

Reducing *Campylobacter*: it can be done!

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Campylobacter is the most common bacterial cause of foodborne infections in the Netherlands. It is present in the intestines of many animal species including birds and *Campylobacter* can be found in the environment as well, especially in surface waters. When chickens are colonized, numbers of *Campylobacter* are usually very high and these animals have been shown to be the main source for campylobacteriosis in humans.

Wageningen University & Research collaborates with NEPLUVI (association of the Dutch poultry processing industry) and the primary poultry sector to reduce *Campylobacter* in chickens and meat, with the goal to reduce the number of cases of illness in humans. The collaboration between research and practice in a Public Private Partnership under the Top-Sector policy of the Ministry of Agriculture, Nature and Food quality focuses on various topics of research.

Biosecurity and keeping flies out

Keeping flocks free of *Campylobacter* is the best way to reduce the contamination in the poultry meat chain. Therefore it is important to take measures to minimize the risk of introduction in poultry houses.

Campylobacter may enter a chicken flock in various ways, amongst others through flies. The use of windbreak nettings in front of the ventilation openings to keep flies and other small insects out of the barns has been shown to reduce the number of *Campylobacter* positive flocks in the Netherlands. Of course, this measure is only effective if appropriate biosecurity measures are taken in order to avoid other transmission routes.

To gain more insight in the main introduction routes in Dutch poultry houses, 22 broiler farmers have been registering the activities in and around the barns while their flocks are being tested weekly for the presence of *Campylobacter*. The goal is to provide farmers with the

most effective tools and methods to prevent *Campylobacter* in their flocks. Work on this topic is still in progress.

Vaccinate poultry

There is yet no commercial vaccine against *Campylobacter*. The difficulty is that *Campylobacter* causes no disease in chicken and hardly any local immune response in their intestine.

At the Faculty of Veterinary Medicine an innovative vaccine candidate has been developed and tested in chicken. Although *Campylobacter* colonisation in individual animals was reduced, trials showed insufficient protection on flock level. Improvement of the vaccine candidate is needed for future studies.



Contaminated broilers, contaminated meat?

Studies were performed to investigate if flocks which are heavily soiled on arrival at the slaughterhouse, lead to a higher degree of contamination of the poultry meat. This could not be confirmed. However, differences were found between conventionally raised and slower growing chickens. The percentage of *Campylobacter* positive flocks was similar or even less for the slower growers compared to conventionally raised chicken. This is contrary to the general scientific consensus that the risk of *Campylobacter* colonisation increases with the age of the birds. Possible factors that may account for this unexpected finding are currently being investigated.

Improvements to slaughterhouses

Statistical analysis of NEPLUVI monitoring data showed a number of variables affecting the level of *Campylobacter* contamination on meat.

As a possible intervention in the slaughter process an innovative way of rinsing the carcasses was evaluated. Unfortunately, the application of this technique did not show a statistically significant reduction of *Campylobacter* levels on chicken carcasses compared to the use of regular rinsing.

In addition to technical interventions, the possibilities of nudges to improve compliance behaviour of food handlers in broiler processing are currently explored.

Monitoring shows decreasing infections

Several studies with various scopes have been performed in the *Campylobacter* Public Private Partnership, which all have the same goal: to reduce the number of human *Campylobacter* cases. Monitoring data from NEPLUVI show that over the years both the percentage of *Campylobacter* positive flocks as well as the number of highly contaminated poultry meat products in the Netherlands has decreased. The latest "Staat of Zoonosen" report from the RIVM (2016) also shows a reduction in the number of human *Campylobacter* cases.

The Dutch poultry sector and Wageningen University & Research strive for further success and will continue their efforts to reduce the level of *Campylobacter* contamination in poultry.



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