

CLIENT EDUCATION HANDOUT

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Failure of Passive Transfer

Overview

Newborn ruminants are born hypogammaglobulinemic due to the nature of their placentation. Although immunocompetent at birth, neonatal ruminants are immunonaïve and dependent on maternally derived immunoglobulin and other factors absorbed from colostrum. Neonates that fail to acquire adequate passive immunity are said to suffer failure of passive transfer. Failure of passive transfer (FPT) is not a disease, but a condition that predisposes animals to contracting infectious diseases. May vary by species, farm, and production system employed on the farm. An association exists between higher IgG levels and lower disease incidence. This association appears to have a greater influence in herds with high disease incidence compared to herds with low disease incidence.

Species and Animal Groups Affected

Neonates of any ruminant species

Signs

Failure of passive transfer is not a disease, but a condition that predisposes to the development of infectious diseases. Affected animals are at increased risk for the development of diseases such as septicemia, enteritis, diarrhea, omphalitis, arthritis, and respiratory disease. Animals with FPT may be clinically normal in a low infection pressure environment

Causes

One of the major causes is failure to provide colostrum in proper amounts at the proper time. Animals that deliver neonates with a shortened gestation period will have poorer quality serum. Both heat stress and particularly cold stress will enhance failure of passive transfer.

Risk Factors

An association exists between higher IgG (or protein) levels and lower disease incidence. This association appears to have a greater influence in herds with high disease incidence compared to herds with low disease incidence. The rate of disease occurrence is obviously a balance between a calf's ability to resist disease and the severity of disease challenging the calf. Serum immunoglobulin concentration is only one factor that contributes to disease resistance other factors that influence disease resistance might include the less-studied non-immunoglobulin components of colostrum (cells, cytokines, etc.). Additional factors to consider in assessing disease risk include general hygiene, pathogen virulence, pathogen concentration, physical environment (e.g., temperature, humidity, wind chill), nutritional status, and miscellaneous stresses (e.g., transportation, handling, surgery).

Treatment

Only first milking colostrum should be fed to the newborn during the first 12 hours of life. Beef calves, kids, lambs, and cria typically will achieve adequate passive transfer if the dam has colostrum and the neonate stands and nurses within the first 2-4 hours.

Management Considerations

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Blackwell's 5-Minute Veterinary Consult: Ruminant 2nd Ed.

Dairy calves should get a minimum of 3 L of good quality colostrum within 6 hours after birth. Do not pool colostrum. Feed colostrum from an individual preselected dam to individual young stock. Minimize disease transfer via colostrum (e.g., Johne's disease, CAE, BLV) by preselecting negative dams. Young stock whose dam produces inadequate colostrum, should be fed colostrum from a preselected donor. Frozen colostrum should be stored from individual donors, identified, and marked prior to freezing. Maintain a bank of frozen, high-quality colostrum for use in emergency situations. Feed young stock within 2 hours of birth and again within 12 hours of birth.

Expected Course and Prognosis

Approximately 70% of animals with FPT will survive, but may have long term production losses when compared to their peers. In animals that become sick, clinical course and prognosis vary and are associated with the underlying disease process. Without aggressive therapy in sick animals, failure of passive transfer warrants a guarded to poor prognosis

Notes

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