**BOVINE**

A calf less than four weeks old in Northland developed lameness and coughed up blood. The calf’s dam had been vaccinated against bovine viral diarrhoea virus (BVDV) with PregSure™ BVD. A complete blood count showed that the calf had severe thrombocytopenia (platelets < 10 x 10⁹/L; reference range 190–940), severe neutropenia (segmented neutrophils 0.01 x 10⁹/L; reference range 0.6–9.4) and mild non-regenerative anaemia (haemoglobin 65 g/L; reference range 80–100), with no increase in reticulocytes. The history and findings are consistent with bovine neonatal pancytopenia (BNP).

BNP is a rare immune-mediated syndrome that occurs in calves up to four weeks of age, and is characterised by external and internal bleeding secondary to thrombocytopenia. BNP emerged in Europe in 2007. An association has been described between the occurrence of BNP in calves and vaccination of their dams with PregSure™ BVD. In 2008 this product became available in New Zealand, and the first cases of BNP in New Zealand were described in 2011. Pfizer Animal Health voluntarily suspended sales and implemented a recall of PregSure™ BVD in New Zealand.

A property in Northland bought 20 rising-one-year-old calves. A few weeks later two calves developed a cough and one died. Samples from the remaining sick calf were submitted to the laboratory. The faeces contained 53 Dictyocaulus sp. larvae per gram. There was also haematologic evidence of inflammation. The total white blood cell count was 19.9 x 10⁹/L (reference range 6.3–14.4), of which band neutrophils were 1.0 (reference range 0–0.3), segmented neutrophils were 13.13 (reference range 1.0–4.6) and monocytes were 1.79 (reference range 0–1.0). The laboratory findings interpreted in conjunction with the history are consistent with a diagnosis of lungworm due to infection with Dictyocaulus sp.

A small number of dairy farms in the Waikato and Bay of Plenty had heifers suffer spontaneous fracture of the humerus. In a typical case in the Waikato two lactating heifers had a spontaneous fracture of the humerus within a few days of each other. The heifers were euthanased and liver samples were sent to the laboratory for copper analysis. The copper concentrations were < 45 and 51 µmol/kg (reference range 95–2000). These very low liver copper concentrations are diagnostic for copper deficiency.

A few animals in a group of calves in Otago displayed unusual neurological signs including stargazing and walking aimlessly. The attending veterinarian reported there were a lot of vehicle batteries in the paddock and suspected lead poisoning. Blood from an affected calf was submitted to the laboratory and the blood lead concentration was found to be > 0.7 mg/L. Blood lead concentrations > 0.5 mg/L are consistent with lead toxicosis.

In the Bay of Plenty a three-month-old calf in a mob of 100 was found in lateral recumbency. It was twitchy, displayed opisthotonus and had no menace response. The calf was euthanased and fixed brain was submitted to the laboratory. UV illumination of the cut surface of the cerebrum demonstrated multifocal fluorescence of the outer laminae of the cerebral cortex. Microscopically there was laminar cortical necrosis. These findings are characteristic of polioencephalomalacia, which may be due to thiamine deficiency, lead poisoning or sulphur poisoning. Water deprivation/rehydration (salt poisoning) can cause similar lesions or may occur concurrently.

Ten recently calved adult dairy cows in Horowhenua developed acute-onset watery diarrhoea with dehydration and weight loss. The diarrhoeic faeces from one cow contained necrotic mucosa. The submitting veterinarian initially submitted four faecal samples for culture to differentiate between rumenal acidosis and salmonellosis. *Salmonella Typhimurium* was obtained from the four samples. The following day six more faecal samples were submitted and *Salmonella Typhimurium* was cultured from all of them. These results confirmed an outbreak of enteric salmonellosis.

A six-year-old lactating dairy cow in the Bay of Plenty was found recumbent in the morning. Physical examination found that the heart rate was increased and rumen contractions were decreased. The milk was abnormal and there was crepitus in the udder. The cow died before any treatment could be administered. A heavy pure growth of *E. coli* was obtained from a culture of milk from the left front quarter. These findings are consistent with acute coliform mastitis with systemic signs of septicaemia and death. Unlike other countries, where
coliforms are the most common cause of necrotising mastitis, in New Zealand the most common cause is *Staphylococcus* sp.

A farm in the Bay of Plenty was raising 400 newborn calves. The calves developed recurrent diarrhoea that displayed limited response to electrolyte and antimicrobial therapy. Four faecal samples were submitted and subjected to a standard panel of tests for diarrhoea occurring in calves one to three weeks of age. The samples gave negative findings for *Cryptosporidium* sp. and rotavirus. Enrichment culture produced pure growths of *Salmonella Uganda* from all four samples. Isolation of unusual *Salmonella* sp. subtypes has been more common this year than in the past.

In peak lactation, ten dairy cows in the Waikato displayed acutely decreased milk production and diarrhoea. Some were also febrile. Four faecal samples were submitted for enrichment culture. *Salmonella Emek* was isolated from two samples and *Salmonella Lexington* from the other two samples.

On a Waikato farm a few individual animals in each of three different mobs displayed clinical signs suggestive of hypomagnesaemia. Two mobs of cows and one mob of two-year-old heifers were affected. Serum samples from three affected cows were analysed and the magnesium concentrations were 0.17, 0.18 and 0.23 mmol/L (reference range 0.49 – 1.15). Ten serum samples from the heifers were also analysed. The serum magnesium concentrations of five heifers were 0.16, 0.26, 0.33, 0.39 and 0.49 mmol/L, consistent with hypomagnesaemia. Interestingly, this farm also experienced hypomagnesaemia in previous years, while neighbouring farms were unaffected.

More than 60 dairy calves were being reared on a farm in the Bay of Plenty. After a spell of bad weather four were found dead. Examination by the local veterinarian found many were in poor body condition, had diarrhoea and were coughing. One calf was subjected to post-mortem examination and the main findings were lungworm and gastroenteritis. Histopathologically the lung had *verminous pneumonia* due to *Dictyocaulus sp.*, and the colon displayed infection by *Trichuris sp.* and *coccidians*. Faecal samples from five animals had egg counts in the range 650–3300 eggs per gram. The group of calves was diagnosed with multiple concurrent parasitic infections including gastrointestinal nematodes, lungworm, coccidiosis and trichuriasis.

An adult Jersey cow in the Nelson region presented with an eye described as full of blood. Because the eye was causing the cow distress, it was enucleated. Gross examination of the resected eye revealed a large intraocular mass. Histologically the mass comprised neoplastic epithelial cells arising from the choroid or ciliary body, consistent with a diagnosis of iridociliary carcinoma.

**EQUINE**

Two Throughbred studs in the Waikato experienced rotavirus outbreaks in suckling foals. The foals developed diarrhoea of about three days’ duration, became lethargic and stopped nursing. Diarrhoeic faecal samples from three affected foals were submitted to the laboratory. *Rotavirus* was detected in the three samples. The samples were also cultured and *Campylobacter jejuni* and *Rhodococcus equi* were obtained from one.

**CERVINE**

Ten percent of a mob of 100 weaner deer farmed in the Nelson region presented with ill-thrift and wasting. Five animals had died. The affected weaners were red deer x wapiti hybrid animals. The farm had a history of Johnes disease detected in animals slaughtered at the meatworks. An affected weaner was euthanased and a post-mortem examination was carried out. Histopathologic examination found lesions characteristic of advanced enteric mycobacteriosis. The lamina propria of the jejunum, ileum and colon was expanded by sheets of epithelioid macrophages that contained many intracytoplasmic bacteria. The architecture of mesenteric lymph nodes was expanded and effaced by epithelioid macrophages. Ziehl-Nielsen staining demonstrated that the epithelioid macrophages contained innumerable intracytoplasmic acid-fast bacilli. The abomasum displayed nodular hyperplasia of the mucosa, and nematode parasites were scattered on the mucosal surface. Liver copper analysis was also conducted. The liver copper concentration was 46 µmol/L (reference range 100–2000). These findings were consistent with Johnes disease, gastrointestinal nematode parasitism and copper deficiency.
**LAMOIDS**

A four-year-old alpaca in the Auckland region presented with **pododermatitis** of all four feet, primarily affecting the pad/haired skin interface. Serum was submitted for trace element analysis. The serum zinc concentration was 11 µmol/L (reference range 12–22). On the basis of these results mild **zinc deficiency** was diagnosed.

**OVINE**

A farmer in Otago reported that about ten of a mob of 500 crossbred lambs developed apparent respiratory distress, became weak in the hindquarters and then sat down. Four of the affected lambs died. One affected animal was taken to the local veterinarian for ante-mortem and post-mortem examination. Serum submitted to the lab demonstrated biochemical abnormalities consistent with myopathy. Creatinine kinase activity was > 105 000 IU/L (reference range 120–1430) and aspartate aminotransferase activity was 7750 IU/L (reference range 64–225). Histologic examination of skeletal muscle found polyphasic moderate to severe multifocal myopathy characterised by myofibre degeneration, atrophy and regeneration. Liver trace element analysis was performed. Abnormal findings were low selenium (330 nmol/kg; reference range 450–5000) and vitamin B12 (310 nmol/kg; reference range 375–1500). The findings are consistent with diagnoses of **nutritional myopathy** due to **selenium deficiency**. The lambs also had concurrent **cobalt deficiency**.

A veterinarian in Northland was called to examine a group of 15 lambs that had been weaned about two months previously. Some had developed diarrhoea two weeks after weaning, and despite anthelmintic drenching three had died. At the time of examination four lambs had diarrhoea, dehydration, poor body condition and pale mucous membranes. The submitting veterinarian reported faecal egg counts of 200–750 eggs per gram. A pooled sample of faeces from three animals was cultured and **Campylobacter jejuni** was isolated.

**CAPRINE**

Two goats in the Waikato presented in lateral recumbency with a stargazing posture. The brain of each goat was submitted for examination. There was patchy fluorescence of the cortex under Wood's lamp UV illumination. Histologically there was laminar vacuolation of the cerebral cortical grey matter and corresponding neuronal necrosis. Laminar cortical necrosis is consistent with **polioencephalomalacia**.

**POULTRY**

A red-legged partridge was introduced to a property in Horowhenua and died two weeks later. The submitter reported that histomoniasis (blackhead) had occurred previously on the property. Post-mortem examination findings included necrohaemorrhagic typhlitis and multifocal necrotising hepatitis. Scrapings were prepared from the caecal mucosa and examined microscopically. There were many flagellated protozoa present. These findings are consistent with a diagnosis of **blackhead** due to **Histomonas meleagridis** infection. *H. meleagridis* is a protozoan transmitted by a nematode parasite of poultry, *Heterakis gallinarum*.

Microbiological swabs obtained from two birds were submitted as part of an ongoing investigation into salmonellosis on Tiritiri Matangi island, a wildlife sanctuary in the Auckland region. *Salmonella Saintpaul* was cultured from swabs obtained from a hihi or stitchbird (*Notiomystis cincta*) and a North Island saddleback (*Philesturnus carunculatus rufusater*).
back off the milking platform and had been running wildly along races and the paddock during the previous four days. On examination a mass was palpated on the left jaw. At that time, the cow was behaving erratically in the yards and tried to jump a high fence. She was treated with oxytetracyclines and magnesium but then began running through fences, and after getting stuck in a drain two days later she was euthanased. Histopathology revealed a severe chronic-active non-suppurative meningoencephalitis consistent with listeriosis. In another case, a six-year-old Friesian cow from Northland with a history of no response to metabolic treatment was euthanased. Histopathology revealed a severe chronic-active meningoencephalitis with neutrophilic microabscesses, also consistent with listeriosis.

There were five sudden deaths in a mob of beef calves still suckling their heifer mothers on a mid-Canterbury farm. One calf was examined at post-mortem. Grossly it had white streaky areas in the myocardium and some skeletal muscles. Histologically, the heart and skeletal muscle had areas of necrosis and mineralisation of variable age. Liver selenium concentrations were 200 nmol/kg (reference range 850–15 000), consistent with a diagnosis of selenium-deficiency-induced white muscle disease.

A two-year-old cow in North Canterbury was jaundiced and in poor condition. She had normal serum copper and selenium, pepsinogen was normal, and she tested negative for Johne’s disease and BVD antigen. The animal was originally from the West Coast of the South Island. A serology test for liver fluke (Fasciola hepatica) was positive. It was thought likely that the jaundice was the result of cholestasis from chronic bile duct inflammation due to fascioliasis.

A group of 300 two-year-old heifers in South Canterbury had recurrent problems with pink eye (keratoconjunctivitis). Conjunctival swabs were collected from four animals and submitted for bacterial culture. Light to heavy growths of Moraxella bovis were isolated from all four samples.

There were sporadic sudden deaths in a mob of 80 yearling dairy cattle grazing rank pasture on a Southland dairy farm. Five were found dead over a period of several weeks. Necropsy of the most recently dead animal found a very haemorrhagic gastrointestinal tract extending from the abomasum to the rectum. Adenovirus inclusions were seen in the nuclei of endothelial cells in sections of the kidney and the mucosa of the abomasum, intestine and rectum. It was assumed that the stress of poor-quality feed was the initiator of this outbreak of adenovirus gastroenteritis. The cattle were shifted to another paddock with better feed and there were no further deaths.

A mob of 30 recently weaned brought-in dairy calves were let into a small paddock on a small farmlet in Southland. Also in this paddock was a large pile of burnt rubbish that had included tanalised posts and rusted containers whose contents were unknown. The next day two calves were found dead, two were recumbent and several more were ataxic. A recumbent calf was euthanased and necropsied. The carcass had a distinctive pungent odour and the contents of the rumen, abomasum and intestine were green. The mucosa of the abomasum were very congested and the abdominal viscera had a green tinge that dissipated after several minutes. The rumen contents contained high concentrations of arsenic, confirming a diagnosis of arsenic poisoning. Fresh kidney copper concentrations were normal and EDTA blood was negative for lead. After two days 15 of the calves showing clinical signs died in spite of supportive treatment.
An Otago dairy farmer decided to treat 40 four-to-six-week-old unweaned calves weighing 50–60 kg for internal parasites. In previous years he had used a pour-on anthelmintic without problems but this year he mixed 150 ml of a combination anthelmintic containing abamectin with 120 litres of whole milk and fed it to the calves. The next day one of the younger calves was found dead and 10 more were dull and recumbent. After 24 hours all had recovered except one that exhibited signs of a probable aspiration pneumonia. Necropsy of the dead calf showed no gross lesions and sections of fixed brain appeared normal. Abamectin toxicity was most likely the cause of the clinical signs shown by these calves.

Since returning from winter grazing on sandy soils near the sea, to the inland home property in Taranaki, three yearling dairy heifers had suffered spiral humerus fractures. Liver copper concentrations in three affected heifers were 40, 45 and 60 μmol/kg (normal 95–3000), confirming copper deficiency as the likely cause of bone fragility. Sandy soils are high in iron and can interfere with copper absorption. Previous cases of humerus fracture have been reported from Manawatu (Weston, 2008) and other cases have occurred in New Zealand this year (see page 14).

Calves were progressively succumbing to diarrhoea and becoming recumbent on a Taranaki dairy farm. Three calves from a total of 27 were affected by the time the veterinarian was called. Faecal samples from affected calves had greatly increased numbers of coccidial oocysts, confirming a diagnosis of coccidiosis.

Spring-calving mixed-age Jersey cows in a mob from the Wairarapa were in poor condition. Trace element concentrations were checked and serum selenium concentrations ranged from 30–70 nmol/L (normal 140–1000), confirming a diagnosis of selenium deficiency as the cause of ill-thrift.

Three yearling Hereford heifers were found dead in a mob of 21 on a Wairarapa beef farm. Only yearlings introduced two weeks ago had died and none of the home-mob yearlings were affected. On arrival the yearlings had been treated with pour-on anthelmintics, copper injections and bovine viral diarrhoea virus vaccination. Concentrations of magnesium in the aqueous humour of all three were normal, while histopathology on two dead heifers revealed vasculitis, which is consistent with a diagnosis of malignant catarrhal fever. It is likely that the recent introduction of naïve cattle to another group led to the infection.

A 10-week-old heifer calf being reared in the Manawatu was found blind, grinding her teeth and twitching. Blood lead concentration was 2 mg/L (normal 0–0.3), confirming a diagnosis of lead toxicity.

Ten Angus cows from a mob of 400 in the Wairarapa had died 2–3 weeks after calving. When two died together, the farmer collected aqueous humour from the eyes of both. The magnesium concentrations were 0.46 and 0.47 mmol/L (normal 0.55–0.99), consistent with antemortem hypomagnesaemia. No magnesium supplementation had been given to the cows, and the farmer reported ataxia and tetany before the cows died.

Six 4-month-old Friesian heifer calves died overnight. Veterinary examination of a live affected calf next morning found it frothing at the mouth and struggling to breathe, and it died soon afterwards. On post-mortem examination extensive fibrin precipitates were found in the thorax and pericardium, coating the heart and lungs. Culture of the lung grew a heavy growth of Pasteurella multocida similar to that seen in previous P. multocida pleuritis outbreaks (McFadden et al., 2011).

Autumn-born 10-month-old healthy Friesian calves from the Wairarapa were shifted to a new property and fed on lush pasture. A few days later two were found in lateral recumbency, thrashing and foaming at the mouth. When the brain from one was examined histologically there were diffuse areas of neutrophil oedema and neuronal necrosis consistent with polioencephalomalacia.

A herd of 18-month-old dairy heifers in Taranaki had been examined for eight cases of ocular disease over a two-week period. In each case only one eye was affected. There was inflammation of the conjunctiva with raised 0.5–1-mm white pustule-like foci on the inner surface of the upper, lower and third eyelid, although the cornea was unaffected. There was epiphora of the affected eye and purulent conjunctivitis. Although the lesions responded to antibiotic treatment, the clinical presentation did not look like typical Moraxella bovis pink eye. Culture of purulent exudate did yield M. bovis, but in addition infectious bovine rhinotracheitis (IBR) virus was detected by PCR, confirming a dual infection.
OVINE

Twelve Merino hoggets out of a mob of 1200 on an Otago sheep farm were found in lateral recumbency over a three-day period. They had been shorn 13 days previously. On clinical examination they showed the typical clinical signs of tetanus, and a necropsy was unremarkable. Histological examination of sections of fixed brain showed no lesions. As the incubation period for tetanus can vary from 1–3 weeks this infection was likely induced by shearing. Clostridial vaccination is not routinely used on farms running Merinos in Central Otago.

An Otago sheep farmer brought in a mob of ewes and their lambs to clean up the grass around the yards. Next day he found 18 ewes recumbent. About half of these recovered soon after being given metabolic treatment. Their lambs were unaffected. A few hours later seven were still recumbent and two had died. Next morning further metabolic treatment was given to the recumbent ewes and a few more recovered. Necropsy of a dead ewe showed no lesions and there were no toxic plants or material evident in the rumen. Blood samples taken from two treated ewes at the time of the second examination showed normal concentrations of calcium, magnesium, ketones, potassium and phosphorus, but serum sodium was markedly elevated at 168 and 174 mmol/L (normal range 140–148), consistent with salt poisoning. Further investigation by the farmer revealed that because it had rained heavily, some of the ewes had camped out in an old open-sided implement shed that had been used for storing bags of salt over many years. There were no bags of salt present at the time but the dirt floor was heavily contaminated with salt from broken bags.

Six-week-old Suffolk lambs from Hawke’s Bay were noticed with ataxia. Low liver copper concentrations of 180 μmol/kg (adequate level 300–3000) confirmed that hypomyelinogenesis due to copper deficiency was the most likely cause.

Three-month-old lambs grazing a lucerne crop in Hawke’s Bay were on average 6 kg lighter than cohorts grazing pasture. Liver copper concentrations averaged 45 μmol/kg (normal 300–3000), confirming copper deficiency. The molybdenum concentration of the lucerne was 10.5 ppm (ideal concentration for grazing animals 0.5–0.9) and copper 11.2 ppm (ideal 10–20), confirming hypermolybdenosis was the cause of the copper-deficiency-induced ill-thrift.

Well-grown and undocked 3-week-old lambs on a Hawke’s Bay sheep farm were ataxic, hypersalivating and unresponsive to stimuli. Histopathological examination of the brain found bilaterally symmetrical regions of necrosis and haemorrhage in the thalamus and peduncles, characteristic of sublethal intoxication with Clostridium perfringens type D epsilon toxin and the disease known as focal symmetrical encephalomalacia.

Romney lambs on a Wairarapa sheep farm were not thriving, despite being unweaned from good-conditioned ewes on ample feed. Whole blood and faecal samples were collected from the worst-affected lambs. Glutathione peroxidase (GPx) concentrations averaged 2.6 kU/L (adequate range 3–50), confirming selenium deficiency. Although the lambs were only six weeks old, faecal egg counts ranged from 100–800 in eight out of 10 animals sampled, indicating early ingestion of nematode larvae.

Between scanning and docking a Hawke’s Bay farmer reported losing 28% more lambs than he expected from his scanning data. Serum samples from 10 ewes with lambs at foot (wet) and 10 ewes without lambs (dry) were tested for Neospora titres, iodine concentration and Leptospira titres. All Neospora ELISA titres were negative, the mean iodine concentration was 23 μg/L (adequate > 60) and 16 ewes had positive titres to Leptospira hardjo though none had a titre to L. pomona. When the titre values were compared between wet and dry groups, seven of 10 ewes in the dry group had L. hardjo titres > 1:1600 while only one ewe in the wet group had a titre this high. This suggested the dry group of ewes had been recently exposed to L. hardjo and this was possibly a cause of pre- or post-natal lamb losses. Further investigations will continue next year to see if this association is real or not. Iodine supplementation of all ewes will also be worthwhile.

A number of ewes without reared lambs after being earlier scanned pregnant were noticed with firm masses in the groin and udder on a Taranaki sheep farm. The ewes were otherwise clinically normal. The masses varied from a few millimetres to a few centimetres in size. On further examination of younger, unmated hoggets, similar lesions were found. Purulent material aspirated from a typical lesion in one ewe grew Corynebacterium pseudotuberculosis, confirming a diagnosis of caseous lymphadenitis.
Tissue samples from ataxic, weaned lambs on a farm in South Waikato were sent to the laboratory. The cervical spinal cords of both lambs had extensive demyelination in the outer layers of the white matter. This was most marked in the ventral funiculi but also extended to the lateral and dorsolateral funiculi. There were occasional chromatolytic neurons in the ventral horns. The brains also had demyelination in the peripheral white matter tracts in the brainstem. Serum copper concentration of four lambs ranged from 2.9–8.6 µmol/L (adequate 11–21) and liver copper ranged from 25–45 µmol/kg, confirming enzootic ataxia due to copper deficiency.

**CERVINE**

A mob of 290 yearling deer on a Southland deer farm were taken off swedes and placed on a grass paddock. Two days later they were yared and given an injectable anthelmintic and an injection of 1.5 ml of copper containing 50 mg/ml of elemental copper as calcium copper edetate. Over the following two days 27 were found dead. Necropsy of two recently dead deer showed only a bloody intestinal tract. Kidney copper concentrations of these two deer were 790 and 390 umol/kg (normal < 150), consistent with acute copper toxicity.

**CAPRINE**

Kids among a group of goats in the Nelson region were noticed to have skin lesions. Adults were unaffected, but all the kids (around three months old) had crusting circular lesions about 1–2 cm in diameter on the outer and inner surfaces of the ear pinnae. The pinnae appeared erythematous and thickened. Lesions could also be found on the pasterns and the nose. There was no obvious pruritis and the animals appeared bright and alert. The lesions did not fluoresce under UV light (Wood’s lamp examination) but dermatophytosis (ringworm) was still suspected and samples were submitted to the laboratory for fungal culture. On receipt at the laboratory direct microscopic examination revealed the presence of several mites resembling *Chorioptes* sp. No dermatophytes were isolated.

**PORCINE**

A three-week-old piglet was submitted from a small West Auckland farm with a history of ill-thrift and wasting affecting up to 30% of litters after weaning. A sample of the faeces was negative for *Salmonella*, *Yersinia* and coccidia, but *Campylobacter* spp. were cultured. Histopathology of the colon demonstrated a moderate multifocal subacute erosive necrosuppurative colitis with intralesional Gram-negative and silver-stain-positive curved bacilli identified as *spirochaete bacteria* (presumptive *Brachyspira* spp., formerly known as *Serpulina/Treponema* spp.). Motile *amoebae* were directly observed as well, presumed to be *Balantidium coli*. *Brachyspira hyodysenteriae* can cause swine dysentery, and *Brachyspira pilosicoli* can cause porcine colonic spirochaetosis. In this case, as the pigs did not die acutely the causal agent is more likely to have been *B. pilosicoli*. The *Campylobacter* sp. cultured may also be in the colon, but was less likely to have caused this amount of inflammation. The *Balantidium* amoebae in the lesions are likely to have been secondary opportunistic invaders. Histopathology of the lung revealed a mild multifocal subacute nonsuppurative interstitial pneumonia. There was no evidence of circovirus infection in the lymph nodes.

Probable post-weaning multisystemic wasting disease in the Waikato was suspected in a non-commercial batch of weaned piglets. A month after weaning four female piglets had faded away and died. The sole surviving piglet was euthanased and found to have no fat reserves. Histology showed several foci of lymphoid cells in the cortex of the kidney, and the lung had diffuse thickening of alveolar walls due largely to infiltrates of macrophages with lesser numbers of lymphoid cells and occasional eosinophils. There were irregular-shaped consolidated areas where the alveoli contained foamy macrophages and lymphoid cells. Rare multinucleated cells were detected. Peribronchiolar and perivascular cuffs of lymphoid cells were present. Some bronchioles contained clumps of neutrophils. The liver had occasional infiltrates of histiocytic cells in the interlobular fibrous tissue and the heart had infrequent small areas infiltrated with lymphoid cells and histiocytes. There was chronic lymphoplasmacytic enteritis with superimposed acute bacterial enteritis. The changes in the kidney, lung, liver, heart and the chronic enteritis were all signs of post-weaning multisystemic wasting disease.

**CANINE AND FELINE**

Urine was cultured from a two-year-old castrated male Burmese cat from Auckland, with a history of spastic paralysis. The cat had been treated for recurrent...
cystitis, with several long-term courses of antibiotics and corticosteroids since October 2010, and had been repeatedly catheterised. The urine cultured > 100 000 *Escherichia coli* bacteria per ml. The bacteria were resistant to all commonly used antibiotics – amoxicillin/clavulanic acid, cephalosporins (1st, 2nd, 3rd and 4th generation), trimethoprim/sulpha, tetracycline, fluoroquinolones, ticarcillin and chloramphenicol – and only sensitive to imipenem, ertapenem, gentamicin, amikacin and fosfomycin. The bacteria were extended spectrum beta lactamase (ESBL)-negative and positive for a plasmid-mediated AmpC b-lactamase enzyme within the *E. coli*. The bacterial cystitis was treated successfully with imipenem.

In another case, *E. coli* was cultured from the urine of a 14-year-old female Springer spaniel from Northland. This dog had been treated for a cystic skin mass since May 2010, with multiple courses of amoxicillin/clavulanic acid and enrofloxacin. The *E. coli* species cultured from the urine was resistant to all commonly used antibiotics (as in the case above) and only sensitive to imipenem, ertapenem, gentamicin, amikacin and fosfomycin. The bacteria were extended spectrum beta lactamase (ESBL)-negative and positive for a plasmid-mediated AmpC b-lactamase enzyme within the *E. coli*. There was no growth on a urine sample one month after treatment. Plasmid-mediated AmpC b-lactamase is a type of antibiotic resistance that renders the bacteria resistant to most b-lactamase antibiotics. *E. coli*, *Klebsiella* and *Enterobacter* isolates occur predominantly in human urinary tract infections, although they are relatively uncommon. These cases may be the first identified isolates in NZ animals. In humans they have been found mostly in hospital situations and are significant because the resistance can be spread between isolates among patients and become very difficult to treat and keep under control in this setting.

**POULTRY**

In a group of 7500 thirty-five-day-old turkeys on a Canterbury farm, 600 had died. Two birds were submitted for post mortem and both had severe unilateral pneumatic lesions. Culture of the lungs and liver from both birds recovered a heavy growth of *Pasteurella multocida*, confirming a diagnosis of fowl cholera.

In a group of 3500 seven-day-old turkeys on a Canterbury farm, 1000 had various clinical signs such as lying on their sides, not walking, and lameness. Post-mortem examination revealed septic stifle and hip lesions in four of six birds. *Staphylococcus aureus* was recovered in pure culture from the affected joints in each case, and also from the liver of two birds with no grossly obvious septic joint disease. As a result *Staphylococcus aureus arthritis and osteomyelitis* were diagnosed.

A mature female duck died suddenly on a Wairarapa lifestyle property. At necropsy the duck was in poor condition, with minimal fat reserves and a proventricular impaction. In addition, histopathology revealed numerous protozoa deep in the lamina propria and muscle wall of the caecum and ileum. Infection with these organisms, either *Histomonas meleagradis* or *Tetratrichomonas gallinarum*, was the most likely cause of ill-thrift and death.

Cases of lameness in 10-week-old and 27-week-old housed layer chickens in Taranaki were investigated. Younger birds had inflamed and swollen tibiotarsal tendons, while in the older birds there was tendon rupture. Histopathology revealed bacteria in the tendons and bones associated with the inflammation and necrosis. The bacteria were confirmed as *Staphylococcus aureus*.

In Christchurch, 12 of 35 canaries in an aviary died over a few weeks. Multifocal white to yellow lesions were seen at necropsy on the spleen and liver and there was some consolidation of the lungs. *Yersinia pseudotuberculosis* was isolated in heavy growth from the liver of one of these birds.

**WILDLIFE**

A rescued wild hawksbill turtle (*Eretmochelys imbricata*) died after surgery for a shell infection. At necropsy there were lesions on the surface of the bowel. Histopathology of the intestines revealed numerous trematode eggs surrounded by macrophages in the mucosa, submucosa and surrounding blood vessels of the serosa. The eggs did not contain an operculum, and some contained a central miracidium, leading to a diagnosis of presumptive *spirorchidiasis*. The lung, kidney and heart contained rare trematode eggs surrounded by small numbers of macrophages. *Spirorchidiasis* is caused in marine turtles by trematodes of the genera *Hapalotremea*, *Learedius* and *Neospirorchis*. They can be incidental findings or can cause cachexia, enteritis, anaemia and mortality. They are similar to schistosomiasis and have a intermediate
molluscan host. Larvae in the water invade the body, and adults develop in blood vessels, then release eggs into the liver, intestines, lung and urinary tract, where they can form granulomas. Eggs are released into the water via the faeces or the urine.

**EQUINE**

A month-old foal was found dead on an Otago farm after a short episode of diarrhoea. On post-mortem the liver appeared enlarged. Histopathological examination of the liver revealed multiple foci of coagulative necrosis, each surrounded by a dense band of inflammatory cells. Large numbers of long thin bacilli were found in silver stains of the intact hepatocytes surrounding the necrotic foci, confirming a diagnosis of **Tyzzer's disease** caused by *Clostridium piliforme*.

Three cases of strangles were confirmed. One case in the Manawatu was seen in a recently foaled Thoroughbred mare with a unilateral thick yellow discharge from the right nostril and bilateral enlargement of the submandibular lymph node. Another case was in a two-year-old Thoroughbred gelding from Rangitikei with a purulent, discharging abscess under the jaw. The third case was seen in a 12-year-old Thoroughbred mare from the Wairarapa, with a bilateral nasal discharge. A heavy growth of *Streptococcus equi ssp. equi* was cultured from each case.

A two-year-old stationbred gelding had numerous wart-like growths on the face, head, eyelids and around the muzzle and commissures of the lips. Histopathology revealed a papillomatous dermatitis with eosinophilic intranuclear inclusions, consistent with **papilloma virus infection**.

**REFERENCES**

