

SURVEILLANCE OF INFECTIOUS DISEASES IN ANIMALS AND HUMANS IN SWEDEN 2019

Chapter excerpt -
Coccidiosis and clostridiosis



Editor: Karl Ståhl

Department of Disease Control and Epidemiology, National Veterinary Institute (SVA), SE-751 89 Uppsala, Sweden.

Authors: Charlotte Axén, Mia Brytting, Ioana Bujila, Erika Chenais, Rikard Dryselius, Helena Eriksson, Pernille Etterlin, Eva Forsgren, Malin Grant, Gittan Gröndahl, Gunilla Hallgren, Anette Hansen, Gete Hestvik, Marika Hjertqvist, Mia Holmberg, Cecilia Hultén, Helena Höök, Cecilia Jernberg, Jerker Jonsson, Ulrika König, Elina Lahti, Emelie Larsdotter, Mats Lindblad, Anna Lundén, Emma Löf, Hans-Olof Nilsson, Oskar Nilsson, Maria Nöremark, Anna Ohlson, Ylva Persson, Karin Persson-Waller, Thomas Rosendal, Karl Ståhl, Robert Söderlund, Kaisa Sörén, Magnus Thelander, Karin Troell, Anders Wallensten, Per Wallgren, Stefan Widgren, Ulrika Windahl, Beth Young, Nabil Yousef, Siamak Zohari, Erik Ågren, Estelle Ågren, Elina Åsbjer

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Reporting guidelines: Reporting guidelines were introduced in 2018 for those those chapters related to purely animal pathogens. The guidelines build on experiences from several EU projects, and have been validated by a team of international experts in animal health surveillance. The aim is to develop these guidelines further in collaboration within the global surveillance community and they have therefore been made available in the form of a wiki on the collaborative platform GitHub (<https://github.com/SVA-SE/AHSURED/wiki>). Feel free to contribute!

Layout: The production of this report continues to be accomplished using a primarily open-source toolset. The method allows the source text, produced by authors, to be edited independently of the template for the layout which can be modified and reused for future reports. Specifically, the chapter texts, tables and captions are authored in Microsoft Word and then converted using pandoc and R to the LaTeX typesetting language. Most figures and maps are produced using the R software for statistical computing. Development for 2019 has further improved the importing of content from Word to LaTeX. The method can now import text, tables and figure captions from Word, as well as the newly designed 'IN FOCUS' sections of some chapters. The tool is available as an R-package at GitHub (<https://github.com/SVA-SE/mill/>). This year the report was also built with a continuous integration pipeline on Microsoft's Azure DevOps platform, allowing every committed change to the content to be built and tested automatically. The report generation R-package and process was designed by Thomas Rosendal and Stefan Widgren. In 2019, figures and the final typesetting were done by Wiktor Gustafsson and Thomas Rosendal with contributions from the report authors.

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Coccidiosis and clostridiosis

BACKGROUND

Coccidiosis and clostridiosis are intestinal diseases that commonly affect broiler chickens worldwide. Both diseases are major causes of economic losses and reduced welfare. To prevent these diseases a combined coccidiosis and clostridiosis surveillance programme was initiated in 1998 by the Swedish Board of Agriculture.

DISEASE

Coccidiosis is caused by microscopic parasites (genus *Eimeria*) that invade the intestinal epithelium. *Eimeria spp.* are ubiquitous, resilient and host specific parasites that are easily transmitted between birds by the faecal-oral route, especially when birds are kept on litter at a high stocking density. The severity of the intestinal lesions is influenced by parasite and host factors, such as parasite species, infectious dose, host age and level of immunity. Generally, young broiler chickens are highly susceptible.

Clostridiosis is a multifactorial disease and the pathogenesis is not well understood. The disease is associated with proliferation of the bacterium *Clostridium perfringens* type A, which together with management factors and loss of mucosal integrity cause lesions in the intestines (necrotic enteritis: NE) and liver (cholangiohepatitis).

Clinical signs of coccidiosis and clostridiosis range from clinical disease with significantly increased mortality rates to mild or subclinical forms, which are associated with reduced weight gain and impaired feed conversion. Clostridiosis is also a cause of condemnation at slaughter due to liver lesions. Both diseases may be prevented by in-feed ionophorous anticoccidials.

LEGISLATION

The health control programme for coccidiosis and clostridiosis in broilers is regulated in the Swedish legislation (SJVFS 2015:17, K152) and is administered by the Swedish Poultry Meat Association. These regulations apply to producers who breed more than 500 broilers annually.

SURVEILLANCE

The purpose of the surveillance is to document that the anticoccidials efficiently protect broilers from disease. The long-term goal is to replace anticoccidials by other preventive measures such as vaccines.

Intestinal lesion scoring

Field control of anticoccidial efficacy is performed by a lesion scoring method in broiler chickens from 20 randomly selected farms originating from regions served by different feed mills. The flock selection is performed by the Swedish Poultry Meat Association. From each selected farm, intestinal lesion scoring (scale 0–4) is conducted on 5 birds on two occasions during the year when the birds are between 22–24

days of age. If the mean total lesion score of an individual flock exceeds a certain level (2.5), an on-farm disease investigation is supposed to be carried out.

On-farm investigation of disease outbreaks in flocks

In flocks with lesion scores exceeding 2.5 and in flocks with acute outbreaks of suspected coccidiosis/clostridiosis an on-farm disease investigation may be carried out. Housing environment, hygiene and disease monitoring routines, feed composition (including analysis of concentration of anticoccidials) and mortality rate is assessed by the farm veterinarian in collaboration with the herd owner, the feed mill company and the control section of the Swedish Poultry Meat Association.

Histological examination of tissue lesions

Samples of tissues with representative pathological lesions collected during on-farm investigations are submitted for histological evaluation to the National Veterinary Institute (SVA). In addition, liver samples from herds with a high (>2%) presence of liver lesions registered at the abattoir are occasionally also sent to SVA for histological evaluation.

RESULTS

In 2019, 37 broiler flocks were investigated for lesion scoring, and a mean total lesion score (MTLS) of 0.34 was registered. In none of the flocks the lesion score exceeded 2.5, indicating low clinical disease occurrence and sufficient efficiency of anticoccidials in the examined flocks.

Sixteen samples of condemned livers from abattoirs belonging to 5 different broiler flocks and 59 samples of different tissues (livers, intestines, bursa fabricii, spleen, heart) from 9 different broilers flocks experiencing acute outbreaks of suspected coccidiosis/clostridiosis were submitted to SVA for histological evaluation. Indications of coccidiosis/clostridiosis (i.e. cholangiohepatitis, coccidiosis and/ or necrotic enteritis) were recognised in 11 of these 14 cases.

DISCUSSION

Approximately 103 million broilers were slaughtered in Sweden in 2019.

In conclusion, histological sampling and flock investigations were relatively few but recognised some farms with coccidiosis and/or clostridiosis/NE, and on these farms no convincing indications of long-term trends toward reduced anticoccidial efficacy were observed. Detailed information on the field situation regarding coccidiosis and NE is however not available.

REFERENCES

Johnson J, Reid WM (1970) Anticoccidial drugs: lesion scoring techniques in battery and floor-pen experiments with chickens. *Exp. Parasitol* 28:30–36