Real time foot and mouth disease training in Nepal

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Foot and Mouth Disease (FMD) is one of the most significant animal disease threats to the New Zealand Livestock industry and recent Ministry of Primary Industry (MPI) estimations put losses attributable to an outbreak in the vicinity of $5.8 billion for a small outbreak (one infected property) to more than $14.5 billion for a large outbreak (Forbes and van Halderon 2014). FMD then would have a major economic, environmental and psychological impact upon New Zealand and should not be underestimated. One can only ponder upon the public outrage and condemnation of mass burning of carcasses as happened in the 2001 UK outbreak. While FMD is largely free in the Western world it is largely endemic throughout Asia. Modern eco tourism in these countries must pose a real threat to our borders with returning citizens of New Zealand.

Early detection in stamping out any outbreak of FMD is critical yet most New Zealand veterinarians have little first-hand experience with the disease. So in early June 2014 a contingent from New Zealand comprising a mix of private veterinarians, MPI Veterinarians and Industry representatives from Beef & Lamb NZ and DairyNZ undertook a week long course on FMD in Nepal. The selection process ensured that a wide geographical spread around New Zealand was achieved to spread the knowledge attained far and wide upon course completion.

The course is set up and run by the United Nations Food and Agriculture Organisation’s European Commission for the Control of FMD (EUFMD) with our Australian counterparts participating since 2012. New Zealand is to send a second contingent in May 2015. The course had two main aims; to provide training to veterinarians facing a real time outbreak of the disease and to offer solutions to Nepal to help them combat the disease and hopefully ultimately eradicate the disease. FMD is endemic in Nepal and a non-notifiable disease. It is present in almost all parts of the country and occurs round the year. On average between 2001 and 2010 more than 873 outbreaks per year have been reported (EUFMD stats).
Upon acceptance into the course the participants had to complete an online EUFMD training course before heading to Nepal. This gave all a chance to talk to each other online, make introductions and most importantly, refresh knowledge on FMD. A lot of time was spent on lesion description and being able to age lesions and in understanding the epidemiology of the disease.

After arriving in Kathmandu and getting settled in with some obligatory sightseeing the course began in earnest. Day one consisted of classroom work in which we were introduced to the Nepal situation and spent more time on lesion description and being able to age lesions. FMD lesions can be aged very accurately for the first five days of an outbreak (+ or – one day) which is critical in an outbreak investigation so that timelines of infection can be established for accurate follow up of tracings and potential contacts. Generally cattle will have quite remarkable lesions and are described as indicator host while sheep and goats may exhibit small or subtle lesions or lameness and are described as the maintenance host. Pigs when infected tend to shed a great deal of virus so are referred to as an amplifier host. In addition to these species we were to also include buffalo of which no-one had any great experience. A refresher course was given in setting up a quarantine site outside a farm and subsequent disinfection upon leaving a farm.

While we had been site seeing and in the classroom the European epidemiology team had been scouring the country side for a current outbreak. We were much relieved to be informed that they had found one in a remote hillside village some 64km West of Kathmandu. Preparations were made for the visit the next day and we were split into four teams of four to six, consisting of a clinical group and an epidemiological group (one to examine and one to record).

The mere 64km was an adventure in itself as we wound our way out of Kathmandu into the surrounding countryside. The trip took approximately three hours with some innovating driving skills displayed by our Nepalese hosts! It was hot (35 degrees plus) but not nearly as hot as it was with our outbreak investigation suits on!

The village of Gajuri consisted of approximate eight houses with a mixture of 1–2 buffalo, the odd cow and calf and a handful of goats. Four of the properties in close contact had reported FMD type lesions and four of the properties had not noted any evidence of disease. The plan then was to inspect the animals of the four possibly clear properties and take relevant samples and then move on to the four infected properties and examine and sample their animals. Facilities were rudimentary to what we were used to and an interpreter was required at all times. Animals all tended to be living in close quarters in pens under or next to houses and also shared common grazing which all helps the virus to spread.

No lesions were seen in the first properties examined but animals in the second batch of houses were displaying a range of clinical signs from salivation and depression to fresh vesicles and ruptured and healing vesicles. A number of samples were taken from animals of all properties but only a handful proved meaningful. A clear lesson was had by all of the difficulties and importance of collecting accurately labelled samples in stressful and trying conditions (heat exhaustion mainly).
Table 1. Clinical findings and lab results

Never the less a clear pattern of spread was established within the village and it became apparent that the index case was a goat which had been grazed on pasture shared with a neighbouring village which had experienced an outbreak of FMD a few weeks earlier.

Back to the classroom to learn our mistakes of the previous day which included poor decontamination technique and poor labelling of samples. More practice was required in the hotel gardens. Also, preparation was required for the second field trip which involved a transect survey of a village which had experienced an outbreak a few months previously. We were to put our epidemiology skills to the test by mapping the spread of the disease in space and time and developing a questionnaire to identify risk factors for the spread of the disease amongst villages and quantifying the economic impact of FMD to the farmers. This was a fantastic opportunity to really find out the friendly nature of the Nepalese families who were only too happy to sit down and talk to complete strangers (via an interpreter.) It rated as one of the many highlights of the trip.
Our findings from both field trips along with recommendations for areas of study and control were presented by the group to representatives from the department of Livestock Services on the final day. It is pleasing to report that some of our recommendations were followed up on and in particular some of the extension ideas presented from the extension team members.

Since coming home team members have been very busy with ‘cascade training’. That is, sharing the knowledge and experiences gained throughout the country via various media outlets. The latest count of the log of training is approximately sixty presentations ranging from newspaper articles to conference presentations, radio interviews, presentations to peers and other interested groups. The message on FMD and the importance of being non complacent is an extremely important one. One that our colleagues going to Nepal this year will most certainly pick up on and continue to run with.

Of course, keep the hotline number close at hand for any suspect exotic disease – 0800 80 99 66

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References