinisk forsøg: Campylobacter concisus
EUdraCT nr. 2011-000808-18

Periode 2

Patientnummer: **xx**

Azithromycin Sandoz® 500 mg/ placebo i kapsler 3 stk.

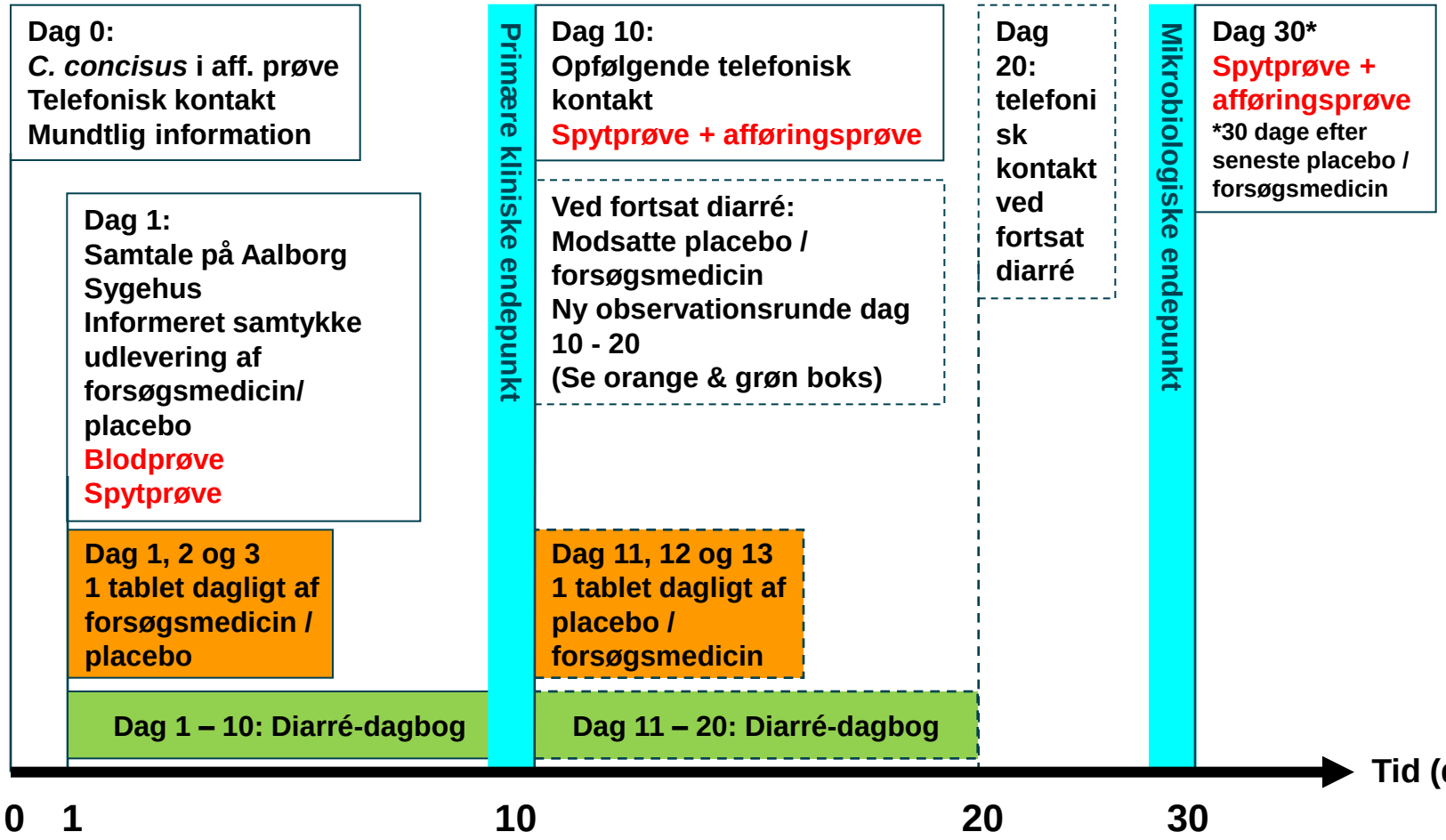
1 kapsel daglig i 3 dage. Synkes hele.

Batch nr.
Anvendes før:

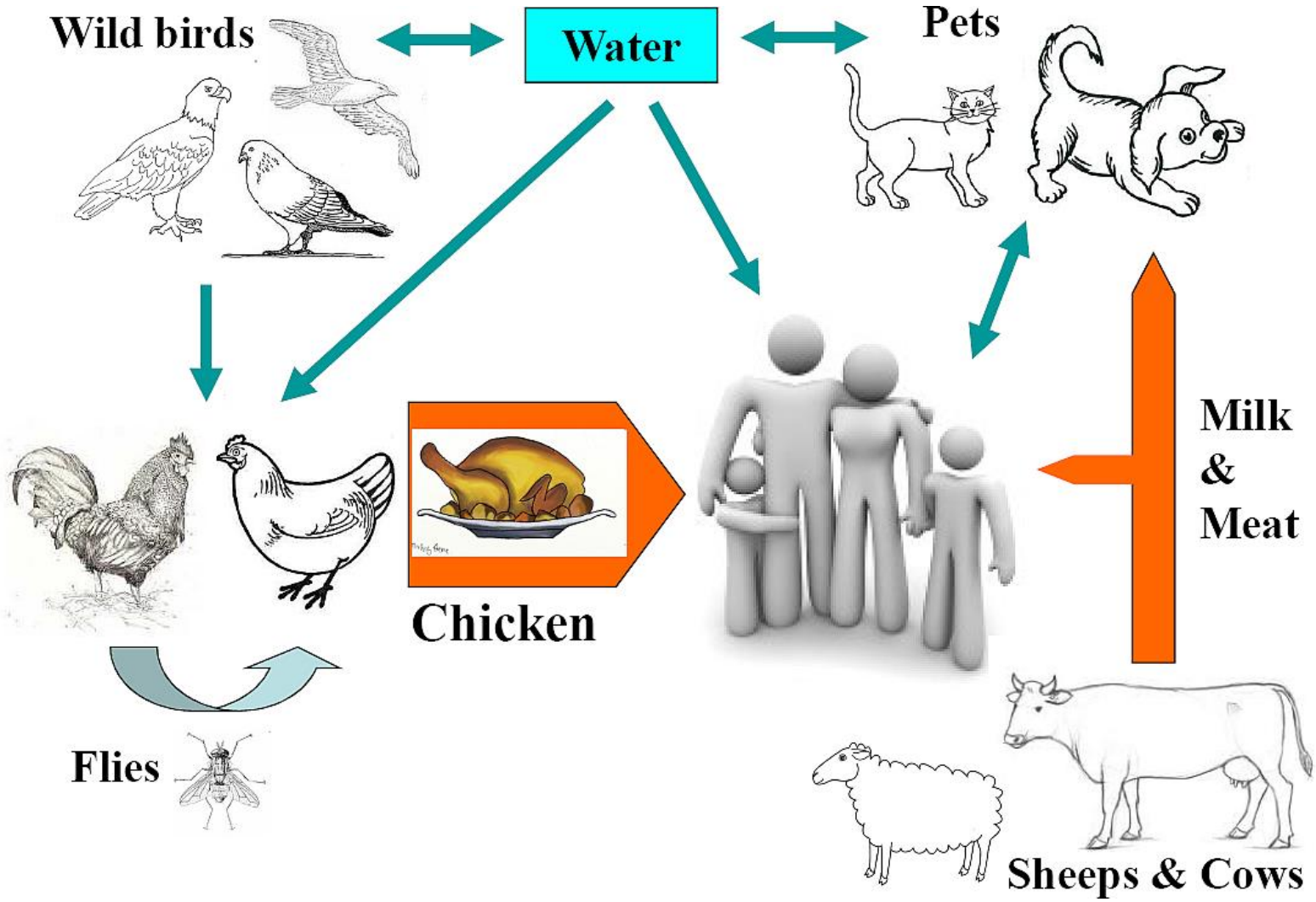
Investigator: Læge Hans Linde Nielsen,
Aalborg Sygehus, tlf. 99 32 65 32

Må ikke opbevares over 25°
Opbevares utilgængeligt for børn
Glostrup Apotek

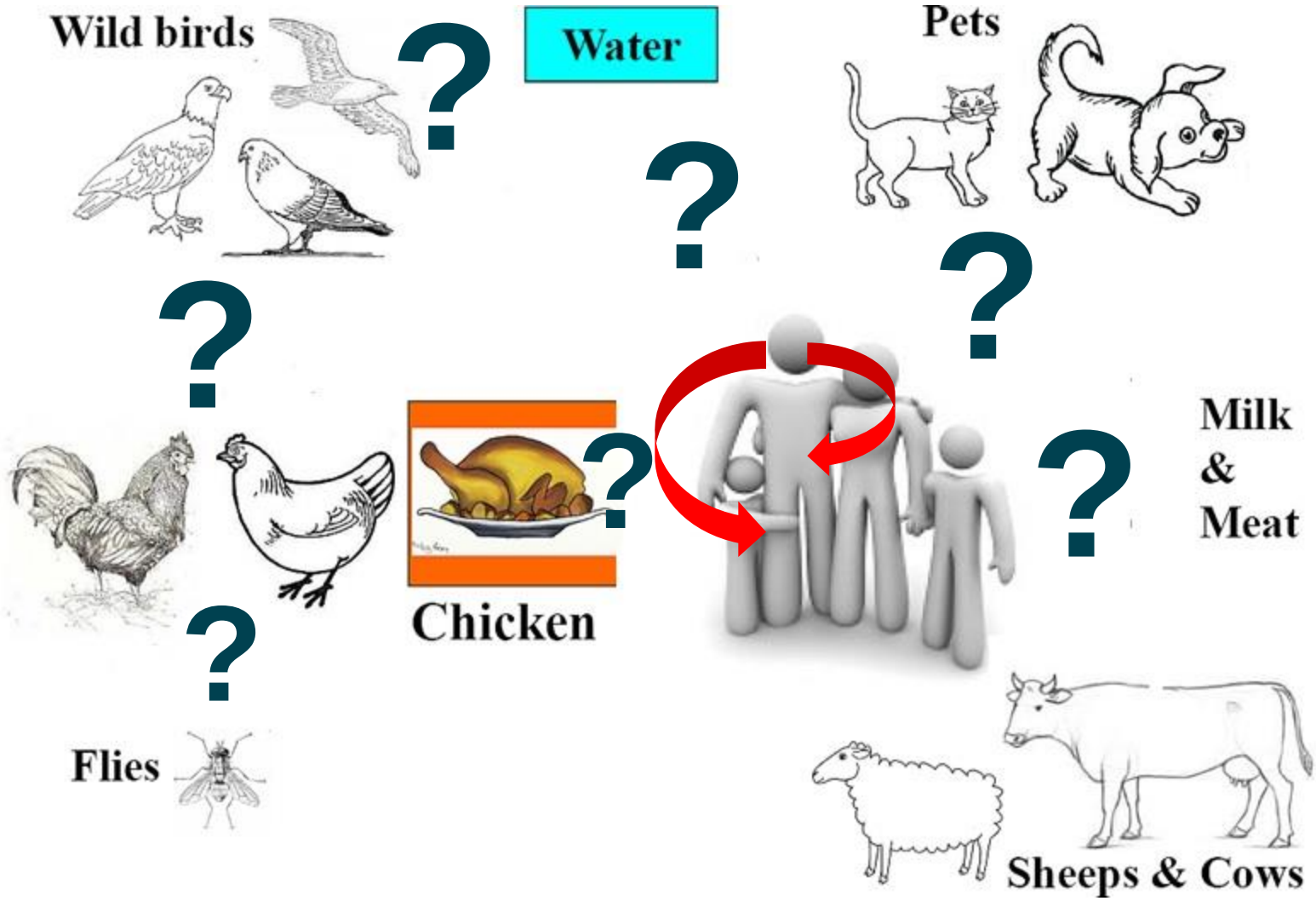
Forsøgsdiagram ved dyrkning af *C. concisus*



The most important routes for human infection by *Campylobacter jejuni/coli*



The most important routes for human infection by *Campylobacter concisus*



(Inflamm Bowel Dis 2010;16:1008–1016)

Campylobacter concisus and Other *Campylobacter* Species in Children with Newly Diagnosed Crohn's Disease

Si Ming Man, BSc (Hons), Li Zhang, PhD,* Andrew S. Day, MD,†,‡ Steven T. Leach, PhD,† Daniel A. Lemberg, MBBS,‡ and Hazel Mitchell, PhD**

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0095-1137/09/$08.00+0 doi:10.1128/JCM.01949-08

Detection and Isolation of *Campylobacter* Species Other than *C. jejuni* from Children with Crohn's Disease▽

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The presence of *Campylobacter* species other than *Campylobacter jejuni* and antibodies to *Campylobacter concisus* in children were investigated. A significantly greater presence of *C. concisus* and higher levels of antibodies to *C. concisus* were detected in children with Crohn's disease (CD) than in controls. *Campylobacter* species other than *C. jejuni* were isolated from intestinal biopsy specimens of children with CD.

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Detection of *Campylobacter concisus* and Other *Campylobacter* Species in Colonic Biopsies from Adults with Ulcerative Colitis

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Prevalence of *Campylobacter* Species in Adult Crohn's Disease and the Preferential Colonization Sites of *Campylobacter* Species in the Human Intestine

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