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The surveillance programme for *Campylobacter* spp. in broiler flocks in Norway 2024

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Content

Summary

Surveillance in 2024 showed that a total of 70 flocks (3.4%) tested positive for *Campylobacter* spp. when all broiler flocks slaughtered before 51 days of age during the period 1st May – 31st October were tested. In total 2 071 flocks from 495 farms were sampled. Of all farms sampled, 57 (11.5%) had at least one positive flock, and of these, 13 had two flocks. In contrast to previous years, the majority of the positive flocks comes from farms having only one positive flock representing 8.9% (44/495) of all farms tested, they contributed with 62.9% (44/70) of all positive flocks tested in 2024.

The carcasses from the positive flocks were either heat treated or frozen for a minimum of three weeks before being marketed. This year's result of 3.4% positive flocks is the lowest percentage of positive flocks detected since the surveillance period was limited to 1st May to 31st October instead of the whole year. The prevalence is very low compared to most other European countries.

Introduction

Campylobacteriosis is currently the most commonly reported foodborne human bacterial infectious disease in Norway (FHI MSIS statistikkbank). In 2020 and 2021 most of the human campylobacteriosis infections were acquired in Norway, probably due to the restricted travel restrictions during the Covid-19 pandemic. During 2023 and 2024 human campylobacteriosis acquired abroad has increased significantly and reached the same level as those acquired domestically. Still, there is a significant number of human campylobacteriosis infections registered with unknown site of infection. In 2024, the total number of human campylobacteriosis infections was 3 092; 1 102 acquired in Norway, 1 251 acquired abroad and 739 registered with unknown origin (MSIS). The total number registered in 2024 is in line with the previous years 2022 and 2023, with a total number of 2 983 and 3 033 respectively (MSIS). Consumption of poultry meat purchased raw has been identified as a significant risk factor together with drinking non-disinfected water, eating at barbecues, occupational exposure to animals, and eating undercooked pork (1).

The action plan regarding *Campylobacter* spp. in Norwegian broilers has been running since spring 2001 (2). The action plan is a joint effort involving several stakeholder groups from “stable-to-table”. The Norwegian Food Safety Authority (NFSA) is responsible for implementing the surveillance programme, while the Norwegian Veterinary Institute (NVI) coordinates the programme, performs the laboratory investigations, analyses the data and communicates the results. Preventive actions are applied on the *Campylobacter* spp positive flocks detected in the surveillance program, and the carcasses from positive flocks are either frozen for a minimum of three weeks or heat treated before reaching the market.

The action plan is updated regularly, and the details for 2025 together with reports and plans from previous years can be found at https://www.vetinst.no/overvaking/campylobacter-fjorfe.

Aims

The objective is to reduce the human exposure to thermophilic *Campylobacter* spp. from Norwegian broiler meat products.

Materials and Methods

All Norwegian broiler flocks slaughtered before 51 days of age during the period 1st May – 31st October were sampled by the owner or the keeper on the farm. The sampling was performed four to six days before slaughter. When correctly sampled, one sample consisted of ten pooled swabs from fresh faecal/caecal droppings. The samples were analysed by real-time PCR for detection of *Campylobacter* spp. at the NVI (3). In general, the test results could be accessed within one working day through a shared database (EOS). All positive test results are also reported individually to the Norwegian Food Safety Authority (NFSA), the slaughterhouse and the farmer.

In the case of undetermined *Campylobacter* spp. status for a flock at the time of slaughter, caeca from ten broilers per flock were sampled at the slaughterhouse for cultivation at NVI. This is to ensure correct follow up of the flock.

The carcasses from all positive flocks are either frozen for a minimum of three weeks or heat treated before being marketed.

Results and Discussion

In 2024, 2 071 flock samples were analysed for *Campylobacter* spp, representing 495 farms. A total of 70 flocks (3.4%) tested positive for *Campylobacter* spp. Eighteen of the 2 071 flocks were sampled at the slaughter house for cultivation due to unknown status at the time of slaughter, and one of these were confirmed positive for *Campylobacter* spp. Nine of the flocks registered as unknown at time of slaughter were due to missing or delayed sample for PCR- analysis at NVI, and nine were taken more than six days before slaughter.

The positive flocks originated from 57 (11.5%) of the farms. Thirteen farms had two positive flocks. None of the farms had more than two positive flocks. This year, the farms having only one positive flock represented 62.9% of the total number of positive flocks which is in contrast to previous years where a minor number of farms have contributed with a larger percentage of the total number of positive flocks.

The annually percent of *Campylobacter* positive flocks has varied substantially since the action plan was launched (Figure 1 and Figure 2). This year's level of 3.4% positive flocks is the lowest percentage of positive flocks since the surveillance period were reduced to 1st May to 31st October, instead of the whole year.

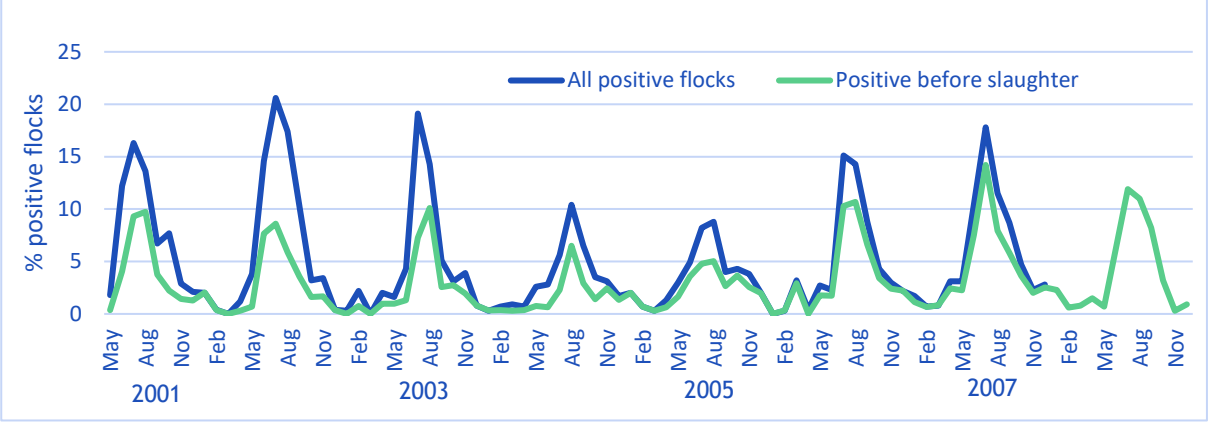

Figure 1. Monthly incidence of *Campylobacter* spp. in slaughtered Norwegian broiler flocks from May 2001 throughout 2008. The blue line represents flocks positive for *Campylobacter* spp., these data are based on two test results; before slaughter and at slaughter. The red line represents flocks tested positive for *Campylobacter* spp. at the sampling at farm before slaughter (from 2005 onwards: sampling approx. four days before slaughter).

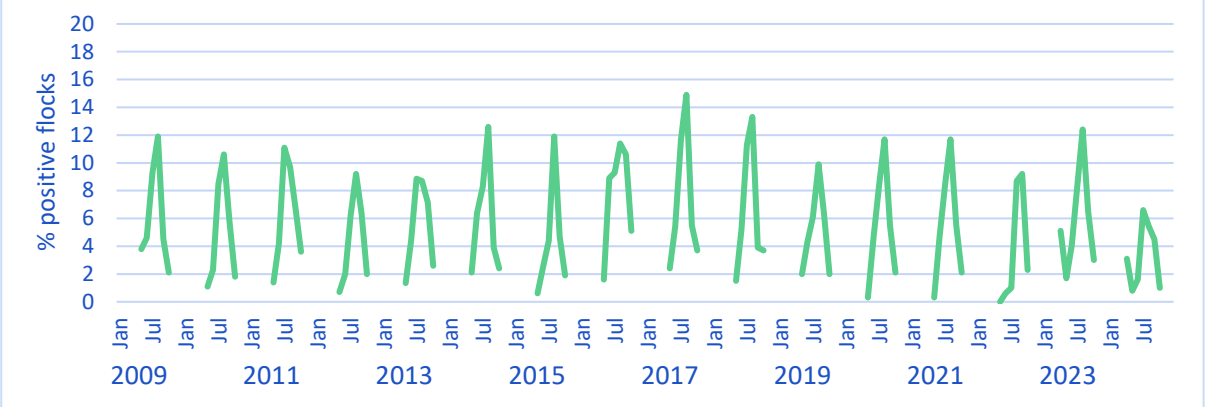

Figure 2. Monthly incidence of *Campylobacter* spp. in Norwegian broiler flocks from May throughout October 2009 - 2024. The red line represents flocks positive for *Campylobacter* spp. when sampled at farm before slaughter.

The results for 2002 – 2007, when all flocks were sampled twice, are presented in Table 1 along with the results of 2008 when the sampling was performed all year but only one time close to slaughter. Up to and including February 2005, samples prior to slaughter were taken approximately eight days before slaughter. At that time,

approximately 50% of the positive flocks were detected only by the sampling and testing at slaughter. From 1st March 2005 and onwards, all flocks were sampled maximum four days before slaughter, and in 2005, 31.8% of the positive flocks were detected at slaughter only. In 2006 this was further reduced to 25.3%, and in 2007 the corresponding figure was 24.5%. This confirms the importance of sampling close to the slaughter date for the detection of *Campylobacter* positive flocks.

From 2008, the sampling at slaughter was terminated, and more recent data to calculate the number of *Campylobacter* positive flocks going on the market without being frozen or heat treated are therefore lacking. Calculations was made assuming that 2008 - 2015 equals 2007 with respect to the proportion of positive flocks being identified before slaughter (approx. 75%), the seasonal distribution (approx. 80% of positive flocks are slaughtered during the six summer months) and that the number of samples equals the number of flocks (Table 1 and Table 2).

Table 1. Results from the Action Plan against *Campylobacter* spp. in broilers in the period 2002 - 2008.

Year	Number of sampled flocks	Number (%) of positive flocks	Number of positive flocks discovered at slaughter only[1]
2002	3 627	228 (6.3)	127
2003	3 550	175 (4.9)	85
2004	3 626	118 (3.3)	58
2005	3 652	132 (3.6)	42
2006	3 908	190 (4.9)	48
2007	4 145	237 (5.7)	58
2008	4 675	193 (4.1)	64[2]

[1] This is the maximum number of flocks positive for *Campylobacter* spp. which had the possibility to reach the market without previous freezing or heat treatment.

[2] For 2008 this is the estimated maximum number of flocks positive for *Campylobacter* spp. which had the possibility to reach the market without previous freezing or heat treatment.

Table 2. Results and estimated results from the Action Plan against *Campylobacter* spp. in broilers in the period 2009 - 2024.

Year	Number. of tested / positive (%) samples[1]	Estimated number of flocks the whole year[2]	Estimated number (%) of positive flocks per year	Estimated number of not identified positive flocks[3]
2009	1 924 / 117 (6.1)	4 000	195 (4.9)	78
2010	2 170 / 110 (5.1)	4 400	184 (4.2)	74
2011	2 282 / 139 (6.1)	4 560	232 (5.1)	93
2012	2 417 / 106 (4.4)	4 830	177 (3.7)	71
2013	2 710 / 149 (5.5)	5 420	248 (4.6)	99
2014	2 685 / 160 (6.0)	5 370	267 (5.0)	107
2015	2 133 / 93 (4.4)	4 260	155 (3.6)	62
2016	2 262 / 175 (7.7)	ND	ND	ND
2017	1 919 / 136 (7.1)	ND	ND	ND
2018	1 986 / 126 (6.3)	ND	ND	ND
2019	2 018 / 103 (5.1)	ND	ND	ND
2020	1 893 / 115 (6.1)	ND	ND	ND
2021	1 891 / 110 (5.8)	ND	ND	ND
2022	2 189 / 106 (4.8)	ND	ND	ND
2023	2 100 / 128 (6.1)	ND	ND	ND
2024	2 071 / 70 (3.4)	ND	ND	ND

[1] Equals (for 2009-2021 approximately) number of slaughtered / positive flocks.
[2] In 2009 - 2015, the estimate for the whole year is based upon number of slaughtered flocks in May – October.
[3] The estimated maximum number of flocks positive for *Campylobacter* spp. which had the possibility to reach the market without previous freezing or heat treatment.
ND: Not determined.

Estimates of the whole year flock prevalence and the number of flocks positive for *Campylobacter* spp. reaching the market without freezing or heat treatment, have not been calculated since 2015 because no sampling has been done in the action plan during the six “winter months” November – April for the last thirteen years. Estimates would probably be hampered with too many uncertainties to be of much value. Also the fact that the sampling since 2016 was performed a maximum of six days before slaughter, not four days as previous years, adds to the uncertainty of such estimates.

The result of 3.4% *Campylobacter* spp. positive flocks in the surveillance program in 2024 is the lowest registered in 20 years (Table 1 and 2), and the prevalence is very low compared to most other European countries (4).

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