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Session: Zoonoses and Infections in Animals

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Survey of brucellosis in sheep and goats in North Senatorial District of Kaduna State, NigeriaB.Y. Kaltungo^{1,*}, H.M. Kazeem², S.N.A. Saidu³, A.K. Sackey³¹ Ahmadu Bello University, Zaria, Nigeria, Zaria, Nigeria² Ahmadu Bello University, Zaria, Zaria, NG, Nigeria³ Ahmadu Bello University, Zaria, Zaria, Nigeria

Background: Most brucellosis related studies in Nigeria are conducted in cattle populations. Brucellosis in small ruminants may be of greater public health concern in view of the *Brucella* species involved.

Methods & Materials: Diagnostic surveillance and herdsmen knowledge, attitudes and practices (KAP) were investigated to generate a base-line data on brucellosis status in sheep and goats in Kaduna North Senatorial District of Kaduna State, Nigeria. Four Local Government Areas (LGAs) were randomly selected; blood and milk samples were collected between April and May, 2012. A total of 1021 (579 sheep, 442 goats) were used for the study. Rose Bengal Plate Test (RBPT), Serum Agglutination Test with ethylene diaminetetraacetic acid (SAT-EDTA), Lateral Flow Assay (LFA) and Milk Ring Test (MRT) were employed.

Results: The overall seroprevalence rates obtained for sheep and goats were 26%, 11% and 3% using RBPT, SAT-EDTA and LFA respectively; indicating highest sensitivity and specificity with RBPT and LFA respectively. There was statistically significant difference between the tests ($P < 0.005$). Milk from lactating sheep (72) and goats (122) were similarly subjected to MRT which yielded seropositivity of 18.1% and 26.2% for sheep and goats respectively. There was no statistical significant difference between the species with respect to MRT ($P < 0.05$). Respondents' KAP regarding brucellosis were evaluated using 70 structured questionnaires. Forty one (59%) of the respondents had some knowledge of bovine brucellosis, but lacked knowledge of the disease in small ruminants. Only 7 (10%) of the respondents recognised brucellosis as a zoonosis, but knew little of its signs in humans. Most of the respondents (74%) practiced extensive system of management. The study further revealed high level (44.5%) of exchange of breeding sires. Also, 57 (81%) of respondents experienced abortions in their flocks with 39 (68%) occurring in third trimester.

Conclusion: The presence of *Brucella* antibodies in the studied animals is alarming in view of its public health significance, the socio-economic importance of these animals along with the fact that pastoralists keep multi species of animals in their holdings. There is therefore the need for a holistic and detailed study on brucellosis to determine its general status, thus enabling government introduce necessary control measures in Nigeria.

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Spatio-temporal patterns of epizootic hemorrhagic disease (EHD) occurrence in the continental USA (1980-2010)K. Berger^{1,*}, A. Massolo¹, A. Zuliani¹, J. Freier², K.J. Linthicum³, S. Cork¹¹ University of Calgary, Faculty of Veterinary Medicine, Calgary, AB, Canada² USDA-APHIS Veterinary Services, Fort Collins, CO, USA³ USDA, Gainesville, FL, USA

Background: Epizootic Hemorrhagic Disease (EHD) is a *Culicoides* insect-borne viral disease of wild and domestic ruminants commonly reported in the USA. While the severity of disease varies by geographic location, mortality rates can be as high as 90% in immunologically naïve white-tailed deer populations. To better understand the current distribution and the potential of incursion to southwestern Canada, we examined the spatio-temporal movement of EHD by quantifying disease foci over a period of thirty years (1981-2010).

Methods & Materials: International collaboration with the USDA provided definitive EHD event data for the continental USA. The dataset consists of georeferenced virus isolations available at the county level by collection date. To quantify spatio-temporal patterns of the disease, a retrospective space-time permutation model (SaTScan™) was implemented. Simulations were performed with 999 Monte Carlo replications to test for significance under a variety of maximum spatial cluster sizes based on percent population at risk (1, 5, 7, and 10%). Representation of results was performed using geographic information (GIS) software.

Results: Results of the space-time permutation model revealed significant clusters of EHD across a diagonal band spanning from the southeastern USA, northwest towards the Upper Great Plains. The most likely significant cluster was centered in Iowa, with a total of 22 positive counties involved between September and October of 1998. This remained the single most consistent significant cluster throughout all model simulations. Multiple EHD foci were also identified corresponding to the widespread outbreaks of both 2002 and 2007. Clusters identified were generally stable throughout all simulations. Overlapping clusters were observed over multiple years, suggesting that further investigation of these clusters could provide a better understanding of the ecological factors responsible for the spatio-temporal clustering and variability of EHD.

Conclusion: Improved knowledge of the spatio-temporal distribution of EHD is critical to classifying areas of greater disease transmission risk and assisting regulatory authorities in the development of targeted disease surveillance strategies. Results of this study can be used to identify environmental factors associated with disease foci and in the development of an ecologically-based risk model that could be adapted and implemented to other vector-borne diseases of global concern.

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