

# THE POTENTIAL TO REDUCE ANTIBIOTIC USAGE WITH CLOSTAT® IN A WESTERN EUROPEAN TURKEY FIELD TRIAL

## Summary

The trial was run by a western European turkey integrator from end 2016- to mid 2017 for a duration of six month with the aim to reduce antibiotic usage while maintaining turkey health at least at the same level. CLOSTAT was applied at the first sign of intestinal health challenges. Health status decreased between 34-38% for the major diseases requiring treatment. Antibiotic use could be decreased between 13 and 51%, depending on the antibiotics required. The reduction was significant for Colistin and the grouped "other" antibiotics.

## Materials and methods

The trial was started in Dec 2016 by a commercial turkey integrator in Western Europe. The reason for applying CLOSTAT was to reduce overall antibiotic use in their turkey production. The group of betalactams (e.g. amoxicillin) and colistin were most used and therefore the main target for reduction. CLOSTAT was applied at the first signs of intestinal health challenges, rather than treatment with antibiotics. As a measure for succes historic data starting from 2014 until, including week 27 of 2017 were used. The data contained records on antibiotics used (betalactams, colistin, others) and key diseases (Figure 1).

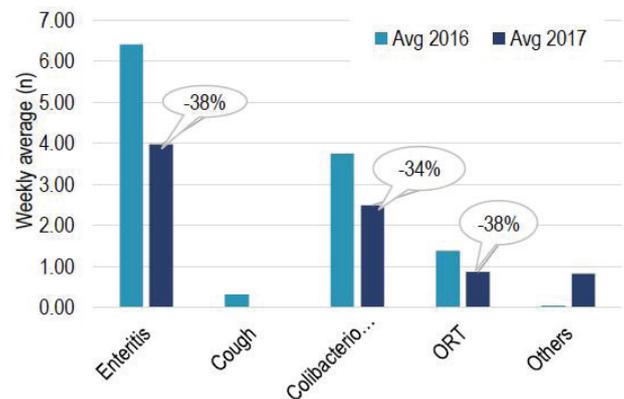


Fig 1: Disease incidence 2016/2017

## Results - effects on diseases

### What may have caused the reduction in ornithobacterium (ORT) infection observed?

The local weather was slightly warmer and drier in the first half of 2017 compared to the first half of 2016. Humid cold weather is known to make turkey more susceptible to ORT, hence the decrease could be linked to weather conditions. The decrease in ORT can in turn explain some of the reduction of usage of tylosin, doxycycline, fluoroquinolones, and TMPs used.

### Effect of CLOSTAT on enteritis prevalence

Enteritis was not differentiated into necrotic and others, the overall enteritis incidence reduced by 38%. CLOSTAT has been shown to affect *Clostridium perfringens* which is typically associated with enteritis in scientific trials (Teo & Tan, 2010). However, the difference between 2016 and 2017 was not statistically significant in this field trial.

## Results - effects on antibiotic use

### Betalactams

Betalactams are a group of widely used antibiotics they are characterised by a common beta-lactam ring. Examples are penicillin, amoxicillin, ampicillin. Betalactams are wide-spectrum antibiotics and are used to treat a range of pathogens, there working towards intestinal health only have a limited effect on their usage.

There was a slight numerical decrease, 13% in the use of betalactams (Figure 2).

### Colistin

Colistin is a widely used polypeptide antibiotic in livestock but only used as a "last resort antibiotic" in humans. Resistance is rare, however resistance plasmids/E. coli have now been found worldwide.

Colistin usage decreased by 44% in 2017 compared to the same time the previous year. Indications for colistin use in turkey are generalised E. coli, incidence of E. coli did not increase however, but decreased by 34% (figure 1). CLOSTAT shows to have than compensate for the decrease in colistin.

### Other antibiotics

The other antibiotics used (Tylosin, Doxycycline, Fluoroquinolones, TMPs (e.g Trimethoprim) were not recorded separately. Overall their use decreased by 51% in the treatment period.

## Conclusions - effects on antibiotic use

CLOSTAT has over a period of six month clearly shown to be able to contribute to an overall antibiotic reduction strategy for turkey for an integrated producer. The main focus was layed on betalactams and Colistin, due to their importance for human medicine. Diseases did slightly decreases between the observation periods, aided by drier weather in the case of ORT. This alone cannot explain the reduction in antibiotic use overall. The 38% reduction in enteritis can at least be partially linked to the use of CLOSTAT.

Colistin was significantly reduced use by 44%, betalactam usage by 13% and other antibiotics by 51% therefore fulfilling the original aim of the study to reduce antibiotic usage with at least equal animal health.

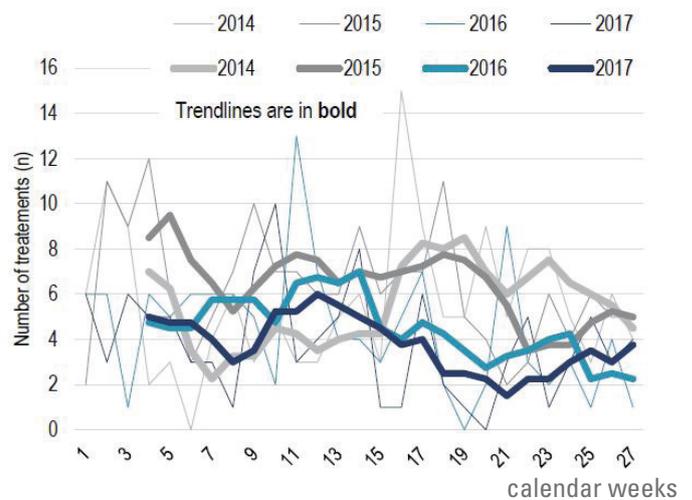


Fig 3: Number of betalactam treatments from 2014-2017

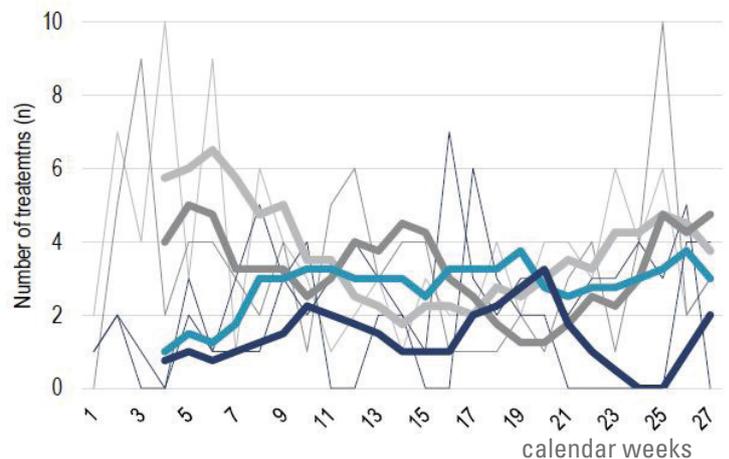


Fig 2: Number of colistin treatments from 2014-2017