

Table (updated from Miller, WG & Mandrell, RE (2006), *Campylobacter in the food and water supply: prevalence, outbreaks, isolation, and detection*. IN Ketley, J & Konkel, ME (Eds.) *Campylobacter jejuni: New Perspectives in Molecular and Cellular Biology*. Norfolk, UK, Horizon Scientific Press.)

Milk and Dairy						
Milk, raw	<i>C. jejuni</i>	100	UK	Mar-78	(35)	
Milk, raw	<i>C. jejuni</i>	63	UK	Oct-78	(34, 35)	
Milk, raw	<i>C. jejuni</i>	16	UK	Nov-78	(34, 35)	
Milk, raw	<i>C. jejuni</i>	148	Scotland	Jan-79	(30, 35)	
Milk, raw	<i>C. jejuni</i>	13	UK	Mar-79	(35)	
Milk, inadequate pasteurization	<i>C. jejuni</i>	3500	UK	Mar-79	(17, 35)	
Milk, churned, unpasteurized	<i>C. jejuni</i>	>75	UK	Apr-79	(35)	
Milk, raw	<i>C. jejuni</i>	4	UK	Jun-79	(35)	
Milk, fecally contaminated	<i>C. jejuni</i>	14	UK	Aug-79	(35)	
Milk, raw	<i>C. jejuni</i>	75	UK ⁱ	Jan-80	(35)	
Milk, raw	<i>C. jejuni</i>	30	UK	Mar-80	(35)	
Milk, raw	<i>C. jejuni</i>	40	UK	Mar-80	(35)	
Milk, raw	<i>C. jejuni</i>	2	UK	Apr-80	(35)	
Milk, raw	<i>Campylobacter</i> sp.	106	USA (OR)	Jan-81	(14)	
Milk, raw	<i>C. jejuni</i>	103	USA (KS)	Mar-81	(14, 21)	
Milk, raw	<i>Campylobacter</i> sp.	190	USA (AZ)	Apr-May-81	(14, 43)	
Milk, raw	<i>Campylobacter</i> sp.	25	USA (MN)	May-81	(14, 20)	
Milk, raw	<i>C. jejuni</i>	21	USA (GA)	May-81	(14, 31)	
Milk, raw	<i>Campylobacter</i> sp.	3	USA (ME)	Oct-81	(14)	
Milk, raw	<i>Campylobacter</i> sp.	14	USA (AZ)	Oct-81	(14)	
Milk, raw	<i>Campylobacter</i> sp.	14	USA (ME)	Oct-81	(14)	
Milk, raw	<i>C. jejuni</i>	>500	Switzerland	Nov-81	(39)	
Milk, raw	<i>C. jejuni</i>	50	UK	Nov-81	(45)	
Milk, raw	<i>C. jejuni</i>	22	UK	Jan-82	(45)	
Milk, raw	<i>Campylobacter</i> sp.	46	USA (MD)	Apr-82	(14)	
Milk, raw	<i>Campylobacter</i> sp.	32	USA (MI)	May-82	(14)	
Milk, raw	<i>Campylobacter</i> sp.	32	USA (ME)	Jun-82	(14)	
Milk, raw	<i>C. jejuni/C.fetus</i>	16	USA (WI) ⁱⁱ	Jun-82	(14, 19)	
Milk, raw	<i>Campylobacter</i> sp.	15	USA (VT)	Sep-82	(14)	
Milk, raw	<i>Campylobacter</i> sp.	4	USA (VT)	Oct-82	(14)	
Milk, raw	<i>Campylobacter</i>	57	USA (PA)	May-83	(2)	

	sp.				
Milk, raw (goat)	<i>C. jejuni</i>	6	USA (WA)	Jul-83	(15)
Milk, raw	<i>C. jejuni</i>	9	USA (CA)	May-84	(3)
Milk, raw	<i>C. jejuni</i>	3	Canada	Jun-84	(4)
Milk, raw	<i>C. jejuni</i>	2	USA (WA)	84	(42)
Milk, raw	<i>C. jejuni</i>	27	USA (CA)	84	(42)
Milk, inadequate pasteurization	<i>C. jejuni</i>	35	USA (VT)	Apr-86	(1)
Milk, raw	<i>Campylobacter</i> sp.	~110	USA ⁱⁱⁱ	78-86	(33, 41)
Milk, unpasteurized	<i>Campylobacter</i> sp.	332	UK (Multi) ^{iv}	87	(38)
Milk, heat-treated	<i>Campylobacter</i> sp.	526	UK (Multi) ^v	87	(38)
Milk, heat-treated	<i>Campylobacter</i> sp.	14	UK (Multi)	89	(38)
Milk, fecal contamination	<i>C. jejuni</i>	104	USA (OK)	88	(36)
Milk, raw	<i>C. jejuni</i>	87	USA (KS)	88	(36)
Milk, raw	<i>C. jejuni</i>	13	USA (WA)	Mar-90	(6)
Milk, raw	<i>C. jejuni</i>	2	USA (WA)	Apr-90	(6)
Milk, raw	<i>C. jejuni</i>	42	USA (TX)	May-90	(6)
Milk, raw (goat)	<i>C. jejuni</i>	3	USA (WA)	Jul-91	(6)
Milk, raw (susp.)	<i>Campylobacter</i> sp.	11	USA (ME)	Feb-92	(6)
Milk	<i>C. jejuni</i>	23	USA (NY)	Apr-92	(6)
Milk, pecked milk bottles	<i>Campylobacter</i> sp.	23	UK	May-92	(28)
Milk, raw	<i>C. jejuni</i>	50	USA (MN)	May-92	(6)
Milk, raw	<i>Campylobacter</i> sp.	72	UK	Jun-92	(27)
Milk, pasteurized	<i>Campylobacter</i> sp.	110	UK	Aug-92	(13)
Milk, raw	<i>C. jejuni</i>	3	USA (WA)	Oct-92	(6)
Dairy, cottage cheese	<i>C. fetus</i>	13	USA (OH)	Dec-92	(6)
Milk, raw	<i>Campylobacter</i> sp.	22	UK	Jun-93	(11, 28)
Milk, raw	<i>Campylobacter</i> sp.	23	Wales	Mar-94	(12)
Milk, pecked milk bottles	<i>Campylobacter</i> sp.	12	UK	May-95	(40)
Milk, raw	<i>Campylobacter</i> sp.	35	UK	May-95	(11, 28)
Milk	<i>C. jejuni</i>	29	USA (NY)	Jun-96	(6)
Milk	<i>C. jejuni</i>	Multi	Sweden ^{vi}	95-97	(23, 24)
Milk, raw	<i>C. jejuni</i> / <i>C. coli</i>	34	Hungary	Apr-98	(18)
Milk	<i>C. jejuni</i>	6	USA (SD)	Jul-98	(6)
Milk	<i>Campylobacter</i> sp.	3	USA (NY)	Jul-98	(6)
Milk, raw	<i>C. jejuni</i>	38	Austria	Sep-98	(22)
Milk, raw	<i>Campylobacter</i> sp.	3	Sweden	98	(37)
Milk, raw	<i>Campylobacter</i> sp.	5	Sweden	98	(37)
Milk	<i>C. jejuni</i>	11	Germany	Apr-99	(32)

Milk, raw	<i>C. jejuni</i>	2	USA (WA)	Jun-99	(6)
Milk, raw	<i>Campylobacter</i> sp.	2	USA (TX)	Feb-00	(6)
Milk, raw	<i>C. jejuni</i>	4	USA (ID)	Feb-00	(6)
Milk, raw	<i>C. jejuni</i>	21	USA (OK)	Feb-00	(6)
Milk, raw	<i>C. jejuni</i>	19	USA (WI)	May-00	(6)
Dairy, malts/unpasteurized milk	<i>Campylobacter</i> sp.	8	USA (MN)	Jun-00	(25)
Milk, raw	<i>Campylobacter</i> sp.	8	USA (MN)	Jun-00	(6)
Milk, raw	<i>C. jejuni</i>	42	USA (ID)	Jun-00	(6)
Milk, raw	<i>C. jejuni</i>	11	USA (OK)	Jun-00	(6)
Milk, raw	<i>C. jejuni</i>	3	USA (PA)	Aug-00	(6)
Milk, raw	<i>C. jejuni</i>	39	USA (NY)	Sep-00	(6)
Milk, raw	<i>C. jejuni</i>	4	USA (MN)	Mar-01	(7, 25)
Milk, raw	<i>C. jejuni</i>	75	USA (WI)	Nov-01	(5, 7)
Milk, raw	<i>C. jejuni</i>	13	USA (UT)	Jan-02	(29)
Milk, raw	<i>Campylobacter</i> sp.	28	Netherlands	Apr-02	(44)
Milk, raw	<i>Campylobacter</i> sp.	3	UK	Oct-Dec-02	(9)
Milk, custard ^{vii}	<i>C. jejuni</i>	81	Spain	May-03	(16)
Dairy, cheese	<i>Campylobacter</i>	11	USA (CA) ^{viii}	Oct-03	(10)
Milk, pasteurized	<i>C. jejuni</i>	>1600	USA (CA)	May-06	(8)
Milk, raw and cheese	<i>C. jejuni</i>	19	USA (KA)	Oct-07	(26)
Total		7,425			

References

1. Birkhead G, Vogt RL, Heun E, Evelt CM, and Patton CM. 1988. A multiple-strain outbreak of *Campylobacter* enteritis due to consumption of inadequately pasteurized milk. *J Infect Dis.* 157:1095-1097.
2. CDC. 1983. *Campylobacteriosis* associated with raw milk consumption--Pennsylvania. *MMWR Morb Mortal Wkly Rep.* 32:337-338, 344.
3. CDC. 1984. *Campylobacter* outbreak associated with certified raw milk products--California. *MMWR Morb Mortal Wkly Rep.* 33:562.
4. CDC. 1986. *Campylobacter* outbreak associated with raw milk provided on a dairy tour--California. *MMWR Morb Mortal Wkly Rep.* 35:311-312.
5. CDC. 2002. Outbreak of *Campylobacter jejuni* infections associated with drinking unpasteurized milk procured through a cow-leasing program--Wisconsin, 2001. *MMWR Morb Mortal Wkly Rep.* 51:548-549.
6. CDC Mar. 6, 2003 2003, posting date. Centers for Disease Control and Prevention: U.S. Foodborne Disease Outbreaks, Annual Listing, 1990-2000. [Online.]
7. CDC Mar. 6, 2003 2003, posting date. Centers for Disease Control and Prevention: U.S. Foodborne Disease Outbreaks, Annual Listing, 1990-2001. [Online.]
8. CDHS-DCDC. 2006. *Campylobacteriosis* among inmates at multiple California state prisons Week 21 1. CA Dept. Health Services, Div. Comm. Disease Control.

9. CDR. 2003. General outbreaks of foodborne illness in humans, England and Wales: quarterly report (October to December 2002). PHLS Communicable Disease Surveillance Centre.
10. DCDC. 2004. Another GI outbreak associated with Queso Fresco Week 6 1-3. California Div. Comm. Dis. Control.
<http://www.lapublichealth.org/spa7/docs/CD2114.pdf>.
11. Djuretic T, Wall PG, and Nichols G. 1997. General outbreaks of infectious intestinal disease associated with milk and dairy products in England and Wales: 1992 to 1996. *Commun Dis Rep CDR Rev.* 7:R41-45.
12. Evans MR, Roberts RJ, Ribeiro CD, Gardner D, and Kembrey D. 1996. A milk-borne campylobacter outbreak following an educational farm visit. *Epidemiol Infect.* 117:457-462.
13. Fahey T, Morgan D, Gunneburg C, Adak GK, Majid F, and Kaczmarski E. 1995. An outbreak of *Campylobacter jejuni* enteritis associated with failed milk pasteurisation. *J Infect.* 31:137-143.
14. Finch MJ, and Blake PA. 1985. Foodborne outbreaks of campylobacteriosis: the United States experience, 1980-1982. *Am J Epidemiol.* 122:262-268.
15. Harris NV, Kimball TJ, Bennett P, Johnson Y, Wakely D, and Nolan CM. 1987. *Campylobacter jejuni* enteritis associated with raw goat's milk. *Am J Epidemiol.* 126:179-186.
16. Jiménez M, Soler P, Venanzi JD, Canté P, Varela C, and Martínez-Navarro F. 2005. An outbreak of *Campylobacter jejuni* enteritis in a school of Madrid, Spain. *Eurosurveillance Monthly.* 10:9-10.
17. Jones PH, Willis AT, Robinson DA, Skirrow MB, and Josephs DS. 1981. Campylobacter enteritis associated with the consumption of free school milk. *J Hyg (Lond).* 87:155-162.
18. Kalman M, Szollosi E, Czermann B, Zimanyi M, and Szekeres S. 2000. Milkborne campylobacter infection in Hungary. *J Food Prot.* 63:1426-1429.
19. Klein BS, Vergeront JM, Blaser MJ, Edmonds P, Brenner DJ, Janssen D, and Davis JP. 1986. Campylobacter infection associated with raw milk. An outbreak of gastroenteritis due to *Campylobacter jejuni* and thermotolerant *Campylobacter fetus* subsp *fetus*. *Jama.* 255:361-364.
20. Korlath JA, Osterholm MT, Judy LA, Forfang JC, and Robinson RA. 1985. A point-source outbreak of campylobacteriosis associated with consumption of raw milk. *J Infect Dis.* 152:592-596.
21. Kornblatt AN, Barrett T, Morris GK, and Tosh FE. 1985. Epidemiologic and laboratory investigation of an outbreak of *Campylobacter* enteritis associated with raw milk. *Am J Epidemiol.* 122:884-889.
22. Lehner A, Schneck C, Feierl G, Pless P, Deutz A, Brandl E, and Wagner M. 2000. Epidemiologic application of pulsed-field gel electrophoresis to an outbreak of *Campylobacter jejuni* in an Austrian youth centre. *Epidemiol Infect.* 125:13-16.
23. Lind L, Sjogren E, Melby K, and Kaijser B. 1996. DNA fingerprinting and serotyping of *Campylobacter jejuni* isolates from epidemic outbreaks. *J Clin Microbiol.* 34:892-896.

24. Lindqvist R, Andersson Y, de Jong B, and Norberg P. 2000. A summary of reported foodborne disease incidents in Sweden, 1992 to 1997. *J Food Prot.* 63:1315-1320.
25. MDH. 2000. Minnesota Department of Health 2000 gastroenteritis outbreak summary. Minnesota Department of Health. Minneapolis, MN. www.health.state.mn.us.
26. MMWR. 2009. *Campylobacter jejuni* infection associated with unpasteurized milk and cheese--Kansas, 2007. *MMWR Morb Mortal Wkly Rep.* 57:1377-1379.
27. Morgan D, Gunneberg C, Gunnell D, Healing TD, Lamerton S, Soltanpoor N, Lewis DA, and White DG. 1994. An outbreak of *Campylobacter* infection associated with the consumption of unpasteurised milk at a large festival in England. *Eur J Epidemiol.* 10:581-585.
28. Pebody RG, Ryan MJ, and Wall PG. 1997. Outbreaks of campylobacter infection: rare events for a common pathogen. *Commun Dis Rep CDR Rev.* 7:R33-37.
29. Peterson MC. 2003. *Campylobacter jejuni* enteritis associated with consumption of raw milk. *J Environ Health.* 65:20-21, 24, 26.
30. Porter IA, and Reid TM. 1980. A milk-borne outbreak of *Campylobacter* infection. *J Hyg (Lond).* 84:415-419.
31. Potter ME, Blaser MJ, Sikes RK, Kaufmann AF, and Wells JG. 1983. Human *Campylobacter* infection associated with certified raw milk. *Am J Epidemiol.* 117:475-483.
32. Reintjes R, van Treeck U, Oehler M, and Petruschke N. 1999. Ein Ausbruch von *Campylobacter*-Enteritis in Nordrhein-Westfalen. *Epidemiologisches Bulletin.* 43:317-320.
33. Riley LW, and Finch MJ. 1985. Results of the first year of national surveillance of *Campylobacter* infections in the United States. *J Infect Dis.* 151:956-959.
34. Robinson DA, Edgar WJ, Gibson GL, Matchett AA, and Robertson L. 1979. *Campylobacter* enteritis associated with consumption of unpasteurised milk. *Br Med J.* 1:1171-1173.
35. Robinson DA, and Jones DM. 1981. Milk-borne campylobacter infection. *Br Med J (Clin Res Ed).* 282:1374-1376.
36. Sails AD, Swaminathan B, and Fields PI. 2003. Utility of multilocus sequence typing as an epidemiological tool for investigation of outbreaks of gastroenteritis caused by *Campylobacter jejuni*. *J Clin Microbiol.* 41:4733-4739.
37. SMI. 1999. Swedish surveillance statistics on infectious diseases for 1999. Swedish Institute for Infectious Disease Control. Solna, Sweden. <http://www.smittskyddsinstytutet.se/download/pdf/rapp99.pdf>.
38. Sockett PN. 1991. Communicable disease associated with milk and dairy products: England and Wales 1987-1989. *Communicable Disease Review.* 1:R9-R12.
39. Stalder H, Isler R, Stutz W, Salfinger M, Lauwers S, and Vischer W. 1983. Contribution to the epidemiology of *Campylobacter jejuni*. From

- asymptomatic excretion by a cow in the cowshed to overt disease in over 500 persons. *Schweiz Med Wochenschr.* 113:245-249.
40. Stuart J, Sufi F, McNulty C, and Park P. 1997. Outbreak of campylobacter enteritis in a residential school associated with bird pecked bottle tops. *Commun Dis Rep CDR Rev.* 7:R38-40.
 41. Tauxe RV, Hargrett-Bean N, Patton CM, and Wachsmuth IK. 1988. *Campylobacter* isolates in the United States, 1982-1986. *MMWR CDC Surveill Summ.* 37:1-13.
 42. Tauxe RV, Pegues DA, and Hargrett-Bean N. 1987. Campylobacter infections: the emerging national pattern. *Am J Public Health.* 77:1219-1221.
 43. Taylor DN, Porter BW, Williams CA, Miller HG, Bopp CA, and Blake PA. 1982. Campylobacter enteritis: a large outbreak traced to commercial raw milk. *West J Med.* 137:365-369.
 44. van den Brandhof W, Wagenaar J, and van den Kerkhof H. 2004. An outbreak of campylobacteriosis after drinking uppasteurized milk, 2002, The Netherlands. *International Journal of Medical Microbiology.* 293:142.
 45. Wright EP, Tillett HE, Hague JT, Clegg FC, Darnel R, Culshaw JA, and Sorrell JA. 1983. Milk-borne *Campylobacter* enteritis in a rural area. *Journal of Hygiene.* 91:227-234.

ⁱ Strains of two different serotypes identified.

ⁱⁱ Four stool samples yielded *C. jejuni* and three *C. fetus*.

ⁱⁱⁱ Represents approximately 7 outbreaks between 1978-1986 and not reported in other references.

^{iv} Represents 6 outbreaks.

^v Represents 2 outbreaks.

^{vi} Represents 2 outbreaks.

^{vii} Possible contamination from raw chicken prepared in the same kitchen.

^{viii} Queso fresco cheese purchased in Tijuana, Mexico 4 days prior to serving.