

Research Digest

Selected highlights from other journals

Mechanical transmission of antimicrobial-resistant *Salmonella enterica* by starlings to livestock feeding systems

J. C. Carlson, D. R. Hyatt, J. W. Ellis, D. R. Pipkin, A. M. Mangan, M. Russell and others

BIRD-LIVESTOCK interactions have been implicated as potential sources for bacteria within concentrated animal feeding operations (CAFOs). In particular, European starlings (*Sturnus vulgaris*) are known to contaminate CAFOs with *Salmonella enterica* through their faecal waste while they consume cattle feed and water. However, ecological interactions associated with microbiological contamination of CAFOs by wild birds are currently poorly understood, as it has been found that *S enterica* serotypes recovered from starling gastrointestinal tracts did not correspond well to the serotypes recovered from cattle feed and water troughs. The aim of this study on a CAFO in Texas in the USA was to determine if starlings can mechanically move *S enterica* in cattle faeces on their feet and feathers to cattle feed and water troughs.

One hundred starlings landing on cattle pens and pen lanes were shot and external wash samples were obtained by washing the carcasses with 50 ml of buffered peptone water. Lower gastrointestinal tracts were removed from the starlings for sampling, and 100 samples from animal pens (ie, cattle faecal samples and samples from cattle feed and water troughs) were also collected. All samples were then tested for the presence of *S enterica* and isolates from all *S enterica*-positive samples were tested for antimicrobial susceptibility.

Positive *S enterica* samples were found in all three sample types, including 17 per cent of starling external wash samples. All sample types were found to have at least one antimicrobial-resistant isolate. The serotypes isolated from the starling external wash samples were all found in the farm environment and 11.8 per cent of these isolates were resistant to at least one class of antibiotics.

The authors conclude that their study provided evidence of a potential mechanism of wildlife-introduced microbial contamination of CAFOs. They suggest that mechanical movement of microbiological hazards by starlings should be considered a potential source of bacteria of concern to veterinary, environmental and public health.

Veterinary Microbiology (2015) 179, 60-68
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Awareness and management of equine nematodes

G. Sallé, J. Cabaret

GASTROINTESTINAL nematodes (GIN) are a serious threat to equine health and welfare, and are increasingly resistant to anthelmintics. Understanding how anthelmintics are used in the field, especially by veterinarians, can help in the design of more sustainable parasite control strategies. This French study aimed to investigate veterinary practitioners' awareness, perception and strategies of equine parasite control through an internet questionnaire survey.

The questionnaire was sent to 940 French equine veterinary practitioners via e-mail, with a response rate of 9 per cent (91 complete responses received). A short, eight-question survey was also sent to members of the European College of Veterinary Parasitology (ECVP) to identify what is being taught in European veterinary schools.

From the practitioner survey, 68 per cent of respondents considered GIN to be of moderate importance, and cyanthostomins were the most frequently reported parasites. Drug efficacy failure was considered a

minor issue by 47 per cent of respondents, and a moderate issue by 48 per cent of respondents. Parasite management mainly relied on systemic calendar treatments, across a wide range of horse owners. Forty-two per cent of practitioners never performed a faecal egg count before drenching, with the use of egg counts mainly relying on horse owner demand. Fifty-nine per cent of practitioners noted that the horse owner was the only person managing the drenching, and this was associated with the frequent use of purchasing drugs off of the internet, and many off-label uses of anthelmintics.

From the ECVP survey, it was found that the teaching of parasitology varied greatly across universities, from 40 minutes to 10 hours. In most universities the teachers were parasitologists. Only some universities took into account the variation in equine establishments when proposing parasite management guidelines.

The authors conclude that veterinarians should reclaim parasite management given the critical situation regarding resistance. They believe there should be stricter regulations for the use of these medicines.

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Oral tylosin administration associated with an increase of probiotic bacteria in dogs with tylosin-responsive diarrhoea

S. Kilpinen, M. Rantala, T. Spillmann, J. Björkroth, E. Westermarck

THE term tylosin-responsive diarrhoea (TRD) is used to describe canine recurrent diarrhoea cases for which no underlying cause can be found after extensive diagnostic investigations, but which show a response to the antibiotic tylosin in a few days. This study aimed to assess the effects of oral tylosin administration on the faecal levels of potentially probiotic bacteria, such as *Enterococcus* species and lactic acid bacteria (LAB), in dogs with TRD.

Fourteen client-owned dogs with suspected TRD that were being administered tylosin treatment and that had firm faeces were included in the study. Tylosin treatment was then discontinued, and the dogs were followed up for up to two months to determine if the diarrhoea recurred. If the diarrhoea did recur, the dogs were given tylosin orally at 25 mg/kg once daily for seven days. On day seven, faecal consistency of the dogs was confirmed at a clinic visit. All faecal samples were cultured to determine the levels of *Enterococcus* species and LAB in the faeces.

At the end of the seven-day treatment period, the faeces of 11 dogs were firm again and these were identified as TRD dogs. Diarrhoea did not resolve in the remaining three dogs and these were removed from the study. In the TRD dogs, the colony counts of *Enterococcus* species, LAB, tylosin-resistant *Enterococcus* species and tylosin-resistant LAB were significantly higher when the dogs were on tylosin treatment and had normal faecal consistency than when they had diarrhoea following discontinuation of tylosin.

The authors conclude that oral tylosin administration results in a significant increase in the *Enterococcus* species and tylosin-resistant *Enterococcus* species colony counts in the faeces of dogs suffering from TRD. They note that enterococci are known to have probiotic properties and suggest they could reduce inflammation in the gut mucosa and normalise the faecal consistency of dogs with TRD.

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