Network on Animal Health and Welfare
Minutes of the 9th meeting

Held on 10-11 November 2015, Parma

(Agreed on 21 December 2015)

Participants

- **Network Representatives of Member States (including EFTA Countries):**

Country	Name (10 November)	Name (11 november)
Austria	Friedrich Schmoll	Friedrich Schmoll
Belgium	Ester Peeters	Kristine Ceulemans
Bulgaria	Georgi Georgiev	Georgi Georgiev
Cyprus		
Croatia	Tomislav Mikus	
Czech Republic		
Denmark	Anette Boklund	Anette Boklund
Estonia		
Finland	Taina Mikkonen	Sirpa Kiviruusu
France	Gilles Salvat	Gilles Salvat
Germany	Michael Marahrens	Michael Marahrens
Greece	Paschalis Fortomaris	Paschalis Fortomaris
Hungary	Anna Zsófia Oszoli	Melinda Kocsis
Ireland	Niall O'Nuallain	Niall O'Nuallain
Italy	Leonardo James Vinco	Fabrizio De Massis
Latvia	Rudite Varna	Kristine Lamberga
Lithuania		
Luxembourg	Carlo Georges	Carlo Georges
Malta		
Netherlands	Trix Rietveld-Piepers	Olaf Stenvers
Poland	Przemyslaw Cwynar	Przemyslaw Cwynar
Portugal	Maria Jorge Correia	Maria Jorge Correia
Romania		Claudiu Stroe
Slovakia	Anna Ondrejkova	Anna Ondrejkova
Slovenia		
Spain	Teresa Villalba	Marina Alvarez Fernandez
Sweden	Lotta Nordensten	Cecilia Hulten
United Kingdom	Rebeca Garcia	Helen Roberts
Iceland	Audur Arnthorsdottir	Audur Arnthorsdottir
Norway		
Switzerland	Liv Sigg	

- **Hearing Experts**

None

- **European Commission:**

None

- **EFSA:**

ALPHA Unit: Francesca Baldinelli (Scientific Officer), Franck Berthe (Head of ALPHA Unit), Edoardo Carnesecchi (Interim), Sofie Dhollander (Scientific Officer), Andrea Gervelmeyer (AHAW Team Leader - chair), Andrey Gogin (Scientific Officer), Eliana Lima (Trainee), Francesca Porta (Trainee), Frank Verdonck (Scientific Officer), Matthew Watts (Interim), Gabriele Zancanaro (Scientific Officer).

1. Welcome and apologies for absence

The Chair welcomed the participants.

Apologies were received from Cyprus, Czech Republic, Estonia, Lithuania, Malta, Norway and Slovenia.

2. Adoption of agenda

The agenda was adopted without changes.

3. Agreement of the minutes of the 8th meeting of the Network on Animal Health and Welfare held on 03-04 June 2015, Parma

The minutes were agreed by written procedure on 06 August 2015 and published on the EFSA website 06 August 2015.

4. Topics for discussion

4.1. Update on Animal killing

Germany presented the issue of killing of animals for disease control purposes, focusing on the welfare impact of the different on-farm killing methods used in depopulation operations. The fact that depopulation methods also pose a potential biosecurity risk was underpinned by data from avian influenza outbreaks in the Netherlands (2003) and the USA (2015). It was proposed to develop guidelines for animal welfare risk assessments of killing for disease control that would consider the different farm conditions, the applied depopulation procedures and equipment and the biosecurity requirements. It was suggested that such guidelines could be developed in the framework of an EFSA Art 36 grant or by the NCP established according to Art 20 of Regulation EC 1099/2009.

4.2. Emergency killing of cattle at a distance

Sweden presented the issue of emergency killing of cattle and reported its national regulation for this method. Specific skills and experience needs to be demonstrated for carrying out this procedure and only a limited number of Swedes have the required weapon. The method cannot be applied in populated areas due to the risk for collateral damage. France reported that this practise is normally applied for wildlife, and that no specific regulation is in place. Several MS reported that in case of animals escaping in populated areas the police intervenes. Luxemburg reported the same practise. Also in Germany, where no specific regulation is in place, only trained people can carry out this procedure. In the Netherlands, a slaughterhouse employee appointed by the inspector and having a gun licence, i.e. a permit to wear and use a gun, is called to shoot the animal, preferably in the head so that it will be killed at once. Decisions are taken case by case for this kind of killing, which is mainly carried out in natural areas.

4.3. Standardisation of EEG analysis for unconsciousness

The UK welfare representative gave a presentation on 'standardisation of EEG analysis for unconsciousness'. It was explained that different definitions regarding consciousness are used. For instance, an animal is described conscious as long as a degree of consciousness is detected (EFSA) or the consciousness of an animal is essentially its ability to feel emotions and control its voluntary mobility (EU legislation). Furthermore, it was stated that consciousness includes sensitivity, but that sensibility does not include consciousness. Looking into the scientific literature, it was found that research studies use different methodologies to assess unconsciousness, sensibility and death. Profound suppression in electrical activity of the brain as recorded by EEG and abolition of evoked brain responses were the two main groups of methods used, but many different end points are reported. Therefore, scientific guidance on how to measure and report consciousness, sensitivity and death would be useful. It was also suggested to discuss and define how immediate is "immediate" in this context. Different potential solutions to the problem were listed: i) to generate an annex to the EFSA guidance on the assessment criteria for studies evaluating the effectiveness of stunning interventions regarding animal protection at the time of killing, ii) to develop an ISO standard, ii) to include a chapter in the OIE Terrestrial Code, iv) to create an ad hoc working group to write an informal guideline which could be published in a scientific peer reviewed journal. Some MS confirmed the need for harmonization. It was assumed that it would not be easy to find consensus, but it was felt that the scientific community acknowledges the advantages of having agreed definitions in place. It was argued that harmonisation of EEG analysis would be useful but also the interpretation is critical and subjective. Different models are used for the evaluation of EEG measurements at the moment. It was suggested to include evoked potentials in the evaluations. Some MS specified that EFSA involvement is the preferred option since a scientific assessment is required. EFSA indicated

that the generation of a scientific opinion from the AHAW Panel could be an option, potentially involving the mechanism of a public consultation of the proposed guidelines.

4.4. Welfare of zoo animals

Bulgaria raised the issue of animal welfare in zoos. MSs provided an overview of their legislation in this regard. In the United Kingdom, a handbook regulating the welfare of zoo animals has been published. A pool of inspectors and experts has been established in order to carry out inspections in zoo. Moreover, the pool of experts focuses its activities on issues regarding the possible introduction of diseases during the import/export of animals inside the zoo. In Belgium, the current legislation is similar to UK's one. A zoo committee has been established in order to discuss new rules and situations that may arise. In Sweden, a specific regulation exists whereby each zoo needs a veterinarian licence in order to be authorised. There are also zoo associations and the public is very interested in welfare topics, as demonstrated by the fact that schools visit zoos with the aim of learning about welfare. In France, a special regulation has been published and the National veterinarian office carries out inspections of zoos in order to assess animal welfare as well as possible risks for public health. Finland highlighted that veterinary inspections are carried out once a year. In the Netherlands, research using behavioural welfare indicators, e.g. stereotype behaviour, has been carried out evaluating zoo animal welfare. Croatia reported that behavioural indicators are checked regularly during the welfare assessments of zoo animals. In Greece, a guidance requires that zoo animal welfare be assessed in species-specific way, in addition to the human health risk posed by zoo animal management. Ireland reported the existence of licences for zoo.

4.5. Manipulable materials for pigs

Gilles Salvat presented the current state of scientific knowledge on the impact of different manipulable materials on pig welfare, health and production. A recent scientific opinion was developed by ANSES, building on EU DIRECTIVE 2008/12/EC and the EU strategy 2012-2015 on manipulable materials, translating these legal requirements into the French context. In France, 95 % of the pig husbandry systems use concrete slatted floors. The importance of foraging behaviour for pig welfare was stressed. High levels of stress hormones, restlessness, and stereotyping result when foraging behaviour is not satisfied. Different types of manipulable objects can be used, which should be deformable, chewable, attractive, not soiled and not be a source of contamination or pose sanitary risks (e.g. contain moulds, micobacteria, pesticides). The quantity of the material should be sufficient to avoid competition and it should be well positioned, accessible, immobile on the floor and replaced regularly. Finally it was highlighted that research is needed on alternatives for concrete floors, on types of manipulable material that motivate the animals and effectively prevent tail biting while being economic. Sweden questioned whether chains are a suitable manipulable material. The Netherlands reported that jute sacks were able to reduce the presence of tail wounds and the occurrence of damaging biting behaviours. Researchers from the Netherlands hypothesized that pigs are

looking for rooting material that has some nutritional value, such as tryptophan. A Tryptophan-enriched diet has been reported to decrease pig aggression (http://www.ars.usda.gov/is/pr/2010/100318.htm).

4.6. Floor quality and sows

France presented on the issue of leg disorders of gestating sows housed on concrete slatted floor. According to Cador et al (2014)[1] floor type is the main risk for leg disorder (slatted floor vs. straw bedding) for gestating sows. Rubber mats put on slatted floors can be a solution to improve leg health and are already used in dairy cow housing. A new study was carried out which showed that rubber mats are associated with fewer lesions in large group housing systems. Switzerland confirmed that similar results were obtained in a study carried out in the previous year. In other experiments, destructible mats were tested. However, the use of such a material has a considerable ecological and economic impact of due to the frequent need for mat replacement. In Germany, a new material made of heavy, sharp and abrasive stones has been tested on poultry. The right balance between softness and abrasiveness still needs to be found in order to prevent skin lesions. To improve the hygiene aspect, silver colloidal molecules were included in the material for their oligodynamic effects. In Croatia, a recent PhD has been done on silicone matrices that have already been tried on horses. Currently a method to attach this material to the floor is being studied in order to prevent pigs from rooting it up.

4.7. Discussion on the mandate on slaughter of pregnant animals

EFSA presented the mandate to the MSs. The ToRs were shown and an explanation of the tiered approach that will be followed by the WG was given. MSs were asked to provide EFSA with data about the number of female adult/post-puberty animals slaughtered, the number of pregnant animals killed in their countries and the gestational age at which these animals are slaughtered, and the reasons why farmers send pregnant animals for slaughter. In general, MS did not indicate that the slaughter of pregnant animals is (considered) a problem in their countries. Most MS expressed the view that currently a collection of the requested data at slaughterhouses would not be feasible, but if the assessment of ToR 3 should indicate that a foetus welfare problem exists, the possibility to collect data at slaughterhouses would increase considerably. No systematic data collection on numbers of female adult/post-puberty animals slaughtered, the number of pregnant animals killed in their countries and the gestational age at which these animals are slaughtered exists in any MS at this stage. As a proxy for this data, MS' records that have to be submitted annually to the Commission under COUNCIL REGULATION (EC) No 1/2005 (protection of animals during transport) could be assessed. A standard format for these reports has been prescribed by Commission Implementing

[1] Prev Vet Med. 2014 Sep 1;116(1-2):102-10. doi: 10.1016/j.prevetmed.2014.05.004. Epub 2014 May 28. Risk factors associated with leg disorders of gestating sows in different group-housing systems: a cross-sectional study in 108 farrow-to-finish farms in France. Cador C, Pol F, Hamoniaux M, Dorenlor V, Eveno E, Guyomarc'h C, Rose N.

Decision 2013/188/EU (http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013D0188&from=EN). Germany highlighted the on-going study S!GN (http://www.ls.haw-hamburg.de/~SiGN/) carried out by the University of Leipzig and the Hamburg University of Applied Sciences. The study protocol can probably be shared with EFSA after the Network meeting. Switzerland reported a study carried out on the prevalence of and the reasons for slaughter of pregnant cattle (http://www.blv.admin.ch/themen/tierschutz/05466/05669/05675/index.html?lang=de&download=NHzLpZeg7t,lnp6I0NTU042l2Z6ln1acy4Zn4Z2qZpnO2Yuq2Z6gpJCGdoR9f2ym162epYbg2c_JjKbNoKSn6A--). Meeting participants highlighted that reasons why animals are sent pregnant to the slaughterhouse differ between livestock species. Also, the remuneration system (payment for live weight versus carcass weight) differs not only between species, but also between slaughterhouses. Meeting participants agreed to check if any of the requested data exists in their MS and to provide feedback to EFSA within 2 weeks after the Network meeting.

4.8. Pecking and scratching materials for laying hens

France presented the current state of scientific knowledge on the development of pecking and scratching materials for laying hens regarding Council Directive 1999/74/EC. The directive prescribes that un-enriched cages systems for laying hens housing are prohibited since 1st January 2012 and that furnished cages must provide more space per hen, a nest area, a scratching and pecking area with litter, perches and claw shorteners. However, no specifications are provided for the cage design, the group size, the size and lining of nests, nor the perch type and position and the size, lining, and litter of the scratching and pecking area. ANSES carried out research on appropriate pecking material, testing different material regarding its durability (weight, thickness), the resulting enrichment of behaviours (e.g. dustbath, pecking, scratching), cleanliness of the material and of the eggs, and the impact on zootechnical parameters such as laying rate, location of laying, and mortality. The most promising materials were those containing minerals and wood.

4.9. Short presentations

a) Same species, different legislation

Sweden presented examples of different requirements defined for the same animal species, e.g. regarding space needs, in different legislative documents. Depending on the purpose the animals serve, i.e. being kept as a pet, for research purposes or for food production, the minimal requirements can vary considerably, although the needs of the animal are the same. MS provided examples of how they deal with this issue.

b) Adulthood

Sweden presented the issue of adulthood in relation with the transport Regulation (Annex I, Chap. III, point 1.9) and the Slaughter Regulation (Annex III, point 1.9). Both state that 'the use of instruments which administer electric shocks shall only be used for adult bovine animals and adult pigs'. The main concerns were about i) how to define adulthood, ii) why the wording is used in the transport and slaughtered regulation, and iii) the chance that electricity would affect younger brains differently than adult brains. The adulthood definitions used in Sweden (based on the weight of animal for pigs and on the age in months for cattle) were presented. The EU Regulation 1234/2007 (Annex III, Part IV, Point 2) defined "adult bovine animals" by weight. Therefore some slaughterhouses in the Netherlands consider it appropriate to use an electric prod to drive calves weighing at least 300 kg into the stun box. Finland reported that at national level cattle are considered adult when 20 months old. Germany reported that the only definition is the one of weaning (the ability of the animal to maintain itself by food and water consumption) which is used for regulating the transport of animals. UK referred to an EFSA opinion where categories of pigs were defined, and emphasised how the definition of adulthood should take into account not only the weight of the animal but also the breed (e.g. the weight of an adult Jersey cow is different from that of a Limousin). Ireland highlighted the need of harmonising adulthood definitions across the existing regulations.

c) NCP for scientific support under Regulation 1099/2009

EFSA representative presented feedback from the meeting held in Zagreb in July with the National Contact Points (NCP) for Regulation 1099/2009 *on the protection of animals at the time of killing*. It was mentioned that after the meeting a letter from the European Commission was received, stating that the EC is on favour of EFSA providing support for the networking between the NCP. Possible future activities were described, such as organizing dedicated meetings once a year and establishing a dedicated webpage containing relevant resources such as a list of the national contact points and links to scientific materials and guidelines prepared by these. A first NCP network meeting is tentatively planned to occur in the first half of 2016.

4.10. African swine fever

Update on the outbreak

An update on the ASF situation in Latvia was presented. The disease has spread during the second part of 2015 with an observed increase in wild boar cases. In 2014 only 13 counties and 34 parishes have been affected, where 32 outbreaks in domestic pigs and 217 cases (178 dead; 39 hunted) in wild boar were identified. In contrast, during the period from the beginning of 2015 up to November 2015, 10 outbreaks in domestic pigs and 810 cases (560 dead; 250 hunted) in wild boar have been registered, 213 pigs were destroyed, with 44 counties and 143 parishes affected. In comparison to the previous period (June 2014 – March 2015), during the period from March to October 2015 the affected area expanded. The monthly number of ASF cases in wild boar is mirroring the

wild boar biology, reflecting an increased size of the wild boar population over spring due to new offspring and its mobility. The distance of spread in the period from June to September 2015 reached 60 km.

8476 wild boars have been tested for ASF as of the end of September 2015. 545 positive animals (85% of all positive animals) were wild boars found dead, and only 187 positive animals (2.4%) were hunted animals. Most cases were found in the eastern part of the country, where the domestic pig population density is lowest. An increase of seropositive hunted wild boars was observed during the 2 years of the epidemic and particularly in the period from June to September 2015.

Latvia is mobilising all available resources to try to prevent the spread of ASF into areas with a higher domestic pig population density. An increase of the wild boar population in infected areas has been observed. Possible solutions for the prevention of ASF spread in the wild boar population are a ban of sustained feeding, limited use of baiting for hunting purposes only, targeted hunting of adult and sub-adult females, decreasing the wild boar density to 0,5 animal/km² or lower; establishment of buffer zone in the central part of the country with very low wild boar population density. It was underlined that no evidence for an effective threshold of wild boar density exists. It is not clear so far if a wild boar density of 0.5 / km is enough to stop the infection or whether ASFV spread is independent of wild boar population density. Further research is necessary and the epidemiological findings of 2015 should be taken into consideration in this context.

In the domestic pig sector the same tendency as last year was observed since the end of the summer, with a reduction of cases. 10 outbreaks have been registered in the 13 weeks from 16 June to 09 September 2015. As in the previous year, mainly smallholder farms and backyard farms were infected in 2015, with the exception of 1 bigger farm. The results of the epidemiological investigations of outbreaks indicate insufficient biosecurity as the main reason of virus introduction into domestic pig farms (indirect contacts with wild boar through provision of sawdust). In backyard farms fresh grass or vegetables are fed to pigs. In most of cases (7 of 10), the introduction is supposed to be linked to feeding of grass harvested in nature, and 1 case to wild bird. These observations are similar to what has been observed last year. Hence, particular attention is paid to informing pig owners. Control measures consist mainly of passive surveillance and control of the adherence to biosecurity standards (1 or 2 times per year, depending on the zone), which is challenging in the backyard farms.

Poland reported that only 3 outbreaks in domestic pigs were registered in the country. Examination of hunted wild boars is ongoing. No increase has been observed since summer.

Cooperation initiative between Baltic countries, Poland and EFSA on harmonisation of ASF data collection

EFSA informed the MS about an initiative to harmonise data collection of ASF monitoring in the Baltic States and Poland and the steps undertaken to combine existing data in a single database. On 23-25 November 2015 a workshop dedicated to this subject is organised at the EFSA premises in Parma.

4.11. Vectorborne Diseases

The UK presented the results of a qualitative risk assessment of vector-borne disease introduction through trade. The vector groups considered were midges, mosquitoes and ticks. Currently not many countries carry out vector surveillance around airports. Both the Netherlands and Denmark reported that during surveillance carried out near their airports not many invasive species have been detected. In the context of preparedness for outbreaks of VBD and, particularly of bluetongue, the UK is modelling and assessing likely incursions of BTV8 and the effects of different vaccination approaches.

France provided an overview of the BTV history in Europe and the new outbreak of BTV8 in September 2015. The genetic homology between the current and the BTV8 serotype circulating in 2007 and 2008 outbreak is high (approximately 99%). A low intra-herd seroprevalence has been observed in cattle and sheep; positive samples are mainly found in cattle. The current BT surveillance in France encompasses 22 regions, in which 60 herds and 30 animals per herd are sampled. Up to 19 October 2015, the testing of 38,406 cattle of 1,304 herds from 89 Departments identified 57 infected herds.

Bulgaria presented an overview of the spread of lumpy skin disease in the eastern Mediterranean countries and the introduction into the EU. Since the introduction of LSDV into Greece, 18 secondary outbreaks occurred near the site of the primary incursion as well as further away. The spread in Greece currently seems to slow down, which could be due to the seasonal reduction of the vector populations. It was stated that the role of different vector groups or species in the transmission of LSDV is not fully understood and that the possibility of LSDV overwintering in tick vectors should be investigated. Currently only live vaccines are available, however, they can only be used in the EU once introduction has occurred. Further research on vaccine development is needed.

Greece informed the network about the actions that have been taken. Vaccination is starting in the South of the Macedonian prefecture, all vaccines have been purchased and are being distributed.

4.12. Brucellosis

France presented an overview of the brucellosis outbreaks that occurred in 2012 in ibex (*Capra ibex*) in the region of the Bargy massif and the actions implemented to control the disease. After the detection of two human cases and a bovine outbreak in 2012, an investigation took place, and all domestic herds in the area and some wildlife were tested. No positive cases were found in domestic bovines and only a few cases were detected in the chamois population. In the same year, the protected ibex population of the Bargy massif was tested and a high proportion of animals was found positive for brucellosis (38% of apparent prevalence). It was mentioned that a great level of excretion of the agent was detected in this population, and that the majority of infected animals were adult females. It was mentioned that due to the high prevalence found the ibex population was probably acting as a reservoir of the agent since 1999 (year of last outbreaks in domestic populations in the region), and was the source of the domestic bovine outbreak of 2012, although the transmission pathway to the bovine population was not clear. In 2013 the French authorities decided to cull all ibex of the Bargy massif more than 5 years old in an attempt to control the

disease. In 2014, an investigation to assess the prevalence in the remaining 300 animals took place, and an apparent prevalence of 40% was detected. After these findings, NGOs suggested a mandate to ANSES to evaluate the health of the alpine ibex population in Bargy and possible risk management options, including vaccination. France presented the approach followed in the mandate, explaining the methodology used and the different scenarios assessed. Two of the main conclusions of the assessment were that the brucellosis status of the ibex population requires long term management and that vaccination could help to reduce the risk of re-infection.

Italy, which had been involved in the scientific assessment, added that the disease dynamics in ibex populations is not clear, nor is the efficacy of the vaccine. The transmission likelihood from ibex to bovine herds was estimated as a very low, and for this reason the transmission event will probably not occur again in the future.

4.13. Avian Influenza

The new EFSA mandate on avian influenza was presented. MS were requested to submit data on HPAI tests carried out on wild birds (both positive and negative) which have not yet been submitted to the European Commission. The network was informed that a workshop on the role of migrating wild birds in the introduction of avian influenza into Europe would be organised by EFSA. At the workshop an expert knowledge elicitation procedure will be applied, therefore the number of participants will be limited. MS were invited to suggest names of ornithologists with relevant experience to Francesca.Baldinelli@efsa.europa.eu. EFSA would also appreciate to be informed about any AI risk assessment carried out by MS in the last 5 years.

The UK representative presented on risk of AI infection linked to housing. Questions regarding potential differences between indoor and outdoor housing with view to the virus amplification within flocks or regarding the survival of the virus will be discussed at a meeting in the UK. An overview of the AI outbreak in the US was presented.

4.14. Paratuberculosis

Sweden presented on the possibility for a country or a herd to stay free of paratuberculosis according to AHL/AHR. A description of the features and challenges of the disease, and a brief overview of the situation in the Swedish cattle population were given. Paratuberculosis is a notifiable disease in Sweden on which mandatory stamping out of confirmed cases and tracing back and forward activities apply. The first and the last paratuberculosis cases were notified in 1993 and 2005, respectively. The main surveillance components are mandatory clinical surveillance, post mortem surveillance (all adult ruminants necropsied are tested for the infection), voluntary paratuberculosis surveillance (started in 1993 and is directed at beef herds, since the infection has found only in beef cattle), PCR testing of all imported cattle (on faecal samples). An

overview of previous targeted surveillance activities and projects were provided, and the results of a study conducted by Frössling in 2013 showing a quite high probability of disease freedom were presented. Only very limited investigation were carried out in wild ruminants (restricted to dead animals). For the 2016, Sweden has planned new projects for evaluating the surveillance system in place, and to quantitatively assess the risk of paratuberculosis introduction in the country. It is not foreseen to evaluate if a correlation with the Crohn's disease in human and animal cases exists.

Denmark suggested that if surveillance activities are carried out and biosecurity measure are applied it would be possible to stay free for a herd. Austria reported that they found a good correlation between infection of wild and domestic ruminants.

4.15. Anti-parasitic drugs

The UK presented on the resistance of parasites to anti-parasitic drugs. Pour-on anthelmintics are only used in cattle, while in sheep mainly oral and injection anthelmintics are used. Pour-on flukicide are used in cattle, in sheep oral or injection flukicides are used. In Scotland, an increase in resistance is observed in a range of livestock hosts (sheep and cattle) and in a range of helminth infections (nematodes and trematodes). Risk factors may include changing life history traits, changing epidemiology, changing farming practices in response to climatic changes, and wildlife reservoirs. Resistance to benzimidazoles and for macrocyclic lactones is observed also in England and Wales which probably reflects the great increase in use both for internal parasites and sheep scab control. The main concern are multi-drug resistant Teladorsagia circumcinta and Haemonchus contortus. Risk factors are probably underdosing, a too frequent use, and lack of good advice for farmers. Guidelines for farmers on good treatment regimes, including specific recommendations on treatment frequency, determining the correct drench volume, appropriate quarantine strategies, pasture management and suitable rotation of drench classes are needed.

4.16. Echinococcus multilocularis

EFSA presented its activities on *Echinococcus multilocularis* (Em) which encompass annual scientific reports on the assessment of MS's Em surveillance aiming at demonstrating absence of the parasite, and a scientific opinion on Em infection in animals, which is to be adopted and published in December 2016.

UK presented its model for the introduction of Em to free countries. The model considers the country of origin and level of Em present, the definitive host species, the existence of border checks and compliance with treatment, the presence of intermediate hosts in the destination country and the presence of definitive hosts in the country of destination. Most of the parameters of the model use estimates in the absence of data. The main conclusion of the model is that the probability of Em introduction through wild animal movements is higher than through movement of domestic pet dogs. The model shows that the presence of border checks will reduce the risk of introduction and that

establishment of the parasite life-cycle in areas where no intermediate or definite hosts are present is not possible. It shows however that multiple introductions could still occur if no treatment were given and that treatment efficacy and timing will also affect the probability of introduction.

4.17. Hoof- and bone-meal as vehicle of pathogens

Sweden presented on the importation of hoof- and bone meal from India to Sweden, where this material is used as fertilizer in organic farming. When sacks broke while unloading a ship, workers got soaked in the meal. Therefore the supervising veterinarians decided to sample the meal. A high level contamination with Enterobacteriacae and salmonella (three different types) was detected. Contamination with anthrax could not be excluded. The shipment was destroyed due to the high salmonella content. An assessment of various risks related to the import of hoof- and bone-meal was requested by the risk managers. Information on similar events and assessments was sought from other MS.