ADVICE FOR SHEEP AND CATTLE FARMERS IN THE EVENT OF LIMITED STOCK OF BRAVOXIN® SUSPENSION FOR INJECTION

This document is intended for flocks or herds, which due to a limited stock situation, are not able to use Bravoxin Suspension for Injection.

The table below details the available MSD Animal Health Clostridial and Pasteurella vaccines for sheep and cattle in the UK. Please note ONLY **Bravoxin Suspension for Injection** is licenced for both sheep and cattle. Sheep farmers may be able to utilise these alternative vaccines after a discussion with their veterinary surgeon.

	Clostridium perfringens type C: Struck	*Clostridium perfringens type D:* Pulpy kidney	*Clostridium septicum:* Braxy	*Clostridium chauvoei:* Blackleg, metritis	*Clostridium novyi type B:* Black disease	*Clostridium haemolyticum:* Bacterial red water	*Clostridium tetani:* Tetanus	*Clostridium perfringens type B:* Lamb dysentery	*Clostridium sordellii:* Abomasitis, toxaemia, malignant oedema, metritis	*Clostridium perfringens type A:* Enterotoxaemia	*Mannheimia haemolytica, Pasteurella trehalosi:* Pasteurellosis
Bravoxin® sheep & cattle	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Heptavac® P *plus* sheep	✓	✓	✓	✓	✓		✓	✓			✓
Ovivac® P *plus* sheep		✓	✓	✓			✓				✓
Ovipast® *plus* sheep											✓

In addition to the above and for cattle herds, Zoetis also produce clostridial vaccines: Covexin® 8 and Covexin® 10.

In the event of limited stock availability, sheep and cattle youngstock should be prioritised for vaccination due to their higher risk to succumb to clostridial diseases because of their reduced immunity and the husbandry procedures typically performed in their first weeks of life.

Clostridial bacteria are ubiquitous in ruminants and are part of the normal bacterial flora of healthy animals. These bacteria can also be found in soil, rotting vegetation, decomposing animal matter, surface water and spoiled animal feed. Clostridial bacteria become pathogenic when the bacteria rapidly multiply and release toxins.[1] This is commonly caused by changes in the bacteria's habitat which create the ideal environment for their fastidious growth requirements.

DISEASE? NOT ON MY FARM!

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Therefore, management changes can be utilised to reduce the risk:

- **Avoid sudden changes in diet** particularly increases in starch.
- **Reduce stress when handling** to help reduce the risk of insult inducing tissue damage through accidental injuries.
- **Prevent contamination of feed and water by rodents or birds.**
- **Avoid pastures where there have been historic cases of sudden death particularly those diagnosed as *Clostridium chauvoei* (Blackleg).** Clostridial bacteria can live in the soil and so can be associated with certain fields.
- **Graze animals on pasture of a good standard** to ensure grass is not being eaten down to bare soil. Supplementary nutrition should always be provided if required.
- **Reduce overcrowding in sheds and at pasture.**
- **Ensure adequate colostrum for new-born lambs through good ewe nutrition and body condition score.** Lambs must receive good quality (Brix refractometer value: 26.5%[4] and above) colostrum of 50ml/kg in the first 2-4 hours of life. Within the first 24 hours of life a newborn lamb must receive the equivalent of 200ml/kg colostrum. Inadequate pre-lambing nutrition (protein and energy) and ewes not being at target body condition score for lambing can result in reduced colostrum yield and quality alongside reduced mothering ability of the ewe.[5]
- **Ensure adequate colostrum for new-born calves through good dam nutrition and body condition score.** Calves should receive good quality (Brix refractometer value: 22% and above) colostrum of 3-4L or 10% of body weight within the first 2-4 hours of life.[2] This should be followed up by another similar sized feed within the first 12 hours of life. Inadequate pre-calving nutrition can result in dams not being the target body condition score at calving so resulting in reduced colostrum yield and quality alongside reducing mothering ability of the dam.[3]
- **Reducing the risk of clostridial disease in newborns can be done through improved husbandry and hygiene in the lambing and calving pens.** All equipment and personnel should be scrupulously clean. Navels of both lambs and calves should be dipped at least twice at an interval of 2-4 hours with 10% iodine, and then daily until the navel is dry. Tagging, docking, dehorning and castration should be undertaken to the highest hygiene standards.

Vaccination is the single most effective way to prevent disease. Therefore, any unvaccinated animals retained for breeding will need to be restarted on the Bravoxin Suspension for Injection course to provide full protection to themselves and any future offspring. Bravoxin Suspension for Injection should be given as two doses at an interval of 4-6 weeks apart, followed by annual boosters. To provide passive protection of the offspring, via the colostrum, a single booster dose should be administered between 8 and 2 weeks before parturition, provided that animals have received a full primary vaccination course prior to pregnancy.

Any adult animals which are part of the breeding herd and have gone over one year since their last Bravoxin Suspension for Injection will need to be restarted. This should be given as a primary course of two doses at an interval of 4-6 weeks apart, followed by annual boosters.

To conclude, whilst **Bravoxin Suspension for Injection** is in a limited stock situation, efforts should be made to improve hygiene and reduce stress and overcrowding. When **Bravoxin Suspension for Injection** is available youngstock should be prioritised for starting their primary course and efforts should be made to restart those who have gone over a year since their last injection.

References: 1. Pathogenesis and pathology of blackleg in ruminants: The role of toxins and neuraminidase. A short review. Useh, N.M., Nok, A.J., Esievo, K.A.N. Pages 155-159. Published online: 01 November 2011. Veterinary Quarterly Volume 25, 2003 Issue 4. 2. AHDB. Colostrum management for dairy calves. [Online] Available at: https://ahdb.org.uk/knowledge-library/colostrum-management-for-dairy-calves 3. Aghakhani M., Foroozandeh Shahraki Amir Davar, Tabatabaei S.N., Toghyani M., Rafiee H. (2022) Cow-level factors associated with colostrum yield and quality of Holstein dairy cows. Animal Production Science 62, 1518-1526. 4. Kessler EC, Bruckmaier RM, Gross JJ. Short communication: Comparative estimation of colostrum quality by Brix refractometry in bovine, caprine, and ovine colostrum. J Dairy Sci. 2021 Feb;104(2):2438-2444. doi: 10.3168/jds.2020-19020. Epub 2020 Nov 25. PMID: 33246611. 5. Page *et al*., Ewe colostrum quality on commercial Welsh sheep farms. Livestock, 2022, 27(1).

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