

## CAMPYLOBACTERIASIS

ANIMAL GROUP AFFECTED	TRANSMISSION	CLINICAL SIGNS	FATAL DISEASE ?	TREATMENT	PREVENTION & CONTROL
All primate genera	Perorally	Secretory diarrhea, haemolytic anaemia	No	Volumen- and electrolyte substitution, Erythromycin, Tetracycline, Quinolones	<i>In houses</i> Good hygienic practices  <i>in zoos</i>  good hygienic practices

<b>Fact sheet compiled by</b> Manfred Brack, formerly German Primate Center, Göttingen / Germany.	<b>Last update</b> 22.11.2008
<b>Susceptible animal groups</b> All nonhuman primate genera.	
<b>Causative organism</b> <i>Campylobacter jejuni</i> , <i>C.coli</i> .	
<b>Zoonotic potential</b> Yes.	
<b>Distribution</b> World-wide.	
<b>Transmission</b> Perorally via contaminated food or water.	
<b>Incubation period</b> 2 – 10 days.	
<b>Clinical symptoms</b> Mostly asymptomatic, in mild disease secretory diarrhea, in severe infections mucohaemorrhagic diarrhea.	
<b>Post mortem findings</b> Thickened, turgid intestinal walls, serous exudation into the bowel lumen, in severe cases haemorrhagic-necrotic enteritis.	
<b>Diagnosis</b> Cultivation: <i>C.jejuni</i> and <i>C.coli</i> are microaerophilic and thermophilic, they require Skirrow's or Butzler's media and 40°C incubation temperature for <i>in vitro</i> cultivation. Storage at -70°C in thioglycolate medium. Confirmation by PCR or hybridization techniques. Serology: dot ELISA-tests.	
<b>Material required for laboratory analysis</b> Stool specimens, serum.	
<b>OIE Reference Laboratories</b> <ul style="list-style-type: none"> <li>• <b>Dr Jaap Wagenaar</b>                      Animal Sciences Group (ASG), Division of Infectious Diseases                      P.O. Box 65, 8200 AB Lelystad                      THE NETHERLANDS                      Tel: (31.320) 23.81.57 Fax: (31.320) 23.89.61                      Email: <a href="mailto:j.wagenaar@uu.nl">j.wagenaar@uu.nl</a> </li> <li>• <b>Dr Jaap Wagenaar</b>                      Faculty of Veterinary Medicine (FVM), Department of Infectious Diseases and Immunology                      P.O. Box 80.165, 3508 TD Utrecht                      THE NETHERLANDS                      Tel: (31.30) 253.12.42 Fax: (31.30) 253.31.99                      Email: <a href="mailto:j.wagenaar@uu.nl">j.wagenaar@uu.nl</a> </li> </ul>	

<p><b>Relevant diagnostic laboratories</b></p> <ol style="list-style-type: none"> <li>Local medical laboratories.</li> <li>Konsiliarlaboratorium für Campylobacter/ Aeromonas Institut für Medizinische Mikrobiologie und Hygiene Klinikum der Universität Freiburg Hermann-Herder-Str. 11 D 79104 FREIBURG Tel.: 0761 203 6500 “ “ 6510 Fax: “ “ 6562 e-mail: Kistman@ukl.uni-Freiburg.de</li> </ol>
<p><b>Treatment</b></p> <p>Usually self limiting, volumen and electrolyte substitution for support; Erythromycin, Tetracycline, Quinolone (Cave: increasing resistance to Quinolones (Nalidixic acid, norfloxacin, ciprofloxacin) in strains isolated from human patients!). Antibiotic resistance also to Kanamycin (mediated by a 14 kb plasmid obtained from phosphotransferase gene – apna – 7) and Aminoglycosides (Streptomycin, Spectinomycin ( due to 6 – or 3”,9-aminoglycoside adenytransferases and phosphotransferases), Macrolides (Erythromycin, Azithromycin) (chromosomally mediated)</p>
<p><b>Prevention and control in zoos</b></p> <p>Good hygienic practices, proper heating of all meat-containing food.</p>
<p><b>Suggested disinfectant for housing facilities</b></p>
<p><b>Notification</b></p> <p>In Germany: Acute human infections by pathogenic Campylobacter have to be reported according ti § 7 Infektionsschutzgesetz.</p>
<p><b>Guarantees required under EU Legislation</b></p>
<p><b>Guarantees required by EAZA Zoos</b></p>
<p><b>Measures required under the Animal Disease Surveillance Plan</b></p>
<p><b>Measures required for introducing animals from non-approved sources</b></p>
<p><b>Measures to be taken in case of disease outbreak or positive laboratory findings</b></p>
<p><b>Conditions for restoring disease-free status after an outbreak</b></p>
<p><b>Experts who may be consulted</b></p> <ol style="list-style-type: none"> <li>Prof. Dr. M. Kist, Konsiliarlaboratorium Freiburg.</li> </ol>
<p><b>References</b></p> <ol style="list-style-type: none"> <li>Adler - Mosca, H., J. Lüthy – Hottenstein, G. Martinetti Lucchini, A. Burnens, and M. Altwegg. 1991. Development of resistance to quinolones in five patients with campylobacteriosis treated with norfloxacin or ciprofloxacin. Eur. J Clin. Microbiol. Infect. Dis. 10 : 953 – 957.</li> <li>Altekruse, S. F., J. M. Hunt, L. K. Tollefson, and J. M. Madden. 1994. Food and animal sources of human <i>Campylobacter jejuni</i> infection. J. Am. Vet. Med. Assoc. 204 : 57 – 61.</li> <li>Brack, M. 1987. Agents Transmissible from Simians to Man. Springer, Berlin.</li> <li>El Hamaki – Jelinek, H., and M. Awad – Masalmeh. 1992. <i>Campylobacter jejuni</i> von Mensch und Tier : Serotypisierung und Verhalten gegenüber Zellen. Wien. Tierärztl. Monatsschr. 79 : 34 – 37.</li> <li>Eyers, M., S. Chapelle, G. van Camp, H. Goossens, and R. de Wachter. 1993. Discrimination among thermophilic <i>Campylobacter</i> – species by polymerase chain reaction amplification of 23 S r RNA gene fragments. J. Clin. Microbiol. 31 : 3340 – 3343.</li> <li>Giesendorf; B. A. J., A. van Belkum, A. Koeken, H. Stegeman, M. H. Henkens, J. van der Plas, H. Goossens, H. G. M. Niesters, and W. G. V. Quint. 1993. Development of species – specific DNA probes for <i>Campylobacter jejuni</i>, <i>Campylobacter coli</i>, and <i>Campylobacter lari</i> by polymerase chain reaction fingerprinting. J. Clin. Microbiol. 31 : 1541 – 1546.</li> <li>Griffiths, P. L., G. S. Moreno, and R. W. A. Park. 1992. Differentiation between thermophilic <i>Campylobacter</i> species by species – specific antibodies. J. Appl. Bacteriol. 72 : 467 – 474.</li> <li>Kugler, E. C. 1999. Vorkommenshäufigkeit von Campylobacter jejuni – Keimträgern und Epidemiologie der Campylobakteriose in Primatenbeständen zoologischer Gärten. Diss. München.</li> <li>McIntyre, M., and M. Lyons. 1993. Resistance to ciprofloxacin in <i>Campylobacter</i> spp. Lancet 341 : 188.</li> <li>Misawa, N., T. Ohnishi, K. Itoh, and E. Takahashi. 1994. Development of a tissue culture assay</li> </ol>



- system for *Campylobacter jejuni* cytotoxin and the influence of culture conditions on cytotoxin production. J. Med. Microbiol. 41 : 224 – 230.
11. Mizuno, K., K. Takama, and S. Suzuki. 1994. Characteristics of cytotoxin produced by *Campylobacter jejuni* – strains. Microbios 78 : 215 – 228.
  12. Pinto – Alphandary, H., C. Mabilat, and P. Courvalin. 1990. Emergence of aminoglycoside resistance genes *aadA* and *aadE* in the genus *Campylobacter*. Antimicrob. Agents Chemother. 34 : 1294 – 1296.
  13. Rautelin, H., O. – V. Renkonen, and T. U. Kosunen. 1991. Emergence of Fluoroquinolone resistance in *Campylobacter jejuni* and *Campylobacter coli* in subjects from Finland. Antimicrob. Agents Chemother. 35 : 2065 – 2069.
  14. Segreti, J., T. D. Gootz, L. J. Goodman, G. W. Parkhurst, J. P. Quinn, B. A. Martin, and G. M. Trenholme. 1992. High – level quinolone resistance in clinical isolates of *Campylobacter jejuni*. J. Infect. Dis. 165 : 667 – 670.
  15. Smith, K. E., J. M. Besser, C. W. Hedberg, F. T. Leano, J. B. Bender, J. H. Wicklund, B. P. Johnson, K. A. Moore, M. T. Osterholm, et al. 1999. Quinolone – resistant *Campylobacter jejuni* infections in Minnesota , 1992 - 1998. N. Engl. J. Med. 340 : 1525 – 1532.
  16. Taylor, D. E., and N. Chang. 1991. In vitro susceptibilities of *Campylobacter jejuni* and *Campylobacter coli* to Azithromycin and Erythromycin. Antimicrob. Agents Chemother. 35 : 1917 – 1918.
  17. Tenover, F. C., T. Gilbert, and P. O'Hara. 1989. Nucleotide sequence of a novel Kanamycin resistance gene, *aphA – 7* , from *Campylobacter jejuni* and comparison to other Kanamycin phosphotransferase genes. Plasmid 22 : 52 – 58.
  18. Wallis, M. R. 1994. The pathogenesis of *Campylobacter jejuni*. Br. J. Biomed. Sci. 51 : 57 – 64.