

Social networks in dairy cattle: potential implications for the transmission of *Leptospira* spp.

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This study aims to analyse the contact structure of dairy cattle that may lead to transmission of *Leptospira* spp., a bacterium responsible of a worldwide zoonosis of high prevalence in cattle herds. For that purpose, we examined the social networks of a group of dairy cows (n=100) and calves (n=33), in a pasture-based system. We focused on three contact behaviours that may lead to transmission of *Leptospira* spp.: sniffing, licking and rubbing face on the genital area of another animal. Direct observations were conducted during four weeks, four hours per day and three days per week. Behaviour sampling method with all-occurrences recording was used to register these behaviours. We created the networks and used exponential random graph models to model the probability of contact between cows based on their calving number, age and reproductive status, and between calves based on their sex and age. Cows were less likely to interact with cows of different calving number, than with cows of similar calving number (OR=0.8). Individuals that were in heat during the observation period were involved in significantly more interactions than individuals that were gestating (OR=1.5). It was more likely for a cow to interact with a cow that had already sniffed/licked/rub her (OR=4.2), than with cows that didn't interact previously with her. Cows that had calved 4 or less times, were less likely to perform the behaviours than cows with higher parity (OR=0.8). Male calves were more frequently the ones initiating the interaction (OR=7.8), and less frequently the receptors of the interaction (OR=0.4). Calves were less likely to interact with calves of different age, than with calves of similar age (OR=0.9). Structural attributes were also key to capture the clustering of the network providing an overall better fit. More detail of the analysis and results will be presented at the congress.