Campylobacteriosis in New Zealand: room for further improvement

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Campylobacteriosis is the most common notified disease in New Zealand with the 7031 cases in 2012 comprising 35% of all notifiable diseases reported to Public Health Services nationwide.\(^1\)

Its incidence in New Zealand peaked at 396 reported cases per 100,000 population in 2003;\(^2\) the highest rate reported by any developed country.\(^3\) The incidence remained at this level until 2006 when it dropped rapidly over a 2-year period to 157 reported cases per 100,000 population in 2008; it has remained stable since this time with 159 reported cases per 100,000 population in 2012.\(^1\)

The current incidence in New Zealand is still 1.5 to 3 times higher than reported incidence rates in Australia, England and Wales, and several Scandinavian countries in the early years of this century.\(^3\)

Campylobacteriosis is the most common cause of bacterial gastroenteritis worldwide. Taking into account the described ratio of reported to unreported cases of 9.3,\(^4\) it is very likely that more than 1% of New Zealanders currently acquire this disease every year.

Two articles in this issue of the NZMJ highlight the impact of campylobacteriosis and interventions that have recently reduced its incidence in New Zealand.

The first article, by Ian Sheerin, Nadia Bartholomew and Cheryl Brunton,\(^5\) describes a significant outbreak of campylobacteriosis in Darfield, Canterbury and estimates the economic costs of this outbreak to the community. The authors state that the likely source of the outbreak was faecal contamination of the town’s water supply compounded by the failure of a chlorination system. They estimate an economic cost to the community of between NZ$700,000 and $1.25 million.

The second article, by Gail Duncan,\(^6\) describes a cost benefit analysis of the introduction of the food safety regulation of poultry production in New Zealand and the reduction in campylobacteriosis that followed.

The Campylobacter Strategy was introduced in 2006 by the then New Zealand Food Safety Authority (NZFSA), now part of the Ministry for Primary Industries. This risk management strategy included the development and implementation of microbiological surveillance activities, the development and implementation of operational guidelines and control measures, communication between all involved parties and international collaboration.

The introduction of these measures is considered to be responsible for the more than 50% reduction in the incidence of campylobacteriosis that followed.\(^7\) The author states that the combined efforts of the NZFSA and the poultry industry resulted in an annual gain of at least $57 million to the New Zealand economy.
Campylobacter species, most commonly *C. coli* and *C. jejuni*, are commensal organisms found in the gastrointestinal tracts of birds, swine and cattle. These reservoirs are the usual source of infection in humans.

Consumption and handling of fresh poultry is thought to be the main source of human infection. Other sources include other contaminated foods (such as beef, pork and unpasteurised dairy products), direct contact with animals (either domesticated or farm stock) and environmental transmission from drinking and recreational waters.

The role that poultry plays in this illness in New Zealand was emphasised by a large national case-controlled study that found that campylobacteriosis was strongly associated with recent consumption of raw or undercooked chicken (OR 4.52, 95%CI 2.88–7.10) or chicken eaten in a restaurant (OR 3.8 5; 95%CI 2.52–5.88).

Campylobacter species infection is acquired by faecal–oral transmission. It results in illness characterised by fever, abdominal pain and diarrhoea. The illness is almost always of mild to moderate severity and is self-limiting, typically resolving without antibiotic treatment, within 5–6 days.

The mainstay of the management of campylobacteriosis, as with most enteric infections, involves adequate rehydration and electrolyte replacement. Antibiotics have very little impact on the duration and severity of symptoms and so are only rarely indicated. In a meta-analysis of the effect of antibiotic treatment on the duration of symptoms in patients with campylobacteriosis, 11 randomised, placebo-controlled trials were analysed. These trials assessed the impact of treatment with erythromycin (n=6), ciprofloxacin (n=3) or norfloxacin (n=2) which was started a mean of 3.5 days after the illness began. Pooled data from these trials showed a mean reduction of only 1.3 days of diarrhoea in the treatment group when compared to placebo. Antibiotic treatment of “real world” patients with campylobacteriosis, who may not receive treatment as early as those in the above trials, may well have even less benefit than this. If treatment is thought to be required, then the antibiotic of choice is erythromycin.

Of major concern, is the alarming increase in the rate of fluoroquinolone resistance found in human isolates of Campylobacter species in a number of countries. This has corresponded with the increased use of fluoroquinolones for growth promotion and the prophylaxis and treatment of infection in animals, particularly poultry, by the veterinary and food production industry. While fluoroquinolones are used by the veterinary industry in New Zealand, they are not licensed for use as growth promoters.

The prevalence of antimicrobial resistance in Campylobacter species isolated from humans in New Zealand remains low; 1.4% for erythromycin and 5.1% for fluoroquinolones during 2012. In comparison, the prevalence of fluoroquinolone resistance in Campylobacter species isolated from humans was 75% in Spain and 84% in Thailand during the 1990s.

As we close in on the 35th anniversary of campylobacteriosis notifications in New Zealand we should acknowledge the recent significant reduction in incidence of this disease that has resulted from the introduction of the NZFSA’s risk management strategy.
The two articles in this issue of the NZMJ have emphasised the direct and indirect costs associated with this infection and serve as a timely reminder that further significant reductions in the incidence of this disease in New Zealand are still required if we are to reach incidence rates seen in other comparable developed countries.

Given the very limited benefit of antibiotic treatment and the increasing rates of antibiotic resistance, prevention of campylobacteriosis must be the goal.

**Competing interests:** Nil.

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**References:**

