

Fecal Shedding In Dairy Calves Early After Experimental Infection with *Mycobacterium Avium* Subsp. *Paratuberculosis*

Rienske A.R. Mortier, Herman W. Barkema, Karin Orsel, Robert Wolf, Jeroen De Buck

Department of Production Animal Health, Faculty of Veterinary Medicine, University of Calgary. 3330 Hospital Dr NW Calgary AB T2N 4N1.

Email: rarmorti@ucalgary.ca

Johne's disease (JD) is caused by *Mycobacterium avium* subsp. *paratuberculosis* (MAP) and is a chronic wasting disease, responsible for severe production losses in the dairy industry. Farmers try to interrupt the within-herd transmission of MAP by implementing best hygiene management practices. However, the potential risk of calf-to-calf transmission is overlooked in current control programs.

In an infection trial to determine the age and dose susceptibility to MAP infection, shedding of MAP was also observed. Fifty Holstein-Friesian calves were experimentally infected at 5 different ages (14 days, 3, 6, 9 & 12 months), and in each age group 5 calves were infected with a low and 5 with a high dose of MAP. All calves were euthanized at 17 months of age to determine the infection status.

Sixty-one percent of calves shed MAP in the feces at least once during the follow-up period. Shedding occurred in calves in all age and dose groups. Calves inoculated with a high dose of MAP shed more frequently compared to calves inoculated with a low dose. Four calves in the 2-week and 3-month high dose group shed at every sampling and in all other cases shedding was intermittent.

Shedding occurred most frequently in young calves within 6 months after inoculation. Even calves inoculated at 9 and 12 months of age were capable of spreading MAP shortly after inoculation, and therefore prevention of infection of only newborn calves will not suffice to reduce the occurrence of MAP infection on a dairy farm. Our findings show that shedding of MAP shortly after infection is more common than previously recognized and should be addressed in order to control JD on farms.

Implications: Calves inoculated up to one year of age with MAP can shed MAP in their feces and thus can infect pen mates when kept in groups.