

A technology transfer project of epidemiologic modelling capabilities in South America: the North American Animal Disease Spread Model

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Infectious disease modelling is playing an important role in supporting the development of response strategies to highly contagious diseases such as foot-and-mouth disease (FMD), avian influenza and classical swine fever. The North American Animal Disease Spread Model (NAADSM; Harvey et al., 2007) is a model framework to be used to assess the potential consequences of animal disease incursions and to evaluate the impact of various control measures to halt the spread of such incursions. It is a free tool available on the web at: www.naadsm.org. Although developed in North America, this model framework can be adaptable to any geographical area and population data.

The development of such large complex simulation model requires serious investments in terms of human resources and expertise. Such resources are not always available in countries that might benefit from the use of a tool like the NAADSM. As a result, modelling groups may be asked to adapt their models for use in countries with potential different animal husbandry systems and epidemiological disease status. This represents an opportunity for modellers to assess the ability of their models using different population structures and to test assumptions used in simulating the spread of highly contagious diseases in areas where the experience in dealing with these diseases exists.

This presentation describes a current technology transfer project funded by Foreign Affairs and International Trade Canada and administered by the Canadian Food Inspection Agency to support Foot-and-Mouth Disease (FMD) preparedness in South America. Through partnership with the Pan-American Centre for Foot-and-Mouth Disease (Panaftosa), training on the use of the NAADSM was provided to epidemiologists from various countries in South America. This provided an opportunity for assumptions used in NAADSM to be discussed by experts in the field of FMD epidemiology. As a result, recommendations were made in order to improve NAADSM's ability to represent the spread of FMD within and between herds, including dynamic of the herd immunity and surveillance activities, regardless of the population.

Epidemiologists from Chile and Brazil were selected to apply NAADSM in their countries as part of pilot studies. At the same time, the NAADSM development team, which includes members from the Centres for Epidemiology and Animal Health in Fort Collins, Colorado (CEAH), Colorado State University, the University of Guelph, the Ontario Ministry of Agriculture, Food and Rural Affairs and the CFIA would be working on the subsequent version of NAADSM including the recommendations made at the training session. By creating the NAADSM expertise in the region, simulation exercises can be developed to reduce the risk of FMD in SA and globally. On the other hand, the use of this tool worldwide will ensure its constant improvement through the establishment of a large user community.

Harvey, N., Reeves A., Schoenbaum M.A., Zagmutt-Vergara, F.J., Dubé, C., Hill, A.E., Corso, B.A., McNab, W.B., Cartwright, C.I., Salman, M.D., 2007. The North American Animal Disease Spread Model: A simulation model to assist decision making in evaluating animal disease incursions. *Prev. Vet. Med.* 82, 176-197.