Control of Campylobacteriosis in New Zealand: a whole-of food-chain approach

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Campylobacteriosis in humans

- A priority foodborne disease worldwide – primarily gastroenteritis
- A number of food pathways have been implicated, especially chicken meat, as well as water, animal contact and environmental sources
- Under-reporting in most countries
Epidemic of notified cases in NZ

2006: 15,873 notifications (379 / 100,000)
1,179 hospitalisations
Monthly cases trends showing consistent trend
Food Safety Minister Annette King says she is seeking immediate advice from officials on what action can be taken to address New Zealand's spiralling campylobacter epidemic.
• Formal partnership between NZFSA, industry and other stakeholders
• Strategic farm-to-plate plan
• Operational research
• Ongoing development of control measures; voluntary and regulatory
Strategy includes NZFSA Risk Management Framework

- Preliminary risk management activities
- Implementation of control measures
- Identification and selection of risk management options
- Monitoring and review
Key objectives of the Strategy

- Significantly reduce cases, with public health goal of 50% reduction over five years
- Invest in detailed food source attribution so as to target control measures
- Research, implement and validate a range of interventions farm-to-plate
- Develop risk model
- Institute monitoring systems (food chain and human) to chart progress
Sophisticated research to determine source of human cases

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<th>Dutch</th>
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<td>Sheep</td>
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<td>14.7</td>
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Farm-to-plate risk-based approach

Prevalence

Farm & Transport → Slaughter & Processing → Preparation & Consumption → RISK

Concentration

Dose Response
NZFSA performance target

- Necessary regulatory tool to achieve NZFSA public health goal
- Tested for a year on a voluntary basis to ensure that required level of control on chilled carcasses in all premises was practical and achievable
- Mandated February 2008 and monitored using National Microbiological Database
NZFSA performance target

• Effectively requires a one log reduction in level of contamination from 2007 baseline levels

• Moving window method, with a high count limit (5.88 $\log_{10}$ CFU per carcass) and average carcass count below 3.78 $\log_{10}$ CFU per carcass)
Validated control measures (1)

- Reducing flock prevalence through on-farm controls (biosecurity, boots, crates)
- Reducing cross-contamination in slaughterhouse through improved hygiene
- Better calibration of evisceration equipment
- Spray washing and chlorination of chill water
Validated control measures (2)

- Strategic use of chemical decontamination during primary processing (e.g. acidified sodium chlorite)
- Heat treatment of product
- Improving hygiene during packaging and distribution
- Improving consumer handling
Industry progress

Processor Results

% Prevalence

Mean log counts

Quarter

Q1 2008
Q2 2008
Q3 2008
Q4 2008
Q1 2009
Q2 2009
Q3 2009
Q4 2009

% Prevalence

Mean log counts

- % Prevalence
- Mean log counts
Individual processor performance against NZFSA target
Non compliance with performance target

- NZFSA-led response team
- 5 premises visits in 2008-2009
- Persistent problems with organic processors
- Freezing imposed until compliant with CPT
- No mandatory closures to date
Results: Relationship between notifications and hospitalisations

![Graph showing the rate of notification and hospitalisation per 100,000 population from 1997 to 2008. The graph indicates a strategy formalised in 2006.]
Total cases - 7176 (166.3/100,000)

- 3836 food-related cases
- 505 travel-related cases
- 574 hospitalisations
Charting progress against NZFSA public health goal

Foodborne Proportion (rate per 100,000 population)

Year:
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
An integrated farm-to-plate strategic approach has resulted in considerable reduction in campylobacteriosis.

Partnership with industry (funding and operational research) has been critical to progress.
• Continuing work on food source attribution and risk modelling will inform changes to control measures and regulatory performance target (increase stringency?)

• New Zealand and Sweden co-leading a new Codex standard for controlling *Campylobacter* and *Salmonella* in broiler chickens,
Acknowledgements

- NZFSA team: Judi Lee, Steve Hathaway, Sharon Wagener, Peter van der Logt, Donald Campbell, Carol Barnao
- Industry: Roy Biggs (Tegel Foods Ltd), PIANZ
- Research providers: Institute of Environmental Science and Research, Massey University (Nigel French and Petra Muellner), Otago University (Ann Sears)