



VLA MONTHLY SCANNING SURVEILLANCE REPORT SEPTEMBER 2009

HIGHLIGHTS

- **Expected seasonal increase in Salmonellosis Dublin in cattle**
This late summer/autumn increase in Salmonella Dublin related disease has been observed for the last ten years. It may be related to calving patterns
- **Cases of idiopathic haemorrhagic diathesis (aka “blood sweating”) in calves investigated**
Recent investigations have identified cases in very young calves of only 1-2 days of age and cases in which there are clear signs of bone marrow regeneration. Cooperation from veterinary practices and farmers has resulted in a rapid accumulation of valuable data and tissue samples for further study. A European symposium is taking place on Dec 5th in France
- **Outbreak of botulism in ewes associated with access to poultry litter**
Further evidence of lack of awareness of the risk for cattle and sheep of contact with poultry litter. In this case it was the flockowners own manure causing the problem. Specific targeting of producers who have both poultry units and cattle or sheep enterprises with information could have a beneficial effect. Greater awareness by cattle and sheep farmers is still needed
- **Evidence of fasciolosis in lambs caused by the winter infection of snails**
Pastures are contaminated with metacercariae resulting from overwintered infections in snails. This increases the risk of disease being seen much earlier in the year
- **Salmonellosis in pigs associated with Salmonella Typhimurium types U288 and PT 193**
Both these seotypes have been previously associated with disease in pigs
- **Further outbreak of disease in chickens caused by Infectious bronchitis virus QX strain**
This isolation follows the previous trend of disease being diagnosed in small flocks. The contact networks involved in backyard flocks need to be studied in order to understand how newly introduced infectious agents can be spread and what risk this poses to large poultry units and to public health should any future agent be a zoonosis

CATTLE

Reproductive diseases

Salmonella Dublin

Preston diagnosed abortion due to *Salmonella* Dublin on a number of units. In one case two, third trimester foetuses, were submitted from a 150 cow dairy herd which had experienced 9 abortions in the last two months. Both dams were reportedly well but a pure and profuse growth of *Salmonella* Dublin was produced from the stomach contents of each foetus.

Salmonella Dublin was also diagnosed by Carmarthen as causing the abortion of two cows over 24 hours from a 105 milking cow herd.

Mycotic abortion

Leahurst diagnosed mycotic abortion following identification at necropsy of typical skin lesions in a foetus with a gestational age of approximately 200 days. The placenta showed typical lesions of thickening of intercotyledonary tissue, haemorrhage around the edges of cotyledons and focal haemorrhage and necrosis within some cotyledons. Mixed fungal species were isolated from placenta, while pure growth of *Aspergillus fumigatus* was isolated from foetal skin.

Alimentary tract diseases

Salmonellosis

Penrith remarked on a noticeable increase in the number of *Salmonella* Dublin diagnoses during September. The diagnoses were mainly in adult cattle either aborting or with diarrhoea. Most of the farms had experienced *Salmonella* Dublin in previous years.

Preston also diagnosed *Salmonellosis* Dublin on identification of the organism in septicaemic distribution from a 7 week old dairy bred bull calf. This calf was purchased at 1-2 weeks of age and introduced to a calf rearing unit as one of a group of seven.

Langford diagnosed *Salmonellosis* Dublin associated with abortion in one cow and severe post calving diarrhoea and jaundice in another adult dairy cow. It was also diagnosed in an animal submitted for post mortem after a group of 12 Holstein replacement heifer calves died after showing gastrointestinal and respiratory signs.

Shrewsbury diagnosed the condition in a 7 month old Holstein heifer which was ill for 2 days with pyrexia and abdominal discomfort. It was the only affected animal in a group of 12. As there was no response to antibiotics and non steroidal anti-inflammatory drugs, the animal was euthanased and submitted. The carcass was jaundiced with the liver enlarged and orange in colour. *S. Dublin* was isolated in septicaemic distribution.

Traumatic reticuloperitonitis (Tyre Wire Disease)

Traumatic reticuloperitonitis (TRP), otherwise known colloquially as 'Tyre wire disease' was diagnosed by RVC in a two-year-old dairy cow. She had a sudden milk drop approximately three weeks before she died. The attending veterinarian reported muffled heart sounds and a tentative diagnosis of TRP was made. Post-mortem examination revealed a grossly distended pericardial sac containing a massive volume of yellow coloured exudate. The pericardial sac and endocardium were grossly thickened (fig 1). The wire was present

predominantly in the pericardial sac, but one end remained through the diaphragm and into the thickened wall of the reticulum.

Fasciolosis

Starcross reported that cases of patent fasciolosis had increased over the previous month, with 9 cases diagnosed. Rumen fluke infection (*Paramphistomum sp*) was diagnosed once.

Shrewsbury reported 11 incidents of fasciolosis, 9 of which were identified in adult cattle but one case was in a group of 8 month old fattening calves which had been at pasture over the summer. They reported the cases to be widespread in the region affecting farms in Herefordshire, Staffordshire, Cheshire, Shropshire and Gwynedd and Denbighshire.

Figure 1.
Pericardial / endocardial thickening in a case of “Tyre Wire”



Parasitic gastroenteritis

Shrewsbury reported parasitic gastroenteritis to be more common during the month, having diagnosed 8 incidents. Seven of the outbreaks were in dairy calves with one in weaned suckler calves. There were particularly high worm egg counts in some, counts of 1050 and 7450 trichostrongyle type eggs per gram in faeces of two seven month old calves on one farm, and 7200 and 18450 trichostrongyle eggs per gram in the large intestinal contents of two dairy calves. In the latter case all 14 calves in a group were reported to have diarrhoea with 3 having died or been euthanased. Abomasal worm counts on two affected animals confirmed the presence of 700 *Ostertagia* in one and 4100 *Haemonchus contortus* in the second, with 9400 and 300 *Cooperia* species, respectively within the small intestinal contents.

Respiratory Diseases

PI3 and RSV

Starcross investigated three outbreaks of respiratory disease in adult dairy cows. On one unit 25 out of 140 milking cows were affected and paired blood samples identified significant seroconversion to PI3 virus. Similarly, paired blood samples were received from a severely affected cow within a group of 142. The animal was pyrexemic, depressed, had an increased respiratory rate and an oculonasal discharge. Serological examination of acute and convalescent samples identified rising titres to both RSV and PI3. In contrast cows affected on the third dairy farm were dry. 12 animals out of a group of 40 developed sudden onset respiratory signs. Paired blood samples identified seroconversion to both RSV and *Mycoplasma bovis* in one out of four samples.

Parasitic bronchitis (Dictyocaulosis, Husk)

Parasitic bronchitis was a common diagnosis during September. Penrith diagnosed the condition as the cause of respiratory disease in yearling dairy heifers on two farms, where it caused significant clinical disease

Shrewsbury diagnosed four outbreaks of husk, one by the demonstration of larvae of *Dictyocaulus viviparus* in faeces, and on histopathology in three cases. One case was in suckler heifers where 20 of a group of 30 had lost condition with coughing and respiratory distress. In two of the outbreaks there was significant mortality with 5 of eight 5 month old calves dying on a north Wales dairy farm and 5 of 30 ten month old fattening cattle dying on a Shropshire farm.

Luddington also reported husk to be a common diagnosis. In one herd of 29 suckler cows three cows died and one of these was submitted for necropsy. The cows had been coughing following exercise. Once the cows showed signs of systemic illness, death followed within 24 hours. Post mortem examination revealed large numbers of lungworms in the trachea and bronchi with concurrent pneumonia affecting >90 % of lung tissue.

In Wales *Dictyocaulus viviparus* infection was diagnosed on seven other occasions by both Aberystwyth and Carmarthen in September, with six diagnoses made in adult cattle.

Other Diseases

Botulism

Penrith diagnosed botulism in a group of fattening cattle. The pasture had been spread with poultry and bovine manure while the animals were still grazing. One animal was found dead and three others weak and dying seven days after the manure had been spread. Initial post-mortem examination by the PVS identified GI tract pathology, reporting an inflamed abomasum and small intestine. Acute clostridial intestine disease was suspected by the attending veterinarian. A subsequent post-mortem examination at VLA identified congestion of the small and large intestines, but no other significant gross pathology. The clinical history was very suspicious of botulism and type D botulinum toxin was demonstrated in intestinal contents.

Idiopathic haemorrhagic Diathesis of calves (“blood sweating”)

Up to the end of September, 37 calves on 31 farms had been diagnosed with the condition in England with no cases yet having been diagnosed in Wales. Intercurrent infection is a common finding. Penrith described a case where *Streptococcus dysgalactiae* was isolated as the cause of septicaemia in one case, *Bibersteinia trehalosi* as the final cause of death cause in another three cases from two different farms.

Preston described two cases on dairy farms and one in a calf rearing unit. Two of the affected animals were Holstein Friesian bulls, whilst the third was a Blonde Aquitaine bull. One of the dairy animals had died at only 3 days of age. RVC investigated a case in a sixteen-day-old calf which had developed a sudden onset of listlessness and inappetence followed by spontaneous bleeding from multiple areas of the skin, the pinnae and the nostrils (Fig. 2) Necropsy revealed haemorrhages throughout the carcass including in the muscles of the limbs, the heart and the thymus. A blood clot was present in the skull.

Luddington reported a case affecting a one-week-old Holstein bull calf recently purchased by a calf rearer, the farmer described the calf as if “somebody had shot at it”.

Figure 2
Calf affected by Idiopathic Haemorrhagic Diathesis (blood sweating)



Keratoconjunctivitis

Starcross investigated an outbreak of severe eye disease affecting approximately 75 cows from a milking herd of 400. The condition was described as very aggressive, initially presenting as watery eyes which progressed to corneal ulceration within 12 hours and severe eyelid inflammation and clouding of the cornea within 24 hours. Rupture of the

cornea occurred in those animals not treated promptly. Affected cows were depressed due to the associated pain. The condition did respond to sub-conjunctival penicillin and steroid injection. Eye swab cultures revealed *Moraxella bovis*.

Mycoplasma Wenyonii

Four of a group of 200 dairy cows showed distal limb oedema and teat oedema with mild pyrexia and milk drop. *Mycoplasma wenyonii* was identified by DGGE in an EDTA blood sample and organisms suspicious of *Mycoplasma wenyonii* were seen in a smear of red blood cells from one animal. There are no known control measures for this organism (little is known about its epidemiology) apart from general fly control and avoidance of using a single needle to inject multiple animals.

SMALL RUMINANTS

Alimentary tract diseases

Clostridial Enterotoxaemia (pulpy kidney disease)

Clostridial enterotoxaemia was diagnosed as the cause of death in two 5-month-old lambs that had been found dead. Only one group of 100 lambs had been affected. These sheep were the only ones to receive additional concentrate and the lambs had only received their first clostridial vaccination. Pulpy kidney disease was also diagnosed in a group of lambs at grass where 9/300 had died suddenly. They were unvaccinated and had recently been wormed prior to the outbreak.

Parasitic gastroenteritis

Starcross reported high worm egg counts of >1,000 trichostrongyle-type egg from samples received across Devon. The highest count, of 32,100 egg, was found in a sample from a weaned male lamb that was reportedly anaemic and showing a slight scour suggestive of haemonchosis. The same parasite was also confirmed as part of a mixed infection that had resulted in the deaths of two five-month-old weaned lambs examined post mortem out of a group of 40. Both had pale mucus membranes and one showed severe faecal soiling. Bury investigated a case in which five deaths had occurred over a period of around three to four weeks from a group of 30 ewes kept in one of two fields. The group had been wormed before arrival in December 2008 but not since. They lambed at the end of June and lambs at foot were not affected. Clinical signs included loss of condition with terminal signs of depression and weakness in the 24 hours prior to death. 1,200 *Haemonchus contortus* were among the total worms counted in the abomasal contents.

Fasciolosis

Cases of chronic fasciolosis continued to be diagnosed. Evidence of contamination of pastures with cercariae from the winter infection of snails was provided by a case in which two faecal samples from five to six-month-old lambs with a history of malaise revealed fluke eggs in one of the samples. This finding indicates exposure to metacercariae in June.

Respiratory Diseases

Mycoplasmosis and Mannheimia

The carcass of a four-and-a-half month-old lamb was presented to Sutton Bonnington for necropsy. The lamb was underweight and not thriving and when presented was recumbent. It was one of seven lambs to be affected in a similar way in a flock of 130. The cranioventral aspects of the cranial, middle and cranial aspects of the caudal lung lobes were purple-grey in colour and firm. *Mycoplasma ovipneumoniae*, *Mycoplasma arginini* and *Mannheimia haemolytica* were detected in lung tissue by DGGE and culture respectively. The Trichostrongyle worm egg count was moderately high at 1550 epg suggesting that parasitic gastroenteritis had contributed to the poor condition of the animal.

Pasteurellosis

Langford investigated a 130 ewe Suffolk flock which had exhibited exercise intolerance on gathering and significant proportion of which were in poor body condition with some showing dyspnoea and coughing. Pneumonic lung specimens from which *Pasteurella multocida* and *Bibersteinia trehalosi* (previously *Pasteurella trehalosi*) were isolated. Fluke eggs were also seen in two out of three faeces samples from the flock indicating that fluke was likely responsible for the poor body condition, and contributing to the disease process.

Pasteurellosis was also diagnosed in growing lambs by Luddington who described a case in which 15 lambs had died from a group of 1000, with nasal discharge, malaise and recumbency seen in several others. On post mortem, ecchymotic haemorrhages were seen in the subcutis over the throat and cranial neck, the nasal chambers and sinuses were severely congested and the lung lobes were swollen and congested. *Bibersteinia trehalosi* was cultured from lung tissue.

Nervous Diseases

Louping Ill

Three lamb carcasses were submitted to Penrith for post-mortem examination from a flock where 8/150 lambs had died suddenly. All three lambs had septicaemia but with three different organisms *Escherichia coli*, *Staphylococcus aureus* and *Bibersteinia trehalosi* respectively. This suggested immune suppression and subsequent questioning confirmed exposure to ticks. Further examinations led to a subsequent confirmation of louping-ill meningoencephalitis in all three lambs.

Sarcocystosis

A three-to-four-month-old lamb was found recumbent and unable to stand, although there was some ability to move the hind legs. It was submitted to Winchester for necropsy which revealed no gross lesions affecting the lamb's nervous system however histopathological examination of the brain and section of spinal cord identified the presence of protozoal structures. Immunohistochemistry using special stains for *Neospora* and *Toxoplasma* gave negative results therefore a presumptive diagnosis of *Sarcocystis* infection was established.

Botulism

An initial submission of three carcasses of adult Dorset Cross ewes to Winchester were received as part of an investigation into 10 deaths within a group of 60 ewes occurring over the preceding few days. Affected animals had been seen to walk with arched backs and subsequently become recumbent prior to death. Affected animals appeared bright even whilst recumbent. This group of ewes had been moved to a new field two days previously but the previous pasture had recently received a dressing of poultry manure from the owner's own layer and broiler flocks. Ewes in adjacent fields which had not received poultry manure dressing appeared normal. Two live and two further dead ewes were submitted. One ewe was in lateral recumbency with dilation of the pupils and froth at the mouth. There was a flaccid paralysis of the limbs and tail. The second ewe was in sternal recumbency and bright. This animal was unable to stand and held its head to one side with the neck bent in a peculiar S-shape. A diagnosis of botulism in the affected animals was made on clinical grounds. The Food Standards Agency were notified.

PIGS

Alimentary tract diseases

Salmonellosis

Four live pigs were submitted to Bury from an indoor 250-sow breeder finisher unit where wasting was affecting 5% of 600 pigs aged six to 10-weeks-old with approximately 3% post weaning mortality. Piglets were vaccinated for PCV2 and *Mycoplasma hyopneumoniae*. Three of the four submitted pigs had diarrhoea, two of these had severe typhlocolitis and one had thickening and corrugation of the ileum. A multiple aetiology was identified with porcine intestinal adenomatosis confirmed in the pig with ileal thickening, and *Salmonella* Typhimurium phage type U288 and *Brachyspira pilosicoli* being isolated from the large intestines of all three scouring pigs. PCV2 associated disease was not identified.

Salmonellosis due to *Salmonella* Typhimurium phage type U288 was diagnosed as the cause of weight loss and occasional scour in eight-week-old pigs from an outdoor rearing site. Twenty-five of 1,100 pigs had died. Pigs were vaccinated for PRRSV and PCV2. Two dead pigs were submitted both of which had a necrotic typhlocolitis which yielded the salmonella organisms.

Another outbreak of salmonellosis was diagnosed on an indoor 540-sow unit rearing pigs to 35 kgs. From one shed of 1000 rearing pigs, 55 deaths were recorded over a nine week period with two to three wasted pigs being found dead each morning. Rearing pigs were vaccinated for *Mycoplasma hyopneumoniae* and PCV2. Two dead pigs were submitted, both of which had a severe typhlocolitis from which *Salmonella* Typhimurium phage type U288 was isolated and no other enteropathogens or PRRSV were identified. Histopathology did not reveal involvement of PIA or PCV2.

Sutton Bonnington isolated *Salmonella* Typhimurium PT 193 from pooled faeces submitted from 14-week-old rearing pigs. The diarrhoea had started in 25% of a group of 71 on the morning of submission. There had been no deaths.

Respiratory Diseases

Mycoplasmosis

Two live piglets aged 6 weeks were submitted to Preston to investigate an outbreak of respiratory disease in a breeding herd. Coughing was initially observed in adults together with an occasional animal with a mucopurulent nasal discharge. Disease then progressed to affect most litters typically from around 4 weeks of age onwards – clinical signs in younger pigs included coughing, increased respiratory rate and a “thumping” respiration in some animals. There was gross and histological evidence of severe chronic proliferative bronchointerstitial pneumonia in both animals submitted. No bacteria were recovered (possibly due to prior antibiotic therapy), but *Mycoplasma hyopneumoniae* was detected in lungs from both pigs by DGGE. Tests for PRRS and SI viruses were all negative.

Other diseases

Erysipelas

Bury investigated an outbreak of swine erysipelas which presented as sudden death of approximately ten of 1000 pigs on the day of weaning. Pigs died rapidly after being seen panting, with reddened skin and a few pigs were seen with diamond-shaped skin lesions. The pre farrowing erysipelas booster for the gilts, from which these pigs were weaned, had been inadvertently omitted. Other ages of pig were reported to be well, which included sows, with numbers born live remaining good.

Neurological Diseases

Streptococcus suis type 2

Streptococcus suis 2 infection was responsible for eight sudden deaths of nine-week-old pigs from a group of 600 on a 2300 pig indoor nursery finisher unit containing pigs from two sources where only one source was affected at the time of submission. Some coughing and joint swelling was reported in the group. Three dead pigs were submitted to Bury with gross lesions suggestive of a septicaemia and, in one, a fibrinous exudate was present over the meninges. Meningeal smears from all three pigs tested positive for *S.suis* 2 and the organism was isolated from meninges and internal viscera. No PRRSV involvement was identified. These pigs had been vaccinated with *Streptococcus suis* 2 vaccine.

BIRDS

Commercial Layers and Layer Breeders

Intestinal Spirochaetosis

Avian intestinal spirochaetosis was diagnosed in two flocks of 24 and 28 week old free range layers which were experiencing a drop in egg production. *Brachyspira pilosicoli* was cultured from caecal contents in the flock experiencing a slight drop in egg production whereas a more pathogenic strain - *Brachyspira intermedia* was present in the pasty yellow caecal content of the flock undergoing a 20% drop in egg production.

Infectious bronchitis

A QX-like infectious bronchitis virus was isolated from pooled tracheal and lung tissue submitted from a group of 12 to 16-week-old pullets – six of which had died out of a group of 200. The unit was a small rearing enterprise which bought in day-old chicks rearing to point of lay. Mild respiratory signs of sneezing and loss of weight were described in the group.

Broilers and Broiler Breeders

Rickets

Rickets was suspected in a flock of 29 day-old broilers submitted with a history of inactivity, depressed growth and deterioration of litter conditions. Findings at post mortem examination were of pododermatitis poor bone strength affecting leg bones in particular, and slight enlargement of parathyroid glands.

Pseudomonas

Pseudomonas aeruginosa septicaemia was diagnosed in two successive submissions of 1, and 6 day old broiler breeder chicks. Routine cultures of liver, spleen and heart produced good virtually pure growth of *Pseudomonas aeruginosa*. Histological examination of skin and tissues at the back of the neck revealed mild focal necrosis with congestion and oedema associated with dense clusters of bacterial rods suggesting the possibility that bacteria might have been introduced during vaccination.

Backyard Flocks

The visceral form of Marek's disease and concurrent "scaly-leg" was diagnosed in an 18 month old Light Sussex hen. Post mortem examination findings included multiple creamy nodules in the heart and thickening of the scales of the legs. Histological examination confirmed the presence of a pleomorphic infiltrative lymphosarcoma in myocardium muscle and peripheral nerve with a pattern of perivascular distribution. Examination of skin from the leg and within the thickened scales there were numerous burrowing mites consistent with *Knemidocoptes mutans*.

Turkeys

Blackhead

Malaise and occasional deaths were reported in a batch of 28 five to eight week old turkeys. Ten birds in total had died, including five on one day. The livers of all five birds examined showed multiple necrotic lesions consisting of slightly sunken coalescing foci with pale centres surrounded by reddening. Each bird also had caecae which were enlarged and had a necrotic, sometimes caseous, core with extensive mucosal necrosis and some associated serosal inflammation. The lesions were typical of histomoniasis, or blackhead, caused by *Histomonas meleagridis*. Chickens were also present on the premises and the turkeys had been housed in a shed previously used by chickens.

Gamebirds

Staphylococcal septicaemia

Five live birds were submitted to Thirsk for examination. The post mortem findings were unremarkable apart from marked, irregular pale-coloured lesions in a trabecular pattern in the livers in two of the birds. The crops and proventriculi of all the birds were devoid of any food. Routine cultures on liver and spleen revealed moderate to heavy, mostly pure growths of beta haemolytic *Staphylococcus aureus*. The clinical signs, post mortem findings and culture results were consistent with a diagnosis of *Staphylococcus aureus* septicaemia. It has been suggested that removal of hard plastic anti-pecking bits from pheasant poults by twisting them without cutting them first, with resulting damage to the nasal mucosa, may sometimes be responsible for introducing staphylococcal infections such as septic arthritis and tenosynovitis and this may have been the predisposing factor in this case.

MISCELLANEOUS SPECIES

Alpaca

Sudden death in a 2-year-old female alpaca was investigated by Penrith. The animal was kept at pasture with another alpaca, two Shetland ponies, and a recently introduced Arab horse. Following histopathology, it was found that the animal had very severe purulent, bacterial meningitis. A possible cause for the meningitis was *Streptococcus equi* spp *equi* infection, which was cultured from the lung. No bacteria were isolated from routine or selective listerial cultures of the brain.

WILDLIFE

Listeriosis in Water voles

Several water voles (*Arvicola terrestris*) were submitted from a captive breeding group used for licensed re-introductions in the North of England. A 6-week-old animal, one of a litter of four, was seen with an unusual gait and head tilt before being euthanased. Histopathology revealed meningoencephalitis, epicarditis and myocarditis consistent with listerial septicaemia and encephalitis. Subsequently an adult animal found dead was also diagnosed with septicaemia caused by *Listeria monocytogenes*.

Salmonellosis in Badgers

Investigations were carried out into a persistent diarrhoea problem in a group of weaned badger cubs at a wildlife rescue centre. A number of *Salmonella* serotypes were isolated from faecal samples of affected cubs. These included S. Agama, S. Ajioba, S. Nagoya and S. Berta. A *Giardia* species was also identified. Advice was given regarding the zoonotic risks and follow up investigations are to be carried out.

Botulism in waterfowl

Two live female adult swans and a live adult mallard drake were submitted to Winchester as part of an investigation into increased mortality amongst wild fowl on a recreational lake. Approximately 30 to 40 water fowl of varying species including swans, gulls and ducks had been found dead or paralysed and subsequently died over the past two months. All three submitted birds

showed flaccid paralysis of the neck, wings and limbs and subsequent post mortem examination was unremarkable. The clinical signs and lack of specific post mortem findings were highly suggestive of botulinum toxicity which is often associated with low water levels together with high ambient temperatures resulting in increased access to decomposed vegetation and invertebrate material. Toxin testing subsequently confirmed the diagnosis in the mallard.

Figure 3
Affected duck showing the flaccid paralysis of the neck (limber neck) associated with botulism



VLA FARM INVESTIGATIONAL VISITS SEPTEMBER 2009

Reason for Farm Visit	Number of farm visits
Animal health & welfare	20
Human & animal health & welfare	7
Human health only	1
Other projects	4