

Campylobacter Abortions in Sheep and Tetracycline Resistance

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In the first year we started the *ag animal health* newsletter (2007-2008), we reported on the tetracycline-resistant *Campylobacter* that was responsible for abortions in sheep (<http://vetextension.cw.wsu.edu/wp-content/uploads/sites/8/2015/03/030108.pdf>, Volume 1, Number 3). This year there have been several abortion outbreaks in sheep flocks in the west. Two outbreaks in particular involved a large percentage of lamb loss due to *Campylobacter jejuni* bacteria that were tetracycline resistant. A recap of what *Campylobacter* is, what to do if you suspect resistance and how to work within the Veterinary Feed Directive Rule are provided below.

Campylobacter spp. is the most common finding in abortions of sheep in North America. The bacteria *C. jejuni* (sporadic abortions) and *C. fetus* subsp. *fetus* (recurring abortion) often cause abortion late in pregnancy or stillbirths. Ewes do not show clinical signs, except occasional diarrhea, but abort in the third trimester, have stillbirths, or give birth to weak lambs. Some ewes are persistently infected and continue to shed the organism in their feces.

If a sheep owner experiences lamb loss through abortion or stillbirths, getting a diagnosis might be prudent to know what they are dealing with. Abortions in sheep are caused by a number of different organisms, some of which can be prevented or treated and some that are difficult to control. If abortions occur with a group of sheep, an important step is to send samples such as the fetus and placenta to the diagnostic lab to help make the diagnosis. If *Campylobacter* is found, an antibiotic susceptibility test would reveal if it is resistant or not.

Many sheep owners put tetracycline in the feed in an effort to stave off the potential problems with abortions in their ewes due to *Campylobacter* and *Chlamydophila*. However, with the emergence of resistance and the new Veterinary Feed Directive Rule (<https://www.fda.gov/animalveterinary/developmentapprovalprocess/ucm455416.htm>), feeding tetracycline may not be beneficial in all cases and now cannot be done without the veterinarian's directive. If the pathogen responsible for the abortions is sensitive to an antibiotic, and the antibiotic must be fed, a VFD must be obtained from the veterinarian of record with a valid Veterinary Client Patient Relationship (<https://www.avma.org/KB/Resources/Reference/Pages/VCPR.aspx>). The VFD requirements apply to all VFD drugs for use in major or minor species.

There are injectable antibiotic products a veterinarian can prescribe for prevention and control of specific causes of abortions in sheep. However, vaccination against *Campylobacter* may be the primary alternative to antibiotic use and can be incorporated into the schedule of vaccinations for other important diseases.

The steps to follow when faced with an abortion outbreak are: (1) try to get a diagnosis with susceptibility testing for bacterial causes; (2) work with a veterinarian to find the best solution to the immediate problem; and (3) identify potential preventive means of control.

The following resources will provide more detailed information on causes of sheep abortions and use of the VFD with examples of breeding sheep VFD forms.

Ag animal health. Updates on abortions in sheep. <http://vetextension.cw.wsu.edu/wp-content/uploads/sites/8/2015/03/060108.pdf>

Sahin O, Plummer PJ, Jordan DM, et al. 2008. Emergence of a tetracycline-resistant *Campylobacter jejuni* clone associated with outbreaks of ovine abortion in the United States. *J Clin Microbiol* 46(5):1663-71. <https://www.ncbi.nlm.nih.gov/pubmed/18322054>

Schoenian S. 2016. Veterinary Feed Directive (VFD): What does it mean to sheep and goat producers? Maryland Small Ruminant Page, University of Maryland. URL: <http://www.sheepandgoat.com/vfd>

PharmGate Animal Health. Pennchlor VFD for use in breeding sheep form. http://www.pharmgateah.com/pdf/vfd/PennchlorVFDForm_sheep_share.pdf

WADDL. Abortion Diagnosis. <https://waddl.vetmed.wsu.edu/animal-disease-faq/abortion-diagnosis>

Zoetis. VFD for Breeding Sheep. Aureomycin Form. <https://www.zoetisus.com/products/vfd/forms/aureomycin-vfd-final-form-breeding-sheep.pdf>

Zoetis. VFD for Breeding Sheep. ChlorMax Form. <https://www.zoetisus.com/products/vfd/forms/chlormax-50-vfd-final-form-breeding-sheep.pdf>

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