

# **Improved food health standards linked to fewer cases of childhood gastroenteritis**

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This scanning electron microscope image shows the characteristic spiral, or corkscrew, shape of *C. jejuni* cells and related structures. Credit: De Wood; digital colorization by Chris Pooley/ Public Domain

A University of Otago study reveals the incidence of non-viral gastroenteritis in New Zealand children has declined over the past 20 years with researchers concluding improved food health standards the key contributor.

The study of children aged under 15 is the first in New Zealand to analyse [longitudinal data](#) on childhood [gastroenteritis](#) caused by non-viral pathogens. Looking at data from 1 January 1997 to 31 December 2015 medical student, now trainee intern, Emma Jeffs and Associate Professor Tony Walls from the University of Otago, Christchurch, found there were 74,454 notifications (57.6 per cent male) and 3192 hospitalisations (56.4 per cent). The overall trend was a reduction in both notifications and hospitalisations.

Ms Jeffs says the decline in both notifications and hospitalisations for most non-viral pathogens included in the study (*Shigella*, *Salmonella*, *Campylobacter*, *Yersinia*, *E.Coli*, *Giardia* and *Cryptosporidium*) is reassuring.

*Campylobacter* was the disease most frequently notified and accounted for 51.7 per cent of all notifications and 43.4 per cent of all hospitalisations. *Campylobacter* infection is a common water and food-borne illness caused by bacterium that can be found in raw chicken meat, offal, raw milk, raw milk products, and other foods. Notification rates peaked at 326 per 100,000 in 2006 and almost halved to about 171 per 100,000 in 2008, gradually decreasing to a low of 141 per 100,000 in 2015.



The study shows that between 2004 and 2008, and most notably between 2006 and 2008, there was a reduction in *Campylobacter* notifications that was consistent across all age groups. Ms Jeffs says this reduction coincided with the introduction of a range of voluntary and regulatory interventions by the NZ Food Safety Authority (now the Ministry for Primary Industries) to reduce *Campylobacter* contamination in poultry. Interventions included the development and implementation of microbiological surveillance activities and increased reporting.

"The observed reduction in *Campylobacter* incidence in children seen in this study provides evidence of the positive effects of a food safety measure on [child health](#)," Ms Jeffs says.

However, while the results are encouraging, she says there is some suggestion from the analysis that *Campylobacter* notification rates may have plateaued since 2008. This may, in part, be attributable to recent outbreaks, which have been water, rather than food-borne, or other changes such as the increasing popularity of the consumption of raw milk. The researchers suggest this observation warrants purposeful surveillance.

Associate Professor Walls, a paediatrician at Christchurch Hospital and infectious diseases specialist, says nontyphoidal *Salmonellae* are also common bacterial pathogens associated with acute gastroenteritis in children and the leading cause of childhood bacterial enterocolitis requiring hospitalisation. Although the food safety interventions were targeted predominantly at *Campylobacter*, they may also have helped reduce the incidence of disease due to *Salmonellae*, which is also commonly transmitted via poultry.

"The observed reduction in the incidence of nontyphoidal *Salmonella* between 1997 and 2016 (as for *Campylobacter*) supports this hypothesis," Associate Professor Walls explains.

An unexpected finding from the study was that Māori children had lower notification rates for disease when compared to non-Māori. The researchers say disparities in Māori access to health care are well documented and may be contributing to the lower rates of notification in Māori children because for notification to occur, [children](#) must present to a healthcare provider and be tested. Therefore, the results observed could be due to lower rates of both presentation and subsequent testing.

**More information:** Emma Jeffs et al. The epidemiology of non-viral gastroenteritis in New Zealand children from 1997 to 2015: an observational study, *BMC Public Health* (2019). [DOI: 10.1186/s12889-018-6229-4](#)

Provided by University of Otago

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