



Cattle Producer's Handbook

Animal Health Section

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Infectious Bovine Rhinotracheitis

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Infectious bovine rhinotracheitis (IBR) is a common and widespread herpesvirus of cattle. Respiratory disease and abortion are the most economically significant forms of IBR infection. IBR virus also causes conjunctivitis and mild genital infections. IBR can infect wild ruminants and goats, although disease in these species is uncommon.

IBR virus is characteristic of herpesviruses in its ability to develop persistent infections called latency or latent infections. IBR persistence does not result in continual viral shedding in contrast to persistently bovine viral diarrhea virus (BVDV) infected animals. This virus incorporates its genetic information into nerve cells innervating the infected organs and tissues. The virus becomes inactive in the nerve cells.

With appropriate stress, the virus may be reactivated and cause disease with potential shedding to pen mates. This reactivation also boosts the immune response that then controls the reactivated disease. While reactivation of latent IBR virus may contribute to maintaining an active immunity to the virus, latency is the mechanism whereby the virus can be maintained in the cattle population.

Transmission and Disease Production

IBR is a viral respiratory disease that is transmitted primarily by respiratory secretions to susceptible animals. Characteristic of herpesviruses, IBR transmission requires close contact to effect successful movement from an infected animal to a susceptible recipient. The virus is unstable outside of the infected animal. After invasion and infection of cells of the respiratory tract, the virus is disseminated via the blood stream to many organs within the infected animal, which results in multiple disease conditions in cattle.

Clinical disease caused by IBRV depends on the tissues or organs infected, the dose of infecting virus, and the resistance of the animal. Respiratory infections

are the most common IBRV infection, although clinical disease is usually only clinically evident in feedyard situations. IBRV respiratory disease in mature cattle is routinely asymptomatic. Conjunctivitis and infectious vulvovaginitis may be observed without evidence of a respiratory infection.

Conjunctivitis presents with tearing and squinting. Upon close examination, the whites of the eye(s) may appear reddened and small blood vessels may be seen extending over the surface of the eye. If corneal opacity (cloudiness) is present, it extends from the periphery to the center as opposed to infectious pinkeye in which the cloudiness proceeds from the center to the periphery.

In addition, IBR conjunctivitis causes the underside of the eyelids to have small "pimples" or follicles not seen in pinkeye and more often involves both eyes. IBR virus can often be recovered from cases of infectious pinkeye as well as from "pinkeye" due to injury because the insult/healing processes may reactivate latent IBR; therefore, diagnosis of IBR conjunctivitis or pinkeye is difficult to verify.

Infectious vulvovaginitis (IPV) is a sporadic condition of cattle after a respiratory episode. The virus can infect the vaginal cells via the bloodstream or by direct transmission by licking and transfer of nasal secretions to the vulva/vagina.

IPV may result in the transmission of the virus to bulls during breeding, which results in infectious balanoposthitis (IBP) with subsequent transmission to another female. Both forms appear as small white vesicles or pimples on the surface of the vaginal vault, the vulvar lips, and the surface of the penis and prepuce.

IPV and IBP do not exhibit abnormal discharges. Interestingly, evidence of the virus spreading via the blood stream when transmitted by breeding is lacking as well as association of the IPV and IBP forms being associated with abortions.