

## Ovine Progressive Pneumonia

### Background

Ovine Progressive Pneumonia (OPP) is a slow-growing, chronic disease of sheep that affects millions of sheep worldwide. In the United States, prevalence of OPP is estimated to be present within over 36% of all sheep-raising operation.<sup>1</sup> OPP is caused by one of several small ruminant lentiviruses, which belong to the family *Retroviridae*. Similar to retrovirus infections in humans (e.g. HIV), this virus attacks multiple body systems while hiding with the animal's immune system to avoid detection. Once infected, animals remain infected for life. Flocks infected with OPP suffer significant losses to production efficiency due to early culling, reduced milk production, lower conception rates, lameness, and decreased weaning weights.

### What Are Signs of OPP?

Due to the progressive nature of the disease, many sheep affected with OPP show no visible signs of their infection. Furthermore, those that do become visibly affected may not show signs until they are 2 years of age or older. The most commonly seen form of this disease is referred to as "thin ewe syndrome", characterized by a progressive loss of body condition and generalized muscle wasting despite a normal appetite. Additionally, sheep infected with OPP often display increased respiratory effort at rest and may tire easily. These animals are more likely to develop secondary bacterial infections, which result in additional signs such as fever, cough, and nasal discharge.<sup>2</sup> In ewes, OPP infection can lead to a chronic mastitis called "hard bag", where the udder becomes enlarged and firm with decreased production of normal-looking milk.<sup>3</sup>

Less commonly, OPP may attack the nervous system or cause arthritis in the joints of limbs. Clinical signs may include a head tilt, unsteady gait, circling, muscle tremors, hind limb weakness or paralysis, joint swelling, and lameness.<sup>3,4</sup>

### How is OPP spread?

OPP is typically introduced into a flock through the purchase of asymptotically infected

animals. The virus is most often transmitted through contact with respiratory droplets from infected sheep.<sup>5</sup> Additionally, lambs can become infected from OPP-positive dams through consumption of infected colostrum or milk.<sup>6</sup> There is currently no evidence that humans are susceptible to OPP.<sup>3</sup>

### Can OPP be treated?

At this time, there are no effective treatments for OPP, and no vaccines available.<sup>3</sup> While supportive care can be used in individuals, it will not stop the progression of the disease and the animal will continue to decline. Producers can prevent the introduction of OPP into their flocks by maintaining a closed herd or by purchasing animals from OPP-free sources. Animals that test positive should be immediately culled. Alternatively, infected animals could be kept separate from negative-testing animals. If separate flocks are to be maintained, producers should be diligent to not share taggers, needles, or other equipment between positive and negative flocks.

### References

- <sup>1</sup> Cutlip RC, Lehmkuhl HD, Sacks JM, et al. 1992. Seroprevalence of ovine progressive pneumonia virus in sheep in the United States as assessed by analyses of voluntarily submitted samples. *Am J Vet Res*, 53(6):976-979.
- <sup>2</sup> Wolf, Cindy. 2021. "Update on Small Ruminant Lentiviruses." *The veterinary clinics of North America*. 37.1: 199–208.
- <sup>3</sup> Spickler, Anna Rovid. 2015. Small Ruminant Lentiviruses: Maedi-Visna and Caprine Arthritis and Encephalitis. Retrieved from <http://www.cfsph.iastate.edu/DiseaseInfo/factsheets.php>.
- <sup>4</sup> American Association of Small Ruminant Practitioners. 2021. Ovine progressive pneumonia. [aasrp.org](http://www.aasrp.org). Retrieved from <http://www.aasrp.org/resources/OvineProgPneum.pdf>.
- <sup>5</sup> Heaton, M., and K. Leymaster. 2017. "Research on genetic susceptibility to ovine progressive pneumonia at the USDA Meat Animal Research Center (USMARC)." Clay Center, Nebraska.
- <sup>6</sup> Highland, M.A., 2017. Small ruminant lentiviruses: strain variation, viral tropism, and host genetics influence pathogenesis. *Veterinary Pathology*, 54(3), pp.353-354.