

A microbiological survey of campylobacter contamination in fresh, whole, UK-produced chilled chicken at retail sale

Area of research interest: [Foodborne pathogens](#)

Study duration: 2014-02-01

Planned completion: 1 July 2015

Project code: FS241044A

Conducted by: Public Health England

The results represent the risk of contamination presented to the UK consumer from whole, fresh UK produced chickens and their packaging.

Background

Campylobacter is the most common bacterial cause of foodborne illness in the UK affecting an estimated 280,000 people a year, with chicken considered the most important vehicle for this organism. A joint FSA-industry target was set up to reduce the prevalence of the most contaminated chickens (those with greater than 1000 colony forming units per gram of chicken skin) to below 10% at the end of the slaughter process, by the end of 2015. This UK-wide survey was undertaken to determine the levels of Campylobacter on whole fresh retail chickens and their packaging.

Research Approach

The survey tested 4,011 samples of whole, UK-produced, fresh chicken during the period February 2014 to March 2015. The samples were evenly distributed throughout the year and the UK (in proportion to the population size of each country), and testing was performed by six laboratory sites. Retailers were sampled in proportion to their market share, according to available data, with their share of free-range, organic and standard chickens taken into account. The objectives of this survey were to:

- determine levels of Campylobacter spp. in skin samples from 4,000 whole UK-produced chilled chickens.
- determine levels of Campylobacter spp. on the outer packaging of 4,000 whole UK-produced chilled chickens.
- undertake statistical analysis of the distribution of counts of Campylobacter spp. from the chicken and outer packaging samples to determine significant factors affecting the distributions.
- ascertain the proportion of strains isolated that are Campylobacter jejuni, C. coli or other Campylobacter spp.
- establish what proportion of strains within the Campylobacter jejuni and C. coli isolated are resistant to a range of antimicrobial agents relevant to public health using an established standard method (to be published at a later date).
- enable a comparison between post-chill counts and retail counts by providing data in a suitable database format.

The first summary of data from the full survey is [available on our website](#), and was published online by us on the 28th May 2015, with headline results having been published on a quarterly basis as Official Statistics:

This report represents further analysis of the full dataset.

Chickens were examined using standard ISO methods. Two samples from each chicken pack were examined, one a sponge swab of the outer packaging and the other a chicken skin (mainly neck-skin) sample.

Results

The prevalence of *Campylobacter* in fresh chicken at retail in the UK found through this study was 73.3%. A significant proportion (19.4 %) of samples had greater than 1000 colony forming units per gram of chicken skin. In 6.8 % of samples *Campylobacter* was detected from the outer-packaging swab, though mostly at low levels of contamination.

There were significant differences between retailers that could not be explained by differences in shelf-life remaining, chicken weights, time of year sampled or type of chicken rearing. Some approval codes (codes signifying the slaughter house premises which the chicken came from) also showed a significant difference in the proportion of chickens with greater than 1000 cfu/g, ranging from 9.4 to 29.7 %, and it was noted that some retailers were supplied by specific approved premises.

A higher proportion of chickens had a high level of *Campylobacter* during the summer compared to winter months. The larger chickens, those over 1400g in weight, showed a higher risk of being contaminated with *Campylobacter* greater than 1000 cfu/g. There was insufficient evidence to determine whether birds with access to range (e.g. free-range/organic birds) were more contaminated than standard birds.

C. jejuni was identified on the majority of chicken skin samples (76.6%) from which isolates were submitted for speciation, *C. coli* was identified in 13.9 % of samples. Both species were found in 4.2 % of samples. *C. coli* was more frequently isolated in the summer months compared to winter and spring months and was more frequently isolated from birds with access to range. Where *Campylobacter* was isolated from the skin and the corresponding outer packing, the same species was detected in 93% of these samples.

A significant proportion of chicken on sale in the UK remains contaminated therefore *Campylobacter* in chicken continues to be a risk in terms of foodborne disease.

Research report

England, Northern Ireland and Wales

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