

CAMPYLOBACTERIOSIS

Based on the MoH Communicable Diseases Control Manual 2012 – December 2017¹ update

Associated Documents

Case Report Form:

K:\CFS\ProtectionTeam\FinalDocs\NotifiableConditions\Campylobacter\FormsStdLettersQuest\CaseReportFormEnteric_Dec2017.pdf

Fact Sheet:

<K:\CFS\Quality\ApprovedDocuments\ProtectionTeam\FactSheets\CampylobacteriosisFactSheet.pdf>

The Illness^{1,2}

Epidemiology in New Zealand

Campylobacteriosis is the most frequently notified disease in New Zealand. There is marked seasonality in notifications, with the peak in spring and summer. Traditionally, campylobacteriosis has mainly been attributed to *C. jejuni*, and to a lesser degree, *C. coli* and *C. fetus*, but other species are increasingly recognised as human pathogens.

Campylobacteriosis is a zoonosis and the commonest notifiable disease in the South Island and New Zealand. It is an enteric organism found in farm, domestic and wild animals and birds. In the South Island commonest species is *C. jejuni* accounting for 95% of isolates. Infection and outbreaks are due to contamination of food or water, person to person spread or from environmental contamination. Most outbreaks occurred in domestic settings. Although essentially a gastroenteritis, Campylobacteriosis can also be associated with significant sequelae including reactive arthritis, febrile convulsions and Guillain-Barré syndrome. From 2010-2012 Campylobacteriosis was the principal diagnosis in 1515 hospital admissions nationally and a relevant diagnosis in another 355. From 1997-2012 it resulted in 13 deaths.

In the past decade the national rates peaked in 2003 at 395.6 per 100,000 population but the average annual rate declined 55% from 2003-2007 to 2008-2012 coinciding with the introduction of a range of voluntary and regulatory interventions to reduce *Campylobacter* spp. contamination of poultry. Since 2009 however, South Island rates have trended upwards from 125 to 226 per 100,000 population. An increase in rates has occurred across all DHBs from 158% in Southern to 206% in Canterbury.

Notification rates vary significantly between urban and rural areas with rural areas generally having higher rates. There is marked seasonality in notifications, with the peak in spring and summer. Canterbury has experienced several large waterborne outbreaks with the most recent involving 138 persons in 2012.

CASE DEFINITION

Clinical description

An illness of variable severity with symptoms of abdominal pain, fever and watery diarrhoea, often with blood-stained faeces. Less frequently, *Campylobacter* can present as an invasive disease.

Reservoir

Zoonotic infection. *C. jejuni* associated primarily with poultry; also cattle, sheep and domestic pets. *C. coli* associated with pigs and poultry and *C. fetus* with cattle. Asymptomatic carriage.

Incubation period

Usually 2–5 days, range 1–10 days.

Mode of transmission

Historically, most often by ingestion of contaminated food, typically poultry or unpasteurised milk. Cross-contamination from raw meat to other foodstuffs may occur via hands, utensils, chopping boards or incorrect storage. In New Zealand, consumption of faecally contaminated

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	<p>water and direct contact with farm or domestic animals are common routes of transmission. Person-to-person transmission is uncommon.</p> <p>Period of communicability <i>Campylobacter</i> spp. may be shed in the stool for several weeks after infection.</p> <p>Prevention: The incidence of disease is reduced by decreasing the microbiological burden of contamination in poultry processing and the purchasing of frozen product. Maintaining potable water supplies is important to prevent waterborne outbreaks. Personal protection involves strict attention to food hygiene and hand washing.</p>
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Notification Procedure

	<ul style="list-style-type: none"> • All species of <i>Campylobacter</i> should be notified. • Probable or confirmed cases must be notified immediately by the attending medical practitioner and laboratory. • All health care workers are encouraged to talk with a medical officer of health about any suspected outbreaks or cases in people who are in high-risk occupations. <p>CASE CLASSIFICATION</p> <ul style="list-style-type: none"> • Under investigation: A case that has been notified, but information is not yet available to classify it. • Probable: A clinically compatible illness that either is a contact of a confirmed case of the same disease or has had contact with the same common source – that is, is part of a common-source outbreak. • Confirmed: A clinically compatible illness accompanied by laboratory definitive evidence. • Not a case: A case that has been investigated and subsequently found not to meet the case definition. <p>Possible notification to WorkSafe</p> <ul style="list-style-type: none"> • Refer to Reporting section, page 5.
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Laboratory Testing

	<p>Laboratory confirmation requires identification of <i>Campylobacter</i> spp. from a clinical specimen by one of the following methods:</p> <ul style="list-style-type: none"> • isolation (culture) • detection of <i>Campylobacter</i> nucleic acid • detection of antigen. <p>All species of <i>Campylobacter</i> should be notified. Where possible, culture should be attempted. Diagnostic laboratories may choose to identify further than genus level but should refer isolates for confirmatory speciation to the Enteric Reference Laboratory at ESR.</p>
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Management of Case

	<p>Investigation</p> <p>If case known to be high risk (for transmitting the infection to others - see Table 1 below)</p> <ul style="list-style-type: none"> • If known that case is a food handler or other person in high risk category, administer questionnaire by telephone and post out disease information on day of notification. Otherwise see box below for Christchurch, Timaru and Greymouth responses. <p>{Note: The letter accompanying the questionnaire mentions that if the case is a child, the letter and disease information are to accompany the child if he/she stays in another household, up to 2 weeks after the diarrhoea stops.}</p> <p>If risk category of case not known</p> <p><u>Christchurch</u></p> <ul style="list-style-type: none"> - Post questionnaire to case with covering letter, disease information and self-addressed envelope within 1-2 working days.
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- If the case lives in the Selwyn, Kaikoura or Waimakariri District Council areas, fax or email details to the appropriate Local Authority EHO for follow-up.

Timaru and Greymouth

- Post questionnaire to case with covering letter, information pamphlet and self-addressed envelope within 1-2 working days.
- Investigate further and obtain a more detailed history if there is an outbreak or if the case is in a high-risk occupation or attends an early childhood service.
- Obtain a food consumption history and details of water consumption and animal contact as well as details of occupation as appropriate per local protocol.
- Ensure symptomatic cases submit stool samples for testing.
- In the event of non-return of the questionnaire no further follow up is required unless the case or situation is high risk.
- Review returned questionnaire and take action as required, eg. further follow-up if:
 - more than one case from same source/situation, eg. at a pre-school/water source.
 - cases attended the same event eg. farm visit, school camp, BBQ.
- Sporadic cases: collect Case Report Form data for EpiSurv (may assist in identifying outbreaks/clusters)
- Liaise with the environmental health officer of the local territorial authority where food premises are thought to be involved.
- Liaise with the Ministry for Primary Industries if a contaminated commercial food source is thought to be involved.

Outbreak

It is the responsibility of all Communicable Diseases staff to be vigilant regarding any increased incidence of Campylobacteriosis. Such an increase is to be promptly reported to the MOH. Refer to:

- ◊ the CPH Outbreak Response Procedure (accessed via CPH Policies & Procedures intranet site page):
<http://cdhbdepartments/corporate/documentmanagement/CDHB%20Libraries/Policies%20and%20procedures,%20guidelines,%20protocols,%20staff%20information%20etc/Com-Dis-Outbreak-Response-Plan.docx>
- ◊ the CPH Outbreak Guide
<Y:\CFS\ProtectionTeam\FinalDocs\NotifiableConditions\OUTBREAK\GENERAL\FormsStdLettersQuest> – Outbreak Guide TEMPLATE.
- ◊ Organise faecal screening (through ESR) of symptomatic persons involved in the event or associated with the facility. These persons are to be managed as cases until results are known.

Restriction and Clearance

- In a health care facility, only standard precautions (<http://www.cdhb.health.nz/Hospitals-Services/Health-Professionals/CDHB-Policies/Infection-Prevention-Control-Manual/Documents/Standard%20Precautions.pdf>) are indicated in most cases.
- If the case is in nappies or an incontinent child, apply contact precautions for the duration of illness.
- Refer Table 1 (following) for exclusion and clearance criteria.

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Table 1.³ Exclusion and clearance criteria for people at increased risk of transmitting an infection to others

Pathogen	Exclusion* and Clearance	Contacts
<i>Campylobacter</i>	<ul style="list-style-type: none"> – Exclude 1,2,3,4 until symptom free for 48 hours – Clearance not required. 	No exclusion or clearance criteria required for any close contacts.

* **Cases of most enteric disease should be considered infectious and should remain off work /school /preschool until 48 hours after symptoms have ceased.** Certain individuals pose a greater risk of spreading infection and additional restriction/exclusion criteria may apply. In exceptional circumstances, eg, where workplace hygiene or sanitation is uncertain, a case may need to be excluded until they have submitted appropriate negative stool(s), taken at a suitable interval.

NOTE: The Health (Infectious and Notifiable Diseases) Regulations 2016 do not contain any exclusionary powers for people at increased risk of transmitting an infection to others (groups 1-4 following). Instead the medical officers of health can resort to broader powers in Part 3A of the Health Act 1956, which include directions to cases and contacts to remain at home until no longer infectious.

1. people whose work involves preparing or serving unwrapped food to be served raw or not subject to further heating (including visitors or contractors who could potentially affect food safety)
 2. staff, inpatients and residents of health care, residential care, social care or early childhood facilities whose activities increase risk of transferring infection via the faecal-oral route
 3. children under the age of 5 attending early childhood services/groups
 4. other adults or children at higher risk of spreading the infection due to illness or disability.
- For further details, refer to Appendix 2 of this protocol and reference 3.

Treatment

- Fluid replacement is the mainstay of therapy.
- Antimicrobial agents have modest if any benefit on duration of symptoms and are only indicated if the infection is severe, the patient is immunocompromised or prompt termination of excretion of organisms is desired. Erythromycin is the preferred antimicrobial agent in New Zealand and generally clears the stool of *Campylobacter* spp. within 3 days. Other macrolides are equally effective. Ciprofloxacin or norfloxacin are alternatives but are associated with increasing resistance and are not recommended for children.

Counselling

- Advise the case and their caregivers of the nature of the infection and its mode of transmission.
- Educate about hygiene and risks of infrequent significant complications such as Guillain-Barre Syndrome and reactive arthritis.
- If case is a child, ask if he/she stays in any household other than that given at the time of notification and if so, ensure advice accompanies the child when he/she moves.
- A fact sheet is available at:
<K:\CFS\Quality\ApprovedDocuments\ProtectionTeam\FactSheets\CampylobacteriosisFactSheet.pdf>

Management of Contacts

As set out in the exclusion and clearance criteria (Table 1 above) neither screening nor restriction is indicated for contacts of infectious cases or for people who have been exposed to the same food material suspected to be the source of infection. If symptomatic, the contact is to be advised to consult GP and have a faecal test. Manage as a case until the result is known.

Outbreak

- Organise faecal screening (through ESR) of symptomatic persons involved in the event or

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	<p>associated with the facility.</p> <ul style="list-style-type: none"> • These persons are to be managed as cases until results are known.
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Other Control Measures

	<p>Identification of source</p> <ul style="list-style-type: none"> • Check for other cases in the community. • Investigate potential food or water sources of infection only if there is a cluster of cases or an apparent epidemiological link. • If indicated, check water supply for microbiological contamination and compliance with the latest New Zealand drinking-water standards (Ministry of Health 2008).⁴ Liaise with the local territorial authority staff to investigate potential water sources of infection. <p>Disinfection</p> <p>Clean and disinfect surfaces and articles soiled with faecal material. For more details, refer to Appendix 1 of this protocol.⁵</p> <p>Health education</p> <ul style="list-style-type: none"> • Educate the public about safe food preparation (See Appendix 3 of this protocol).⁶ • Hand-cleaning facilities should be available and used after contact with animals. • Young children should be supervised during contact with animals and during hand cleaning. • Food-related activities should be separated from areas that house animals. • Domestic animals that have diarrhoea should be taken to a veterinarian for assessment and treatment. • If a water supply is involved, liaise with the local territorial authority to inform the public. Advise on the need to boil water. • In early childhood services or other institutional situations, ensure satisfactory facilities and practices regarding hand cleaning, nappy changing, toilet use and toilet training, preparation and handling of food, and cleaning of sleeping areas, toys and other surfaces.
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Reporting

	<ul style="list-style-type: none"> • Ensure complete case information is entered into EpiSurv. • If a cluster of cases occurs, contact the Ministry of Health Communicable Diseases Team and outbreak liaison staff at ESR, and complete the Outbreak Report Form. • If an outbreak, write report for Outbreak Report File [CFS\ProtectionTeam\FinalDocs\NotifiableConditions\Campylobacter\Outbreaks]. • If suspected that the infection was acquired at work, complete the WorkSafe notification form 'Notifications under sections 197 and 199 of the Health and Safety at Work Act 2015, Notifications by Medical Officers of Health' (paper copies are kept in the office). • File.
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Appendix 1

Extract from the MoH Communicable Disease Control Manual 2012 - December 2017 Appendix 1: Disinfection⁵

	<p>Disinfection and cleaning the environment</p> <p>Diseases that are notifiable have public health implications. Therefore decontamination of the environment is recommended when cross-infection from the source is possible. Disinfection is also indicated for contamination with y resistant bacteria.</p> <p>Concurrent disinfection is the application of disinfection measures as soon as possible after the discharge of infectious material from the body of an infected person, or after articles have been soiled with such infectious discharges.</p> <p>Personal protective equipment (PPE) must be used during environmental disinfection to prevent self-contamination.</p>
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Procedures

Disposable items: Any items that can be disposed of should be categorised as in NZS 4304:2002 New Zealand Waste Standard and disposed of.

Solid surfaces and/or equipment (including children's toys): Before disinfection, solid surfaces and/or equipment should be cleaned with detergent and dried. Before disinfection chemicals are applied, it should be established that they are fit for purpose a clear process on how to use them and manufacturer's recommendations are followed

Source: Ministry of Health. 2009. *Guidelines for the Management of Norovirus Outbreaks in Hospitals and Elderly Care Institutions*. Wellington: Ministry of Health.

Appendix 2

Extract from the MoH Communicable Disease Control Manual 2012 - December 2017 Appendix 2: Enteric Disease³

Exclusion/Restriction

Cases of most enteric disease should be considered infectious and should remain off work/school until 48 hours after symptoms have ceased. Certain individuals pose a greater risk of spreading infection and additional restriction/exclusion criteria may apply. Microbiological clearance may be required for individuals infected with/exposed to certain pathogens.

The key criteria are:

- the decision to exclude any worker is based on individual risk assessment. As a general rule, any worker with symptoms of gastrointestinal infection (diarrhoea and/or vomiting) should remain off work until clinical recovery and stools have returned to normal (where the causative pathogen has not been identified). Where the pathogen has been identified, specific criteria are summarised in Table 2.4
- the overriding prerequisite for fitness to return to work is strict adherence to personal hygiene, whether symptomatic or not.

The circumstances of each case, carrier or contact should be considered and factors such as their type of employment, availability of toilet and hand washing facilities at work, school or institution and standards of personal hygiene taken into account. For example, a carrier may be relocated temporarily to a role that does not pose an infectious risk.

Pathogen specific exclusion criteria for people at increased risk of transmitting an infection to others

Pathogen specific exclusion (restricting criteria for people from work, school or an early childhood service and for subsequent clearance are summarised in Table 2.4. Additional information is also included in the table for the following groups:

1. people whose work involves preparing or serving unwrapped food to be served raw or not subject to further heating (including visitors or contractors who could potentially affect food safety)
2. staff, inpatients and residents of health care, residential care, social care or early childhood facilities whose activities increase risk of transferring infection via the faecal-oral route
3. children under the age of 5 attending early childhood services/groups
4. other adults or children at higher risk of spreading the infection due to illness or disability.

The Health (Infectious and Notifiable Diseases) Regulations 2016 do not contain any exclusionary powers or incubation periods for infectious children, or for high risk occupational groups such as people who work with children or food handlers. Instead the medical officers of health can resort to broader powers in Part 3A of the Health Act 1956, which include directions to cases and contacts to remain at home until no longer infectious. This Manual contains the recommended exclusion periods for specific diseases (Refer: Table 2.4). There is guidance published about the 2016 regulations and Part 3A of the Health Act in

www.health.govt.nz/our-work/diseases-and-conditions/notifiable-diseases/summary-infectious-disease-management-under-health-act-1956

The legislation is principles based. In this context this means that medical officer of health must weigh protection of public health (the paramount consideration) with the following principles: trying voluntary means first if likely to be effective, choosing a proportionate, and the least restrictive measure required in the circumstances, fully informing the case or contact of the steps to be taken and clinical implications, treating them with dignity and respect for their bodily integrity and taking account of their special circumstances and vulnerabilities, and applying the measures no longer than is necessary

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(sections 92A to 92H).

Under Part 3A a medical officer of health can direct a case or a contact to stay home (section 92I(4)(b) or 92J(4)(b)). This is when the officer believes on reasonable grounds that the case or contact poses a public health risk (as defined in the s2 Act). The direction must specify duration.

Alternatively, in the context of attendance at an educational institution, if the officer believes the infection risk is unlikely to be effectively managed by directing the case or contact, he or she can approach the head and direct them to direct the case or contact to remain at home. In serious cases, the medical officer of health can also direct the head to close the institution or part of it (s 92L).

Medical officers of health have no powers to direct closure of premises or places where people congregate, other than educational institutions. If a medical officer of health needs to manage a public

health risk by excluding infectious people from certain occupations, public pools, campsites, concerts and other public environments, he or she can use directions to the individuals concerned – to stay away from a certain place, or not to associate with certain people.

The Ministry for Primary Industries has powers to close commercial food premises. In contrast, medical officer of health powers focus on the risk the person poses.

Note that while there are provisions that apply to early childhood service workers, there are no provisions for health care workers – instead, advice should be provided to employers in terms of the Health and Safety at Work Act 2015.

Employers may decide to implement more stringent exclusion/restriction criteria in response to their own or their customers' requirements.

Appendix 3

Extract from the MoH Communicable Disease Control Manual 2012 - December 2017 Appendix 3: Patient Information⁶

Health education resources

Pamphlets, posters and other resources available from the Ministry of Health at www.healthed.govt.nz.

Food safety practices

The Ministry for Primary Industries

The Ministry for Primary Industries (MPI) leads New Zealand's food system, ensuring the food we produce is safe and protecting the health and wellbeing of consumers. MPI is responsible for legislation covering food for sale on the New Zealand market, primary processing of animal products and official assurances related to the export of animal and plant products and the controls surrounding registration and use of agricultural compounds and veterinary medicines. MPI is the New Zealand competent authority for imports and exports of food and food-related products.

MPI contact information: www.mpi.govt.nz/contact-us

Food safety practices in preparing and cooking a hangi: He whakatairanga i nga ahuatanga mahi mo te tunu hangi:

www.mpi.govt.nz/food-safety/community-food/marae-food-safety

Safe food preparation – key messages

Educate the public about safe food preparation.

- Avoid working with food when you:
 - are unwell especially with a gastro infection
 - have open skin sores, boils or abscesses.
- Clean your hands thoroughly after using the toilet or changing nappies or other incontinent products for others and before and after preparing food.
- Wash raw vegetables and fruits thoroughly before juicing them or eating them fresh.
- Cook meat thoroughly before eating.
- Cook eggs and egg products properly. Avoid eating raw, incompletely cooked eggs or using dirty or cracked eggs.
- Keep hot food hot between cooking and eating it.
- Wash hands, utensils and chopping boards in hot, soapy water after handling uncooked food.
- Keep raw meat, poultry and fish separate from and below other foodstuffs so that any raw meat juice does not contaminate other foods stuffs especially ready-to-eat foods.
- Cover all stored food.
- Cover and put uneaten, cooked food in the refrigerator within 1 hour of cooking.
- Defrost food by placing it on the lower shelves of a refrigerator (if raw meat place on bottom shelf

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to avoid raw meat juice contaminating other foods) or use a microwave oven according to defrosting instructions. Avoid defrosting food at room temperature.

- Thoroughly reheat (until internally steaming or piping hot, at least 70°C) leftover or ready-to-eat foods before eating.
- Strictly follow use-by and best-before dates on refrigerated foods.
- Find out more about how to prepare and store food safely and when you need to take extra care with some types of food at www.mpi.govt.nz/food-safety/food-safety-for-consumers.

References and further information

1. NZ Communicable Diseases Control Manual 2012, Campylobacteriosis
<http://www.health.govt.nz/publication/communicable-disease-control-manual-2012>
2. C&PH Information Team report, South Island Campylobacteriosis: A review of notifications 2010-2012 by District Health Board, , September 2013
<http://intel.phuserver.org.nz/media/38367/south%20island%20campylobacteriosis%20report%202010-2012.pdf>
3. MoH Communicable Disease Control Manual Appendix2: Enteric Disease.
<http://www.health.govt.nz/system/files/documents/publications/cd-manual-appendix-2-dec17.pdf>
4. Ministry of Health. 2008. Drinking-water Standards for New Zealand 2005 (Revised 2008)
<http://www.health.govt.nz/publication/drinking-water-standards-new-zealand-2005-revised-2008-0>
5. MoH Communicable Disease Control Manual Appendix 1: Disinfection
<http://www.health.govt.nz/system/files/documents/publications/cd-manual-appendix-1-dec17.pdf>
6. MoH Communicable Disease Control Manual Appendix 3: Patient Information
<http://www.health.govt.nz/system/files/documents/publications/cd-manual-appendix-3-dec17.pdf>

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