Companion Animal RESEARCH REVIEW™

Making Education Easy

Issue 10 – 2020

In this issue:

Welcome to both a new year, and a new Companion Animal Research Review.

We hope you will find something in this issue to compliment your mood if you are relaxing sun-drenched and sudoric, or lift you from any feelings of etiolated ennui if you are currently working hard indoors. In the summer salad below, you will find an interesting paper examining the risk factors for *Giardia duodenalis* infection in dogs, along with a contemplation of the relationship between *Lynxacarus radovskyi* and feline eosinophilic granulomas. Other topics on the platter include leptospirosis as a cause of immune-mediated haemolytic anaemia in dogs, the diagnosis of feline infectious peritonitis, the effect of neutering dogs on the expression of inherited conditions, and some fuel for the fire of the "flank versus midline ovariectomy in cats" debate.

We hope you find the content of this issue interesting reading, and as always, welcome your feedback.

Kind regards,

Associate Professor Nick Cave

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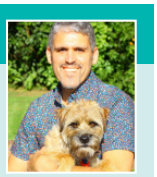
Independent commentary by Nick Cave



Nick Cave is an Associate Professor in small animal medicine and nutrition at Massey University, NZ. He graduated from Massey University in 1990 with a BVSc, and worked in general practice for 6 years until 1997, when he returned to Massey for a residency in small animal internal medicine, attained membership in the Australasian College of Veterinary Scientists by examination, and graduated with a Masters in Veterinary Science in 2000. In 2004 he moved to the University of California, Davis, where he attained a PhD in nutrition and immunology. At the same time, he completed a residency in small animal clinical nutrition, and became a diplomate of the American College of Veterinary Nutrition by examination in 2004. In late 2005, he returned to Massey University to lecture in small animal medicine and nutrition. He is a founding member of the WSAVA Global Nutrition Committee, and a founding board member for the Massey University Working Dog Centre.

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Host factors associated with *Giardia duodenalis* infection in dogs across multiple diagnostic tests

Authors: Uiterwijk M et al.

Summary: This study involving 1291 dogs (household, shelter, hunting and clinical dogs) examined the relationship of *Giardia duodenalis* infection (tested with faecal quantitative polymerase chain reaction [qPCR], rapid enzyme immunochromatographic assay, direct immunofluorescence, and centrifugation sedimentation flotation [CSF]) and group of origin, faecal consistency, age, sex, neuter status, and gastrointestinal parasite coinfection. *G. duodenalis* was less common in dogs >1 year old than in younger dogs, and was more common in group-housed dogs, particularly hunting dogs, than household and clinical dogs. There was a consistent relationship with Trichuris, driven by a high prevalence in hunting dogs. Household dogs were more likely to have *G. duodenalis* when they had loose stools and Giardia-positive dogs with loose stool shed more cysts, than Giardia-positive dogs without loose stools. When other gastrointestinal parasites were present, fewer *G. duodenalis* cysts were detected by CSF (but not confirmed by qPCR).

Comment: A good veterinary trivia quiz question would be, "what are the most common clinical signs seen in over 80% of Giardia infections?" The answer, of course, is: "none". There are even those who dispute it can cause disease in dogs at all, though they are in the great minority and find it difficult to talk to people at parties. In children, especially in developing countries, infection with Giardia actually reduces the incidence of diarrhoea, though it does reduce growth rates and even cognitive development, presumably through impairing nutrient absorption. However, when nutritional status in children is improved through supplementation, the protective effect of Giardia infection against diarrhoea is lost. It seems the relationship between the parasite and its host is more complex than the life-cycle suggests. Without doubt, we are in a steep part of the Giardia learning curve in companion animal medicine, and have even less understanding of the determinants of pathogenicity in dogs and cats than in humans. The discovery of different subtypes, or assemblages, meant that at least we can understand the zoonotic risk better, and it is always a relief when managing an outbreak to learn that it is a non-zoonotic assemblage, as the canine infections often are. This study describes an overall eyebrow-raising prevalence of ≈32% in different groups of dogs. The authors have recently published another paper, probably from exactly the same data set, comparing the sensitivity of the four assays used in this paper. Consistent with previous studies, a single zinc sulphate CSF was only 48% sensitive, compared with qPCR which was 97% sensitive (Uiterwijk M et al., Parasites & Vectors 2018). In the present study, they presented more findings that are consistent with previous ones, namely that in a random cross-sectional sample, there is no association between infection with Giardia and the presence of diarrhoea, nor was there any relationship between the number of cysts being shed and faecal grade. The limited amount of data collected on the dogs did not further enlighten whether the organisms could be causing disease in some. One might propose that we understand at least enough to know that the presence of Giardia in the faeces of a dog is neither a definite zoonotic risk, nor a definite sign of disease. Thus when we detect them in a dog with diarrhoea, we are obliged to treat them, but not to be surprised or confused if successful treatment has no effect on the diarrhoea. Assemblage testing would inform us about the zoonotic risk of an individual, but it is not widely available. However, from a research perspective, one might also propose that we need to be trying harder to understand the host-parasite differences and interactions that determine when, and when not to blame the beasties on the clinical signs before us.

Reference: Parasit Vectors 2019;12(1):556
Abstract

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Association between infestation by *Lynxacarus radovskyi* (Acari: Lystrophoridae) and the occurrence of feline eosinophilic granuloma complex

Authors: da Rocha CM et al.

Summary: This single centre study examined cases of *Lynxacarus radovskyi* mites and the relationship between the parasite and the occurrence of feline eosinophilic granuloma complex (FEGC) injuries. Over an 18-month period, 8 *L. radovskyi* cases were identified by acetate tape impression or direct fur examination; 7 cats also had at least one characteristic FEGC injury. Moxidectin or spot-on imidacloprid plus corticotherapy was effective in all FEGC cases.

Comment: I am typing this overlooking the startlingly beautiful Matapouri beach in Northland, which, by coincidence, is within a short driving distance of where in June 2016, a 4-month-old malnourished, scaly-coated kitten was presented to Jane Nichols of Northland Veterinary Group. Jane was thorough enough to identify the presence of strange looking mites, and diligent enough to notify the Ministry for Primary Industries, whereupon New Zealand's first case of *L. radovskyi* infection was identified, and successfully treated with fipronil (Nichols J and Heath A., N Z Vet J. 2016). In that instance, patchy alopecia and surface scale were the dominant clinical signs, and in the paper by da Rocha et al., (2019), the authors refer to the appearance as typically having a "salt and pepper aspect". However, in the 8 cases they report, the cats also had eosinophilic granulomas of varying severities. The authors treated their cases with moxidectin and imidacloprid, which was effective in all cases. Although they do not make a strong case for causality, the suggestion is that there is a causal relationship between mite infection and the granulomas. The suggestion would be convincing if the granulomas had resolved with mite treatment alone, however, all 8 cats also received immunosuppressive doses of prednisolone. Nonetheless, in all cases of eosinophilic granulomas we must consider potential parasitic or allergenic stimuli, and we can thank these authors for alerting us to another candidate for consideration. And of course, to thank Jane Nichols for alerting us to the presence of the mites on these shores, while hoping they are confined to the idyllic winterless North.

Reference: J Parasit Dis. 2019;43(4):726-9
Abstract

Prevalence and clinical significance of the medullary rim sign identified on ultrasound of feline kidneys

Authors: Ferreira A et al.

Summary: This retrospective case-control study assessed the prevalence and clinical significance of the medullary rim sign (MRS) in ultrasonographic examinations of 661 cats. Overall, 243 (36.8%) cats had variation in the MRS; a thin MRS in 133 cats was not associated with disease, but a thick MRS in 110 cats was associated with azotaemic renal disease ($p = 0.001$). There was also a relationship between MRS and a diagnosis of feline infectious peritonitis ($p = 0.028$).

Comment: Many of you reading this will have marvelled at cases where you have seen lesions in the liver during ultrasonography, only for them to be invisible at laparotomy, and even more surprisingly when you see none during ultrasonography, and yet the hepatic capsule looks more like the lunar surface than something you'd happily fry with bacon. Sometimes, one feels that the ultrasonographer's shades of grey are even less informative and stimulating than E.L. James'. Compared with radiography, ultrasonography is still an infant technique, or at least, somewhere in its teens. It is certainly not an adult, and the interpretation of the images continues to grow as the quality of the images improves. In a paper on ultrasonography in humans published in 1982, the authors first described using ultrasonography to guide fine needle aspirates of the liver, and suggested that "target lesions" were characteristic of metastatic neoplasia. That interpretation hung around for several years, but is now known to be false, although when you look at the images from the early machines, we would perhaps be amazed they even identified the liver correctly. The medullary-rim sign is something that has been noted for some time in dogs, cats, and humans, but there remains uncertainty as to its significance. The sign is seen as a non-shadowing hyperechoic band that runs parallel to the wavy corticomedullary junction. This is the first paper I have read on its significance, and when compared with the previous publications in cats that only included small numbers of cases, this retrospective study of 661 cats is probably a good place to start. Of the included cats, few, if any, would have been healthy, and thus a retrospective study without healthy case controls cannot contribute to the question of prevalence, which the authors begrudgingly concede in their discussion. However, the association of a thick medullary-rim sign with azotaemia in this referral population is valid, as was the finding, previously reported, of an association with feline infectious peritonitis. However, the question of the diagnostic utility of the sign was not answered, or even posed by the authors. The authors didn't calculate the sensitivity or specificity of the sign, though eye-balling the numbers gives you the feeling that both would have been very poor indeed. Thus, the absence or presence of the sign is not telling us something about renal capacity, but is it telling us something about the nature or stage of the disease? The authors may be a little too dismissive when they conclude that it is "most likely an incidental finding". Until we have a large series of cases that are either followed longitudinally or further characterised histopathologically. I feel like this is still part of the infancy of the art, and I'm not quite ready to throw the toys out of the cot just yet.

Reference: Vet Rec. 2019;Nov 20 [Epub ahead of print]
Abstract

Leptospirosis and immune-mediated hemolytic anemia: A lethal association

Authors: Furlanello T and Reale I

Summary: This case report examined a dog with severe anaemia (flow cytometry positive for circulating antibodies against red blood cells). Vector-borne diseases were excluded, but leptospirosis was not and the vaccine-induced immune-mediated haemolytic anaemia (IMHA) was suspected. Immunosuppressive therapy with prednisone was unsuccessful, as were two whole-blood transfusions, and the dog died. Leptospirosis was later identified as the cause (based on micro-agglutination test for antibodies and PCR for microbial DNA in urine). Leptospirosis can mimic primary IMHA and should be considered in differential diagnosis. Liver involvement, elevated serum liver enzymes activity and increased serum bile acid, was observed at admission and suggested pathology other than a primary IMHA.

Comment: With any immune-mediated disease, a hunt for an inciting cause is recommended, because elimination of that cause, if possible, can significantly improve the prognosis. Unfortunately, like the menu at the Massey student cafeteria, a typical "antigen hunt" will rarely bear fruit. Thus, "idiopathic" or "primary", or "auto-immune" usually precede the mechanistic diagnosis. In this paper, the authors were bold enough to admit that missing the diagnosis of leptospirosis infection was catastrophic, because the instigation of immunosuppression and absence of antibiosis likely accelerated the dog's demise. As they point out, the combination of the positive urine PCR result and the high titres to *Leptospira interrogans* serovars Pomona and Bratislava makes the diagnosis of leptospirosis as the cause "highly plausible", but sadly, too late for the dog. To be fair, I'm pretty sure any of us would have missed the presence of the infection, as the dog was not azotaemic and the hepatopathy and other changes could well have been part of an otherwise "idiopathic IMHA". But the lesson for us is clear: leptospirosis infection varies in its presentation according to serovar, individual, dose, and probably other factors. This single case report serves to expand our understanding of the breadth of disease, and to whet our appetite for testing cases that could fit a broader clinical definition. In May of this year, there began a series of cases of leptospirosis in dogs in central Sydney that may not yet have stopped. All cases have so far been infected with the Copenhageni serovar, were unvaccinated, and were rapidly fatal. Hepatic and renal injury was present in all, but most of them also developed haemorrhagic pneumonitis, which had previously only been sporadically reported in dogs. Those Sydney cases also remind us that there is variance even within serovars, and some particularly virulent mutants continue to emerge.

Reference: Vet Res Forum 2019;10(3):261-65
Abstract

Diagnosis of feline infectious peritonitis: A Review of the current literature

Authors: Felten S and Hartmann K

Summary: This review of feline infectious peritonitis identifies feline coronavirus (FCoV; also known as feline enteric coronavirus; FECV) and feline infectious peritonitis virus as vectors that vary in virulence, but are indistinguishable by a number of diagnostic methods. This review facilitates interpretation of diagnostic tests and raises awareness of their advantages and limitations. Diagnostic trees are provided that depict recommended diagnostic steps to be performed based on clinical signs or clinicopathologic abnormalities.

Comment: When the feline unit at Massey University was established, the feline enteric coronavirus was introduced along with the first inhabitants. Aside from episodes of mild diarrhoea in the kittens, its persistence is marked by the sporadic but regular cases of FIP, which has been a cause of about 9% of the colony cat deaths over the years. In the colony setting, the diagnosis is relatively straightforward and is based on the combination of gradual weight loss, elevated globulins with a low albumin/globulin ratio and the absence of another obvious cause. Cases that I remember were misdiagnosed include an intestinal lymphoma, a pancreatic carcinoma, and an intestinal tumour that was causing a low grade, strangely low cellular peritonitis with an effusion positive on Rivalta's test. A misdiagnosis in the colony can be frustrating, but it is not often dramatic. In the clinic however, that approach to the diagnosis of feline infectious peritonitis could be thought of as cavalier. I don't know if you have ever euthanased a cat with a suspicion of feline infectious peritonitis, and held your breath when the post mortem result is returned, but I certainly have. In many cases, the consequence of a misdiagnosis is as dire as the disease itself. If you have not read a review on feline infectious peritonitis recently, then I can recommend this one, at least for the content of its narrow focus. It is comprehensive to a fault in that regard, and whilst it will not shed light in the dark recesses of your understanding of the disease or the viral mutations, or epidemiology, it is the definitive statement on the diagnosis. It skips over the clinical presentation, and dives straight into the clinical pathology. So if you have been confused about the value of Rivalta's test, which sample to send for PCR, or if antibody testing is still worth considering, then this is the paper for you. And if you want to simply cut to the chase, it has some handy diagnostic algorithm flow charts at the end.

Reference: Viruses 2019;11(11):pii:E1068
Abstract

Priorities on treatment and monitoring of diabetic cats from the owners' points of view

Authors: Albuquerque CS et al.

Summary: This questionnaire-based study examined owners' perceptions and priorities in the treatment and monitoring of feline diabetes mellitus, perceived effectiveness of communication between veterinarians and clients, and the impact of diabetes on owners' everyday lives and human-pet bonds. In total, 748 questionnaires were returned and revealed that at the time of diagnosis, a majority of veterinarians did not discuss how to recognise unstable diabetes (46%) or home blood glucose monitoring (HBGM; 40%). The effects of diet on diabetic remission/stabilisation and HBGM were also not discussed. When first drawing up insulin and injecting their cat, only 49% of owners were supervised by a veterinarian/veterinary nurse. 39% of diabetic cats were not fed a 'diabetic' diet, but 71% of owners used HBGM. Initial concerns over costs, boarding, effect on daily life and potential negative impact on the human-pet bond declined after initiating treatment ($p < 0.0001$).

Comment: Here's another quiz I like posing to students: what is the cause of death in over 90% of diabetic cats (and dogs)? Insulin induced hypoglycaemia? Ketoacedotic coma? Sepsis? Pancreatitis? "Old age"? No, it's pentobarbitone. Now I admit that usually elicits a groan and an eye-roll, but it serves to make a point: there is a balance between the benefits of ideal glucose regulation and the risk. The risk is that the owner will elect to euthanase the animal, because of any combination of expense, hassle, worry, concern they might not be doing the right thing, or because it's the Christmas holidays and they can't find someone to take care of their pet. We all have our limits as pet owners. In the largest collection of data on diabetic dogs, lack of insurance reduced survival by almost 50% (Mattin M et al., Vet Microbiol. 2014). In several studies specifically designed to determine the risk factors for survival, euthanasia occurs shortly after the diagnosis of diabetes, again emphasising what we already know, it is the owner that determines the outcome, not the disease. The present study by Albuquerque et al., (2019), surveyed a good number of owners of diabetic cats, and using an online questionnaire they probably captured a wide range of clinic approaches. The results don't make attractive reading, but paint a picture of owners obtaining a considerable amount of information from the internet to paper over the cracks of knowledge left by their veterinarians. The respondents were typically highly motivated, as demonstrated by the high percentage that monitored blood glucose at home. Yet despite their engagement, they felt uneducated in regards the time needed to care for their pet, monitoring, injection technique, nutrition, and recognising problems. Online information found by the owners was deemed helpful by 76%, whereas 25% reported that discussions with their vet were either unhelpful or did not occur at all. More than 90% of respondents lived in the US, Canada or UK, so it is not unreasonable to suspect it would be similar here in NZ. Owners that continue to treat their animals despite inadequate veterinary support, and who are willing to fill out a tedious questionnaire, are likely to be a biased selection, and this did not capture those who elected to euthanase early. Would we save more diabetic lives if we made the whole process as simple as possible, by focussing on minimising clinical signs, ease of treatment, and avoidance of ketoacidosis, while foregoing more intensive measures to optimise glucose regulation such as continuous glucose monitoring? Or alternatively, should we emphasise to owners that managing a diabetic is very time consuming, and can be expensive, and only encourage those fully committed? Either way, it seems we can do much more to educate those owners who are willing to have a go at treating their pet, and though client education is time consuming, that time is likely to relieve a lot of client stress and ultimately, save lives.

Reference: J Feline Med Surg. 2019;Jun 26 [Epub ahead of print]
Abstract

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Metronidazole treatment of acute diarrhea in dogs: A randomized double blinded placebo-controlled clinical trial

Authors: Langlois DK et al.

Summary: This randomised placebo-controlled clinical trial examined the use of metronidazole in 31 dogs with acute nonspecific diarrhoea. Mean time to diarrhoea resolution for metronidazole recipients (2.1 days) was shorter than for placebo recipients (3.6 days; $p = 0.04$). *Clostridium perfringens* relationship with acute diarrhoea pathogenesis was not investigated, but 23.1% metronidazole recipients had persistent *C. perfringens* at day 7, which was less than the 78.6% of placebo recipients with persistent *C. perfringens* ($p = 0.007$).

Comment: I'm not sure we can be said to have had recurring themes in the Companion Animal Research Reviews, but antimicrobial stewardship, and the increasing prevalence of antimicrobial resistance are topics that keep coming back. Not in a good way like a chocolate homing pigeon, but in an unwelcomed way like a dodgy uncle on a bungy cord. This paper ostensibly helps part of the conundrum by providing evidence of efficacy of metronidazole as a treatment for acute diarrhoea, of undiagnosed cause. If we take the start of the discussion at face value then we can conclude that yes, oral metronidazole can shorten the time to resolution of clinical signs in some dogs with acute nonspecific diarrhoea. However, it is difficult to accept that conclusion unskeptically, when a larger study recently demonstrated that there was no difference between metronidazole and placebo (Shmalberg J et al., Front Vet Sci. 2019). The authors of the study by Langlois et al., (2019) were uncertain as to why there would be a difference between studies. However, given the heterogeneity of the diseases included in "acute non-specific diarrhoea", and the very small numbers of cases used, it could not be less surprising if there are several small studies that bobbled around the mean, which would only be detected from a large enough study or a meta-analysis. Put simply, the findings of this small study, albeit well designed and conducted, do not trump other larger ones. In this study, the decrease in duration of diarrhoea was 3.6 to 2.1 days, and you have to draw a long bow to convince me that difference matters that much. But what of the negative aspects of "non-specific antibiotic usage"? I wish to quote the penultimate sentence of this paper: "The impact of widespread antimicrobial usage for a condition that is frequently self-limiting also needs to be considered.", which when worded that way is a suggestion that carries all the force of the "Do not tumble dry" label. To be charitable, perhaps the authors intend us to consider the impact in the same way that we might consider the impact of a moon-sized asteroid – as something more than a minor inconvenience. Oral metronidazole produces a dysbiosis in dogs that lasts for at least a month, and we have no understanding of the consequences of that dysbiosis. How does one consider that? And how does one consider the fact that in the present study, none of the dogs were given dietary therapy. Antibiotics are increasingly precious commodities, and our free licence to prescribe is in jeopardy. Imagine practising in a hospital with an official antibiotic steward who authorised or declined your prescriptions. Such places exist, at least in human hospitals. A difference in the duration of diarrhoea of 1.5 days seems to me to be a small gain for a whole lot of trouble, and I doubt the use of metronidazole in these cases would pass muster in a steward's eyes.

Reference: J vet Intern Med. 2019;Nov 19 [Epub ahead of print]
Abstract

A review of the impact of neuter status on expression of inherited conditions in dogs

Authors: Oberbauer AM et al.

Summary: This review examines the effects of neutering in dogs on cancer, orthopaedic, and immune disorders and discusses the effect of body weight. Despite societal benefits for population control, negative associations of neuter and health conditions have been reported, particularly with respect to early age neutering. Different physiological systems rely on gonadal steroids during development and maintenance, and studies of the impact of neuter status have examined multiple body and organ systems. In inherited conditions, neutering is sometimes associated with an increased risk of expression.

Comment: When I was asked to review this paper for the journal, I was going to decline, as it is neither in my area of expertise, nor did I have time. But the subject so fascinated me that I could not resist the opportunity to read it then and there. After all, how often do we think we need to balance the adverse effects of neutering against the benefits? Or in my case, what negative effects was I aware of? A decrease in urethral sphincter efficacy in bitches has long been associated with neutering, although more recent meta-analyses have thrown the strength of the association into doubt, and we may have laboured under a misapprehension created by poor retrospective studies. The association between neutering and obesity on the other hand, is well established, and the role of gonadal oestrogen, at least in cats, is irrefutable. But what of other risks? The authors review the diverse range of conditions that are increased in prevalence by neutering including a number of cancers, orthopaedic conditions, and several immune-mediated diseases. The risks are often different for the two sexes, especially for neoplasia and immune-mediated diseases, and the authors give a brief attempt at suggesting why that might be. Importantly, they spend some time trying to evaluate the confounding effect that obesity might have on all the diseases considered. That attempt was possible for some, but not all, and it remains an open question for most of the conditions mentioned. The authors' over-arching conclusion is that we should be more cautious in our recommendations for neutering based on their data. One of my criticisms as a reviewer was that unfortunately, the reader cannot reach that conclusion, since the risk has not been quantified, and only associations were given. To enact change, a paper such as this would need to quantify the absolute and relative risks, and compare those with the risk reduction that comes from neutering. So the feeling one gets from this paper is of disquiet that we might be practicing with some complacency, or at least without a proper weighting of the risks and benefits of neutering, and that it is neither a completely benign nor necessarily beneficial procedure in all cases. However, an answer to the question of whether we should move away from a blanket recommendation to neuter, will need to be provided by a more balanced analysis than that provided in this paper.

Reference: Front Vet Sci. 2019;6:397
Abstract

Host-range shift of H3N8 canine influenza virus: a phylodynamic analysis of its origin and adaptation from equine to canine host

Authors: He W et al.

Summary: This comprehensive phylodynamic analysis examined all the available whole-genome sequences of H3N8 canine influenza virus (CIV) to provide a framework to understand the emergence of H3N8 CIV from H3N8 equine influenza virus (EIV). The host-range shift of EIV from equine to canine hosts occurred in approximately 2002 and occurred through a reassortant virus of the circulating Florida-1 clade H3N8 EIV. Once established in canines, H3N8 CIV spread efficiently and remained an enzootic virus. H3N8 CIV has since evolved and diverged into multiple clades with both intra- and inter-lineage reassortment.

Comment: The nomenclature of influenza can seem more complex than the viruses themselves, though it is more a matter of quantity than complexity. Of the four types of influenza viruses, A, B, C and D, only A and B cause the seasonal human epidemics, and only A viruses have caused global pandemics. Type C usually only cause mild illness in people and have not led to human flu epidemics. Influenza D viruses primarily affect cattle and have not been found to infect people. The type A viruses are further categorised according to the two main surface proteins, haemagglutinin (H) of which there are 18 subtypes, and neuraminidase (N) of which there are 11. Predictably, it is those surface proteins that function as receptors and determine the host range of the virus, and are the immunodominant antigens for immunity. For example, influenza A (H1N1) infects people, and the virus detailed in this paper, influenza A (H3N8), infects horses. However, there is a startling amount of genetic variation even within the H-N subtypes, hence you may be immune to the H1N1 virus that caused a flu pandemic in 2009, but be completely susceptible to another variant of it that might appear next year. The equine H3N8 virus emerged in the 1960s and, typical of influenza viruses, has evolved and formed several different clades since then. In contrast, no prior influenza virus had been found that had adapted to dogs, although isolation of several human variants from dogs has been reported in sporadic cases. Then in 2003, a variant of the equine H3N8 virus emerged in Florida that had adapted to dogs, and since then the virus has expanded geographically, and genetically. This paper is a fascinating read for anyone with an interest in the dynamic world of viruses and the risks of inter-species jumps, and despite being a highly technical piece of molecular virology, it is an easy read. The authors definitively describe the molecular origins, the continued genetic diversification, and the nature of the mutations that allowed the species jump. They relate the events of the Australian equine influenza epidemic of 2007, and provide an explanation as to why the virus did not establish in dogs at that time. New Zealand remains free of Equine A (H3N8), and the only influenza virus we have found in dogs in New Zealand was an influenza C virus in a single dog, that was just as likely to have been a fomite for a virus that was sneezed into its face by its owner as it was to have been actually infected. However, the analysis of this paper serves as another reminder that interspecies transmission of influenza occurs, and new variants will emerge that could cause widespread disease in domestic species, as well as in humans.

Reference: Vet Res. 2019;50(1):87
Abstract

Prospective comparison of perioperative wound and pain score parameters in cats undergoing flank vs midline ovariectomy

Authors: Swaffield MJ et al.

Summary: This prospective, randomised study compared perioperative pain score and wound parameters between flank (n = 38) and midline (n = 37) ovariectomy in cats. Duration of surgery and anaesthesia and intraoperative complications did not differ between the groups. Cats receiving a flank ovariectomy had higher Feline Acute Pain Scale (FAPS) scores versus those with a midline ovariectomy 1 hour postoperatively ($p = 0.0004$) and at discharge ($p = 0.002$), but FAPS scores were higher after midline ovariectomy at 3- ($p = 0.016$) and 10-day ($p = 0.045$) re-examinations. Surgical wound swelling was higher for midline ovariectomy at discharge ($p = 0.048$) and at 3-day ($p < 0.0001$) and 10-day ($p = 0.001$) postoperative exams.

Comment: It seems there is something of a trans-Atlantic divide amongst cat spey practitioners. In the UK, the "flankers" hold sway with a 96% majority, whilst in the US a similar majority is held by the "middlers". I confess not to have read a single method comparison paper before, though the authors of this paper assure us that "multiple studies have shown no strong superiority" of either method. However, whilst there might not be a strong reason to prefer one method over the other when performed by experienced practitioners, there could be a significant advantage during the learning phase. Thus, this study to see which is superior during those sweaty, shaky days of the final undergraduate year is definitely warranted. Many teaching hospitals, including our own, run neutering clinics that manage to bin the gonads of heroic numbers of animals, and some of the recent undergraduate spey/neuter studies to have been published have reported very large numbers of animals that give great confidence in the data. So I was a little disappointed at there being fewer than 40 cats in each group in this study. One could argue that with a smaller study, any clinically meaningful consistent difference in outcome would be detected, however, a counter claim would be that the huge numbers of cats speyed each year means that even a small difference might, for the life of a few cats, be meaningful. Nonetheless, the fact that the cats' pain was followed for 10 days was a clear advantage to this study. I'm not sure how one weighs the increase in pain immediately following the flank spey, against the decrease in swelling compared with the midline. However, as the authors concluded, there was no clear consistent winner, and it seems that the ardent flankers and middlers will have to continue their contest armed only with anecdote instead of evidence to support their cause.

Reference: J Feline Med Surg. 2019;Apr 5 [Epub ahead of print]
Abstract