

Bluetongue Virus in Sheep

Information for Producers

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KEY POINTS

- Virus transmitted by biting midges, *Culicoides*
- Outbreaks typically observed in late summer to early fall
- Symptoms include fever, dullness, mouth sores, lameness and nasal discharge
- Can cause infertility in rams and ewes
- Treatment BTV is supportive but important to differentiate from pneumonia that needs antibiotics
- Reduce standing water near sheep to control midge populations
- Vaccines have limited effectiveness

What is Bluetongue Virus?

Bluetongue Virus (BTV) infects cattle, sheep, goats and wildlife (deer). Infected animals don't shed the virus, it is spread by *Culicoides* biting midges (no-see-ums, punkies) when they take a blood meal. Clinical signs of BTV resemble Foot and Mouth disease, a devastating disease not present in the US.

Confirmed infections are reportable to the State Veterinarian. Disease in sheep often follows outbreaks and die-offs in deer. Epizootic hemorrhagic disease (EHD) virus is a related Orbivirus that commonly infects deer and causes similar disease signs but rarely causes disease in sheep.

BTV in Washington State and the Northwest

Recently, BTV outbreaks have become an almost annual occurrence in Washington state sheep flocks and white tail deer populations. BTV serotypes 10, 11 and 17 have been identified in the region. Late summer to early fall is the peak season for BTV when the biting midges are most active.

Weather is a key predictor of outbreaks. Mild winters and increased spring rainfall typically increase *Culicoides* population densities thereby increasing the risk of BTV outbreaks as was the case in WA during fall 2015.

Clinical Signs & Diagnosis

BTV infects white blood cells and cells that line blood vessels. Damage to small blood vessels makes them leaky and fluid builds up in tissues causing swelling. Small vessels also become blocked so tissues don't get adequate blood and die. These changes result in the disease signs described below. In a flock that has never been infected before, over 75% of sheep may become ill but less than 5% die, depending on the BTV serotype. Inapparent infection or mild clinical signs are most common. Clinical signs include:

- High fever (up to 106-108 °F)
- Dullness or a reluctance to move
- Clear nasal discharge becoming thick white-yellow which dries forming crusts
- Mouth sores causing excessive salivation, difficulty chewing and swallowing

- Lameness/stiff gait due to muscle and coronary band damage
- Swollen muzzle, head and ears
- Swollen/blue tongue (hence the virus's name)
- BTV can impact fertility in both ewes and rams which may result in a prolonged breeding season due to rebreeding. Breeding soundness exams should be performed to confirm ram fertility. Affected ewes can abort or may deliver lambs that fail to thrive or with birth defects including porencephaly and cerebral necrosis.
- Death may occur in severe cases or prolonged recovery with loss of wool

While BTV is usually suspected based on clinical signs, it is confirmed by diagnostic testing. Contact your veterinarian or the Washington Animal Disease Diagnostic Lab (WADDL) for details on testing. If confirmed, BTV is reportable to the State Veterinarian's office for surveillance purposes due to its similarity to Foot and Mouth disease. Sheep showing signs of fever, nasal discharge and lethargy may have pneumonia, especially lambs in the fall when temps are cold at night and warm during the day. It is important to differentiate between pneumonia where antibiotic treatment is indicated and BTV where antibiotics are not needed and it is better to minimize the stress of handling. Often those with BTV will also show lameness

Washington Animal Disease Diagnostic Laboratory: (509) 335-9696, waddl@vetmed.wsu.edu

Treatment

Treatment for BTV is supportive and will depend on the presenting signs:

- **Provide comfortable, low stress, shaded environment for affected sheep, minimize movement and handling**
- **Soft feed and easy access to water to encourage eating and drinking**
- Anti-inflammatory drugs may be indicated for sheep with high fever and severe signs. Contact your veterinarian.
- Oral drench with electrolytes if severe dehydration present
- Unless secondary bacterial infection or pneumonia is suspected, antibiotics are not indicated



PC: Sarah Maki-Smith, 2018

Prevention

Control of midge populations is key to preventing infection and outbreaks. Most important is to minimize standing water in areas sheep are kept as those areas are where midges breed. Peak midge activity is dusk and dawn so keeping sheep indoors or away from marshy areas at those time can reduce risk of infection. Insecticide sprays (0.5% permethrin) can help repel midges but should be applied weekly. Spray should be applied to the belly and legs and back as they are the most common feeding sites. Higher concentration, pour on pyrethrins are more convenient but do not adequately repel midges from the belly and legs. Currently, there is one BTV vaccine licensed for use in the United States. Vaccination is variably effective in prevention of BTV because the predominant serotype can vary by year and geographic region. There is limited cross-protection between the vaccine (BTV-10) and the prevalent strains in the region (BTV-10, 11, 17). If used, vaccination should occur 1 month before the expected occurrence of the disease (mid to late summer). This allows time for immunity to develop. Anestrus (not cycling) in ewes can occur in the 3 weeks following vaccination. Birth defects and abortion can occur if pregnant ewes are vaccinated.

Economic Importance

Infection with BTV can result in losses to individual producers through treatment costs, infertility in rams and ewes as well as reduced production and quality of wool and meat. A severe outbreak can have impacts on local, national and international trade as BTV is a worldwide reportable disease.

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