MOTIVES OF LIVESTOCK FARMERS AND HOBBY HOLDERS TO VACCINATE AGAINST BLUETONGUE VIRUS SEROTYPE 8 DURING A VOLUNTARY VACCINATION CAMPAIGN IN 2008 AND 2009 IN THE NETHERLANDS

Armin Elbers1, Aline de Koeijer1, Francesca Scolamacchia2, Piet van Rijn1

1Virology, Central Veterinary Institute of Wageningen UR, Lelystad, 2Farm Animal Health, Fac. of Vet. Med., University of Utrecht, Utrecht, The Netherlands

Introduction: Bluetongue (BT) is an arthropod-borne viral non-contagious disease of domestic and wild ruminants, affecting sheep in particular with severe clinical disease, including mortality. A major epidemic of BT virus serotype 8 (BTV-8) was diagnosed in Western Europe in August 2006, affecting The Netherlands, Belgium, Germany, Luxembourg and the North of France. During 2007 it became evident that BTV-8 had survived the winter in Western Europe and a re-emerging epidemic quickly developed within the originally affected countries, affecting approximately 40,000 locations with ruminants. In addition, BTV-8 was introduced into the United Kingdom, Denmark, Switzerland and the Czech Republic. As a response, the EU Commission recommended vaccination as the most efficient veterinary measure that may be used to fight BT. The veterinary pharmaceutical industry made a great effort by developing an inactivated vaccine against BTV-8 in a very short time period. A marketing authorization for a veterinary vaccine is granted after the quality, safety and efficacy of the product have been assessed in accordance with legal standards. Even when using an accelerated assessment procedure it can still take some time before authorization is granted. In this case of an emergency situation, EU Member States were authorized to use vaccines without a marketing authorization. A vaccination campaign started in the Spring of 2008 in the affected countries. In the Netherlands this was done on a voluntary basis, with financial support from the EU.

Material and methods: At the start of the new voluntary vaccination campaign in 2009 (without financial support), we investigated the motives of livestock farmers and hobby holders to vaccinate by a postal survey, which was sent to a random sample of 1,660 sheep farmers, 1,925 cattle farmers and to all 320 Dutch dairy goat farmers. Since there was not a sampling frame of hobby holders available, we developed an electronic survey, which was posted on 3 websites of hobby holder societies. In the survey, the following questions were asked:

a) number of ruminants present by species;
b) province in which the ruminants were located;
c) if clinical disease problems possibly caused by BT were encountered in the past 3 years, and if yes, in what year and by what diagnostic method they were confirmed;
d) if ruminants were vaccinated in 2008, and the reasons to vaccinate or not to vaccinate in 2008;
e) if ruminants were vaccinated in 2009 or if there was an intention to vaccinate them in 2009 and the reasons to vaccinate or not vaccinate in 2009;
f) if the farmer was not going to have his ruminants vaccinated in 2009 or if the farmer hesitated to have them vaccinated in 2009, what measures or incentives would stimulate the farmer to have his ruminants vaccinated in 2009;
g) would the farmer consider vaccination against other BT serotypes in the future, when such a vaccine would be available;
h) under what conditions would the farmer consider vaccination against other BT serotypes;
i) if the farmer did not want to vaccinate his ruminants against other BT serotypes in the future, what were the reasons for that.

Results: Response rates were: 585 (35%) sheep farms, 717 (37%) cattle farms, 42 (13%) goat farms and 431 hobby holdings. Mean vaccine uptake in 2008 was: 73% sheep farms, 71% cattle farms, 43% goat farms and 67% hobby holdings. Top-5 motives to have their animals vaccinated against BTV-8 in 2008 and 2009 were: prevention of disease and/or production loss, a subsidized vaccination campaign, recommendation by the veterinary practitioner, welfare reasons and making a contribution to the eradication campaign. For 2009, good experience with the BTV-8 vaccination campaign replaced a subsidized vaccination campaign as an important motive. Top-5 motives for not having their animals vaccinated against BTV-8 in 2008 and 2009 were: no BT-related clinical problems, expectation that the level of disease and/or production loss would be low, estimation that the risk of infection was low, costs of vaccination were too high and balance between costs of vaccination against possible loss without vaccination. Willingness to vaccinate was significantly lower in 2009 compared to 2008: 42% sheep farms, 58% cattle farms, 19% goat farms and 49% hobby holdings. Top-5 measures and incentives to stimulate vaccination among farmers and hobby holders that did not want to vaccinate in 2009 were: lower costs of vaccination, possibility for the farmer to vaccinate his own animals, more information on efficacy/safety of vaccine, more information why the animals had to be vaccinated (again) and availability of a BT vaccine combined with vaccine(s) against other diseases (one-shot). A total of 54% of sheep farms, 52% of dairy farms and 31% of goat farms and 47% of hobby holdings indicated to be willing to have their ruminants vaccinated against other BT serotypes (e.g. BT serotype 1 which has spread in France from the South to the North) in the future if vaccines against these serotypes were made available. However, for most farmers and hobby holders, their willingness remained strongly conditional, top-5 conditions being: vaccination should be subsidized, more information on efficacy/safety of vaccine, more information on why the animals had to be vaccinated, availability of a BT vaccine against several different serotypes and possibility for the farmer to vaccinate his own animals.
Discussion: Implications: The present study obtained an accurate estimate of vaccine uptake by commercial livestock farmers and hobby holders in 2008 and 2009. It was expected that vaccine uptake in dairy goat would be lower compared to the other animal species because goats show much less clinical signs after infection than sheep and cattle. Willingness to vaccinate was significantly lower in 2009 compared to 2008. The decrease in willingness to vaccinate against BTV-8 in 2009 compared to 2008 was strongest in sheep farmers and goat farmers compared to dairy farmers and hobby holders. The most important reason for this is that vaccination was no longer subsidized in 2009, but also a considerable proportion of farmers indicated not to have encountered serious BT-related clinical problems in 2008. One can speculate about the consequences of a decreasing vaccine uptake in the Netherlands for the future. As a number of important aspects of the transmission process are not fully known, predictions are likely to be of limited accuracy. Amongst others, the length of time during which the vaccine will protect the animals is likely to have a major influence on the evolution of the situation. Vaccine manufacturers have claimed, based on their registration dossier, a period of clinical protection of at least one year. Another factor of great importance is the proportion of ruminants which were infected in 2006, 2007 and/or 2008 and have acquired a protective immunity. Because a considerable part of the population is protected via natural infection and vaccination, some of the susceptible animals could be protected by herd immunity. Assuming lifelong protection in naturally infected and vaccinated animals, new infections will only spread among newborns, while only a small proportion of the older animals will be infected. Therefore, within-herd level of new infections should be limited, especially in cattle herds. Within the sheep population, newborn lambs only play a limited role in transmission because a large proportion of lambs are shipped off to the slaughterhouse before the start of the vector active season. It is recommended to vaccinate newborns that will be used as replacement and breeding stock in order to prevent virus circulation, fertility problems and welfare problems. When the decrease in willingness to vaccinate will be structural in the coming years, more and more older animals with a protective immunity will leave the farm and the susceptible population will increase again.

Limitations: Our survey response rate of sheep (35%) and dairy farmers (37%) was quite satisfactory taking into account the use of a mail questionnaire survey. Furthermore, the response of hobby holders by the internet-based survey was up to expectation. Indeed it is not unusual to have a response rate of about 20% when asking the opinion of farmers using mail surveys, which is why this estimate was used to calculate sample size prior to the study. We used approved strategies to increase the response rate like a short survey, freepost return envelope, user-friendly survey, promise to have access to the final report of the investigation via a website and an explanation for not participating was requested. The response rate of goat farmers (13%) was somewhat disappointing. We made additional efforts, specifically concerning the goat farmers, to increase the response rate by sending an additional request for response and finally developed an electronic questionnaire also for the dairy goat farmers. However, no extra goat farmers responded because our intermediate, the Quality Assurance Association of Dairy Goat Farmers, was out of touch. However, we have to bear in mind that we surveyed the total target population of dairy goat farmers instead of taking a sample, thus a response rate of 13% is acceptable.

Acknowledgements: We thank all livestock farmers and hobby holders that responded to our survey. We thank the Dutch Quality Assurance Association of Dairy Goat Farmers (VKGN) for sending our survey to their members. We thank Hobby Holder Association "Levende Have", Hobby Holder Association "Nederlandse Belangenvereniging voor Hobbydierhouders" and Hobby Holder Association "Platform voor de kleinschalige Schapen- en Geitenhouders" for having our electronic questionnaire posted on their websites for several weeks.

Key words: bluetongue virus serotype 8, bluetongue vaccine, vaccination campaign.

References:


