Cellule Facultaire de Biosécurité
Médecine Vétérinaire - ULg

6th Biosecurity Day

LIÈGE université

Importance of biosecurity in crisis management

Tuesday, January 30, 2018

Faculty of Veterinary Medicine

Liège University

laboratoire HUCKERT'S INTERNATIONAL la désinfection maîtrisée

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HOSPITHERA Count on us

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The Faculty Biosecurity Unit (CFB)

a. History

Following the first visit of experts for issuing the agreement by the EAEVE (European Association of Establishments for Veterinary Education) and ECOVE (European Committee on Veterinary Education*)* of our Faculty, they highlighted non-conformities of infrastructures and procedures in terms of biosecurity.

In March 2009, the *ad hoc* Biosecurity Working Group was created at the Faculty and allowed the elaboration of our Biosecurity SOP (Biosecurity Standard Operating Procedures applied to the Faculty of Veterinary Medicine, Liège University; URL: http://www2.fmv.ulg.ac.be/actualites/Biosecurity_Manual_Final_6Jan10.pdf). In these SOP, biosecurity is defined as the implementation of measures aiming at, on one hand, reducing the risk of introducing pathogens (bio-exclusion), and on the other hand, at limiting the probability of transmission and dissemination of these pathogens (bio-containment).

Concurrently, the working group proposed improvements of the Faculty infrastructures in order to ensure compliance, from the biosecurity point of view. The work accomplished by the Biosecurity Group highly contributed to the approbation of our Faculty by the EAEVE and ECOVE. Besides, these official bodies cited our Biosecurity SOP as an example. At this stage, it is used as a reference by several faculties of veterinary medicine around the world. Our Biosecurity SOP are currently undergoing an update process. A website illustrating biosecurity SOP was also created a few years ago (URL: https://www.fmv-biosecurite.ulg.ac.be/?langue=en).

In January 2010, the working group became a permanent body, the **Faculty Biosecurity Unit (CFB)**, in order to continue the work undertaken so far. The CFB work will also allow answering the requirements of the EAEVE and ECOVE with the view of gaining European accreditation in 2019.

The CFB has an advisory capacity, targeting biosecurity within the frameworks of teaching activities. The Unit submits its recommendations to the Faculty.

b. Our missions

The CFB has an advisory capacity, regarding biosecurity in relation with teaching activities (clinics, para-clinics, practical activities and tutorial classes). These advises deal with biosecurity procedures to adopt, and infrastructures where live or dead animals, animal products and biological samples are found. The Unit defines procedures allowing the assessment and management of biological risks within the frameworks of teaching activities, the assessment of compliance with biosecurity SOP and the surveillance of antibiotic resistance in the FVM.

The CFB missions are :

1. The update of Biosecurity SOP and website, with special focus on new legislations, emergence of infectious diseases and recommendations from bodies, either internal to the University, such as the Department of Occupational Protection and Hygiene (SUPHT), or external, e.g. the Occupational Medicine and Prevention Service (SPMT-ARISTA).

2. The implementation of a biosecurity education programme for all actors of the FVM (staff and students).

3. The assessment of human and logistical means required to reach the objectives mentioned above, in collaboration with the relevant Departments (strategic plan).

4. The elaboration of crisis scenarios.

c. Composition

Members of the CFB are assigned by the Faculty Council for a 2 year- and renewable mandate, starting from October 1st. The CFB President is elected internally, for a 2-year- and renewable mandate as well.

Composition: each Faculty Department is represented:

- Clinical Department of Small Animals and Horses – Small Animal Clinics, Imaging Unit and Clinic for Birds, Rabbits, Rodents, Poultry, Zoological and Exotic Animals (CARL) – *Dr Stéphanie CLAEYS*
- Clinical Department of Small Animals and Horses – Equine Clinic – *Dr Laureline LECOQ*
- Clinical Department of Food-Producing Animals – *Prof. Hugues GUYOT*
- Department of Food Science – *Sébastien CREVECOEUR (Suppl.: Sarah LEBRUN)*
- Department of Infectious and Parasitic Diseases – *Prof. Claude SAEGERMAN* **(President)**
- Department of Morphology and Pathology – *Dr Dominique CASSART*
- Department of Functional Sciences – *Prof. Tatiana ART*
- CARE – FePEx (Experimental Farm) – *Dr Ludovic MARTINELLE*
- University Department of Occupational Protection and Hygiene (SUPHT), Biosecurity Section – *Dr Marie-France Humblet* (**Secretary**)

<u>Permanent guests</u> :

- The Liège University Biosafety Officer (SUPHT, Biosecurity Section) – *Dr Christine GRIGNET*
- An Occupational Doctor, designed by the SPMT-ARISTA – *Dr Cécile SURLERAUX*
- The President of the Faculty Biosafety Committee – *Prof. Etienne THIRY*

Importance of biosecurity in crisis management

The Faculty Biosecurity Unit (CFB) is very happy to invite you to the sixth edition of its Biosecurity Day; this year, it will focus on the "**importance of biosecurity in crisis management**".

When a reportable disease occurs in a veterinary hospital, biosecurity will be the pillar to prevent its further dissemination inside and outside the infrastructures and the potential threat to human health when zoonotic pathogens are concerned.

Our Biosecurity Day will consist of two activities. The first one will deal with theoretical aspects of the management of a crisis scenario. After a short introduction, **Professor Alan Guthrie** (University of Pretoria, South Africa) will share his experience in management of African horse sickness (AHS) in South Africa, and highlight the importance of biosecurity. Afterwards, **Professor Jean-Pierre Vaillancourt** (University of Montreal, Canada) will expose the importance of biosecurity in the management of an outbreak of avian chlamydiosis in a veterinary teaching hospital. Finally, the importance of biosecurity in the management of a foot-and-mouth disease (FMD) outbreak will be focused on by **Dr Fred Landeg** (formerly acting UK Chief Veterinary Officer, DEFRA); he will share his long experience with the 2001- and 2007-outbreaks that occurred in the UK.

The second activity will consist in the organization of several practical workshops, organized in parallel, and targeting the three main sectors of our Faculty: horses (AHS), birds and small animals (avian chlamydiosis) and food-producing animals (FMD). These interactive workshops, led by the morning speakers, will rely on ride-along and reflexions on the best way to manage the introduction of these diseases in our Faculty. In parallel, a formation focusing on the management of an incident or accident in a Biosafety Level 2 (BSL2) laboratory will be co-chaired by the ULiège Biosafety Officer, i.e. Dr Christine Grignet, and by the Occupational Health Doctor-Prevention Adviser from the External Prevention Service, i.e. Dr Cécile Surleraux. The event will conclude by a sharing of experience towards the main points highlighted in each workshop.

The CFB would like to thank Huckert's International, VWR, MSD Animal Health, the Walloon Livestock Association (AWE), Hospithera and VMD for their support in organizing the event; the Faculty of Veterinary Medicine for the provision of infrastructures and material; the University Department of Occupational Protection and Hygiene (SUPHT) for the logistical and financial support, with very special thanks to Mrs M.-F. Humblet and Mrs F. Naedenoen.

Claude Saegerman, President of the Faculty Biosecurity Unit

Programme

10h00 Welcome
(Prof. Claude SAEGERMAN, President of the CFB]

10h05 **Importance of biosecurity in the management of African horse sickness**
Prof. Alan GUTHRIE
Equine Research Centre, University of Pretoria, South Africa

10h50 **Importance of biosecurity in the management of avian chlamydiosis in a veterinary teaching hospital**
Prof. Jean-Pierre VAILLANCOURT
Avian Medicine, Department of Clinical Sciences, FVM / Research group in Epidemiology of Zoonoses and Public health / Public Health Research Institute, University of Montreal, Canada

11h35 **Importance of biosecurity in the management of foot-and-mouth disease**
Dr Fred LANDEG, DVM
Former acting UK Chief Veterinary Officer, DEFRA, UK

12h20 Question and answer session

12h30 Lunch (Salle Polyvalente, B45)

13h30 **Parallel interactive workshops**

- *African horse sickness* (*Prof. A. GUTHRIE*)
- *Importance of biosecurity in the management of avian chlamydiosis in a veterinary teaching hospital – interactive workshop (Prof. J.-P. VAILLACOURT)*
- *Importance of biosecurity in the management of foot-and-mouth disease – interactive workshop (Dr F. LANDEG)*
- *Management of a lab incident in a BSL2 (Drs Christine GRIGNET and C. SURLERAUX* [in French])

15h30 Coffee break (Salle Polyvalente, B45)

16h00 Sharing and exchange on workshops experience + questions
(moderator: *Dr Ludovic MARTINELLE, CARE-FePEx*)

16h50 Conclusions (*Dr Ludovic MARTINELLE, CARE-FePEx*)

Importance of biosecurity in the management of African horse sickness

Alan GUTHRIE, DMV, PhD, Professor
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African horse sickness (AHS) is an infectious but non-contagious viral disease of equines transmitted by *Culicoides* midges. AHS has an extremely high mortality (>70%) in horses. The disease is manifested by pyrexia and clinical signs and lesions compatible with impaired circulatory and respiratory function that are characterized by subcutaneous, intermuscular and pulmonary oedema, transudation into the body cavities, and haemorrhages of serosal and mucosal surfaces.

AHS is endemic in sub-Saharan Africa. In subtropical regions, including South Africa, AHS is strictly seasonal with the first cases historically occurring in late summer and an abrupt disappearance following the onset of colder weather in the autumn. Epidemics of AHS have occurred in North African countries on a number of occasions following spread of the disease up the west coast of Africa or up the Nile valley. AHS epidemics have also occurred in the Middle and Near East (1944 and 1959 to 1963) and southern Europe (1966 and 1987 to 1990). AHS is transmitted biologically by midges which are most active at dawn and dusk. Wind-borne spread of infected midges may play a role in local spread of AHS. Long-distance spread of AHS is usually the result of inadvertent movement of Equidae infected with AHSV. The 1987 AHS epidemic in southern Europe was associated with the introduction of infected zebra from Namibia to a safari park in Spain.

The incubation period in horses following natural infection with AHSV is between 5 and 9 days. In susceptible horses mortality is 70 to 95% and the prognosis is extremely poor. In mules the mortality is approximately 50% and in European and Asian donkeys it is 5-10%. Mortality is very low in African donkeys and zebra.

Recent changes in the global distribution and nature of Bluetongue virus (BTV) infection have been especially dramatic, with spread of multiple types of the virus throughout extensive portions of Europe and invasion of the south-eastern USA with previously exotic virus types. Although climate change has been incriminated in the emergence of BTV infection of ungulates, the precise role of anthropogenic factors is less certain. Similarly, there have been recent alterations in the distribution of other *Culicoides*-transmitted Orbiviruses including EHDV, AHSV and EEV and therefore horse industries and Veterinary Administrations in many countries have developed contingency plans for AHS.

In affected horses, AHS elicits a wide range of clinical presentations which are generally classified into four clinical forms. The ‘Dunkop’ or ‘Pulmonary’ Form is the peracute form of the disease from which recovery is exceptional. The incubation period

is short, usually 5 to 6 days, followed by a rapid rise in temperature, reaching a maximum of 40 - 41°C.

The 'Dikkop' or 'Cardiac' Form of AHS has an incubation period of 7 days or more, followed by a febrile reaction of 39-41°C that persists for 3 to 4 days. The more typical clinical signs often do not appear until the fever has begun to decline. At first the supraorbital fossae fill as the underlying adipose tissue becomes oedematous and raises the skin well above the level of the zygomatic arch. The 'Mixed' Form of AHS is seen at necropsy in the majority of fatal cases of AHS in horses and mules. Horse sickness fever is the mildest form and is frequently overlooked in natural outbreaks of AHS. The incubation period is up to 9 days after which the temperature gradually rises over a period of 4 to 5 days to 40°C. Apart from the febrile reaction, other clinical signs are rare and inconspicuous. The conjunctivae may be slightly congested and the pulse rate may be increased. This form of the disease is usually observed in previously immunized horses.

A clinical diagnosis of AHS is virtually impossible during the early febrile phase of the disease. However, a presumptive diagnosis should be possible once the characteristic clinical signs have developed. The typical necropsy findings support the presumptive clinical diagnosis. AHS is a listed World Organization of Animal Health (OIE) disease and is considered a foreign animal disease in all countries except those in the endemic area of sub-Saharan Africa and therefore suspected cases must be immediately notified to State Veterinary Authorities. The State Veterinary Authority will make arrangements to have whole blood samples in heparin and or EDTA collected from live animals showing clinical signs and submitted to an authorized laboratory for virus isolation and polymerase chain reaction based molecular diagnostic techniques. Organ samples including spleen, lung and lymph nodes collected from dead animals at necropsy should be refrigerated and transported on ice to an appropriate laboratory for diagnostic procedures.

There is no specific treatment for AHS and therefore appropriate supportive therapy is provided based on the clinical signs observed in individual cases. In endemic countries, modified live virus (MLV) vaccines are licensed and have been used successfully for several decades to control AHS. Although not currently commercially available, inactivated or recombinant vaccines may prove to be viable alternatives for the current MLVs.

The introduction of equids incubating AHS is the most important means of introducing the disease into an area or country free of the disease. Zebra and African donkeys that do not develop clinical signs of AHS are particularly dangerous. Equids imported from infected countries should be quarantined in insect-proof facilities prior to export or at the point of entry. At present, the OIE recommends a minimum 14-day quarantine period under vector-protected conditions with appropriate diagnostic testing for horses imported from AHS infected countries or zones.

Once an outbreak of AHS is suspected, it is imperative that control measures be implemented immediately. A containment zone should be established in the area around the outbreak, and this zone should be declared a controlled area. The

movement of all equids within, into, and out of the controlled area should be terminated and movement controls rigidly enforced. All equids should be stabled, at least from dusk till dawn, and sprayed with insect repellents and insecticides. If sufficient stabling facilities are not available, barns can be used. Even if not vector-protected, such housing reduces the risk of infection. Additionally, the rectal temperatures of all equids in the area should be taken regularly. Pyrexia generally precedes overt disease by about 3 days thus allowing the early detection of infected animals. Animals with pyrexia should be housed in vector-protected stables until the aetiology of the pyrexia has been established.

Once the diagnosis of AHS has been confirmed, vaccination of all susceptible animals with the relevant AHS vaccine should be considered. This decision to vaccinate will invariably be under the auspices of the State Veterinary Authority will be influenced by the success of measures already taken.

Curriculum vitae

Professor Guthrie (BVSc 1984, MMedVet, PhD) is the Director of the Equine Research Centre (ERC). The Equine Research Centre (ERC), University of Pretoria (UP), and the University of Witwatersrand, is a multi-disciplinary collaboration to improve the research initiatives in African Horse Sickness (AHS). The Equine Research Centre is an entity within the University of Pretoria and situated at the Faculty of Veterinary Science, Onderstepoort Campus.

Back in early 1990 a decision was made at Government level to establish an equine research centre through the University of Pretoria. Prof Alan Guthrie was busy with his PhD in Louisiana, USA, when he applied for the position of Director of the soon to be established research centre. Having been accepted for the position, Prof Guthrie's first role was to design the facility, which was initially situated in a prefab building on the grounds of Onderstepoort, before the University made the current building available for the Centre. Prof Guthrie was the sole member of staff at the start. In 1995, the Centre became involved with infectious diseases, which was when the first Export Workshop was held resulting in a relaxation of the stringent export requirements imposed by the OIE as a result of the African horse sickness problem in South Africa.

The ERC conducts research to improve and promote the health and welfare of horses and the horse industry in South Africa. The ERC has 3 main focus areas: equine infectious diseases, equine sports medicine and equine health and welfare. The ERC has ultimately made excellent progress on developing a new generation vaccine against AHS, and RT-PCR tests that improve the sensitivity and specificity of detection of AHS virus. The RT-PCR Test is now officially validated by the OIE for certification of individual animals prior to movement. It has greatly improved the laboratory diagnosis of AHS by shortening the time required for the diagnosis. Other diseases being researched by the ERC are: equine Influenza, equine encephalosis virus (EEV), equine piroplasmosis, contagious equine metritis (CEM). It also works on diagnostics and epidemiology of orbiviruses.

Prof. Guthrie is (co)author of over 100 publications in peer-reviewed journals. He's also a member of the *ad hoc* OIE group on the assessment of the AHS status of Member Countries.

Importance of biosecurity in the management of avian chlamydiosis in a veterinary teaching hospital

Jean-Pierre VAILLANCOURT[1,2], Guillaume LE LOC'H[2] & Jean-Luc GUERIN[2]

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[2] *Chair of avian biosecurity, ENV Toulouse*

Introduction

Avian chlamydiosis, caused by *Chlamydia psittaci*, is quite prevalent in birds, having been reported in over 460 different species. There are 8 serovars but genotyping based on the outer membrane protein A (*ompA*) gene analysis is more common. All avian genotypes should be considered as having zoonotic potential. *Chlamydia* is an obligate intracellular Gram-negative bacterium with a unique nonsynchronous life cycle in the cytoplasm of the host cell. Three morphologically distinct forms of chlamydia have been recognized: elementary body (EB), reticulate body (RB) and intermediate body (IB). EB is the infectious form of the organism.

It is also sporadically reported in humans worldwide. Because of the broad distribution of *C. psittaci*, veterinary clinics treating exotic and wild birds must be in a position to diagnose this condition and have biosecurity measures in place to prevent the spread of the agent to other patients and to its personnel.

Essential information on this disease pertinent to biosecurity

Clinical signs and lesions due to *C. psittaci* in birds depend first on the avian species, psittacines being by far the most susceptible. In other bird species, healthy carriage is the most common outcome, which compounds the diagnosis; and this is especially true with pigeons and doves commonly seen in wildlife veterinary clinics. The other main factors are the virulence of the chlamydia strain, age, immune status, and concurrent diseases. Normally, younger birds are more susceptible than adults. Adults may be healthy carriers. Stress due to nutritional deficiency, overcrowding, adverse environmental temperature, transportation, handling, egg laying and breeding can trigger clinical signs and shedding of bacteria. Fecal shedding of chlamydia occurs irregularly; it is more consistent via the respiratory tract. Transmission of *C. psittaci* primarily occurs through inhalation of contaminated air, contact with wild, sick or dead birds, contaminated feed, water and equipment. Vertical transmission has been reported. Ectoparasites can also transmit the disease. In birds the incubation period

varies from 5 to 10 days or more depending on factors listed above. Clinical signs also vary and may include anorexia, lethargy, ruffled feathers, coughing, nasal and ocular discharge, loose green droppings, and loss of weight and decreased egg production. Rarely neurological signs can be seen. Lesions also vary depending on the species of birds and other factors listed above for clinical signs. The most common lesions seen in psittacines are hepatosplenomegaly, although fibrinous airsacculitis, pleuritis, pericarditis, perihepatitis, meningitis and pneumonia can also be observed.

Transmission to humans is mainly through inhalation of the bacteria. Incubation period can range from 1 to 2 weeks or more and clinical signs include flu-like symptoms and occasionally pneumonia, endocarditis, encephalitis and death if not treated quickly.

Biosecurity principles and measures

In general terms, there are three key principles related to effective biosecurity: a) separating contaminated material and infected individuals from non-infected individuals; b) reducing the amount of contamination originating from vectors, carriers and contaminated material; c) reaching optimal compliance; because the best biosecurity plan is worthless if not applied consistently.

Separating: Birds suspected of being infected with *C. psittaci* (in particular rescued seabirds and pigeons, in which this bacteria is quite prevalent) should start in isolation and not go through the lobby or regular examination rooms. The isolation room should be designed with an anteroom to provide a place for donning personnel protection equipment (PPE: gloves, coveralls or coat, footwear, FFP2 or higher rating mask, eye protection) as well as a hand washing station.

***Ventilation*:** Given that *C. psittaci* can be inhaled, ventilation is an important element. Contrary to a surgical room, isolation rooms must have a negative air pressure (<2.5 Pa) in relation to adjacent areas to prevent contaminated air from entering other premises of the hospital. These rooms should receive six to 12 air changes per hour, and all air should be exhausted directly outdoors, unless HEPA filters are integrated to the ventilation system.

Flow of patient and material: Once a patient has been identified as potentially infectious, it should be admitted to the isolation unit; and it should remain there until discharge. If the patient must be moved through the hospital (e.g., for diagnostic or treatment purposes), PPE should be used and the path through the hospital should avoid sensitive areas such as the intensive care unit. Linens, feed bowls, etc. should be transported to the cleaning area in bags. Disposable items also limit contamination if handled correctly using biohazard bags.

Footbaths are often used in isolation protocols. Studies have found significant reductions in bacterial contamination of boots treated in a footbath with a peroxygen compound; however, most of the time personnel do not spend enough time in footbaths to make them effective. Shoe covers, or even better yet, isolation unit dedicated footwear are preferable. Gloves are needed and must be changed between patients to prevent cross-contamination. Hand disinfection must always be performed after glove removal.

The number of staff working within the isolation unit should be minimized. These staff members must limit contact with other patients. The isolation patients should be treated last when possible, and by personnel ending their shift before leaving the building. People who have become ill after contact with birds should consider avoiding other birds until their illness has been diagnosed.

Reducing:
All medical equipment should be cleaned and disinfected before use on another patient within the isolation unit or before removal from the unit. Misting surfaces and bird droppings with cleaning solution prior to cleaning decreases aerosolization of *C. psittaci*.
Convenient hand washing stations in all clinical areas of the hospital are essential. Water temperature to wash cage blankets or other linens, and equipment should be in excess of 70 °C; however, it is best not to exceed 65°C when washing floors, walls and tables to prevent "baking" organic material and creating biofilms.
Floors and wall base: in clinical areas they should be easy to clean; requiring nonporous, water resistant surfaces not physically affected by cleaning solutions. These floors should be seamless. Drains facilitate washing with large volumes of water or even high-pressure washers, but they provide a site for bacterial colonization. So, they must be disinfected routinely. In clinical areas, walls should be washable (e.g., sealed concrete; laminates; or a fiberglass-reinforced plastic). In the isolation units, walls should be free of open joints or crevices. Frequent wet-mopping of the floor with disinfectants can reduce the circulation of dust and feathers.
After a patient is discharged, the isolation unit must be disinfected before the next admission. All hard surfaces must be disinfected. If cages are stacked, the cage under the vacated cage should also be disinfected.

Compliance: Compliance is always an issue when it comes to biosecurity. One should never assume that a biosecurity protocol is systematically applied by all. Hence it is important to verify regularly if the measures are in place; this includes monitoring air pressure daily while the isolation room is in use. Training is an important component of a strategy to enhance biosecurity compliance. Finally, compliance is enhanced when it is easy to apply the measures. For example, an antiseptic hand lotion dispensers located in washing stations maximizes staff compliance because it is easy to use.

Conclusion

Chlamidia psittaci is ubiquitous and represent a significant risk for hospitalized birds and clinical personnel. Societal concerns for animals, with people increasingly interacting with them, climate change, and other human activities create conditions that may disturb the environment and impact exotic and wildlife birds. Veterinary teaching hospitals must offer care in a setting optimizing biosecurity conditions in order to protect hospital personnel and students as well as prevent the spread of the disease to other patients.

Curriculum vitae

Professor Vaillancourt graduated from the University of Montreal FVM in 1986. He completed a PhD in Population Medicine (Epidemiology) at the University of Minnesota in 1990. From 1983 to 1984, he was assistant of clinical formation in the Veterinary Medicine College, University of Montreal, then from 1986 to 1990, he occupied a post of assistant of clinical formation and researcher in the FVM, University of Minnesota. Between 1990 and 1996, he was Assistant Professor in the University of Guelph, (Ontario Veterinary College, Department of Population Medicine). He was then appointed as Associate Professor in the FVM of North Carolina State University (Department of Population health and pathobiology) from 1996 to 2004.

First Invited Professor at the "*Facultad de Medicina Veterinaria, Universidad Nacional Autónoma de México*", he joined the Montreal FMV in 2004 as a Full Professor in the Department of Clinical Sciences, Chair of Avian Medicine. Between 2007 and 2009, he was Director of the Avian Research Center, and from 2009, Director of the Research Group in Epidemiology of Zoonoses and Public Health. In 2013, he also became Assistant Director of the Public Health Research Institute, University of Montreal. He now teaches Avian Medicine, Veterinary Public Health and Principles of Population Medicine at the University of Montreal.

His main fields of research are: infectious diseases, zoonoses, biosecurity and regional control of reportable diseases. He collaborates with industrial psychologists to assess the observance of medical and biosecurity measures and works on the regional control strategies for emerging diseases. He is author or co-author of over 70 pair-reviewed papers, more than 20 book chapters. He takes part to the elaboration of didactical material on biosecurity and regional control of infectious diseases, apart from participating to national and international evaluation committees of research projects. He's reviewer for several international scientific reviews, member of several professional associations and 67 University Committees.

Professor Vaillancourt is/has been consultant in biosecurity and regional control of contagious diseases (especially reportable diseases such as avian influenza) to stakeholders in animal production and governments of several countries (USA, Canada, China, Mexico, France, Italy, Switzerland, Belgium, Argentina, Chili and Peru).

The Importance of Biosecurity in the Management of Foot and Mouth Disease

Fred LANDEG, DVM
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Private Specialist Consultancy
Tutor EU BTSF Contingency Planning and Animal Disease Control – various EU Member States
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On the 20th February 2001 foot and mouth disease was confirmed in the UK at an abattoir in Essex. Foot and mouth disease virus (Pan-Asia O) had been introduced in illegally imported animal products, which were subsequently fed as unprocessed waste food to pigs at Heddon-on-the-Wall, the primary outbreak. Disease remained unreported on the pig premises for up to three weeks until pigs were sent to the Essex abattoir on 8th and 15th February 2001. During this period there was windborne spread from the pigs at Heddon-on-the-Wall to grazing sheep 5km away. Sixteen of the infected sheep were sold at Hexham Market on 13 February 2001. Nine were bought by a dealer and mixed with 175 other sheep which were sold on 15 February in 21 lots to 9 livestock dealers from 8 different geographic areas of Britain taking disease with them. At least 57 farms from south of Scotland to Southwest England had already been infected with the virus when disease was confirmed on 20th February.

By the time the disease had eventually been eradicated in September 2001, more than six million animals had been killed: over four million for disease control purposes; and over two million for welfare purposes. Disease had been confirmed on 2,026 premises in Great Britain and the epidemic had also given rise to limited outbreaks in Northern Ireland (4), the Republic of Ireland (1), France (2) and the Netherlands (26). The direct cost to the public sector in Great Britain was estimated by the National Audit Office at over £3 billion (€3.4 billion) and the cost to the private sector at over £5 billion (€5.6 billion).

The introduction of disease and its rapid spread can be put down to failures in biosecurity at national, regional and local levels. Specific mechanisms of spread and their relative importance were identified during the 2001 outbreak. It was not until 27th July 2001 that legally defined basic biosecurity measures were introduced and enforced to prevent the spread of disease in worst affected areas, rather than rely on livestock keepers being responsible and voluntarily implementing best biosecurity practices. Following the 2001 outbreak and the lessons learnt with respect to biosecurity practices, preventative measures were introduced to limit the introduction and size of any future outbreak. These measures included an EU wide ban on the feeding of waste food to pigs, the policy of implementing an immediate national livestock movement ban as soon as any outbreak of foot and mouth disease is confirmed and livestock movement controls in the absence of disease. These movement controls include a six-day standstill for foot and mouth disease susceptible

ruminants and a 20-day standstill for pigs; if animals are moved on to a livestock premises no animals may be moved off the premises until the relevant standstill period has passed. The public memory is short and there is continuous pressure to limit, circumvent or remove preventative biosecurity measures.

Curriculum vitae

Fred qualified from the Royal Veterinary College, University of London, in 1971. After a spell in private veterinary practice, he entered public service in 1975 as a Veterinary Officer with the Ministry of Agriculture Fisheries and Food (now DEFRA – Department for Environment, Food & Rural Affair). In his career he held a number of departmental posts concerned with public health, animal health and animal welfare: Veterinary Officer (VO), Senior VO, Divisional VO, Deputy Regional VO, Head of Veterinary Resource Team, Head of Veterinary Exotic Diseases Division and Acting Assistant CVO. He was appointed UK Deputy Chief Veterinary in 2004 and was made acting UK Chief Veterinary Officer in November 2007, shortly before retiring from public service at the end of April 2008.

In 2000, he played a major role in determining control policy for the outbreak of classical swine fever, and as ACVO in determining control policy for the 2001-FMD-outbreak, at strategic and tactical levels. He was responsible for the National Disease Emergency Control Centre, including the epidemiology and serology units. In 2002, he was a key player in determining the movement control policy after FMD. Between 2005 and 2008, he was involved in the national control of outbreaks of Newcastle Disease, Avian Influenza and FMD. He also played a major role in the control of bluetongue outbreaks.

He was awarded CBE in the Queen's Birthday Honours List 2008. Currently, he is a consultant for a major supermarket chain and for a number of European consultancies engaged in training in Europe and Third countries.