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AEEMA MEETING - JUNE 1ST, 2012 - COMMUNICATIONS

Paratuberculosis control program in North western Italy (Piedmont region) involving producers association

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Paratuberculosis (PTB) is a debilitating, infectious, costly disease which is taking an increasing importance in Italian dairy herds. In the Piedmont Region, the seroprevalence of PTB was estimated at about 21.75%. On the basis of these results, a voluntary control program involving producers' association was developed. The objectives of the program were: 1) sensitizing producers to PTB; 2) providing diagnostic tools to the farmers involved in the control program 3) gradually reducing the overall prevalence in the area and in participating herds. Program design: Step 1) Information; Step 2) Screening; Step 3) Monitoring; Step 4) Biosecurity.

Multidisciplinary and evidence-based method for prioritizing diseases of food-producing animals and zoonoses

Marie-France Humblet, S. Vandeputte, A. Albert, Christiane Gosset, Nathalie Kirschvink, E. Haubruge, Fabienne Fecher-Bourgeois, P-P Pastoret & C. Saegerman

The prioritization process developed in the present work is based on a multi-criteria decision-making relying on expert opinions and evidence-based data. One hundred animal diseases and zoonoses were included in the process and 5 categories of 57 criteria were considered. International experts performed an intra- and an inter-category weighting of the prioritization criteria. Information corresponding to each criterion/disease was collected through evidence-based medicine. An overall weighted score was calculated for each disease on the basis of two approaches, deterministic and probabilistic. A ranking of diseases was established as a result. A classification and regression tree analysis allowed the classification of diseases into 4 subgroups. Few differences were observed between the deterministic and the probabilistic methods. This generic and predictive tool could be applied in different contexts and to diseases affecting other animal species.

Challenges related to disease surveillance in marine shellfish in France

Coralie Lupo, C. Francois, Isabelle Arzul, Céline Garcia, J-P Joly & T. Renault

The basic concepts and objectives of animal disease surveillance are common to all types of animal production. Yet, the procedures for implementation have been mostly developed for terrestrial animal productions. Disease surveillance in marine shellfish calls for specific measures in view of the peculiarities of marine biology and rearing techniques. The main objective of disease surveillance in marine shellfish is to detect as early as possible exotic and newly emerging diseases. With this objective in mind, a national surveillance network for surveillance of mollusc diseases called Repamo has been developed. It combines passive reporting and risk-based surveillance.

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Bovine tuberculosis in the badger (*Meles meles)* in France

Ariane Payne, Maria-Laura Boschiroli, E. Gueneau, J-L Moyen, T Rambaud, Barbara Dufour, Emmanuelle Gilot-Fromont & J. Hars

Seine-Maritime, Côte-d'Or and Dordogne/Charente are areas of high prevalence of bovine tuberculosis (bTB) in cattle or wildlife. In these areas, surveys have been carried out to monitor the presence of bTB in badgers, a species considered as a bTB maintenance host in British Islands. *Post-mortem* examination of 1599 trapped badgers revealed a frequency of visible lesions higher in Dordogne/Charente (14/283, 4.9%) than in Côte-d'Or (19/1146, 1.7%) and Seine-Maritime (2/160, 1.25%). In Seine-Maritime, *M. bovis* was isolated by culture in one badger out of 103. In sampling areas around infected cattle farms, 29/218 (13.3%) badgers were found positive by PCR in Dordogne/Charente, 45/878 (5.1%) by PCR and 49/878 (5.6%) by culture in Côte-d'Or. All *M. bovis* strains isolated from badgers were of the same genotype as those isolated from cattle in the vicinity. These results identify badgers as a wild-living host for *M. bovis*, its precise epidemiological role remains to be determined.

Estimations of badgers (*Meles meles*) densities in Dordogne in 2011 in connection with the epizootic disease of bovine tuberculosis

E. Reveillaud, Sandrine Ruette & J. Hars

Since 2004, an increase in the incidence of bovine tuberculosis in cattle herds fin Dordogne was recorded. Even though it is well known that tuberculosis cases observed in wildlife are initially of bovine origin, wildlife may eventually contribute to the persistence of the disease in a given area. An epidemiological survey on wildlife, conducted in 2010 - 2011 (n=199 analysed badgers) led to the discovery of 10 infected badgers in the area, where bovine tuberculosis had been found. Also, a roe deer and four wild boars were found to be infected. It appears from the literature that bovine tuberculosis occurs in cycles and that the density of vulnerable wild species represents a major risk factor in the development of perennial epidemiological cycles of bovine tuberculosis. The objective of this study was to evaluate the density of badgers in two areas, of about 100 km2 each, within the infected area in the north of Dordogne. These areas were investigated in a search to locate badger setts from transects spread out, based on a systematic sampling of 50 points per area. The densities of the main occupied setts (MS) were found to be 0.50 MS/km2 in area N°1 and 0.73 MS/km2 in area N°2. The average number of badgers per sett was evaluated by using photo trapping cameras installed at the access to ten main badger setts in area N°1 and of fifteen setts in area N°2. The size of the badger groups presents in these setts varied from 0 to 5 badgers. From these estimations, we computed densities of 0.85 badger/km2 in area N°1 and of 1.17 badgers/km2 in area N°2 These densities are in accord with figures generally found in continental Europe, but are significantly lower than those found in Great-Britain which may account for differences from country to country in the epidemiological role of the species. The differences in protocol design between investigations carried out in France and in Great Britain, as well as various biases, should be taken into consideration when comparing the results.

Use of clinical indicators of Q fever (*Coxiella burnetii*) exposure in dairy herds as an example of syndromic surveillance

C. Saegerman, N. Speybroeck, Fabiana Dal Pozzo & G. Czaplicki

Q fever is a zoonosis occurring worldwide in livestock. Although it is often ignored in differential diagnosis, Q fever can persist in herds of ruminants and generate major financial

losses in the long run. Well-known pleomorphic manifestations of Q fever include abortions, stillbirths, delivery of weak offspring and premature delivery. In cattle, Q fever is frequently asymptomatic and/or under-reported. Syndromic surveillance of cattle herds using health related data (clinical signs or other) is frequently cited because it may precede or replace formal diagnosis using laboratory complementary analysis. Resorting to new methodologies in the epidemiological surveillance, gives a chance to identify early indicators of *Coxiella burnetii* exposure. A random cross-sectional survey was conducted to estimate the seroprevalence of Q fever in southern Belgium by means of an ELISA test on bulk tank milk (n = 206 herds). Herds giving a positive result were regarded as herds potentially exposed to the risk. At the same time a questionnaire was sent out separately allowing the investigation of presumptive clinical signs over the previous twelve months in prime- and multiparous cows. A multivariate logistic regression analysis was used to identify irregular repeated matings and stillbirths or weak calves as risk factors in first primi- and multiparous cows respectively. In addition, a boostrapped quantile regression revealed that the average score of putative clinical signs related to Q fever was significantly higher than other factors in both sub-groups. A classification and regression tree analysis confirmed the importance of an average clinical score as the main splitter and additionally infertility as second splitter, irrespective of the sub-group. The use of more advanced epidemiological methods permits to propose syndromic surveillance as a tool permitting the early identification of dairy herds exposed to Q fever. Syndromic surveillance permits the focusing of complementary investigations in dairy herds presenting altered clinical indicators.

Presence of *Listeria monocytogenes* in raw milk for human consumption

Daniela Manila Bianchi, A. Barbaro, Silvia Gallina, Nicoletta Vitale, Maria Caramelli, Laura Chiavacci, Paola Musicanti & Lucia Decastelli

Listeria monocytogenes is an important cause of zoonosis (listeriosis) and is responsible for food- related illness ranging from gastroenteritis to meningitis. Listeriosis is transmitted to humans through contaminated foods, such as raw milk. In Italy most of the milk consumed daily is heat treated, however since in 2007, the Ministry of Health authorized automatic vending machines delivering unpacked raw cow milk, the consumption of liquid raw milk increased. To date, there are 1032 dairy herds allowed to supply raw milk to vending machines (Integrated National Annual Report of the Italian Ministry of Health), 112 of them (about 10%) are registered in the Piedmont Region. In this study, the presence of *Listeria monocytogenes* in raw milk from bulk tanks in farms and from raw milk vending machines in North Western Italy (Piedmont Region) was investigated. Between July 2010 and July 2011, 407 samples of raw milk were collected from 112 vending machines or from the 93 farms supplying vending machines and were analysed. *Listeria monocytogenes* was isolated from 7 out of 407 milk specimens (1.72%; CI95%:0.7%-3.5%): 3/93 were isolated from farms (3.23%; CI95%: 0.7%- 9.1%) and 4/112 from vending machines (3.6%; CI95%: 0.9%-8.9%). The serotypes most frequently isolated were 1/2a and 4b/4e. These results outline the importance of the advice « to be boiled before drinking » that Italian Ministry of Health made compulsory on the vending machines to inform consumers. Heat treatment of raw milk still remains the most effective tool to reduce the risk of listeriosis and other food-borne illness.

***Trichinella spp.* in wild and domestic animals In the Turin province, Italy**

Silvia Gallina, Daniela Manila Bianchi, A. Bellio, F. Pulitano, F. Zuccon & Lucia Decastelli

Pork, horse and game meat may be infected with muscle larvae of the zoonotic nematode Trichinella, which may cause a severe disease in humans. This paper reports on analyses performed during the year 2011 by Laboratorio Controllo Alimenti (Food Control Laboratory) of Istituto Zooprofilattico Sperimentale Piemonte, Liguria e Valle d'Aosta in Turin (Piedmont - Italy) for the detection of *Trichinella spp.* larvae in muscular tissues. A total of 13.533 samples (12.050 samples from domestically slaughtered animals; 1.183 samples from game meat; 300 samples from wild reservoir animals) were analysed according to the methods described in Commission Regulation (EC) No 2075/2005. Four samples from wild animals (foxes) were found to be positive for *Trichinella spp.* No samples from domestically slaughtered animals were found to be contaminated by *Trichinella spp,* confirming that the herd system effectively prevents contact between wild and domestic animals and thus protects herds from the infection.

Control of the rabies risk of operations

H. Haskouri, K. Chabaa, M. Amine Bensebaa, H. El Rhaffouli, H. Qadda, R. Boukhris, M. El Allouchi & L. Fathallah

Rabies is an infectious, disease, usually inoculated by a bite. It is a major zoonosis, eventually leading to death in all cases where clinical signs are observed. As part of their operations, the Royal M Armed Forces of Morocco intervene in countries where rabies is enzootic. Consequently, the health services play a role in protecting military personnel as well as animals, by implementing procedures to control the risk of rabies. This control is materialized by the enactment of preventive measures designed to protect military personnel against rabies and to react optimally in case of accidental exposure to the disease.

Molecular epidemiology for BTV8 topotypes in North-Western Italy

Maria Cristina Radaelli, A. Romano, Nicoletta Vitale, Laura Chiavacci & Mariella Goria

Bluetongue (BT) is an infectious non contagious vector-borne disease of ruminants transmitted by Culicoides biting midges. It is caused by Bluetongue virus (BTV), a double-stranded RNA virus member of the Orbivirus genus within Reoviridae family. The replication of the virus is characterized by a high mutation' rates during sequential passage of BTV between hosts (insect and ruminant). This peculiarity contributes to the diversification and independent evolution of BTV by way of variations in genomic segments linked in this way with the geographic origin of the virus strains (topotypes). In order to identify specific topotypes involved in the 2008 BTV-8 outbreaks occurring in North-Western Italy (Piedmont region), phylogenetic analyses based on nucleotide sequences of genomic segments were carried out.

AEEMA MEETING, MAY 31st, 2012 - SYNDROMIC SURVEILLANCE

Which approach to choose for syndromic surveillance?

L. Josseran

Syndromic surveillance appeared in the field of sanitary surveillance in the late 90s.It was proposed initially for identification of bioterrorism attacks, but it gradually appeared as

potentially beneficial in a much larger area. The currently accepted definition is that given by the CDC in Atlanta. Syndromic surveillance is defined as based on automation of recording and transfer of data for professional use. A number of systems that were developed initially did not survive. Those that are still in use are those integrated in a public health approach through large scale surveillance and with a significant implication of official organizations in sanitary surveillance. Syndromic surveillance offers a number of benefits such as access to data in real time, the non-requirement for a specific workload in the capture of data, and the building of historical data bases that may be used later as references. But one should keep in mind its limitations - somewhat limited sensitivity and specificity, cumbersome technical constraints); Experience accumulated to date shows that syndromic surveillance should not be opposed to conventional surveillance. Indeed, they should be regarded as complementary he time element should be considered in the use of syndromic surveillance: short term for alerts, mid-term for creating historical references, and long term for building historical reference data bases to generate a status report on the health of the population in the early 21st century.

Typology of syndromic surveillance systems

P. Hendrikx, J-B. Perrin, Céline Dupuy, D. Calavas & Barbara Dufour

Syndromic surveillance is a concept developed over the past ten years. A number of initiatives were taken in the field of animal health but the diversity in terminology, in definitions used and in types of systems under development created a need to develop a typology of these systems. The study of existing systems led us to propose a classification based on four criteria: object of the surveillance (targeted or untargeted), sources of data (sanitary data or other data), data collection systems (autonomous or integrated) and methods of data analysis (expert based or quantitative). Based on these criteria, we propose a typology of syndromic surveillance systems in two main groups: autonomous systems centred on sanitary data *vs*. untargeted systems, integrated and centred on automated data collection and treatment.

Surveillance of equine neurological syndrome in France

Agnès Leblond & P. Hendrikx

Recent outbreaks of West Nile virus–associated (WNV) diseases, both on the Continent and in the Americas, stress the importance of early warning systems that may rapidly identify emerging and re-emerging diseases and thus assist in their control. Traditional approaches of disease monitoring become less reliable and increasingly costly when used for rare health-related events, such as WNV outbreaks in southern France. The objective of this work was to discuss methodological issues related to syndromic monitoring by veterinary practitioners of WNV-associated disease in Camargue horses. Tracking by veterinarians of cases of equine encephalitis is an example of such syndromic monitoring of an emerging disease. Signs of illness, observed prior to diagnostic confirmation, can be of interest because they may provide an early warning for WNV circulation in a given area and allow authorities to take appropriate public health preventive measures.

Human Influenza surveillance in France

E. Belchior, Isabelle Bonmarin & D. Levy-Bruhl

Surveillance of human influenza in France is based on several complementary systems: reports by primary care networks, on the clinical impact of influenza in the community, reports of virological data from reference laboratories, reports from emergency units and hospitals,

reports of acute respiratory infections outbreaks in nursing homes, reports of severe acute respiratory infections in intensive care units and mortality data when available and reports on vaccine coverage.

Surveillance of ruminant mortality in France and in Europe

J-B. Perrin, C. Ducrot, P. Hendrikx & D. Calavas

In animal health, mortality surveillance systems are uncommon although a number of data are collected routinely, particularly in national identification registers and rendering plants. However, several veterinary projects are being considered in France and Europe. This article based on an inventory of current and past initiatives in human and in in animal health, discusses the potential benefits and methods to monitor mortality, for purposes of early warning as well as for longer term surveillance.

What is the added value of syndromic surveillance for detecting new diseases?

D. Calavas, J-B Perrin, Céline Dupuy, C. Ducrot, M. Savey & P. Hendrikx

Syndromic surveillance offers an attractive approach, in the overall control of the main infectious diseases (though with attendant relative increase in the risk of re-emergence of these diseases and introduction of exotic diseases and of cutbacks in the resources available for surveillance. The technique was developed originally to assist in the detection of unexpected health events and was assumed to provide earlier warnings since it is based on data available in real time rather than on laboratory results) at a reduced cost (as the data concerned have already been generated for other purposes). Some commentators even consider that syndromic surveillance could pick up emerging events that might otherwise slip through the net provided by conventional surveillance systems.

SHORT PAPERS

Preliminary results of a first survey in sheep flocks of the Walloon Region concerning the disease due to the Schmallenberg virus

C. Saegerman, L. Martinelle, Fabiana Dal Pozzo & Nathalie Kirschvink

A preliminary anonymous survey was conducted in order to contribute to the forthcoming evaluation of the economic losses due to the Schmallenberg virus (SBV). The preliminary results obtained pointed to several significant characteristics recorded in the flocks affected by SBV a higher abortion rate, more frequent birth of lambs with abnormalities (deformed limbs), peri-partum deaths and dystocia (requiring symptomatic treatment). The implementation of a survey on a larger scale, covering a higher number of herds, appears desirable to fully evaluate the impact of SBV infection in the sheep sector.

Seroprevalence of paratuberculosis in dairy herds in North Western Italy (Piedmont Region)

Stefania Bergagna, Maria Sylvia Gennero, Elisabeta Mellia, Rosaria Possidente, Laura Chiavacci & Nicoletta Vitale

Paratuberculosis (PTB) is a major cause of economic losses in the cattle industry due to reduced milk production, reproductive disorders poor feed conversion, shortened production age and increased predisposition to other disease etc. PTB occurs worldwide with a high frequency. Control programs have been implemented in many countries at regional and even

at national level. To estimate PTB prevalence in dairy herds in the Piedmont Region a survey was carried out between January 2007 and June 2008. Random samples from 1531 dairy herd representing 63% of the target population were selected and bulk tank milk samples were tested for the presence of PTB antibodies using a commercially available absorbed ELISA test kit, 3 times a year. Estimated seroprevalence in dairy herds corrected for sensitivity and specificity was found to be 21.75% (CI95%: 19.3%-23.3%).. These results underlined the need for a control plan for PTB in the Piedmont Region.