UNIVERSITY OF SURREY

FARM ANIMAL PATHOLOGY AND DISEASE SURVEILLANCE SERVICE

Summer/Autumn 2018 NEWSLETTER

Welcome to the sixth newsletter from the Veterinary Pathology Centre (VPC) at the University of Surrey.

Currently in the Surveilance news:

African Swine Fever (ASF)

In light of the recent ASF reports, the EFSA have produced a short video to raise awareness about the disease aimed primarily at pig keepers; how it spreads, measures to take to reduce risk of infection, and clinical signs. This is available on this link: https://www.efsa.europa.eu/en/topics/topic/african-swine-fever.
Information on how to report ASF if suspected is available on https://www.gov.uk/guidance/african-swine-fever.

African Swine Fever Detected In Wild Boar In Belgium

Please find attached a preliminary outbreak assessment from the APHA International Disease Monitoring team for the first detection of African swine fever (ASF) in Belgium, in wild boar.

This is clearly a very significant development in the westward spread of ASF in European Union Member States in which ASF was first detected in the Eastern EU in January 2014. Given the large geographic distance between these first Belgian wild boar ASF cases and other confirmed cases of ASF in wild boar further east, it is most likely that infection has been introduced by movement of fomites or infected meat products from ASF-infected areas, in other words, human mediated, however investigations are in progress.

Briefly:

- ASF has been reported in wild boar in Belgium in the Luxemburg region, close to the border of France.
- There have been two reports of disease, involving four wild boar.
- This is a heavily forested area, and there are large numbers of wild boar in this area, crossing EU borders.
- This is the first identification of ASF in Belgium since 1985.
- We are monitoring the situation closely.

Information on this has also been included in messages from Promed and the Swine Health Information Centre (US) on these links:

http://www.promedmail.org/direct.php?id=20180913.6027857

https://www.swinehealth.org/special-announcement-asf-belgium/

Updates On African Swine Fever In China And Central & Eastern Europe

You will also be aware that there are more ASF reports in both China and in Central & Eastern Europe, especially Romania, and the APHA International Disease Monitoring team updates published on the Defra website provide more information on both these regions:

China - https://www.gov.uk/government/publications/african-swine-fever-in-pigs-in-china

Europe - https://www.gov.uk/government/publications/african-swine-fever-in-pigs-in-poland-lithuania-and-latvia

The new finding in Belgium and the continued and increasing ASF infection in Eastern & Central Europe emphasise the need to raise awareness amongst pig keepers in UK and across Europe of the need for them to take stringent external biosecurity precautions to reduce the risk of introduction. These messages, and the importance of not feeding catering, kitchen or domestic waste to pigs have been highlighted in past public communications and making sure that UK pig farmers and keepers are aware of these is vital:

https://www.gov.uk/government/news/pig-keepers-warned-not-to-feed-kitchen-scraps-to-pigs-due-to-african-swine-fever-risk

https://www.gov.uk/government/news/african-swine-fever-risk-reminder

An extract from one of these reads:

"The biggest risk of the disease entering the UK's pig population is by pigs eating infected pork or pork products derived from infected pigs or wild boar. The ASF virus can survive for months in smoked, dried and cured meats, and in frozen meat. The greatest risk is from meat products brought into the UK from affected countries as personal imports since commercial trade of such products is not permitted from ASF restricted areas.

It also survives in pig faeces and in the blood of infected pigs or wild boar. The virus can therefore be spread on vehicles, equipment, clothing and boots contaminated by infected pigs or wild boar. As a result, farm staff whose homes are in ASF-affected areas in Europe, and people returning to the UK from holidays or hunting expeditions could unknowingly bring back infection. If these people also happen to keep pigs, or work on pig farms, they could pass that contamination on to their pigs and introduce disease, but there are some straightforward actions they can take to prevent introduction.

Practise good biosecurity

- Use dedicated clothing and boots for you and anyone coming onto your premises.
- Prevent vehicles or equipment from coming on to your premises unless cleaned and disinfected first.
- Ensure that people who look after or visit your pigs understand the disease risk of bringing back meat products and in particular wild boar meat or pork/pork products from affected countries. Trade of pork from affected areas in these countries is illegal.
- Don't bring meat products onto the farm to avoid accidental access to pigs."

Providing dedicated clothing and boots for workers and visitors, limiting visitors to a minimum, and preventing outside vehicles which may be contaminated from coming on to the farm, are all valuable procedures to reinforce.

Anything you can do to promote these messages amongst your colleagues and to your pig-keeping clients, whether small-scale or commercial, is valuable in reducing the risk of introduction of ASF to the UK. Raising their awareness of the situation in other countries as described in the updates is also important and there are useful maps illustrating ASF reported in these regions.

An ASF poster is available for pig keepers summarising this information which you may wish to use:
http://apha.defra.gov.uk/documents/surveillance/diseases/african-swine-fever-poster.pdf
and the EU has produced an animated video to underline key messages:
http://www.efsa.europa.eu/en/press/news/180711

There are images of clinical signs and pathology of African Swine Fever on this link to remind you what is looks like:

http://apha.defra.gov.uk/documents/surveillance/diseases/african-swine-fever-images.pdf

If a pig keeper or vet suspects ASF, it must be reported to APHA immediately as indicated below:

In England: Defra Rural Services Helpline on 03000 200 301

In Wales: APHA on 0300 303 8268

In Scotland: contact the local APHA Field Services Office
https://www.gov.uk/government/organisations/animal-and-plant-health-agency/about/access-and-opening#scotland-field-service-offices

https://www.gov.uk/guidance/african-swine-fever

Centre of Expertise for surveillance in extensively managed livestock:

APHA Carmarthen Veterinary Investigation Centre (VIC) is being developed as a Centre of Expertise for surveillance in extensively managed livestock. Extensively-managed animals are those that are kept in such a way that they are not easily regularly and closely inspected for signs of ill health, or significantly altered production. The Centre will focus on extensively managed cattle and sheep. Further information is available on the APHA Vet Gateway: http://apha.defra.gov.uk/vet-gateway/surveillance/experts/exten-man-livestock.htm

Updated APHA collection service link:

To check if you are in an area where free collection is available, follow this link: http://apha.defra.gov.uk/postcode/pme.asp

For more information, please visit: http://www.surreyvetpathology.com/pathology-services/surveillance-services and look at the Surveillance Post Mortem prices.

Events:

28-29 Sept 18: **British Society of Veterinary Pathology (BSVP) Autumn Meeting**
Applied ruminant pathology: Disease investigation, diagnosis and surveillance
For more details please visit: http://www.bsvp.org

Please do not hesitate to contact us if you would like to provide feedback or have any questions about using our service. **It is important that the responsible veterinary surgeon calls us to discuss a case before submission**, to ensure that it is eligible for a surveillance *post-mortem* examination**. Eligible cases are heavily subsidised by the APHA and do not incur additional fees for routine diagnostic tests.**

We look forward to working with you all.

Dr Pernille Jorgensen, CandVetMed MRCVS.
Surveillance Lead
Farm Animal Pathology and Disease Surveillance Officer

CATTLE

Alimentary tract

Severe Summer Scour Syndrome

A one-year-old female dairy heifer with clinical symptoms of reluctance to move or rise, dehydration and tachycardia was submitted for *post-mortem* examination after being the third animal to die within a month after turn out to pasture. Five animals, presenting similar symptoms, died the same time the year before. The main gross findings consisted of a poor body condition (Figure 1), deep ulcerative foci on the lateral aspect of the tongue (Figure 2), alongside extensive and diffuse haemorrhage of the mucosa of the alimentary tract, which contained watery faeces. Superficial crusting of the skin of the muzzle was also identified, with mild inflammation of the underlying tissue. Microscopic examination of the tongue lesions confirmed them to consist of a severe ulcerative glossitis with secondary bacterial colonisation, but was unable to determine a primary cause. Examination of the intestines diagnosed a moderate subacute to chronic lymphoplasmacytic enteritis, of which aetiology also could not be identified microscopically. However, the main differential diagnoses of Idiopathic Necrotic Enteritis, BVD associated mucosal disease and enteric salmonellosis could be ruled out.. *Salmonella* was not isolated in faeces, and a BVD PCR result was also negative. No parasites/protozoa were observed microscopically in the gut, and only a low number of worm eggs and coccidial oocysts were identified in the faeces. Speciation of the oocysts present did reveal them to consist of pathogenic *Eimeria Bovis* and *Eimeria Zuernii*, however their presence in low numbers only, alongside the *post-mortem* examination findings of oral ulcers, made a diagnosis of coccidiosis unlikely. Low oocyst counts had been recovered from other animals in the group as well.

The livestock scanning surveillance networks in England and Wales, Scotland, Northern Ireland and the Republic of Ireland have in recent years identified a syndrome of severe, rapid onset diarrhoea and weight loss in weaned dairy calves up to 12 months of age. Typically, this occurs within a month of turnout, with high morbidity. Routine investigations tend to rule out common parasitic, bacterial and viral causes. A proportion of outbreaks and individuals have oral and oesophageal ulceration and necrosis. The APHA and its partner *post-mortem* examination providers are undertaking a collaborative investigation this year and next, based on the case definition described above, which has been named **Severe Summer Scour Syndrome**. Should practitioners become aware of outbreaks that fit the case description, they should contact their disease surveillance service to discuss further investigation.

Figure 1: Dairy heifer in poor body condition

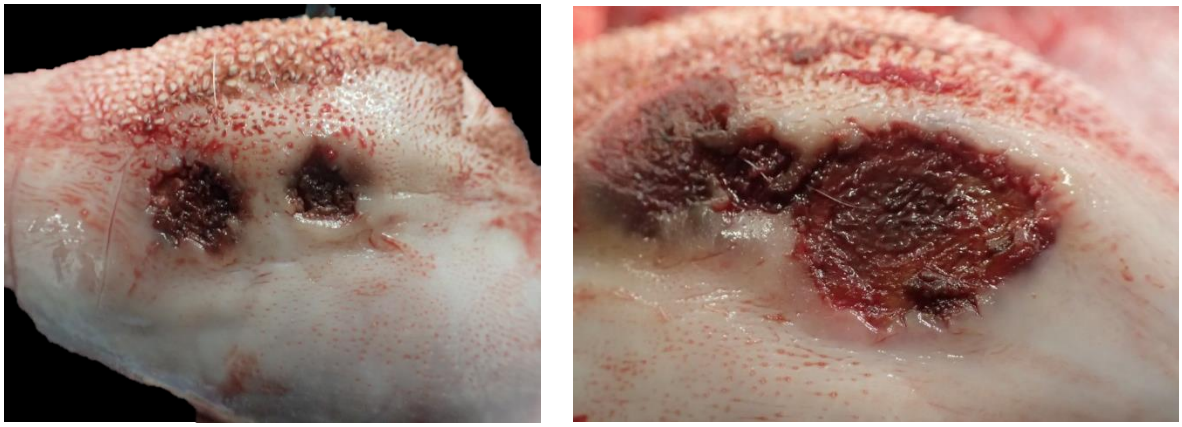


Figure 2: Severe ulcerative glossitis. Right and left lateral aspect, respectively.

Mycotic omasitis and abomasitis was diagnosed in an eight-year-old dairy cow in good condition. The cow had showed signs of acute milk drop and malaise and was euthanized after several days without improvement despite treatment. On gross pathological examination the omasum appeared dilated and doughy, and a foul, rancid smell escaped upon incision of the organ. The omasal leaves were friable upon palpation and red and black irregular areas in the mucosa could be seen after gently washing off the ingesta (Figure 3A and B). The abomasum was full of liquid ingesta, and small multiple foci of ulceration was seen within the mucosa. A diagnosis of severe, acute to subacute, necrotising omasitis and abomasitis with intralesional fungal hyphae was confirmed by histopathology. Fungal infections usually occur secondary to primary mucosal injury, which can occur as a result of ruminal acidosis, abomasal reflux or mucosal infarction, secondary to disseminated intravascular coagulation. There was no evidence of rumen acidosis in this case, and histopathological examination of the intestines was within normal limits.

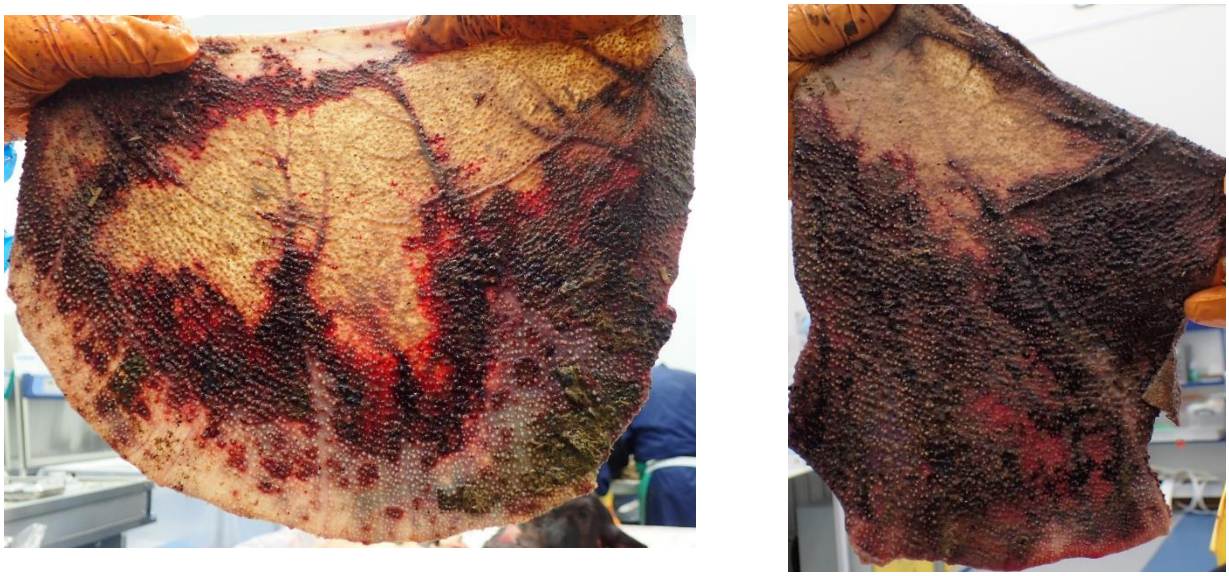


Figure 3A and B: Severe bovine necrotizing omasitis

Foetopathy

A male bovine foetus was submitted for an abortion investigation, with a history of likely *Neospora*-associated infection on the farm based on previous serology-testing and a foetal *post-mortem* examination. Vaccination for BVD, IBR and leptospirosis was in place on the farm. The foetus itself did not show any significant pathological lesions, however a severe and widespread haemorrhagic

intercotyledonary placentitis was noticed in the accompanying placenta (Figure 4A). Microscopic examination identified necro-haemorrhagic and suppurative placentitis with mixed bacterial colonies, including large numbers of cocci, often forming chains, and colonies of very small coccobacilli (Figure 4B). PAS staining of the placenta ruled out any fungal involvement in the placentitis.

The small coccobacilli were thought to possibly represent *Ureaplasma species,* hence additional PCR/DGGE testing of the foetal stomach content (FSC) and placenta was ordered in agreement with **APHA Cattle Expert Group.** *Ureaplasma diversum* and *Mycoplasma bovirhinis* was detected from the FSC, which confirms the diagnosis of ***Mycoplasma/Ureaplasma* associated abortion**. Standard testing for common infectious causes of bovine abortion rendered negative results and abortion associated with *Neospora caninum* could not be confirmed due to a negative PCR result and the lack of characteristic microscopic lesions within the myocardium.

A letter from Watson *et al.* (2012) reported that it is likely that *Mycoplasma/Ureaplasma* infections are responsible for sporadic abortions in the UK, rather than multiple cases, but more investigation is required for this assumption to be shown as valid. Unfortunately, it is not economically sustainable to routinely conduct *Mycoplasma* PCR/DGGE test for each abortion under the Surveillance service, which limits the investigation. *Ureaplasma diversum* has been associated with an abortion epidemic in Finland during 2002-2003 and has also been reported to be an important pathogen causing reproductive problems in Brazil.

No further abortion cases were submitted from the farm, hence further investigation has not been undertaken.

This case illustrates the importance of submitting placenta with the foetus in the investigation of bovine abortions.

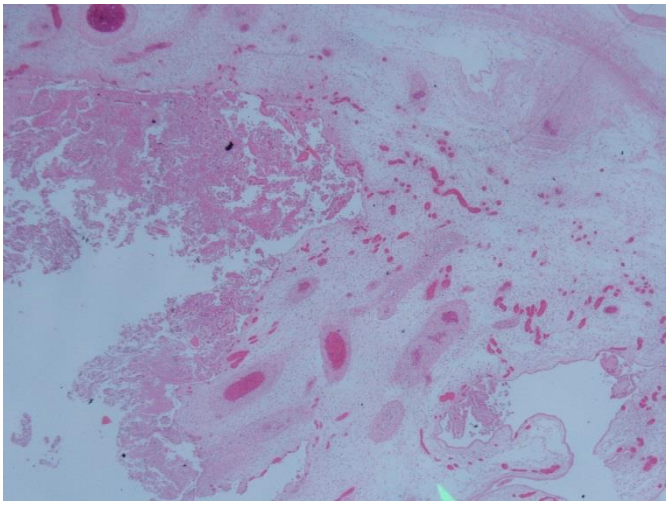


Figure 4A and 4B: Bovine placenta; haemorrhagic intercotyledonary placentitis.

No infectious cause of abortion could be identified in a bovine foetus estimated to be in the eighth month of gestation, with gross findings of fibrinous polyserositis and markedly enlarged and severely congested mesenteric lymph nodes (Figure 5). Furthermore, the shape of the heart was rounded and hypertrophy of the right ventricle was obvious (Figure 6), and congestion of the brain and lungs was also noticed. The exclusion of infectious causes, in combination with gross and microscopic findings of hypertrophy of the right cardiac ventricle, congestion of the liver alongside polyserositis, is suggestive of a diagnosis of **congenital right-sided heart failure**.

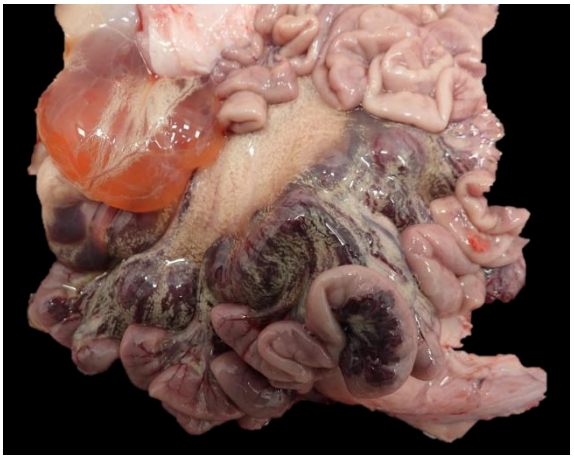


Figure 5: Congestion of mesenteric lymph nodes

Figure 6: Cardiac hypertrophy

SMALL RUMINANTS

Alimentary tract

Haemonchosis was diagnosed in a three-month-old weaned goat kid with clinical symptoms of blindness, anaemia, tachycardia, recumbency and head tremor. Two nannies and three kids had died within a week on the holding. Generalised pallor of the carcass was seen on gross examination in addition to a minimal amount of blood. The abomasum contained a small amount of dark coloured fluid with small white nematodes with morphology suggestive of mature *Haemonchus contortus* (Figure 7). A total worm count confirmed the diagnosis which is likely to have resulted in anaemia and the subsequent clinical symptoms witnessed prior to death.
The warmer summer in the UK this year may lead to an increase in the number of cases of haemonchosis in grazing sheep and goats at grass. The clinical symptoms of haemonchosis included anaemia and subcutaneous oedema and in contrast to other causes of parasitic gastroenteritis, diarrhoea is not a common feature. There is little host immunity to *Haemonchus contortus*, so disease can be seen in adults as well as in kids and lambs.

Figure 7: Mature worms seen in abomasal content of a goat.

Nervous system

A six-month-old castrated Boer goat with neurological symptoms including incoordination, weakness and blindness, was submitted for *post-mortem* examination. Gross findings consisted of raised areas within the cerebral cortex, which were yellowish in colour and soft in consistency. The brain was examined under UV light, and this demonstrated auto-fluorescence that corresponded to the areas within the cerebral cortex described (Figure 8A and B). The gross pathology and fluorescence of the brain described under ultraviolet illumination are typical of **Polioencephalomalacia (PEM)** also known as cerebrocortical necrosis (CCN), which was confirmed histologically. PEM is a nutritional disorder of ruminants, often associated with inadequate thiamine (vitamin B1) levels, which may be occur after (abrupt) dietary alterations and high grain/low fibre diets, which can interfere with the production by the rumen microbes. Excessive sulfur intake has also been reported to cause PEM, high levels can be found in brassica forages such as turnips, rape mustard and oil seed meals.

Possible factors involved in the development of CCN include dietary thiamine deficiency, changes of diet resulting in changes in the rumen flora (increased thiaminaise-producing bacteria), and intestinal pathology, parasitic gastroenteritis in particular, reducing absorption. Polioencephalomalacia can also be caused by sulphate intoxication, water deprivation, lead toxicity and carbon monoxide poisoning.

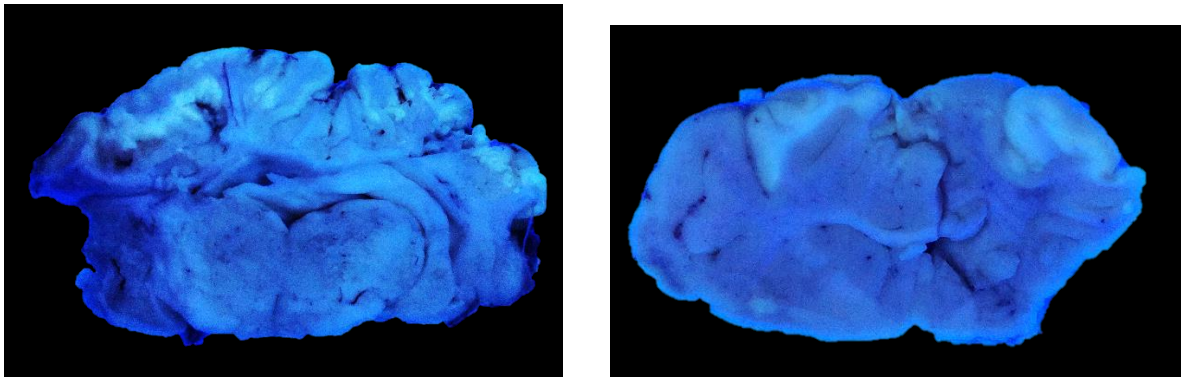


Figure 8A and B: Auto-fluorescence of the cerebral cortex

Systemic disease

Bilateral vegetative valvular endocarditis was diagnosed in a three-year-old ewe submitted for *post-mortem* examination. The ewe was in poor body condition, and represented the only clinical case in the flock. Relatively large yellow nodular masses were seen on the aortic, bicuspid and tricuspid valves (Figure 9), in addition to fibrinous pleurisy and pericarditis, pleural effusion and ascites. Endocarditis is a rare disease in sheep, compared to other ruminant species, such as cattle, with few cases reported in the literature. Similar to cattle, the lesions are most likely the result of an initial septic event with secondary valve colonisation. A light growth of haemolytic *Streptococcus* sp. was isolated from the liver in this case- a species of bacteria which is commonly involved in cases of valvular endocarditis. Endocarditis is considered to occur sporadically in ruminants, which also appears to be the case with this submission, as this adult ewe is reported to be the only animal affected on farm. Previous stressful events resulting in immuno-compromise might have contributed to the development of septicaemia in this adult animal.

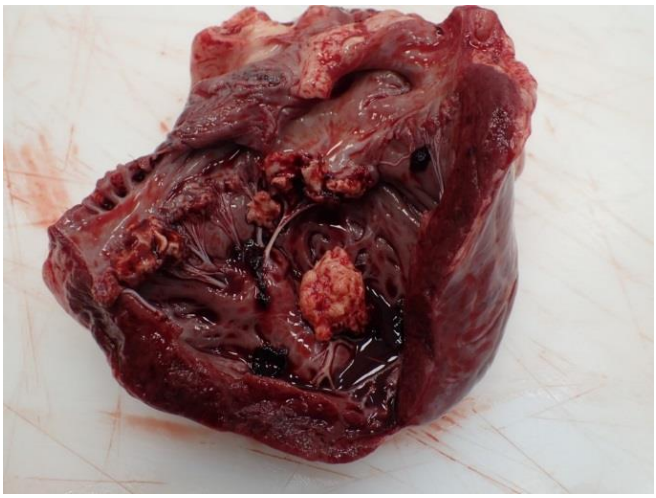


Figure 9: Ovine valvular vegetative endocarditis

PIGS

Systemic disease

Two five-month old finishers with a clinical history of lethargy and weight loss and discolouration of the ears and legs were submitted for *post-mortem* examination.
Lesions suggestive of systemic infection was seen in both pigs on gross examination and included, vegetative valvular endocarditis (Figure 10), discolouration of the skin and ear tip necrosis, (Figure 11), congestion of liver and lymph nodes and small amounts of fibrin within the body cavities. *Erysipelothrix rhusiopathiae* was isolated from the blood of one of the pigs which confirmed a diagnosis of bacteraemia associated with erysipelas in this animal. No significant bacteria could be isolated from the other pig, which could possibly be due to the *ante-mortem* antimicrobial therapy in this animal. The disease process was thought to be of a chronic nature due to the development of the vegetative valvular endocarditis, which might explain the wasting seen in these pigs. *Haemophilus parasuis*, *Salmonella* species*, Brachysopira* species, PRRSV and PCV2 associated disease was ruled out as a cause of wasting and systemic infection.

Vaccination for *Erysipelothrix rhusiopathiae* can be implemented as a method of controlling the disease, as the bacterium is considered to be present in most pig farms, where it is found in either the tonsils of the animals or in the environment. Growing pigs over eight weeks of age are most susceptible, and infected faeces is thought to be the main source of infection. The bacterium is known to be able to produce everything from peracute to chronic disease, and clinical symptoms can include fever, septic arthritis and lameness, skin lesions, infertility and abortions.

Figure 10: Porcine valvular vegetative endocarditis.

Figure 11: Porcine ear tip necrosis

FARM ANIMAL PATHOLOGY AND DISEASE SURVEILLANCE TEAM

VPC Director: Prof. Roberto La Ragione

Pathologists/Surveillance Officers:
Dr. Pernille Jorgensen (Service Lead)
Dr. Barbara Bacci
Dr. David Harwood
Dr. Alex Stoll

Epidemiologists/Consultants:
Prof. Alex Cook
Pete Sewell

Surveillance Project Manager: Julia Gerhold

VPC Administrator: Louise Ryan

Receptionist: Sue Grover-Smith

Technical Services Manager: Jon Cooper

Post-mortem Facilities Manager: Tom Hussey

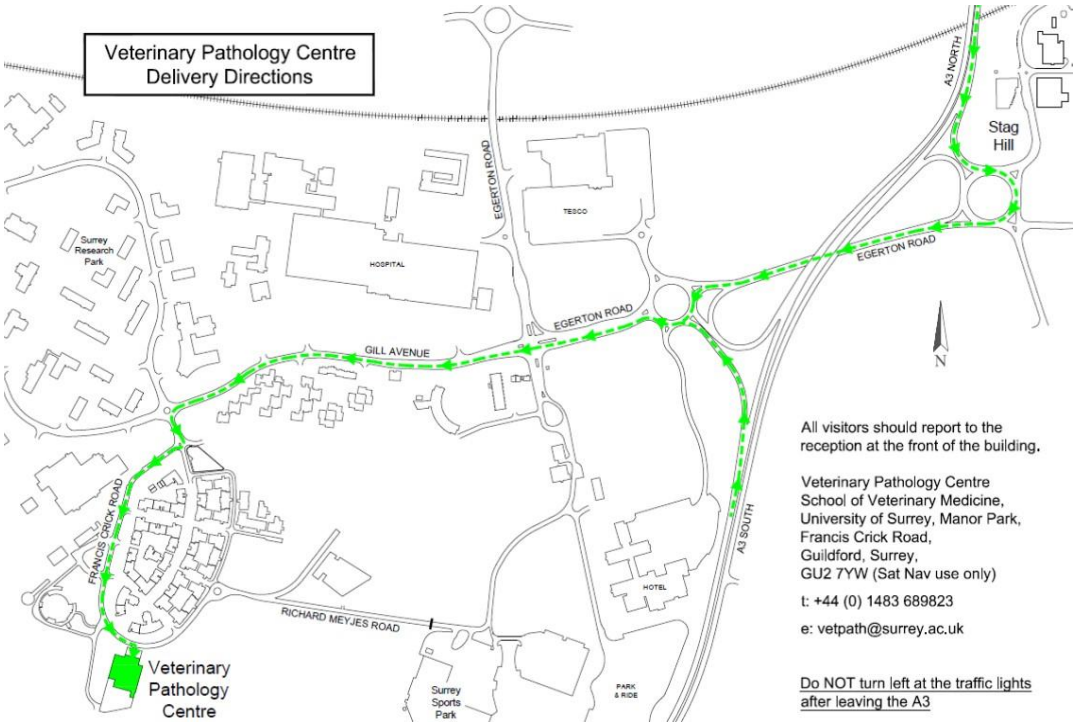
Technical Staff: Kat Gowan, Emily Tubb, Mike Chaplin, Keith Hiley, Alice Robinson

Pathology Laboratory Manager: Abbe Martyn

Histology Technical Staff: Duncan Grainger, Lucia Lozano White

Business Development Manager: Rachel Hargreaves

SURREY VETERINARY PATHOLOGY CENTRE



HOW TO FIND US

If using a Sat Nav, please follow postcode: GU2 7YW and do NOT turn left at the traffic lights after leaving the A3