Diarrhoea preweaning due to clostridial disease and *E. coli* infection
- First diagnosis of *Klebsiella* species septicaemia in post-weaned pigs
- Unusual outbreak of inclusion body rhinitis in preweaned pigs
- Severe polyarthritis due to *Streptococcus suis* type 17

**Alimentary Disease**

**Neonatal deaths and diarrhoea due to clostridial enterotoxaemia**

Three dead and one live two-day-old piglets were submitted to Winchester due to diarrhoea and high mortality on a 600-sow unit. Of the previous 60 sow and gilt litters, 50% had been affected by scour and increased mortality. A recent change had been made in the clostridial vaccination programme applied to the sows. Post mortem findings were virtually identical in all four piglets with a large quantity of clotted milk present within the stomachs and varying degrees of severe necrotic haemorrhagic enteritis with gas bubble formation visible in the intestinal walls. Intestinal content varied from liquid and yellow to frank haemorrhage. These findings were highly suggestive of *Clostridium perfringens* type C enteritis which was confirmed by detection of *Clostridium perfringens* alpha toxin in four piglets and beta toxin in two of the piglets (beta toxin is more labile making it important that sufficient numbers of piglets are tested to avoid false negative results). Gammaglobulin concentrations in serum varied from 22.2 to 8.5 ZST units, no reference range is available for pigs but compared to the reference range in calves and lambs (>20 ZST units), this suggested that some piglets had less than optimum colostral antibody uptake which may have been a predisposing factor in addition to the change in the vaccination. The clinical history in this case could raise concerns regarding porcine epidemic diarrhoea, however the post-mortem findings and laboratory results yielded a clear alternative diagnosis in this case.

**Enteric colibacillosis in pre and postweaned pigs**

Two cases of *E. coli* F4 colibacillosis were identified by Thirsk. In the first case, five of nine piglets were wasting with diarrhoea with some ataxia from a litter whose mother died and were being reared on goat milk. The second case involved diarrhoea in one to six week old pigs with a morbidity of 60% and mortality of approximately 3%. Antimicrobial sensitivity testing showed resistance to multiple antibiotics most likely to reflect antibiotic usage on the farms.

**PCV2-associated enteric disease with concurrent ileitis**

Loss of condition in 15 to 18-week-old pigs prompted the submission of three pigs to Thirsk. Post mortem examination revealed enteritis in all three pigs with pathology varying from a thickened jejunum and ileum in one pig, ileal rigidity in another and a generalised thickening of small intestinal walls and caecum in the third. Histopathology revealed severe chronic enteritis and colitis with acute superimposed ileitis in all three pigs consistent with *Lawsonia intracellularis* infection and also raised suspicions of PCVAD which was confirmed in the pigs by immunohistochemistry. No pathogenic *Brachyspira* species were identified.
**Respiratory Disease**

**Pasteurellosis and gastric ulceration causing finisher deaths**

Three dead pigs were submitted to Bury St Edmunds to investigate a recent increase in mortality to 3% and low grade respiratory disease in 20-week-old finishers on an indoor all-in, all-out 4000-pig unit. Pigs were vaccinated for PRRS, *Mycoplasma hyopneumoniae* and PCV2. All three carcases were very pale due to haemorrhage from gastric ulcers and, in two of the pigs, this was sufficiently severe to have been the cause of death. They also had significant cranioventral pulmonary consolidation with approximately 30% of the lung affected. *Pasteurella multocida* was isolated from the lungs of all three pigs and histopathology in one of them showed a severe necrotising bacterial pneumonia consistent with pasteurellosis. However, in addition, histopathology on another pig showed evidence of bronchiolitis fibrosa obliterans suggesting a previous severe necrotising bronchiolitis and earlier swine influenza virus infection. The clinical history of chronic low grade respiratory disease and a sudden recent increase in mortality and respiratory disease suggests that acute swine influenza may have been superimposed on pre-existing low grade pneumonias although, due to the stage of disease when submitted, it was not possible to confirm this by detection of swine influenza virus by PCR.

**Lungworm causing pneumonia in outdoor pig**

Lungworm was identified in an eight-week-old pig in very poor body condition which died and was submitted to the AHVLA/RVC surveillance centre. There was mottling of the pleural aspects of all lung lobes and firm reddened areas within the caudodorsal lung lobes. Dissection revealed large numbers of lung worm (*Metastrongylus apri*) in the bronchi and bronchioles and the presence of associated lung lesions made it likely that the lungworm contributed to the poor body condition. The pig also had diarrhoea and investigations are still in progress into the cause. Figure 2 illustrates a case of pneumonia in a pig due to lungworm. The earthworm is the intermediate host for pig lungworm and, as earthworm can live several years, this can be a means by which lungworm infection builds up over time and can carry over between batches kept outdoors. Respiratory disease due to lungworm is not a common diagnosis at AHVLA but has typically been diagnosed on continuous outdoor units where there is regular re-use of ground for rearing pigs, sometimes in association with PCV2-associated disease in unvaccinated herds.

![Figure 2: a) Pneumonia in a pig due to lungworm b) lungworm visible in lumen of airway](image)

**Bacterial pneumonias and Glässer’s disease**

Three seven-week-old pigs were submitted to Penrith after being found dead. All three had extensive pneumonias, pericarditis and peritonitis. *Haemophilus parasuis*, *Streptococcus suis* and *Pasteurella multocida* were isolated from the lungs indicating a mixed bacterial aetiology was involved including Glässers disease. Although clinical signs had not been noticed, the pathology indicated that the
pneumonias were in fact chronic in nature.

**Unusual outbreak of inclusion body rhinitis in preweaned pigs**

Two live three-week-old piglets from a small farrow to finish unit were submitted to Thirsk to investigate a respiratory problem. The litters were healthy until three weeks of age when sneezing began. Most of the litter recovered however, one or two started to snuffle and snore very badly and had difficulty swallowing. This progressed to breathing difficulties and most of these affected piglets died. There was a poor response to antimicrobial treatment. Post-mortem examination revealed a bilateral white to clear mucoid nasal discharge with reddened nasal turbinates. No other abnormalities were detected in the respiratory system of one pig while the second had minor purple consolidation in one cranial lung lobe. No significant bacteria were isolated but histological examination of sections of snout revealed widespread intranuclear inclusion bodies in glandular epithelium with plasmalymphocytic infiltration of the submucosa confirming inclusion body rhinitis. This is a herpes virus infection, which replicates in the mucus glands of the nose of non-immune piglets. It then progresses to viraemia and finally moves to other epithelial sites. In pigs older than three weeks clinical signs are fairly minimal however, anorexia and some pyrexia can occur. Younger pigs can develop rhinitis, sneezing and respiratory distress. The presence of intranuclear inclusions could raise concerns over Aujeszky's disease, however, the absence of significant pneumonias, relatively low mortality, lack of nervous disease in young pigs and lack of abortion in the breeding herd helps to distinguish the two herpes virus infections.

**Systemic Disease**

**First diagnosis of Klebsiella species septicaemia in post-weaned pigs**

*Klebsiella pneumoniae* subspecies *pneumoniae* (*Kpp*) septicaemia was diagnosed at Bury St Edmunds as the cause of sudden death of 10 five-week-old pigs. The pigs were found dead on the morning of submission in different tents on an outdoor nursery unit onto which 600 weaners were introduced a week earlier from two sow herds. This is the first diagnosis of an outbreak of *Kpp* septicaemia in post-weaned pigs rather than pre-weaned pigs since the disease emerged in the East Anglian region in the summer of 2011; it is the second diagnosis of the disease this year. Neither of the two sow herds from which pigs were sourced have had outbreaks of *Kpp* septicaemia diagnosed in preweaned pigs. A farm visit is being undertaken to obtain background details. Further information on *Kpp* septicaemia is available on this link: [http://www.defra.gov.uk/ahvla-en/publication/pig-survreports](http://www.defra.gov.uk/ahvla-en/publication/pig-survreports)

All the outbreaks of *Kpp* septicaemia have been diagnosed in the East Anglian region and have consistently presented as sudden deaths of pigs in good body condition during the summer months as illustrated in figure 1. Postmortem findings are similar to other causes of septicaemia and laboratory investigation is essential to make a specific diagnosis and distinguish *Kpp* septicaemia from other septicaemias such as *Streptococcus suis* or erysipelas.

Figure 1: Seasonality of *Kpp* septicaemia outbreaks diagnosed since 2011
**Musculoskeletal Disease**

**Severe polyarthritis due to *Streptococcus suis* type 17**

Two live and two dead nine-week-old pigs were post submitted to Thirsk to investigate severe lameness and meningitis on a newly established unit operating within a three site production system. Affected pigs were from the first batch to have farrowed and showed severe joint thickening and meningitis. Sixty pigs from a group of 400 required treatment with injectable penicillin and there was some response to treatment although mortality rate in affected pigs was around 40%. In submitted pigs there was marked fibrinous arthritis and engorgement of meningeal blood vessels. *Streptococcus suis* serotype 17 was isolated from joints and brains and severe acute to subacute purulent meningitis was confirmed histologically. This *S. suis* type is not commonly associated with primary disease in AHVLA submissions but the profile of pathogens causing disease on newly established “young” herds does sometimes differ from that in established “older” herds.