Welcome to the first newsletter from the Veterinary Pathology Centre (VPC) at the University of Surrey! From 3rd January 2017 the APHA extended its free carcase collection services in England and we are now responsible for providing surveillance post-mortem examinations (PMEs) on farm animals from holdings across much of south-east England. This report provides news, information and details of some of the more interesting and significant cases we have encountered so far this year.

Farms within a 1 hour radius of Guildford are responsible for delivery of carcases to the Veterinary Pathology Centre (pale brown area). Farmers across a significant area of south-east England (pale blue area) are eligible for a free carcase collection service. To check if you are in an area where free collection is available please follow this link to enter your postcode: http://ahvla.defra.gov.uk/postcode/pme.asp

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.

Dr Chris Palgrave, BSc(Hons) BVM&S PhD FRCPath FHEA MRCVS
Lead Pathologist: Farm Animal Pathology and Disease Surveillance
NEWS ITEMS

Avian Influenza. After the 28th February the rules regarding housing of poultry have changed in some areas of the UK as a more targeted approach to controlling the virus has been adopted by Defra. For current advice and guidance on what to do if you keep poultry or to report suspicion of disease in animals, call the Defra Rural Services Helpline on 03000 200 301 or follow the link: https://www.gov.uk/guidance/avian-influenza-bird-flu

Schmallenberg virus. Up to date information about infection can be found at: http://ahvla.defra.gov.uk/vet-gateway/schmallenberg/index.htm

NADIS parasite forecast: http://www.nadis.org.uk/parasite-forecast.aspx

MEET THE VPC RECEPTION TEAM

Your first point of contact at the Veterinary Pathology Centre is most likely to be Louise or Sue. They will be more than happy to assist you with carcase submission or answer any other questions you may have about the service.

Louise Ryan

Sue Grover-Smith

FEATURED STAFF MEMBER: DR CHRIS PALGRAVE

Chris originally comes from a farming community in rural south Norfolk. He graduated from the Royal (Dick) School of Veterinary Studies, where he also completed an intercalated BSc (Hons) and PhD in porcine immunogenetics and comparative pathology.

Chris practised as a mixed (primarily dairy) vet in Pennsylvania, USA, before attending the Anatomic Pathology Residency Program at North Carolina State University in Raleigh, USA. He has been a lecturer and senior lecturer at the Universities of Edinburgh and Bristol, respectively. After 18 months gaining experience in a commercial diagnostic laboratory, Chris joined the University of Surrey in 2015 where he now leads the Farm Animal Pathology and Disease Surveillance team. Chris is a Fellow of the Royal College of Pathologists and the Higher Education Academy.

Dr Chris Palgrave
SURVEILLANCE CASE EXAMPLES

CATTLE

Reproductive:

**Schmallenberg virus (SBV)** – was investigated in calves from two separate premises in Kent and West Sussex. One case involved a full term calf that was submitted for examination following a ‘difficult calving.’ The forelimbs showed fixed flexion of the elbow and shoulder joints, the head was firmly held laterally and associated with cervical scoliosis – typical grossly of SBV infection. An SBV PCR undertaken on brain tissue was negative, but SBV serology on PME blood gave a strong positive result. The second calf also showed bilateral forelimb arthrogryposis, bilateral hindlimb hyperextension, cervical scoliosis and torticollis, SBV serology on PME blood gave a strong positive result an SBV PCR test is pending.

Stillborn calf with bilateral forelimb arthrogryposis, hindlimb hyperextension and cervical spinal scoliosis and torticollis, consistent with congenital SBV infection.

Alimentary:

A neonatal calf (<7 days old) was submitted following a history of nervous signs and diarrhoea. A pure growth of haemolytic *E. coli* was isolated from the surface of the brain, cryptosporidia, coronavirus and rotavirus were all demonstrated in faeces demonstrating a truly multi-factorial aetiology. The ZST result was 7.8 o.d. units (range >20) confirming hypogammaglobulinaemia. A review of the on farm calf management was advised. A summary of alimentary disease trends in calves from VIDA data was published recently in the Veterinary Record (Vol 180, 6, p 144), and is reproduced below.
Respiratory:

An outbreak of pneumonia in calves aged 5 – 6 months was investigated following the submission of an acute case that died rapidly. At PME, there was widespread interstitial and interlobular oedema with bulla formation that extended into the mediastinal space. There was also cranioventral lung consolidation. Histological examination confirmed a bronchopneumonia, with occasional large multinucleated syncytial cells containing 2-12 nuclei which overlapped and were ‘moulding’ around each other. **RSV was confirmed as the primary pathogen** by PCR.

In a separate more unusual respiratory investigation, an outwintered 6 month old suckler calf was losing condition, showed respiratory signs before becoming recumbent and dying. Gross pathology showed lungs to be uniformly firm in consistency and ‘heavy’, being more prominent over the caudal lobes, but with none of the more typical signs of calf pneumonia. Somewhat unusually, this was confirmed by histopathology as a **severe chronic fibrosing interstitial pneumonia**. Possible causes included ingestion of a mycotoxin (pneumotoxin) from mouldy feed – it was an isolated loss.

Miscellaneous:

A 12 year old cow from the New Forest area was submitted for PME after a history of condition loss, and the passage of dark blood tinged urine, other similar losses had been reported. At PME, the most notable feature was a severe haematuria with abundant frank blood in the urinary bladder lumen with many interspersed clots. The wall of the bladder was diffusely haemorrhagic and congested and numerous polypoid masses were present about the mucosa. This presentation is typical of ‘**bovine enzootic haematuria**’ associated with chronic bracken toxicity.

**Urinary bladder of an adult cow with haematuria.** Projecting from the bladder mucosa are multiple variably-sized haemorrhagic polypoid masses, consistent with chronic bracken toxicity (bovine enzootic haematuria).
Reproductive:

A number of ewes were reportedly dying around lambing, some pre-lambing some post lambing. Two were submitted for PME, both were in moderate condition. The most striking feature in each however was a total absence of any feed material in the rumen – both being completely devoid of content. The remainder of the alimentary tract also had little content. Livers were pale orange in colour, gall bladders grossly distended. One ewe was lambing with a ‘rotten lamb’ partially presented and gas-gangrenous change to the uterine wall. The second ewe had lambed, but the uterus contained copious purulent exudate. It was suggested that late pregnancy nutrition had resulted in nutritional / metabolic imbalance as the major underlying problem.

Alimentary:

Two ewes were culled to investigate a problem of ill thrift and diarrhoea in a lowland flock. At PME, both ewes were in poor condition and did have very fluid gut content. In one ewe, this content was lightly blood tinged in the terminal jejunum, and the associated lymph nodes were enlarged. Histopathological examination confirmed Johne’s disease in this ewe, intestinal sections showed segmental, moderate to marked, chronic, histiocytic and granulocytic enteritis. Lymph node showed multifocal, mild to moderate, chronic, histiocytic, lymphadenitis. Multiple intrahistiocytic acid-fast bacilli were evident in both sites. There was no evidence of Johne’s disease in the second ewe, and PGE was confirmed by elevated worm egg counts. Johne’s disease was also confirmed in a second flock, when a ewe showing weight loss and terminal diarrhoea was culled and sent for PME. Acid fast organisms were identified in faeces.

Thickened area of small intestine from an adult sheep. Left: Crypts separated by sheets of macrophages within the lamina propria (H&E). Right: Macrophages contain vast numbers of intracellular acid-fast (ZN, bright pink) bacilli, consistent with Mycobacterium avium paratuberculosis.

As with Johne’s disease in cattle, the condition in sheep can also present as an ‘iceberg disease’ – and some serological screening to assess flock prevalence was advised. The causative organism is common to both species. Clinical signs in sheep can be more vague, and include anaemia, weight loss and sub-mandibular oedema, with diarrhoea often only developing in the later stages. Gross pathology is also more subtle with only minimal gut thickening and associated lymph node enlargement.
Respiratory:
A group of adult goats were gathered together and held in a trailer, when one showed acute respiratory distress, collapsed and died. PME revealed acute laryngeal and pulmonary oedema with pulmonary congestion and collapse. Histologically this was thought to be associated with a bronchointerstitial pneumonia due to heavy infestation with the lungworm *Muellerius capillaris*. Death was most likely due to a combination of thoracic and abdominal compression in the trailer, together with pre-existing respiratory pathology. *Muellerius* infestation in goats is most often sub-clinical, but can predispose to other pathology.

Lung from an adult goat with pneumonia: Two coiled nematode larvae (*Muellerius capillaris*) are present in this image, surrounded by degenerate neutrophils and macrophages.

Neurological:
A ewe was submitted which showed circling, disorientation and drooling for a few hours before death. Histopathological examination of brain tissue showed severe perivascular lymphoid cuffing and granulomatous thromboencephalitis of the brainstem with mild chronic meningitis. These lesions are typical of encephalitic listeriosis. Listeriosis was also confirmed as the cause of sudden death in a Pygmy goat that had been ‘off colour’ for 24 hours. Typical histological lesions were again evident.

Listeriosis is most commonly associated with the feeding of poor quality or spoiled silage (pH >5.0), which allows replication of the causative bacterium, *Listeria monocytogenes*.

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**FARM ANIMAL PATHOLOGY AND DISEASE SURVEILLANCE TEAM**

**VPC Director:** Prof. Roberto La Ragione

**Pathologists/Surveillance Officers:**
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**Technical Services Manager:** Jon Cooper

**Post-mortem (PM) Room Manager:** Tom Hussey

**Technical Staff:** Ian Freeman, Emily Tubb, Mike Chaplin, Keith Hiley

**Histology Laboratory Manager:** Abbe Martyn

**Histology Technical Staff:** Duncan Grainger, Ella May

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

http://www.surreyvetpathology.com