BRITISH DEER VETERINARY ASSOCIATION

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Bluetongue in Deer - Information for Vets (BDVA)

Summary

- Clinical signs associated with bluetongue virus (BTV) infection in UK deer species are very rare.
- Production losses associated with BTV infection in UK deer species appear very low.
- There is a poor evidence base associated with BTV infection in reindeer, but they are more genetically close to white-tailed deer than all other UK species. White-tailed deer are not found in the UK, but are present in North America and display clinical signs to BTV infection with serovars present there. North American BTV serovars are different to those found in Europe.
- There are no reported cases of clinical signs of BTV infection in reindeer in Europe.
- Only domesticated deer (i.e. farmed deer and reindeer) may be readily vaccinated against BTV.
- Red deer seroconvert well to vaccination with BTV.
- Decision to vaccinate deer should be made on a balance financial consideration and clinical impact.

Background

Bluetongue is a notifiable disease in the UK with variable clinical signs observed in ruminant species. It is caused by Bluetongue Virus (BTV) of the *Orbivirus* genus. It is transmitted primarily by *Culicoides* spp. midges and is not considered to spread from animal to animal. There are 24 serovars (1-24) considered typical and 11 (25-36) considered atypical. The UK experienced an outbreak of BTV-8 first reported in 2007 and a subsequent BTV-3 outbreak first reported in 2023. Sheep are considered the primary species of concern for bluetongue, however clinical signs are also noted in cattle, goats and new-world camelids.

Deer in the UK can be classified as 'wild' or 'domesticated', with some also found in some zoological collections. Different classifications are governed by different legislation. Domesticated deer include farmed deer (primarily red deer; *Cervus elaphus*, and a very small number of fallow deer farms; *Dama dama*) and reindeer (*Rangifer tarandus*). Wild deer can either be truly wild or enclosed parkland deer. Wild deer found in the UK include red deer, fallow deer, sika deer (*Cervus nippon)* roe deer (*Capreolus capreolus*), muntjac (*Muntiacus reevesi*) and water deer (*Hydropotes inermis*) with varying geographical distribution. Enclosed parkland deer are generally red deer, fallow deer, sika deer and some non-wild species (e.g. Axis; *Axis axis*, barasingha; *Rucervus duvaucelii*, or Père David's Deer; *Elaphurus davidianus*). Domesticated deer are able to be handled and antemortem interventions are possible, whereas interventions in wild deer are limited by practicality and legislation.

Clinical Disease in Deer

Clinical signs of bluetongue in deer vary depending on species. Whilst deer will become viraemic and seroconvert to BTV (López-Olvera et al. 2010), clinical signs appear rare in species found in the United Kingdom. Whilst widespread seroconversion is reported in wild deer (Linden et al. 2010; García-Bocanegra et al. 2011; Chatzopoulos et al. 2015), no clinical signs are noted and seroconversion does not appear to lead to production losses in commercial systems.

Clinical signs of bluetongue infection in deer are often associated with white-tailed deer (*Odocoileus virginianus*) which are not found in the UK. White-tailed deer are primarily found in North America, which is affected by different BTV serovars to those found in Europe. Clinical signs in reported in white-tailed deer including acute death, pyrexia, facial oedema, petechial haemorrhages and ulceration on the oral mucosa and coronary bands. Reindeer are the species present in the UK that are considered genetically closest to white-tailed deer; both are the Tribe "Odocoileini". There is limited evidence of reindeer seroconversion to BTV despite surveillance (Afshar et al. 1995; Sánchez Romano et al. 2019; Tryland et al. 2023; Tryland et al. 2023) and there are no reports of clinical disease.

The role of deer as a maintenance host for BTV in Europe is not clear, generally they are not thought to play a major role (García-Bocanegra et al. 2011; Rossi et al. 2019).

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Vaccination

Whilst there is evidence that red deer seroconvert well to existing commercial vaccine (Lorca-Oró et al. 2012), consideration must be made on the likely clinical benefit of vaccination to a population of deer. Only domestic deer are able to be vaccinated, due to the ability to handle for veterinary intervention. In a commercial setting, the cost of the vaccine should be balanced against the possible clinical benefit to that population, given signs and production effects are very rare in UK deer species. Vaccination of a deer herd could be considered where the risk of disease being introduced into other domestic animals is significant.

Reindeer may be more susceptible to clinical signs of BTV infection, though there is currently no evidence supporting that statement. Given the monetary and emotional value of reindeer in the UK, consideration should be given to the risk-benefit of vaccination. It should be noted that reindeer occasionally display adverse reactions to other vaccinations (e.g. clostridial vaccinations).

For further information, please contact the BDVA: admin@bdav.co.uk

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