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Report

Action plan against
Campylobacter spp. in
Norwegian broilers

Results from the
Surveillance of broiler flocks 2006
Surveillance of meat products 2006

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Introduction

This report summarizes the results from the "Action Plan against *Campylobacter* spp. in Norwegian broilers" from 2006.

The action plan regarding *Campylobacter* in Norwegian broilers has been implemented since spring 2001. The action plan is a joint effort involving several stakeholder groups from "stable-to-table". The Norwegian Zoonosis Centre at the National Veterinary Institute coordinates the programme, and is responsible for the collection and analyses of data and the communication of results.

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

Materials and Methods

The action plan consists of three parts; a surveillance programme including all Norwegian broiler flocks, a follow-up advisory service to farms with *Campylobacter* positive flocks, and surveys of broiler meat products. The action plan is updated regularly, and the details for 2006 together with other information regarding the action plan can be found at www.zoonose.no.

Surveillance

All Norwegian broiler flocks that are slaughtered before 50 days of age are sampled pre-slaughter by the owner maximum four days before slaughter. The sample consists of ten pooled swabs from fresh faecal droppings. The samples are submitted to the National Veterinary Institute's laboratory in Trondheim, where they are analysed by PCR. The carcasses from the positive flocks are either heat treated or frozen for a minimum of three weeks before being marketed. All flocks are tested upon arrival at the slaughter plant by sampling ten caeca per flock at the slaughter line. Contents of the ten caeca are pooled into one sample and analysed by local laboratories. Samples are analysed using the method described in NMKL no. 119, 1990, with minor modifications. Carcasses from flocks which are only positive at the slaughterhouse sample are not automatically heat treated or frozen.

Follow-up of positive flocks

Broiler farms that deliver *Campylobacter* positive flocks shall be subject to a follow-up visit by advisors from the poultry industry or the Municipal Food Safety Authority. The visit should result in measures on the farm to reduce the risk of flocks becoming contaminated with *Campylobacter* in the future.

Surveys of broiler meat products

According to the plan for 2006, four Municipal Food Safety Authorities should sample 25 samples from retail each month from March - December. Samples were analysed using the method described in NMKL no. 119, 1990, with minor modifications.

Results

Surveillance of broiler flocks

A total of 3,908 flocks from 526 broiler farms were tested. These flocks were slaughtered in 4,053 batches (a batch includes all chickens from one flock slaughtered on the same day). A total of 127 flocks were slaughtered in more than one batch. Most of these were slaughtered in two batches, a few were slaughtered in three or four batches. In addition, four flocks were split in two batches slaughtered in two different slaughterhouses on the same day.

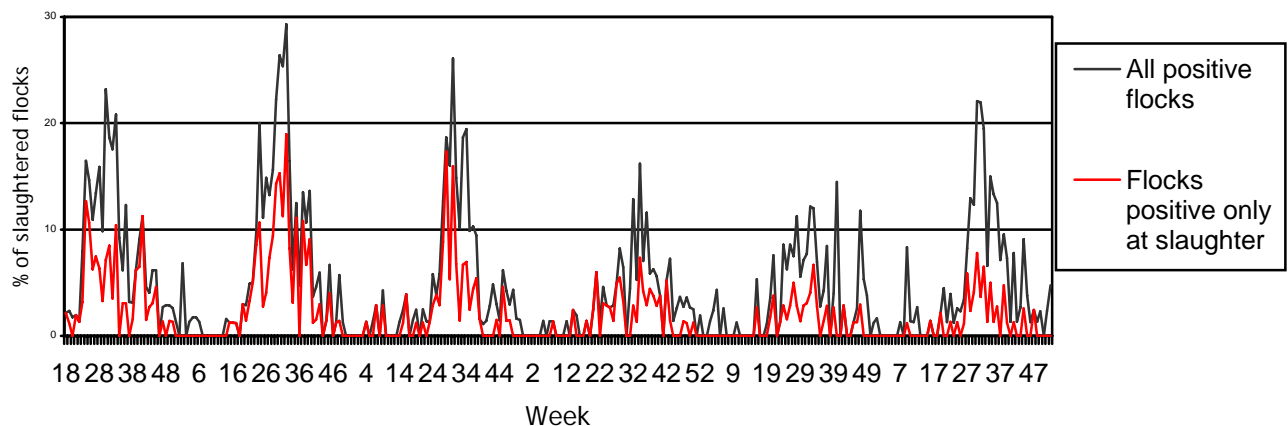
Overall, 190 (4.9 %) flocks (191 (4.7 %) batches) were positive for *Campylobacter* sp. either at pre-slaughter, slaughter, or both sampling times. For those slaughterhouse samples where the reference laboratory confirmed *Campylobacter* sp., *C. jejuni* was isolated from 92.6 % and *C. coli* from 7.4 %. From five flocks, the attempt to verify the positive diagnosis did not succeed, one of these flocks was negative at the pre-slaughter sample.

Of the 190 positive flocks, 142 (74.7 %) tested positive at pre-slaughter sampling, and these carcasses were frozen or heat treated in order to prevent contaminated poultry from reaching the general market as fresh broiler meat. A total of 22 flocks tested positive only at pre-slaughter.

The positive flocks came from 140 (26.6 %) of the farms. Of these 140 positive farms, 113 (80.7 %) had only one positive incidence during 2006 (a positive incidence is defined as one positive flock or as several parallel positive flocks from different houses) and produced 119 (62.6 %) of the positive flocks. A total of 19 (13.6 %) farms had two positive incidences (producing 44 (23.2 %) of the positive flocks), and eight (1.5 %) had three positive incidences. The 27 farms with two or more positive incidences in 2006 (representing 5.1 % of all farms) had 71 positive flocks, accounting for 37.4 % of all positive flocks.

The proportion of *Campylobacter* positive flocks and the proportion of flocks testing positive only at slaughter has varied substantially since the action plan was launched (Figure 1).

Figure 1. Weekly incidence of *Campylobacter* sp. in slaughtered Norwegian broiler flocks from week 18 in 2001 throughout 2006.



In the first years of the Action Plan, when the pre-slaughter samples were taken approximately eight days before slaughter, approximately 50 % of the positive flocks were detected only at slaughter. From 1 March 2005 onwards, all flocks had to be sampled maximum four days before slaughter. This contributed to the fact that in 2005, 31.8 % of the positive flocks were detected only at slaughter and in 2006 this was further reduced to 25.3 %.

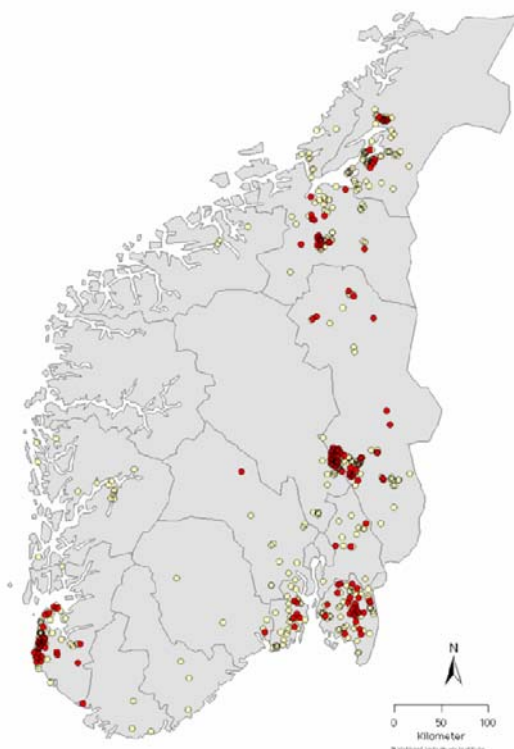
Most farmers follow the guidelines regarding time of pre-slaughter sampling. A total of 216 (5.3 %) slaughter batches were sampled earlier than four days before slaughter, mostly in connection with holidays. In total, less than 0.7 % of the flocks were not sampled according to the action plan (i.e. sampled only once).

Regional differences in the proportions of positive flocks and farms were found (Table 1, Figure 2).

Table 1. *Campylobacter* positive flocks and farms by county in Norway 2006.

County	Farms		Flocks	
	N	No. positive (%)	N	No. positive (%)
Østfold	81	25 (31)	718	32 (4)
Akershus	14	3 (21)	111	6 (5)
Hedmark	113	45 (40)	878	62 (7)
Oppland	10	0 (0)	55	0 (0)
Buskerud	11	1 (9)	67	1 (1)
Vestfold	34	6 (18)	225	6 (3)
Telemark	5	1 (20)	24	1 (4)
Aust-Agder	3	0 (0)	24	0 (0)
Vest-Agder	4	1 (25)	24	1 (4)
Rogaland	92	27 (29)	735	38 (5)
Hordaland	14	0 (0)	86	0 (0)
Møre og Romsdal	3	0 (30)	22	0 (0)
Sør-Trøndelag	67	20 (15)	416	27 (6)
Nord-Trøndelag	75	11 (31)	523	16 (3)
Total	526	140 (26.6)	3,908	190 (4.9)

Figure 2. Broiler farms in Norway in 2006 with only *Campylobacter* negative flocks (yellow) and farms with one or more *Campylobacter* positive flocks (red).



Survey of broiler meat products

The results stratified according to month (month of purchase or month of shelf life) are presented in Table 2 and Table 3. A total of 8.5 % of the products were positive. A total of 68 of the verified isolates were *C. jejuni*, eight were *C. coli* and four were *C. lari*.

The 81 positive samples came from 50 positive production batches (samples from the same production facility with the same expiry date). A positive production batch was represented with maximum five positive samples.

Table 2. Analysed and positive samples of poultry products by month of purchase.

Month of purchase	N	No. positive
March	99	1
April	99	0
May	95	4
June	97	2
July	100	8
August	99	34
September	98	15
October	96	3
November	88	8
December	87	6
Total	958	81

Table 3. Analysed and positive samples and batches of poultry products by month of shelf life.

Month of expiry	N	No. positive
March	82	1
April	68	0
May	114	3
June	96	3
July	103	5
August	110	36
September	91	8
October	94	10
November	86	7
December	102	8
January 2007	12	0
Total	958	81