VET nuus•news

August / Augustus 2022

The Monthly Magazine of the SOUTH AFRICAN VETERINARY ASSOCIATION
Die Maandblad van die SUID-AFRIKAANSE VETERINÊRE VERENIGING



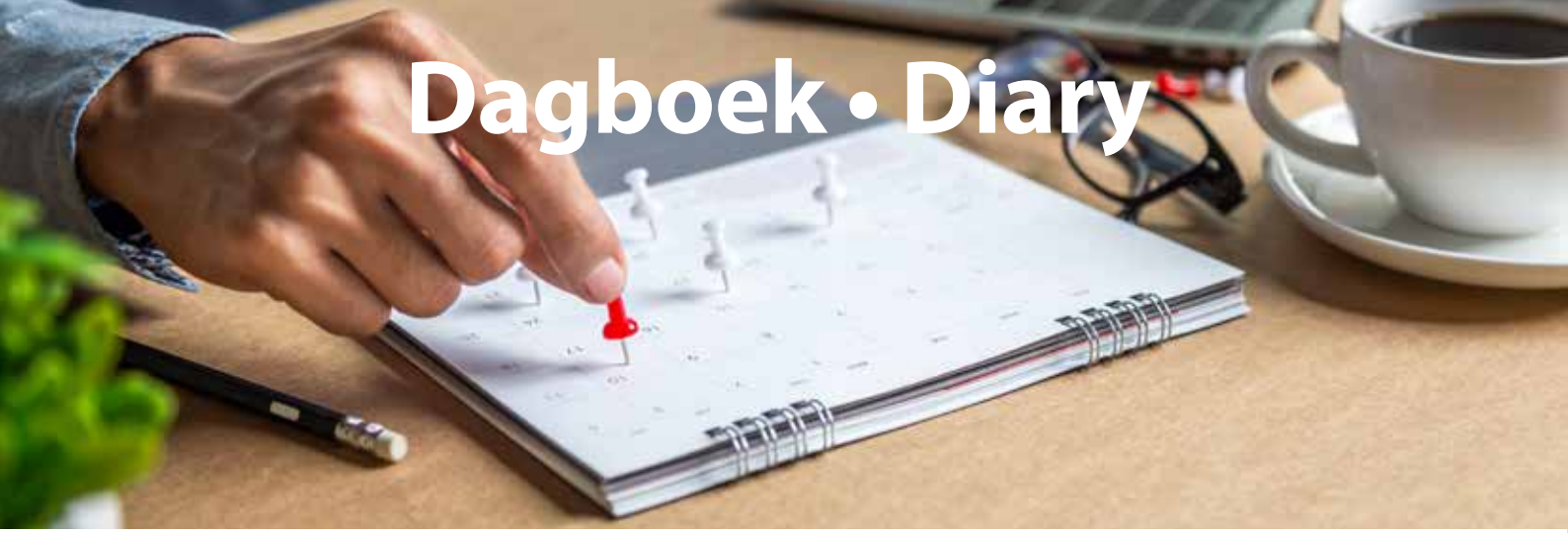
FOCUS

Felines (Cats)

CPD

Canine Monocytotropic Ehrlichiosis (CME) - Part 2

SAVA
South African Veterinary Association
Suid-Afrikaanse Veterinêre Vereniging



Dagboek • Diary

Ongoing and Online 2022

SAVETCON: Webinars.
Info: Corné Engelbrecht, SAVETCON, 071 587 2950,
corne@savetcon.co.za / https://app.livestorm.co/svtsos

A Course in Human Ethics and Animal Rights.
Completion time: approximately 8 hours.
Website: http://animalvoiceacademy.org
Contact: admin@animalvoiceacademy.org

Acupuncture – Certified Mixed Species Course.
Info: Chi University:
https://chiu.edu/courses/cva#aboutsouthafrica@tcvm.com

Certification in Clinical Integrative Canine Rehabilitation
Contact: enrolment@civtedu.org

August 2022

Afrivet Symposium.
02-04 August
Venue: Protea Hotel Fire & Ice, Menlyn Pretoria
Info: conference@savetcon.co.za

NVCG Congress with David Church & Jill Madison.
03-04 August
Venue: Hazendal, Cape Town
10-11 August
Venue: The Gateway AHA Hotel, Umhlanga
12-13 August
Venue: Premier Hotel Midrand, Johannesburg
Info: Vetlink, 012-346-1590, www.vetlink.co.za

Free State & Northern Cape Branch Congress.
13-14 August
Venue: Montebello Estate, Bloemfontein
Info: https://www.savetcon-admin.co.za/Register/main.php

Mpumalanga Branch Congress.
19-20 August
Venue: Venue: Dunkeld Country Lodge, Dullstroom
Info: Vetlink, 012-346-1590, www.vetlink.co.za

SASVEPM Congress.
24-26 August
Venue: East London ICC
Info: https://savetcon.co.za/SASVEPM2022

WAHVM Congress.
31 August – 03 September
Venue: Brescia, Italy
Info: https://www.wahvm.co.uk/brescia2022

September 2022

Eastern Free State Branch Congress.
02-03 September
Venue: Golden Gate Hotel, Clarens
Info: Corné Engelbrecht, SAVETCON,
https://www.savetcon-admin.co.za/Register/main.php

4th International Conference on Parasites of Wildlife.
11-15 September
Venue: Skukuza, Kruger National Park
Info: http://savetcon.savetcon.co.za/icpow2022/

October 2022

Oranje Vaal Branch Congress
14-15 October
Venue: Khaya Ibhubezi, Parys
Info: https://www.savetcon-admin.co.za/Register/main.php

NVCG (Brandon Wustefeld) Pre-Congress Day
24 October
Venue: Emperors Palace, Kempton Park, Gauteng
Info: Vetlink, 012-346-1590, www.vetlink.co.za

11th Biennial South African Veterinary and Paraveterinary Congress and Awards.
25 – 27 October
Venue: Emperors Palace, Kempton Park, Gauteng
Info: Corné Engelbrecht, SAVETCON:
071 587 2950 / corne@savetcon.co.za /
https://savetcon.co.za/SAVA2022/

BVSc class of 1982 (Republic of OP), 40th Reunion
28-30 October
Venue: Mount Grace Hotel, Magaliesburg
Info: Petrie at AB Events, petrie@abevents.co.za

November 2022

Middle East and Africa Veterinary Congress (MEAVC)
25-27 November
Venue: Dubai, UAE, World Trade Center
Info: +971 4 4475580, info@meavc.com,
www.meavc.com

March 2023

10th International Sheep Veterinary Congress (ISVC)
06-10 March
Venue: Seville, Spain
Info: https://isvc2023.com/index.php

June 2023

IVRA EVDI Joint Conference
18-23 June
Venue: University College Dublin, Dublin, Ireland
Info: http://www.ivraevdi2023.com/

VET nuus•news

Contents I Inhoud

VetNuus is 'n vertroulike publikasie van die SAVV en mag nie sonder spesifieke geskrewe toestemming vooraf in die openbaar aangehaal word nie. Die tydskrif word aan lede verskaf met die verstandhouding dat nóg die redaksie, nóg die SAVV of sy ampsdraers enige regsaanspreeklikheid aanvaar ten opsigte van enige stelling, feit, advertensie of aanbeveling in hierdie tydskrif vervat.

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VetNews is published by the South African Veterinary Association

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PRINTED BY
UVO: +27 (0)12 423 9460

Diary / Dagboek

II Dagboek • Diary

Regulars / Gereeld

2 From the President
4 Editor's notes / Redakteurs notas

Articles / Artikels

8 Case Studies in Feline Infectious Peritonitis
12 Furious and fierce felines: improving a cat's experience in practice
14 Feline urinary tract disease: Urolithiasis
18 As professionals working in the Veterinary Sector -What should the Science and Experiences of Covid have taught us? Part 1
20 Drug combinations used for the Immobilisation of Wild Felids
22 The Ferret consult – What do I do??

Association / Vereniging

24 CVC News
26 SAVA News
28 In Memoriam
32 SAVA Legal Column

Vet's Health / Gesondheid

34 Life Coaching

Technical / Tegnies

31 Royal Canin Column
36 Ophthalmology Column
38 Zoetis Pages

Relax / Ontspan

30 Do you Know?
48 Life Plus 23

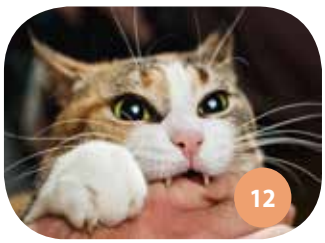
Marketplace / Markplein

40 Marketplace

Jobs / Poste

42 Marketplace/Jobs / Poste
46 Classifieds / Snuffeladvertensies

SAVA
South African Veterinary Association
Suid-Afrikaanse Veterinêre Vereniging









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From the President



Dear members,

I had the privilege to visit Belgium and Germany for the past month. In Belgium, I stayed with a good friend, the previous Chief of Veterinary Services of the Belgium Defence Force and currently a member of the Gent Veterinary Order, a structure very similar to our SA Veterinary Council.

I also had the opportunity to visit the Gent Faculty of Veterinary Science and engage with a former colleague now practising in London, and the previous Surgeon General of the Belgium Defence Force.

The engagements gave me new perspectives on the changing world of veterinary science and strongly confirmed the global village we live and function in, especially in the veterinary domain.

The dire veterinary shortages are not only a South African phenomenon but are as bad in Europe, if not worse. The same factors are being debated. Is it a shortage of training opportunities? Are the student selection in line with industry expectations? Can students afford the cost of their studies? Why do graduates not want to work in particular environments; is it a matter of over-control? What is done to retain veterinarians by the various employment sectors? Is it remuneration? Must the universities increase student numbers? Is there a bigger need for veterinarians? Is there an increase in patient numbers? Does the scope of work increase? Should other para-veterinary professions play a more important role in delivering veterinary services? Do Clients have unreasonable expectations?

We feel the burden even more in South Africa, with numerous other countries recruiting our veterinarians. It is time for proper research to identify the underlying reasons for the shortages of qualified veterinarians. Factors that will have to be addressed are: what is the need (state veterinary services, private, industry and other sectors such as food safety and security); is the net inflow and outflow positive or negative; if negative, as experienced, is it an undersupply or bad retention; if an undersupply, how is it going to be addressed (Second Faculty); if however, if it is due to retention, what are the driving forces (Financial/Opportunities/Personal Circumstances/Over Regulation/Scope creep/Support systems/Client expectations/Increase patient load); what can be done to mitigate the driving forces (Government/SAVC/SAVA/Veterinarians/Industry/Community). Before a comprehensive investigation is not undertaken, mitigating procedures and actions cannot be devised.

On top of the veterinary shortages, the scourge of emerging and re-emerging diseases is raising its ugly head worldwide, putting more strain on veterinary resources. During my month-long visit to Belgium, the cheese industry battled with Listeriosis, whereas the world's largest chocolate factory was closed down due to Salmonellosis, seriously impacting Belgium's economy. The principles of One Health will have to be entrenched in all health-related fields. We, as SAVA, will have to play a leading role in transforming the veterinary landscape and ensure veterinary policies and procedures support the needs of the day, be it for small animals, production animals, wildlife, exotic animals or food safety and security in cities or rural areas alike.

Let us start to engage and debate the issues that can positively influence the future, not grabbing at short-term solutions that do not address the underlying causes.

Paul van der Merwe



24-Hour,

Toll-Free Helpline:

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South African Veterinary Association
Suid-Afrikaanse Veterinêre Vereniging

MISSION STATEMENT

"The South African Veterinary Association aims to serve its members and to further the status and image of the veterinarian. We are committed to upholding the highest professional and scientific standards by utilising the professional knowledge, skill and resources of our members, to foster close ties with the community and thus promote the health and welfare of animals and mankind".

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CREDO

We, the members of the Association, resolve at all times:

- To honour our profession and the Veterinary Oath
- To maintain and uphold high professional and scientific standards
- To use our professional knowledge, skills and resources to protect and promote the health and welfare of animals and humans
- To further the status and image of the veterinarian and to foster and enrich veterinary science
- To promote the interests of our Association and fellowship amongst its members.

Ons, die lede van die Vereniging, onderneem om te alle tye:

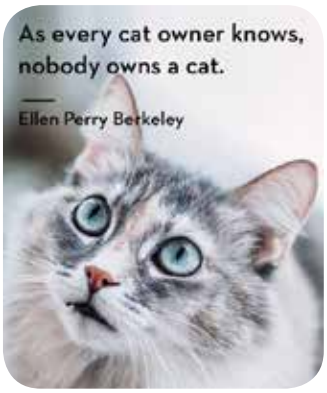
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- 'n Hoë professionele en wetenskaplike peil te handhaaf en te onderhou
- Ons professionele kennis, vaardigheid en hulpbronne aan te wend ter beskerming en bevordering van die gesondheid en welsyn van dier en mens
- Die status en beeld van die veearts te bevorder en die veeartsenykunde te verryk
- Die belange van ons Vereniging en die genootskap tussen sy lede te bevorder.

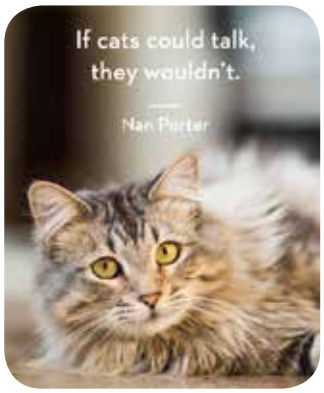


Andriette van der Merwe

Editor's notes / Redakteurs notas

Cats have mesmerised people for centuries and centuries. They began their unique relationship with humans 10,000 to 12,000 years ago in the Fertile Crescent. In this geographic region, some of the earliest developments in human civilisation occurred (encompassing modern-day parts of West Asia).





Thought to have descended from the African wildcat and used to catch vermin, the domestic cat can be traced back to ancient Egypt 4,000 years ago (and perhaps beyond). The Egyptians quickly regarded cats as sacred creatures because they helped reduce disease and protect crops.

I can confess that I am a cat person, but that would not be entirely true. I am an animal person. Cats just form part of the wider animal group. When selecting a theme, I am always a little apprehensive about whether I will get enough articles to fill an edition. But this month, I was completely blown out of the water. I want to thank the contributors who made my inbox overflow. Articles include Feline Infectious Peritonitis (FIP), how to reduce the trauma for the vet, cat and owner during a vet visit, what to do if an owner brings a ferret to the practice, and drug combinations for wild felids, Urolithiasis in cats and many more. I want to thank all the contributors from the bottom of my inbox. By the quality of the articles received, I realise how much effort and time goes into writing them. And to do that on top of day-to-day work. August is not only the official last month of winter (I know, I know) but also Women's month.

I want to salute all women within the veterinary industry. There are many significant roles to fill within the field. When attending the RUVASA congress earlier the year, it struck me that most of the attendants were males over 50.



But then you see them, the younger female vets, passionate about large animals and safe and secure meat production. In every facet of the industry, they are making a difference.

Happy women's day on the 9th of August.

May you go with care and compassion into the world and make the difference you want to see.

For everyone who either works with or just love cats to bits, have a happy Cat August!

"Time spent with cats is never wasted." – Sigmund Freud.

Regards,

Andriette





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SAVA BRANCH CONGRESSES

FREE STATE & NORTHERN CAPE
13-14 August
Monte Bello Estate, Bloemfontein

EASTERN FREE STATE
2-3 September
Golden Gate Hotel, Clarens

FREE STATE & NORTHERN CAPE

Programme
Saturday 13 August 2022

08:00	Arrival Refreshments/Exhibitor Networking
09:00	Welcome & Introduction *(Dr Duncan Winckworth)*
09:10	SAVA Overview *(Dr Paul van der Merwe)*
09:30	Basic chemotherapy do's and don'ts for general practitioners *(Dr Anri Celliers)*
10:30	Exhibitor Speed Introductions
10:45	Mid-morning refreshments
11:15	Everything you need to know about taking care of our geriatric patients *(Dr Anri Celliers)*
12:15	One Health *(Dr Paul van der Merwe)*
13:00	Lunch
14:00	Branch AGM
14:45	When vomiting is good: Management of common toxicities *(Dr Anri Celliers)*
15:45	Mid-afternoon refreshments
16:15	The Diagnosis of Cushing's Syndrome and monitoring the treatment – a laboratory perspective *(Prof. Fred Reyers)*
17:00	Close of Day 1 - Rugby: South Africa vs New Zealand
19:00	Social Dinner

Sunday 14 August 2022

08:30	Exhibitor Networking
09:00	Help your histopathologist help you *(Dr Didi Claasen)*
09:45	Durable cure for bovine pneumonia *(Dr Hanré Ferreira)*
10:30	Mid-morning refreshments
11:00	Rabies: Frequently asked questions *(Dr Didi Claasen)*
11:45	Bovine Reproduction *(Dr Collin Albertyn)*
12:30	Close of Conference / Lunch & Departure

EASTERN FREE STATE

Programme
Friday 2 September 2022

09:00	Welcome & Introduction *(Dr Marthie Kleynhans)*
09:10	SAVA Presentation *(Dr Paul van der Merwe)*
09:30	Unexplained Icterus in dogs *(Dr Liesel van der Merwe)*
10:30	Exhibitor Speed introductions
10:45	Mid-morning refreshments
11:15	Liver and gallbladder disease *(Dr Liesel van der Merwe)*
12:00	Biosecurity rules for livestock agents – The role of the veterinarian *(Francois Knowles)*
12:45	Exhibitor Networking
13:00	Lunch
14:00	Diarrhea in small stock, Lameness, Goats - how different are they *(Dr Ariena Shepherd)*
14:45	Management of arrival cattle in a feedlot *(Dr Schabort Froneman)*
15:30	Mid-afternoon refreshments
16:00	Lamb mortality in the first 100 days *(Dr Ariena Shepherd)*
16:45	Close of Day 1
17:00	Branch AGM
18:30	Social Dinner Event

Saturday 3 September 2022

08:30	Exhibitor Networking
09:00	Introduction to Acupuncture *(Dr Heather Nixon)*
09:30	Durable cure for pneumonia *(Dr Andy Hentzen)*
10:15	Reactive Oxygen Species (ROS) and male reproduction: interactions with tannin antioxidants and micro minerals *(Prof. Dietmar Holm)*
11:15	Mid-morning refreshments
11:45	The interface between State Veterinary Services and Private Practices *(Dr Patricia Froneman)*
12:30	BUN and albumin and what we've learnt about their impact on cow fertility *(Prof. Dietmar Holm)*
13:30	Lunch & close of Conference

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Non-Members: R1,875* / R1,035 p/d

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Case Studies in Feline Infectious Peritonitis

Dr Rowena Watson

Feline Infectious Peritonitis(FIP) has been one of the most prolonged, worst enemies of every cat-lover. It arises via a perfect storm of events: a cat must be infected with the normal feline Corona Virus, which must then undergo multiple mutations to allow a change in tropism from enteric cells to macrophages and an alteration in virulence, and then the host immune response must fail (Pedersen, 2014). It must be noted that not every cat with feline coronavirus will develop the mutations and that not every cat that develops the mutations will develop FIP. Stress and superinfections can increase the risk of FIP development (Tekes & Thiel, n.d.)

It is thought that much of the pathology and manifestations of FIP are associated with how the macrophages and the immune system respond to infection. Cats that do not develop clinical FIP despite mutations in the virus are thought to mount a vigorous cell-based immune response (Kennedy, 2020). Antibodies are considered to be counterproductive in a FIP infection by enhancing viral uptake and replication by macrophages (Pedersen, 2014). Antibodies are also thought to contribute to type III hypersensitivity vasculitis (Pedersen, 2009). Within these assumptions, it is believed that the effusive form of FIP is due to a failure to mount a T-cell response in the face of a vigorous B-cell response(Kennedy, 2020). The dry form of the disease represents an intermediate state – the cellular response is effective at confining the virus in macrophages in focal sites (Kennedy, 2020). The different forms, however, can be somewhat interchangeable: in experimental infection, the dry form usually follows a brief bout of effusive disease, and in the terminal stages of the disease, immunity may completely collapse, and a dry form of FIP can become somewhat effusive (Kennedy, 2020).

Diagnosis of the disease remains challenging and is based mainly on a compatible history, signalment, and clinical signs, supported by clinical assays. FIP is typically seen in young cats, often from multi-cat backgrounds (shelters, breeders) (Felten & Hartmann, 2019). CBC findings often include non-regenerative anaemia, total leukocytosis and possibly lymphopaenia. Interestingly, although lymphopaenia is a variable finding, flow cytometry shows a selective decrease in T-lymphocytes, even in cats with normal lymphocyte counts (Kennedy, 2020). Pederson et al. (2015) found that the degree and timing of onset of lymphopenia can be associated with the severity and rapidity of disease progression.

Biochemical changes often (but not always) include a changed albumin-to-globulin ratio, with an increase in gamma-globulins (Felten & Hartmann, 2019). It may be accompanied by a monoclonal gammopathy demonstrated on serum electrophoresis. Most cases also show bilirubinaemia and bilirubinuria due to haemolysis. No biochemical changes are specific for a diagnosis of FIP, but the finding of a high A:G ratio has a high negative predictive value when the prevalence in a population is low (Felten & Hartmann, 2019). Azotaemia and increased liver enzymes are also possible. Acute phase proteins can be analysed but cannot distinguish between FIP and other inflammatory conditions (Felten & Hartmann, 2019).

Although unable to provide any specificity, diagnostic imaging can increase suspicion of FIP. On abdominal ultrasound, enlarged lymph nodes and pyogranulomatous lesions on kidneys, intestines and liver (Felten & Hartmann, 2019). Granulomas can also be seen on thoracic radiographs.

Effusion analysis is instrumental. Effusions contain high levels of protein (>35g/l) and relatively low cellularity, consisting of mainly non-degenerate neutrophils and macrophages (Felten & Hartmann, 2019). Rivalta's test on effusion simply discriminates between a transudate and exudate – it is not specific for FIP, with other possible diagnose being septic peritonitis and lymphoma (Felten & Hartmann, 2019). The effusion can also be used for immunohistochemical staining of viral particles within macrophages or RT-PCR (Felten & Hartmann, 2019).

PCR is another often used diagnostic method. It was previously assumed that only cats with FIP would have detectable levels of FCoV in their blood or tissue – this has proven to be false. Up to 80-90% of FCoV-infected cats will have positive RT-PCR results (Felten & Hartmann, 2019; Pedersen et al., 2015). An assay to detect FCoV mRNA was also not a guaranteed diagnosis, with up to 52% of non-FIP cats having positive results (Felten & Hartmann, 2019). RT-PCR run on effusion samples tended to have a much higher specificity, although FCoV RNA has still been detected in effusions from cats without FIP (Felten & Hartmann, 2019). Fewer studies are available on PCR analysis on CSF and aqueous humour, although results seem to be more promising (Felten & Hartmann, 2019). An assay is also available for real-time RT-PCR to detect S-gene mutation, but this has not proven any significant advantage over other PCR assays (Barker et al., 2017).

Coronavirus titres are often high in FIP cases, but surprisingly, low titres and even negative titres have been documented (Meli et al., 2013). It is thought to be due to antibody binding to massive amounts of the virus or immune exhaustion (Kennedy, 2020). Additionally, healthy cats may have exceptionally high titres. A positive titre, whether high or low, only indicates exposure to FCoV.

Until very recently, no treatment for FIP has been available. In 2018, the first in-vitro assessment of the efficacy of GS441-524 was published (Murphy et al., 2018), followed by the first clinical trial in 2019 (Pedersen et al., 2019). This trial showed remarkable results, with 25 of 31 cats surviving long-term follow-up (the most extended follow-up so far is five years). GS-441524 is the metabolite of Remdesivir and is itself metabolised intracellularly to an active triphosphate metabolite (Murphy et al., 2018). This molecule acts as a nucleotide analogue and, when incorporated into RNA, triggers the termination of RNA replicase, halting viral replication (Murphy et al., 2018).

Due to the patent being held by Gilead, all research on GS-441524 in cats (and its parent compound, Remdesivir) was halted. However, a roaring black-market trade sprung up, with many "brands" of GS-441524 products being produced and exported. Thousands of cats were treated successfully via this black market trade, with large amounts of anecdotal data collected. Over time, the doses used have been titrated upwards to reduce the chances of relapse.

As COVID swept the world, Gilead seized the opportunity and registered Remdesivir for use in COVID patients. It has opened the door for legal use of Remdesivir across most of the world and the production of GS-441524 by compounding pharmacies, including South Africa. GS-441524 is administered as a single subcutaneous injection, once daily, for a minimum of 84 days. Different starting doses are reported, depending on what barriers the virus has crossed, i.e. breaching the blood-brain-barrier or blood-eye-barrier. Side-effects are minimal, with the main side-effect being pain on injection and the possibility of fibrosis and skin lesions forming. Increases in hepatic enzymes have been reported, but with no apparent liver toxicity, as well as mild, non-progressive renal toxicity (also not associated with renal failure) (Pederson, n.d.).

No formal studies have been conducted to demonstrate the relapse rate of treatment with GS-441524, but relapses are estimated to be between 5 and 15%, with most relapses being associated with neurological disease (Jones et al., 2021; Pederson, n.d.). Unfortunately, there is no way to predict which cats will relapse. A recent study has investigated the use of alpha-1-acid-glycoprotein in predicting which cats will relapse (Addie et al., 2022) has shown promise, but this assay is unavailable in South Africa. Deciding if it is safe to stop treatment should be based on clinical progress, with weight gain being a crucial prognosticator and normalising haematological and biochemical parameters (Pederson, n.d.).

Debate rages about whether remdesivir and GS-441524 are equally effective or if one is superior to the other. All of our formal studies have been conducted using GS-441524 and the vast majority of our anecdotal evidence. It must be remembered, however, that doses for remdesivir are not the same as for GS-441524 (Pederson, n.d.).

COVID has also led to the release of novel anti-virals. Of these, molnupiravir has shown promise as a second-line medication in the treatment of resistant FIP, with one of the black-market Chinese companies having performed "clinical trials" and claiming good efficacy.

UC Davies (B Murphy and K Reagan) is currently researching the effectiveness of molnupiravir in cats with FIP. Although viral resistance to GS441-524 is uncommon, it has been noted (Pederson & Jacque, 2021).

Case Study: Squirrel

A neutered, domestic longhair named Squirrel had been found as a stray at about five months old. Squirrel was rehomed at nine months old. Since rehoming, the new owners had been struggling with a capricious appetite – which the foster owners had never encountered. He presented at 15 months old after the owners noticed an abnormality in his right eye and anorexia.

On presentation, Squirrel was lethargic and had an overall unkempt appearance, with a poor coat and the presentation of weight loss (BCS 2.5/9). He was slightly dehydrated, evidenced by sunken eyes and decreased skin turgor. He was pyrexic with a temperature of 40.1°C, struggled to walk, had anterior uveitis of the right eye, and had an obvious aqueous flare.



Squirrel, at the start of treatment

On haematology, he showed a moderate, non-regenerative, normocytic anaemia (Ht of 28%, which dropped to 21% in the following days) and a neutrophil count of 11.8 x 10^9. On biochemistry, his albumin was normal (28g/l), but globulins were elevated (67g/l), giving a ratio of 0.4. ALT was top normal at 108U/l.

On abdominal ultrasound, there was a severe hypoechoic subcapsular halo around both kidneys, with an extension of hypo to anechoic fluid or congealed material in the retroperitoneal space. There were oval, hypoechoic renal cortical lesions and mild renal enlargement. A diffuse moderate abdominal lymphadenopathy was evident, and the liver was hypoechoic and heterogeneous. All else was within normal limits.

FNAs of the subcapsular kidney material and the retroperitoneal material had cytology consistent with a pyogranulomatous reaction.

Glucose	**5.18mmol/l**	**(4.11-8.84)**
Creatinine	**153umol/l**	**(71-212)**
Urea	**7.2mmol/l**	**(5.7-12.9)**
TP	**95g/l**	**(57-89)**
Albumin	**28g/l**	**(22-40)**
Globulin	**67g/l**	**(28-51)**
Alb/Glob	**0.4**	
ALT	**108U/L**	**(12-130)**
ALKP	**<10U/L**	**(14-111)**

RCC	**4.8 x 10^{12}/l**	**(5.3-10.60)**
Ht	**28%**	**(29.7-44.5)**
Retic	**32K/ul**	**(3.0-50.0)**
Neutrophils	**11.8 x 10^9/l**	**(2.5-12.5)**
Lymphocytes	**1.2 x x 10^9/l**	**(0.40-6.80)**
Monocytes	**0.9 x x 10^9/l**	**(0.15-1.7)**



Squirrel: right kidney

As a matter of interest, coronavirus titres were run and were returned as 1:86.

A likely diagnosis of FIP was made, with ocular and possible neurological involvement.

Treatment with a compounded injectable form of GS-441524 441-524 was started at 10mg/kg due to suspected neurological improvement. Additional supportive treatment included B12 due to the anaemia and anti-emetics.

Within 48h, Squirrel's pyrexia had resolved, and within five days, he was eating sufficiently to be discharged. He appeared to have a thrombo-embolic event whilst in hospital, resulting in the tip of his ear and the tip of his tail necrosing and eventually sloughing off.

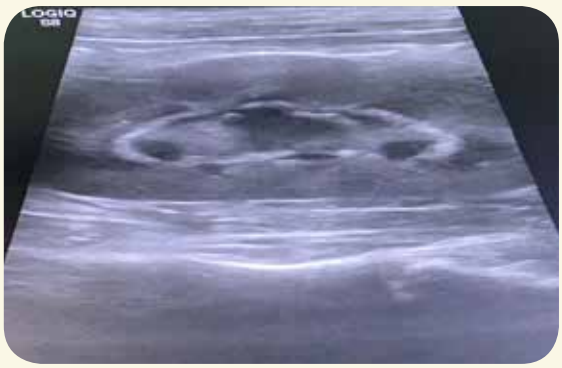
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The owners continued medicating him at home with no other intervention necessary.

Routine follow-ups were performed at four weekly intervals, with clinical improvement and improvement in haematological and biochemical parameters. By week 12, when treatment was due to stop, Squirrel had gained 1.7kg with a BCS of 6/9. His uveitis had cleared entirely, as well as all neurological deficits. He was clinically normal in all ways.

His haematocrit had increased to 33% on haematology, with a normal leukocyte count and a lymphocyte fraction of 20%. His albumin was 26g/l and globulins were 47g/l, with a ratio of 0.6. All other biochemical parameters were normal. A breathtaking change was seen on abdominal ultrasound, with the improvement of the kidney lesions being the most prominent.

Two years after the end of treatment, Squirrel is alive and healthy.



Squirrel right kidney, after 12 weeks treatment



Squirrel at 2 year follow-up

Case Study: Raven

Raven, a nine-month-old male, castrated, domestic shorthair, presented after being diagnosed with FIP at his primary vet, based on signalment, clinical signs and appropriate blood work. He had been syringe-fed for the past three weeks and treated with prednisolone.

On presentation, Raven was emaciated, with BCS 1/9, and overall, small for his age. He was severely dehydrated (based on a weight gain of 12% when rehydrated), and mucous membranes were pale. Raven was tachypnoeic, tachycardic and hypothermic on presentation (35.8'C).

He presented with iritis and later developed a severe keratitis. He was paretic and only able to lift his head. He was urinary and faecally incontinent. Twelve hours after presentation, Raven started to seizure.



Raven shortly after presentation



Iritis of the left eye



Keratitis of the left eye

On haematology, Raven had severe non-regenerative anaemia (Ht 16%), mild non-degenerate neutrophilia (14.25 x 10^9), and low normal lymphocytes (0.8 x 10^9). Biochemistry showed mild hyperglycaemia, likely due to stress, with low normal albumin (25g/l – however, this was probably higher due to severe dehydration) and a hyperglobulinaemia (70g/l), giving a ratio of 0.4. ALT and ALKP were both raised (212U/L and 117U/L, respectively). Creatinine was low, reflecting severe muscle wasting. Thoracic radiographs showed lesions suggestive of pulmonary granulomas. An abdominal ultrasound showed enlarged abdominal lymph nodes and hypoechoic subcapsular halos, with hypoechoic lesions within the kidneys – a classical FIP granuloma appearance.

Raven was started on a locally compounded GS-441524 injectable product at 10mg/kg. He was started on Levetiracetam to control seizures and given supportive treatment of B12, anti-emetics, and SAMe.

He remained critical for several days, with his haematocrit dropping to 12% on day five. He had more seizures on days two and three of treatment.

Nutritional support was maintained via a nasoesophageal tube. Over the next two weeks, he gradually strengthened, partially regained bladder and bowel control, and started eating by himself. He was discharged on continued therapy with GS-441524 and SAMe.

Glucose	**9.6mmol/l**	**(4.11-8.84)**
Creatinine	**43umol/l**	**(71-212)**
Urea	**7.4mmol/l**	**(5.7-12.9)**
TP	**95g/l**	**(57-89)**
Albumin	**25g/l**	**(22-40)**
Globulin	**70g/l**	**(28-51)**
Alb/Glob	**0.4**	
ALT	**212U/L**	**(12-130)**
ALKP	**117U/L**	**(14-111)**

RCC	**3.4 x 10^{12}/l**	**(5.3-10.60)**
Ht	**16%**	**(29.7-44.5)**
Retic	**23.2K/ul**	**(3.0-50.0)**
Neutrophils	**14.25 x 10^{9}/l**	**(2.5-12.5)**
Lymphocytes	**0.8 x x 10^{9}/l**	**(0.40-6.80)**
Monocytes	**1.5 x x 10^{9}/l**	**(0.15-1.7)**

After 12 weeks of therapy, Raven's body weight had more than doubled (from 2.05kg to 4.3kg), and his BCS was 5/9. His ocular exam was normal, with the keratitis fully healed. He was fully mobile and showed no neurological signs; all haematological and biochemical parameters had normalised. He was fully continent.

Fourteen months after treatment ended, Raven is still doing well.

FIP is no longer the undefeatable enemy of every cat-owner. Although treatment is not easy and not inexpensive, Squirrel and Raven are only two of many examples of cats that have survived this deadly disease. Hopefully, more possibilities for treatment and prevention will emerge with the world more focussed than ever on anti-viral medications, and with FIP being an interesting model for COVID.

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Furious and fierce felines: improving a cat's experience in practice

Dr Uldri vd Merwe

Our profession often presents us with feline companions that are not the easiest to restrain and handle for simple and quick procedures. Cats are prone to excessive stress, as we are well aware and seem to respond in pretty violent ways, with members of staff often walking away with scratches and bites. A fair amount of studies have been done on minimizing stress in the practice for these feisty felines, and one particular drug has proven to be as close to magic as you can get.

Cat owners have long been known to put off vet visits unless absolutely essential due to the visible stress these journeys cause their pets. Indirectly, the stress of a pet puts an owner in distress, making them less likely to bring their animals back for return appointments or routine care. Consequently, this can cause a massive challenge in managing felines with chronic health conditions and providing vital routine vaccinations and health checks.

Gabapentin has long been used and is licenced for seizure control that is refractory to conventional treatment and has more recently been used for chronic pain, especially neuropathic in origin. It is known that peak effectivity is usually achieved quickly (within two hours), and a steady state is achieved in 1-2 days of continued dosing. The drug is partially metabolized by the liver and finally cleared by the kidneys and therefore should be used with caution in patients with suspected or confirmed hepatic or renal pathologies.

Gabapentin's exact mechanism of action is unknown but is thought to decrease the release of excitatory neurotransmitters aiding in analgesia and anxiolysis. Studies on the mechanism of action and elimination have mostly been done on dogs; literature on cats is seemingly sparse. However, there has been an influx of recent studies on using Gabapentin as an anxiolytic in fractious cats for routine procedures in practice. Gabapentin has been shown not to affect blood pressure and, at lower doses, does not cause concerning ataxia or sedation.

Doses for dogs vary from 10mg to 20mg per kilogram body weight given per os every 6 to 8 hours, and incremental dose increases are recommended if necessary. Dosages for cats are licenced to be between 5mg and 10mg per kilogram body weight per os every 8 to 12 hours with the same advice for dose increases as dogs. Gabapentin, as an anxiolytic in cats specifically, is used at dosages ranging from 25mg to 100mg per cat per dose.

The method of use differs slightly between studies and in practice. Some clinicians prefer a dose administered a day before the planned vet visit as the drug only reaches a steady state in 1-2 days, while studies show that the peak effectivity is reached within an average of 90 minutes after administration. The consensus seems to be that only a single dose about 90 minutes before the vet visit or stressful situation is required to mitigate anxiety. Dosages should be tailored to individual patients considering their weight and previous drug administration responses.

Gabapentin has not yet been licenced for anxiolysis in cats, so owner information about off-licence drug use should be stressed. Regardless of that, the use of Gabapentin has made a measurable difference in handling cats in practice for simple procedures such as blood collection, blood pressure monitoring and general health examinations. Cats are much calmer and more tolerant of being restrained and often do not require further sedation or anaesthesia to be handled. It reduces stress to the patient and client and often considerably lowers cost and the risk of sedation or anaesthesia that may not be necessary and can be avoided.

Practically, fractious cats are often those with other medical conditions that require diagnosing, and hyperthyroid patients stand out from the rest. We are all aware that an overactive thyroid causes uncontrollable hyperactivity, making it noticeably clear that these patients are usually the most difficult to handle. For this reason, we have seen in practice that these patients often require the higher end of the suggested dosage range (i.e. 100mg per cat per dose) to be suitably controlled for restraint.

Gabapentin is (almost) the magic wand that we all hope we have when it comes to the restraint of fractious cats. It makes a considerable difference in minimizing stressful visits to the vet for our feline companions.

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American Veterinary Medical Association - Volume/Issue: Volume 251: Issue 10, 15 November 2017

Clinical evaluation of the effects of a single oral dose of Gabapentin on fear-based aggressive behaviours in cats during veterinary examinations

Marie Kruszka DVM[1,2,3], Edith Graff DVM[4], Tiphaine Medam PhD[5], and Sylvia Masson DVM

American Veterinary Medical Association - Volume/Issue: Volume 259: Issue 11 , 1 November 2021

A review of pre-appointment medications to reduce fear and anxiety in dogs and cats at veterinary visits

Amelia Erickson, Kaylin Harbin, Justine MacPherson, Kate Rundle, and Karen L. Overall

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Feline urinary tract disease: Urolithiasis

Dr Brogan Atkinson

Urinary tract disease is a common reason for owners seeking veterinary care for their cats, and urolithiasis forms a significant component of this. Urolithiasis is not a single disease but rather the interaction of multiple dynamic abnormalities resulting in the ideal environment for stone formation. The syndrome of urolithiasis is caused by a combination of familial/congenital/acquired pathophysiological factors leading to abnormal renal excretion of metabolites and/or minerals, compounded by risk factors for precipitation such as urine pH and concentration and the presence of a nidus. Types of uroliths vary between the upper and lower urinary tract in cats. Upper urinary tract uroliths are most commonly calcium oxalate, whereas struvite and calcium oxalate are the two most common stones identified in the lower urinary tract.

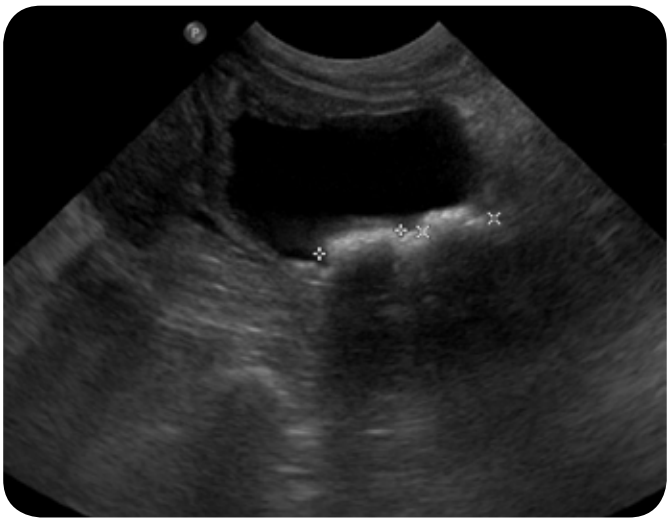


Figure 1: Ultrasound image of two large urocystoliths within the bladder lumen.

Diagnosing feline urolithiasis is not only simply identifying the presence of uroliths but also determining the composition of the stones, which forms an integral part of management. Clinical signs associated with upper urinary tract urolithiasis are often non-specific and require further investigation. Pollakiuria, stranguria, haematuria and house soiling are all clinical signs associated with lower urinary tract disease, none of which are pathognomonic for uroliths. Substantial differentials to exclude are feline idiopathic cystitis, urinary tract infections and neoplasia. Azotaemia is common in upper and lower urinary tract disease, the severity of which varies depending on chronicity, uni/bilateral involvement and urolith location. Any cat with azotaemia should be screened for urolithiasis, as the presence of an obstruction affects treatment and prognosis. Diagnostic imaging is vital for the diagnosis of uroliths as well as the estimation of stone composition. Radiography is a widely available modality that allows for visualising the entire urinary tract. At least two orthogonal views should be taken in a patient with an empty colon and rectum, requiring enemas in some cases.

Inclusion of the entire urinary tract is essential, including the pelvic and perineal regions. Uroliths less than 2 mm and those composed of urate or cystine can be challenging to identify on radiographs. More sensitive techniques such as abdominal ultrasound and contrast-enhanced radiography/computed tomography should be considered before ruling out urolithiasis. The presence of hydronephrosis and hydroureter is consistent with ureteral obstruction. A renal pelvis measuring >13 mm on ultrasound is diagnostic for obstruction; >7 mm is likely associated with obstruction, with many <7 mm also associated with obstruction. Although ultrasound is a sensitive modality for determining the presence of uroliths, up to 25% of cats with ureteral obstruction can be missed requiring more advanced imaging modalities such as contrast-enhanced CT to diagnose.

Once a urolith has been diagnosed, two critical questions should be asked: Is this stone clinically significant and what is the most likely composition. Firstly, determining the clinical significance of a urolith depends on location and associated clinical signs. Renoliths are not always problematic and can be a common finding in cats with chronic renal disease (CKD). Only obstructive renoliths require treatment as non-problematic uroliths do not significantly contribute to the progression of CKD in cats. Uroliths are often incidentally diagnosed with routine imaging, and it is essential to remember that uroliths without associated clinical signs or risk factors for obstruction do not always require intervention.

Predicting urolith composition is a critical step in the diagnostic investigation as it impacts short-term treatment and long-term prevention of uroliths. Without quantitative urolith analysis, the composition of a stone is at best an educated guess, but this can still help make clinical decisions. Several tools are available for this purpose, including urolith radiopacity and urinary pH. The following table provides a guideline for the most common uroliths encountered:

Urolith type	Radiopacity	Urine pH
Calcium oxalate	Radiopaque	< 6.5
Struvite	Moderate to markedly radiopaque	> 7
Urate	Radiolucent	≤ 6.5
Cystine	Radiolucent	≤ 6.5

A complete urinalysis is always necessary. It allows you to determine pH, urine SG, the presence and type of crystals and if there is any additional pathology such as bacterial cystitis. Crystalluria in the presence of uroliths may not accurately predict stone composition. Once a urolith forms, it promotes precipitation and adherence of similar crystals to the stone. Crystals present within the urine sample may differ from those forming the urolith. Quantitative analysis of uroliths is the only definitive means to determine the composition, and attempts should be made to retrieve stones in the least invasive

manner for this purpose. Unfortunately, stone retrieval via voiding or catheter retrieval is rarely possible in cats, given the size of the urethra. Voiding urohydropropulsion can be attempted with small uroliths (1-3 mm) in female cats; or in male cats who have undergone a perineal urethrostomy as a non-invasive alternative. Small stones/sediment collected from cats following urethral catheterisation or voiding urohydropropulsion should be sent for analysis.

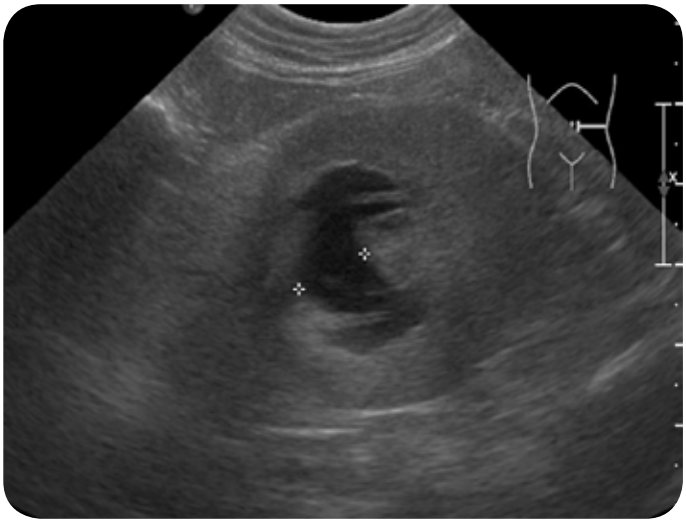


Figure 2: Ultrasound image of a cat with moderate dilation of the renal pelvis, in this case cause by a urolith within the ureter. The pelvis measured 9.2 mm in diameter.

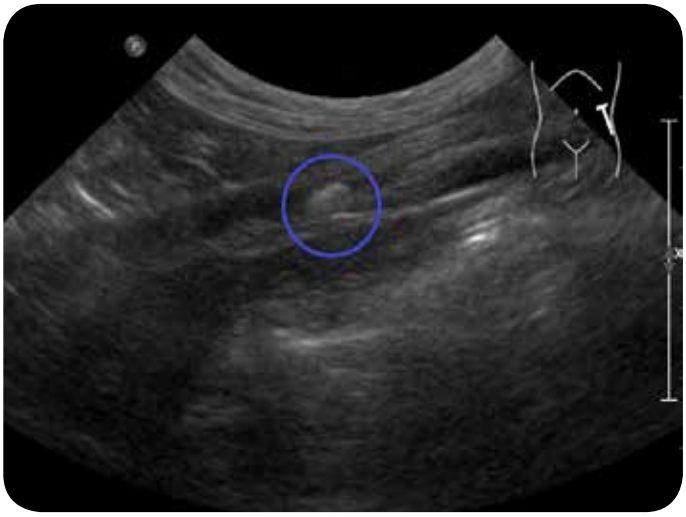


Figure 3: Ultrasoud image of the obstructive urolith with in the ureter lumen of the same cat as seen in Figure 2.

Short-term management of urolithiasis

Upper urinary tract urolithiasis in cats

Medical dissolution of upper urinary tract uroliths is often not an option because these stones are likely calcium oxalate in composition and are not continuously bathed in urine. If ureteroliths are going to pass spontaneously, it will typically occur within 4-6 weeks. The average diameter of feline ureters is 0.3 to 0.4 mm, resulting in obstruction from uroliths as small as 1-2 mm.

In addition to the small diameter, approximately 25% of cats develop ureteral strictures associated with uroliths. Medical management is only successful in approximately 10% of cases and should only be attempted in stable patients. It should never be attempted in cats that are oliguric/anuric, those with hyperkalaemia or severe/progressive azotaemia and if there is progressive dilation of the renal pelvis. If a cat is stable and owners agree to medical management after being fully informed of the poor success rate, this should only be undertaken for 24-72 hours. Medical management includes IV fluid administration, diuretics (mannitol) and alpha-adrenergic antagonists. Intravenous fluid therapy and diuretics increase urine flow, facilitating urolith migration. The alpha-adrenergic antagonism promotes ureteral relaxation assisting in the passage of stones. Serial monitoring of urolith position should be done using either ultrasound or radiographs. If there is no progression within 72 hours, the next course of action is a referral to a specialist centre for the placement of a subcutaneous ureteral bypass or ureteral stenting.

Lower urinary tract uroliths in cats

Signs of uraemia occur within 24 hours of urethral obstruction, making prompt detection and alleviation of the blockage necessary to minimise renal damage. There can be several consequences to urethral obstruction, the risks of which increase with delays in treatment. Detrusor atony, urethral lesions, bladder and urethral mucosal damage, urinary tract infection and eventual bladder rupture are all possible. Correction of urethral obstruction should be performed as soon as possible. Emergency stabilisation of patients with fluid therapy, addressing life-threatening electrolyte abnormalities, patient warming, and oxygen supplementation (if needed in severely depressed patients) should be undertaken. It is important to remember that many of these interventions will only temporarily alleviate abnormalities; normalisation will not be possible without correcting the obstruction.

Two common electrolyte abnormalities seen during urethral obstruction are hyperkalaemia and hypocalcaemia. Calcium carbonate can be administered as a cardioprotective agent and as a supplement for those with hypocalcaemia. For severe hyperkalaemia, intravenous dextrose with/without insulin therapy can be administered but requires careful patient monitoring. Cystocentesis may provide temporary relief and should be done with a 22G needle, which must be carefully stabilised to avoid further bladder damage or rupture.

The bladder should be emptied entirely. Many protocols for sedation/anaesthesia are available, including opioids (morphine, buprenorphine, butorphanol), benzodiazepines (diazepam, midazolam), and general anaesthetic agents (propofol, alfaxalone, inhalant anaesthetic induction via mask) to name but a few. Regardless of the protocol, careful anaesthetic monitoring is necessary, and alpha-2-agonists (medetomidine and dexmedetomidine) should be avoided at all costs as they increase urethral tone making passage of urethral catheters more difficult. Once the cat is adequate sedated, urethral catheterisation should be performed with careful retropulsion of uroliths into the bladder. Indwelling catheters can be left in place for up to 48 hours; ideally, the firm tomcat catheter should be replaced with a more flexible, softer version once the

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obstruction has been relieved. Post-obstructive diuresis is a common complication following obstruction correction and can markedly influence hydration status and electrolyte balance.

Urine production should be monitored, and fluid therapy adjusted accordingly to ensure adequate fluid replacement. Acute hypokalaemia is common, and oral or parenteral supplementation may be necessary depending on the severity. Re-obstruction occurs in up to a third of cats, most often within the first 48 hours. In cases where you cannot alleviate the obstruction or those with severe penile trauma, cats with recurrent obstruction may require surgical urinary diversion, such as perineal urethrostomy. There is a risk of stricture formation with a perineal urethrostomy, and only experienced surgeons should perform this procedure.

Long-term management of urolithiasis

Some general guidelines to remember:

- Cystoliths not associated with clinical signs and unlikely to cause obstruction do not necessarily require removal, but medical dissolution should still be attempted.
- Medical dissolution can be considered when cystoliths are not causing an obstruction.
- Cystoliths causing an obstruction should be removed, ideally with non-invasive techniques before surgery.
- Struvite uroliths should be medically dissolved and occur in sterile urine in cats.
- Consider medical dissolution of urate and cystine uroliths.
- Calcium oxalate uroliths are not amendable to medical dissolution.

Struvite uroliths

Struvite (magnesium ammonium phosphate) uroliths are highly amendable to medical dissolution, and surgery is only considered in cases of obstruction. Alkaline urine is a major risk factor for struvite urolith formation, and struvite is more soluble in acidic urine (pH <6.8). Potential causes of alkaluria such as diets low in animal protein, distal renal tubular acidosis, and familial history of struvite urolithiasis should be considered as underlying causes in struvite stone-forming cats. Struvite uroliths are associated with sterile urine, unlike the typical bacterial cystitis seen in dogs. Cats with persistently alkaline urine should still have bacterial culture performed to exclude the presence of urease-producing bacteria.

Several diets (Hills s/d, Hills c/d range, Royal Canin SO range) are designed to promote dissolution, avoiding excessive magnesium and phosphorus and reducing urine pH. When undertaking urolith dissolution, urethral obstruction is a risk and owners should be warned and monitor their cats for associated clinical signs. Repeat radiographs every two to three weeks; the stones should be at least 30% smaller. If there is no change in size, then the urolith may not be composed of struvite; otherwise, the owners may not be adhering to dietary changes.

Once the stone is completely dissolved, the dissolution diet should be continued for another four weeks before switching to a maintenance diet designed to reduce struvite formation. Encouraging water intake and a high moisture diet will also help reduce urinary SG and the risk of crystal precipitation.

Calcium oxalate uroliths

Calcium oxalate forms in urine saturated with calcium and oxalate. Precipitation is enhanced in acidic urine, and alkalinising the urine can reduce the risk of formation. There is a breed predisposition in Himalayan and Persian cats. Hypercalcaemia may be a predisposing factor. As it is a common abnormality in middle-aged to older cats, calcium levels should be determined in all cats presenting with calcium oxalate urolithiasis. As mentioned previously, these uroliths are not amendable to dissolution, and surgery is often the only option for removal if voiding urohydropulsion is impossible. If the cat is not showing clinical signs, monitoring and long-term management should be instituted to prevent progression.

The single most important aspect of prevention is optimising water intake to maintain urinary SG below 1.025. Control of pH is less important, but urinary alkalinisation with potassium citrate is an option in patients with persistently acidic urine. A few dietary interventions such as increasing the sodium chloride content resulting in increased water intake and urine volume can be considered, but this should be avoided in cats with heart disease, kidney disease or hypertension.

There is, however, very little research into the long-term impact of this intervention. The use of thiazide diuretics (hydrochlorothiazide at 1 mg/kg twice daily) can be considered in repeat offenders.

Purine uroliths (Urate and Xanthine)

Purine uroliths are the third most common urolith encountered in cats and are composed predominantly of ammonium urate or uric acid. Predisposing factors include porto-vascular anomalies, hepatic dysfunction, and genetic metabolic defects. Xanthine stones rarely occur naturally and are usually the consequence of allopurinol administration to prevent urate stones.

Dissolution can be attempted but may be unsuccessful, in which case surgery can be considered in those cats with persistent stones causing clinical signs. Prevention requires feeding a protein-restricted, alkalinising diet and increasing water intake.

Cystine uroliths

Cystinuria is a hereditary renal transport disorder leading to cystine crystalluria and eventual urolith formation. Cystine uroliths have only been found in cats' lower urinary tract, and the Siamese breed may be predisposed. Solubility of cystine uroliths increases above a pH of 7.5. Urinary alkalinisation with potassium citrate and increased water intake are key factors in prevention. Once the urolith has been diagnosed, the composition determined and management instituted, monitoring urolith forming cats is of utmost importance. These cats should undergo regular re-evaluation to monitor the progression of dissolution or identify recurrence.

>>> 17

During dissolution, cats should be re-evaluated every two to three weeks.

Once the stones have been dissolved or removed, re-evaluation should occur at least every three months for the first year to identify early recurrence and ensure owners adhere to the management plan. Once these cats are well controlled, the period between each follow-up can be extended to 6 months. At each appointment, diagnostic imaging and a full urinalysis, at a minimum, should be performed. The target pH will vary depending on the urolith type and should be checked to ensure treatment goals are met. Urine concentration is a key factor in the formation of all urolith types, and a urine SG below at least 1.030, but ideally, 1.025 should be targeted.

Urolith-forming cats will be long-term patients, and only with careful monitoring for recurrence and associated complications can we assure the best quality of life for them and their owners.

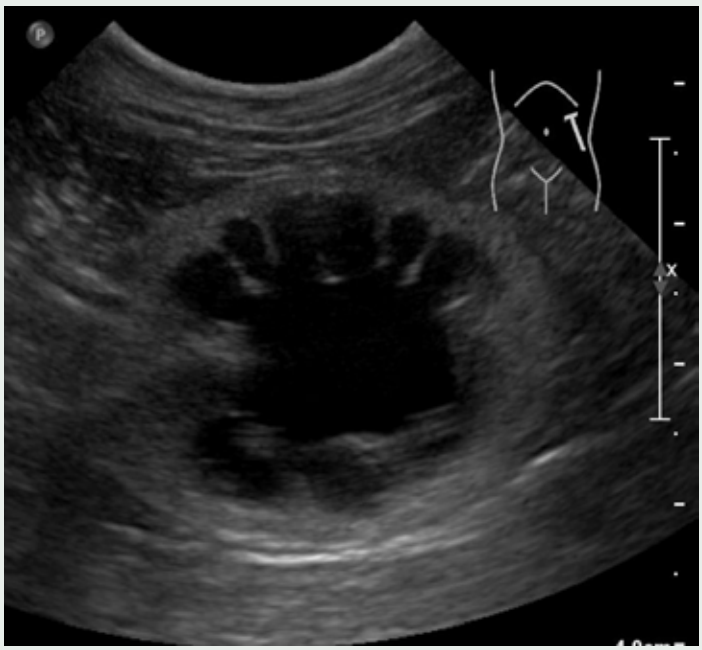


Figure 4: Ultrasound image of ureteral obstruction causing severe hydronephrosis.

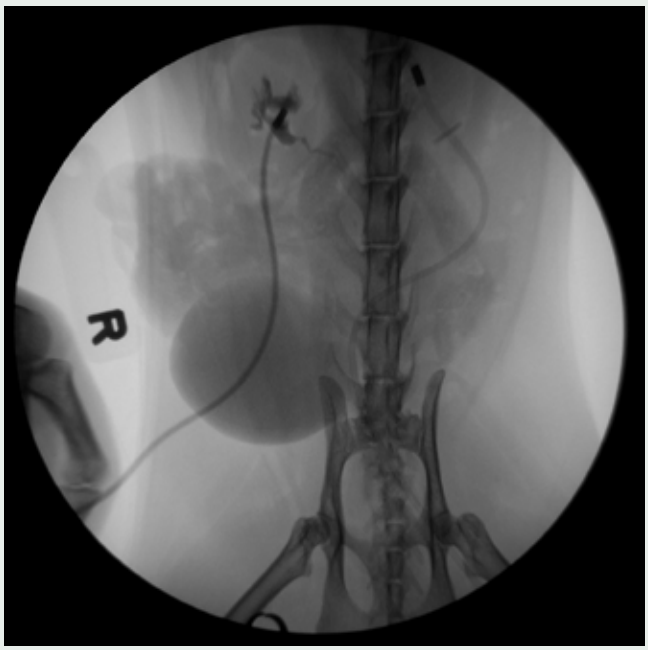


Figure 5: A fluoroscopic image of the same cat noted in Figure 4, after placement of a subcutaneous ureteral bypass device.

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As professionals working in the Veterinary Sector - What should the Science and Experiences of Covid have taught us? *Part 1*

Dr Neil A Forbes BVetMed DipECZM(avian) FRCVS

Covid has focused many minds on infection control, biosecurity, zoonosis and nosocomial infections, which is undoubtedly good. If anything positive can come from the pandemic, perhaps it might act as a 'light bulb moment', just as cleanliness was to Florence Nightingale so many years ago, as well as in teaching us all some valuable and uncomfortable home truths. Covid was not the first, nor will it be the last global pandemic. All of us in health care sectors have a duty of care to patients, staff and populations alike to undertake basic infection control procedures. As references demonstrate, we cannot rely on human cleaning and disinfection in busy clinical settings. We must use methods and techniques that can run simultaneously with 'on-going clinical activities', that are proven safe (for patients, staff and the environment) and appropriate (to national or international standards) to match the requirements of that specific clinical setting. We must test and measure outcomes and record and investigate nosocomial and zoonotic incidents. We must continue to learn and improve.

COVID

Now that it seems most likely that the infection was derived from bats in a 'wet market' in Wuhan, China (Haider *et al.* 2020), we are reminded that differing inpatients and out-patients each carry a variable endemic contagion risk to our facilities, staff and other patients (Wright *et al.* 2008). Patients should be assessed and managed on a contagion and infection risk control basis at all stages of their journey through our facility.

Covid is not the first, nor will it be the last zoonotic pandemic infection. Scientists estimate that more than 60% of known infectious diseases can be spread from animals, and 75% of new or emerging infectious diseases in people come from animals. They can be distributed in several ways, including direct or indirect contact, vector-borne, foodborne or waterborne (MSD 2021).

Covid has been a timely reminder that in these days of globalisation, high population densities and frequent international travel, infection and contagion control must be considered in a global sense, in which the weakest link in the chain creates the most significant risk.

As veterinarians – clinicians, and business owners, we have a duty to our clients and businesses to maintain effective control of contagious infections (both those we know about now, as well as those that are unknown). Such infections are not only a danger to our clients, patients, staff and business, but sick animals are accepted to be the source of 75% of new emerging infectious diseases in humans (MSD 2021).

Whilst we have all been focusing on Covid-19, Laximinarayan (2022) reminds us of the 'forgotten pandemic of anti-microbial infection'. Laximinarayan quotes Murray (2022) in estimating 1.27 million human deaths globally due to Anti-Microbial Resistance in 2019, a figure which is almost identical to the combined global deaths over the same period caused by HIV and Malaria, whilst WHO figures (November 2019 to January 2022) for Covid-19 are four times higher, all be it over a more extended period.

ANTI-MICROBIAL RESISTANCE (AMR)

Despite all the hype of the last five years, the recent Lancet publication (Laximinarayan 2022) demonstrates clearly that AMR is a silent pandemic. It is killing more people than Malaria or AIDS. It is close to Covid-19, so despite the infection control measures thrust upon us by the experience of Covid, we are still failing to meet the challenges of infection control and hence as a spin-off, of the AMR pandemic. The responsible use of antibiotics is essential, but more importantly, we must continue the drive to reduce the requirement for antibiotics by improving animal husbandry (particularly in food-producing species). It can only be achieved by improved biosecurity and infection control, improved standard operating procedures, better cleaning, disinfection and the monitoring of the infection control outcomes

Whilst we have all been excited and focused on Covid, we are reminded that in recent years the incidence of nosocomial infections in humans after hospital visits was outed as a scandal (Boyce 2016). However, the incidence in human hospitals has been drastically reduced by applying an 'effective disinfectant' delivered in an aerosolised form (fogging).

Gebel *et al.* (2013) confirmed the role of contaminated surfaces in transmitting pathogenic microorganisms causing healthcare-acquired infections.

White *et al.* (2007) demonstrated that detergent cleaning reduces the bacterial load by 80% from surfaces. Disinfectant cleaning does not generally maintain a surface pathogen free for any longer than detergent alone (Dharan *et a.l* 1999), whilst a 'two-stage cleaning', with detergent removal of bioload, followed by disinfectant treatment achieved the best results overall. Moreover, laboratory evidence suggests that biocides used at a sub-lethal concentration may trigger the expression of biocide resistance and/or select bacteria resistant to antibiotics (Maillard & Denyer 2009, Karatzas *et al.* 2008). In light of this, biocides are not recommended for use in situations where environmental conditions will compromise their efficacy, i.e. where excessive organic material remains present, as the cleaning has not been undertaken before disinfection. Unannounced cleanliness audits in human hospitals using bacterial swab culture (Anderson *et al.* 2011) showed 86.8% hygiene failure, whilst using adenine triphosphate (ATP) testing (a much quicker system with results being made available immediately 'patient side' yielded hygiene failures of 84% (Schabrun & Chipchase 2006). Post-cleaning hygiene monitoring using fluorescent markers, ATP or microbiological testing has proven valuable in improving cleaning efficacy (Carling *et a.l* 2016). Dancer (2012) demonstrated that simple infection control procedures are abandoned, ignored, or forgotten when staff are overworked in demanding clinical situations. Indeed, all hygienic practices are consistently challenged in a busy ward. For this reason, using fogging with effective anti-microbial solutions is beneficial. However, no one should ignore the need for the regular use of detergents to remove organic material before disinfection. Byrns and Fuller (2011) trialled various methods of aerolisation of biocides for sterilising spaces in buildings. Where effective biocidal agents were applied, they reported high levels of efficacy, particularly noting the benefit of reaching and penetrating areas that would not otherwise be sanitised. However, the technique is not universally recommended unless the agent is safe for staff and patients or in situations where the facility can be emptied before application. Many fogging agents can only be used when clinical areas are empty of patients and staff, which inevitably limits their application, especially in facilities with multiple patients that are rarely empty. In contrast, optimal efficacy is achieved when fogging is done using effective agents that can safely be used with either patients or staff in situ. However, few anti-microbial solutions meet these exacting requirements (effectiveness and safety).

Some disinfectant compounds comprising of a surfactant plus an anti-microbial substance, such as quaternary ammonium compounds (QAC) (of which there are now six generations, with sequential advances just as seen in penicillins or cephalosporins), are designed to minimise bacterial contamination of surfaces by maintaining their anti-microbial activity on surfaces for weeks or months. These compounds' ability to prevent surface contamination for prolonged periods is unclear. Two studies have reported persistent anti-microbial activity of varying levels for differing periods (Baxa *et al.,* 2011, Tamimi *et al* .2014). Further evaluation of organosilane-type compounds using a variety of application methods appears warranted. Polyhexamethylene biguanide disinfectant was

found to reduce bacterial levels on surfaces for at least 24 h after application in one study. It is noteworthy that both the surfactant plus QAC and the polyhexamethylene biguanide technologies are already included in at least one readily available veterinary disinfectant (F10. Health and Hygiene). Disinfectant application techniques, either by using aerolisation (fogging) or applying some disinfectants with a microfiber cloth, are demonstrated to have marked advantages over the cotton-based fabric. QACs can bind to cotton fabric, limiting disinfection availability (Engelbrecht *et al* .2013). It should be remembered that just as antibiotics (e.g. penicillin and cephalosporins) are available in 'generations', so are many disinfectants. Categorisation and consideration of the efficacy and safety of a disinfectant product should not be based simply on the class of constituent chemical but rather on external certification by a government-approved laboratory, in respect of its patient and user safety, its efficacy (against standard pathogen types and models), as well as its environmental residue safety. Users should know what constitutes efficacy based on their geographical area requirements. In the UK, standards require:

- Log^5 kill of bacteria (standard tests, e.g. Staph., Pseudomonas, Mycobacterium, E. Coli,)
- Log^4 kill of viruses (standard tests, e.g. FMDV, AI, Parvo, - enveloped and non-enveloped)
- Log^3 kill fungi and yeasts (standard tests, e.g. *Aspergillus* spp, Trichophyton, Candida)
- Log^4 kill bacterial spores.

Clinicians must be aware of the necessary contact time using their disinfectant under standard operating conditions (i.e. temperature and concentration). They must consider if this is realistic, e.g., spraying a dirty consulting room table and immediate wiping with a dry paper towel before the next patient is ushered in may not be practical or effective.

As busy clinicians always struggle to manage excessive caseloads, the reliance on human staff to complete effective cleaning and disinfection in the clinical workplace has been proven to be flawed. In truth, achieving effective disease control cannot be delegated to over-stretched cleaning and nursing staff, as cleaning and disinfection are simply too important, and the risks and effects of failure are too significant. Facility cleaning protocols must consider the importance of cleaning to include periodic 'deep cleaning' with the chemical removal of the lipid surface layer. The frequency of cleaning and deep cleaning must consider the likely contamination challenge and the risk effect of contamination in each clinical setting.

CONCLUSION

It is clear that;

1. Infection Control is more important than ever.
2. Any disinfectant must have proven efficacy against Covid and all relevant veterinary pathogens.
3. Disinfectant delivery by the fogging method is the most effective delivery form for control of both Covid and all other pathogens which remain pathogenic on any solid surface, although prior detergent cleaning is essential.
4. Fogging is pointless if the disinfectant used is not efficacious at the concentration recommended.
5. Few veterinary disinfectants have proven efficacy against all relevant pathogens and can be safely delivered by fogging; however, there are exceptions.
6. Cleaning and regularly removing the lipid-surface layer to maintain disinfectant efficacy remains essential.
7. Measuring and monitoring the outcomes of cleaning, disinfection, infection control, and the prevalence of nosocomial infections is essential.

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Drug combinations used for the Immobilisation of Wild Felids A Short Summary

By: Liesel Laubscher
Wildlife Pharmaceuticals (Pty) Ltd



Wild felids, whether in the wild or in captivity, most often require chemical immobilisation to be handled safely. This situation requires experience and expertise. Because of their aggressive nature and the danger they pose, chemical immobilisation is generally carried out using intramuscularly (IM) injected anaesthetics that can be delivered via projectile darting systems. Although most felids respond similarly to anaesthetic drugs as domestic cats, there is still no "one-size-fits-all" approach to anaesthetic drug selection. Cognisance must always be taken of species differences, what the anaesthetic requirements are in terms of procedures that need to be performed, and the environment in which the animal is being captured. The animal's physical state (for example, highly stressed animals or physically compromised animals) may require different doses or combinations to be safely immobilised.

Several factors need to be considered when selecting an appropriate protocol to immobilise a predator. Firstly, the drugs that constitute the combination must be highly concentrated to keep the injection volume to a minimum. This is particularly important in larger species like lions and tigers that may require higher doses. Secondly, the combination needs to provide quick inductions, especially if the animal is to be darted in the wild where it can either travel long distances during induction (making it difficult to locate or recover) or is in danger of attack by its predator counterparts. In free-ranging situations, the animal's size can also often be difficult to estimate, particularly with illusive species like leopards or animals in groups or that are moving at long distances. Therefore, it is vital that whichever combination is selected has a wide margin of safety so that it is safe to choose a higher dose instead and for this dose to be safe in case the weight is underestimated. Underdosing a wild felid can have dangerous consequences. For more lengthy procedures or when animals need to be transported over distances, it is also essential that the combination can safely and efficiently be topped-up and that there are no harmful drug interactions.

Lastly, and this is particularly important if animals are to be released back into the wild where other predators occur, a fully reversible combination is preferred so that animals can return to their normal state of alertness as soon as possible. In captive situations, premedication can be used, with benzodiazepines being the most popular option. Diazepam has poor bioavailability when given IM; therefore, it is generally given orally in bait about 1-3 hours before immobilisation. Oral doses of diazepam ranging from 0.15 - 0.46 mg/kg (20–60 mg/adult tiger or lion) have been reported for premedication in large cats. More recently, midazolam has also become a good alternative and has started replacing the use of diazepam due to its improved bioavailability when given IM. Equivalent oral doses of diazepam are reported to be effective with the added advantage of having some amnesic properties.

Small felids

Small felids are often easier to trap and physically restrain than their larger counterparts. Some species, like black-footed cats, can often be trapped, physically restrained and mask induction used with isoflurane. With more aggressive species or animals with highly aggressive or stressed demeanours, IM injection of anaesthetic drugs is recommended. It's advisable to either hand inject, if possible, or use low-impact darting systems with small darts and short needles to limit injury to the animal. The most commonly used drug combinations for small wild felids are either 10 mg/kg ketamine + 0.03 mg/kg medetomidine or a combination of 5 mg/kg tiletamine-zolazepam + 0.02 mg/kg medetomidine.

The combination of ketamine, butorphanol, and medetomidine has long been used in domestic cats and has more recently been investigated in small wild felids like serval. While butorphanol enhances analgesia and increases the level of sedation achieved with medetomidine, the inclusion of medetomidine counteracts ketamine-induced increases in heart rate and improves muscle

relaxation. Ketamine also improves the duration and intensity of analgesia. In captive servals, IM injections of 1 mg/kg ketamine, 0.2 mg/kg butorphanol, and 0.05 mg/kg medetomidine produced smooth and rapid inductions with good muscle relaxation. Reliable sedation was achieved and rapidly reversed with the administration of atipamezole.

Midazolam has been added to darting combinations for small wild felids - particularly for its muscle relaxant properties. Its combination with ketamine, in particular, counteracts the convulsant properties of ketamine, resulting in smooth anaesthesia with good muscle relaxation. Its reversibility with flumazenil also means it improves the reversibility of combinations in which ketamine is used.

The combination of 3-5 mg/kg ketamine + 0.1-0.4 mg/kg butorphanol + 0.1-0.3 mg/kg midazolam has been reported to work well in small wild felids. The combination allows for lower doses of each drug, resulting in fewer adverse effects and increased reversibility (i.e., faster recoveries). It results in rapid induction with a reliable degree of sedation and provides good analgesia and muscle relaxation. It is short-acting, making it suitable for short, less invasive procedures. The combination is reversed with 1 mg naltrexone per m butorphanol and approximately 0.01 – 0.02 mg flumazenil per mg midazolam.

Large felids

In large wild felids, ketamine is one of the most commonly used anaesthetic agents. It is a cyclohexylamine (also known as a dissociative anaesthetic) and is particularly useful for supplementation and maintenance of anaesthesia, usually at doses ranging from 0.2 – 2 mg/kg IM or IV. Although it can be used as the sole agent in small felids, this is not recommended in larger species as it results in a very rigid and cataleptic state of anaesthesia. In these species, it is more commonly used in combination with alpha$_2$'s, benzodiazepines or opioids.

Some side effects to keep in mind when using ketamine include excessive salivation, seizures, muscle rigidity and long recoveries with post-anaesthesia ataxia. Additionally, when a combination includes ketamine, there is a risk of sudden arousals, so it is vital to be vigilant and closely monitor the depth of anaesthesia (i.e. monitor ear twitch reflex).

The combination of medetomidine and ketamine is likely the most popular combination that has been used in large wild felids in the last decade and results in quick inductions (usually within 3 – 11 minutes). Anaesthesia in this combination can last up to 45 minutes and provides a good depth of anaesthesia. Additionally, both medetomidine and ketamine provide good analgesia and the muscle relaxation provided by medetomidine counteracts the rigidity often associated with the use of ketamine. The combination is also relatively inexpensive and readily available. Doses for large felids are usually in the range of 3 mg/kg ketamine + 0.03-0.05 mg/kg medetomidine and can be partially reversed with 5 mg atipamezole per mg of medetomidine. Some adverse effect to keep in mind when using this combination is that medetomidine can cause cardiovascular changes, so, if possible, blood pressure should be closely monitored. It can also induce vomiting and moderate respiratory depression with transient apnoea. Additionally, animals are very sensitive to noise, and as mentioned, reflexes should be closely monitored because sudden arousals have been reported with the use of ketamine.

Before highly concentrated medetomidine was available, ketamine + xylazine was extensively used in wild felids. This combination provides a similar quality of anaesthesia as the medetomidine + ketamine combination, with doses in the range of 3 – 10 mg/kg ketamine + 0.3 – 1 mg/kg xylazine. This combination is also partially reversed with IM administration of 1 mg atipamezole per mg xylazine.

Another dissociative anaesthetic combination that is very popular is the combination of tiletamine-zolazepam. It is either used on its own or combined with medetomidine to lower the tiletamine-zolazepam dose and make it more reversible. This combination provides short induction times with a reliable plane of anaesthesia. It has minimal cardiovascular effects in most species. However, its lack of reversibility means that recoveries are often prolonged and rough, which can be impractical and risky when animals are released back into the wild. Doses vary depending on species and whether medetomidine is added to the combination, ranging anywhere from 1 – 6 mg/kg. Arguably, one of the most popular recently used combinations is the fixed-dose combination of 30 mg butorphanol + 12 mg azaperone + 12 mg medetomidine/ml (also known as BAM). This combination has been shown to produce reversible anaesthesia without hyperthermia in cheetahs, lions, leopards and tigers. Its high concentration makes it very suitable for delivery in low-volume darts. Doses generally range from 0.006 – 0.02 ml/kg, depending on the species. The combination provides smooth and quick inductions, good analgesia and a reliable plane of anaesthesia. Its complete reversibility with IM injections of 1 mg naltrexone per mg butorphanol + 5 mg atipamezole per mg medetomidine makes it very suitable for use in animals that need to be released back into the wild. Recoveries are also very smooth with no residual ataxia and occur within 10 minutes after administration of the antagonists.

Another combination that is gaining interest is the combination of butorphanol, midazolam and medetomidine. It's been shown to be suitable for small and larger wild felids and produces fast, smooth inductions with adequate sedation for transport and/or minor procedures. While butorphanol and medetomidine provide good analgesia, medetomidine and midazolam result in a good muscle relaxation level. It is also short-acting, which should be kept in mind, with top-ups usually required 45 minutes after recumbency. Doses that have been reported are 0.3 mg/kg butorphanol + 0.2 mg/kg midazolam + 0.03 mg/kg medetomidine in lions and 0.2 mg/kg butorphanol + 0.15 mg/kg midazolam + 0.035 mg/kg medetomidine in cheetahs. The combination can be completely reversed with 1 mg naltrexone per mg butorphanol, 5 mg atipamezole per mg medetomidine and approximately 0,01 – 0,02 mg flumazenil per mg midazolam - although the latter can be excluded as well and reversal will still result in quick recoveries. More recently, some research has been done on the combination of ketamine + butorphanol + medetomidine in lions and leopards. Although still experimental, this combination has shown some promise, with inductions being good and animals going down within 10 minutes. Cardiovascular parameters appear stable, and the plane of anaesthesia is quite deep. Recoveries also appear to be predictable and smooth, although more work is required to establish the ideal dose of each of the constituent drugs per felid species. No published literature is currently available on exact doses per species.

For more information about different combinations used in wild felids, follow Wildlife Pharmaceuticals on social media or visit their website at www.wildpharm.co.za



The Ferret consult – WHAT DO I DO??

Ferrets are not commonly kept pets in South Africa; however, they can present every now and then. This article will discuss common presentations and their management.

Do they get vaccinated?? – yes

All ferrets should be vaccinated against canine distemper. Ferrets under 14 weeks of age require two or more vaccinations, with annual booster vaccinations. Use a C3 vaccine. The amount given is determined by the vaccine brand – normally 0.25ml.

Why spay? Oestrogen toxicity

Ferrets are seasonal breeders (increasing day length) and induced ovulators. If not mated, the Jill will not ovulate and will continue in oestrus. It may result in alopecia and bone marrow suppression, leading to death.

The best prevention is to spay the female ferret, which can be done surgically or chemically (which will be discussed later). Suppose the patient is too sick for surgery and would need to be brought out of oestrus; it may be achieved by injecting either HCG (100IU/ferret IM, given 1-2 weeks apart) or proligestone.

The latter has been associated with pyometra. In some cases, a blood transfusion may be needed, similar to that of a cat.

But! Adrenal Gland Disease

Adrenal Disease in Ferrets is common; surgical or medical intervention can be performed with variable success.

The most common clinical signs encountered are lethargy, alopecia, especially of the tail, weight loss, aggression, thinning of the skin, sexual behaviour and puritis. The aetiology of the disease is unknown; however, the cause of the clinical signs is mainly due to an increase in hormones (estradiol, 17-- hydroxyprogesterone and androstenedione). There is a correlation between early age spaying/neutering and disease development; however, delaying sterilisation only delays the onset of the disease. The pathological changes associated with the adrenal glands vary from neoplasia to hyperplasia.

In some cases, the neoplastic tumours can be large, metastasise and locally invasive. The variable pathological states of the adrenal glands affect the surgical outcome directly. I weighed the evidence of doing a medical or surgical intervention. The surgical intervention method is to perform an adrenalectomy, while the medical intervention requires a GnRH analogue implant. Medical treatments are under investigation with variable effects and efficacy.

Medical intervention requires further research to ensure that the most effective method is discovered. At this stage of the study, the most common method used worldwide is GnRH analogue implant – a 4.7mg Deslorelin acetate (Suprelorin) implant, which reportedly can last up to 18 months. Leuprolide acetate can be used; however, it would need to be given more frequently depending on the clinical signs, which can be every 4-8 weeks.

Chemical sterilisation can be used as an alternative to surgical sterilisation; unfortunately, the cost is a significant factor concerning chemical sterilisation.

The current consensus regarding desexing of ferrets is to delay this procedure until at least six months of age however, there is still a chance of developing adrenal gland disease.

Gastrointestinal foreign bodies

Ferrets are sometimes adventurous, which can result in ingesting foreign bodies, which commonly present with lethargy, diarrhoea or anorexia. It is essential to differentiate this from gastritis, eosinophilic gastroenteritis etc. Management is like that of a dog or cat.

Helicobacter Gastritis

Helicobacter mustelae commonly cause disease in young ferrets under 20 weeks, including lethargy, anorexia and weight loss. Diagnosis is difficult as not all laboratories are equipped to culture the bacteria or have the stains to pick it up in biopsies. In some cases, you may be able to detect it in the faeces. A positive result should be interpreted with care, as most ferrets are infected with helicobacter. Treatment of helicobacter is a combination of Amoxicillin Clavulanic Acid (12.5-20mg/kg PO BID V-Tech), Metronidazole (15-20mg/kg PO BID V-Tech) and Bismuth subsalicylate (0.25 ml/kg q6hrs PO).

Eosinophilic gastroenteritis

Eosinophilic gastroenteritis is characterised by chronic weight loss, anorexia and diarrhoea, of which the aetiology is unknown. You may palpate the gas-filled intestines and enlarged mesenteric lymph nodes on clinical examination. Diagnosis can be made by observing peripheral eosinophilia on a blood smear. A biopsy of the small intestine and stomach will reveal eosinophilic infiltration. Treatment involves Ivermectin (0.4mg/kg SC) and prednisone (1.25 to 2.5 mg/kg PO with a tapering dose).

Cardiomyopathy

Dilated cardiomyopathy (DCM) is relatively common in older ferrets. Hypertrophic cardiomyopathy has been reported in ferrets but is rare. Clinical signs of DCM can be non-specific or include symptoms such as dyspnoea, lethargy and heart murmurs. Diagnosis is as for any species. Diuretics, ACE inhibitors and other cardiac medications have been used in ferrets. My treatment of cardiac disease includes diuretics like Furosemide (1-4mg/kg PO BID V-Tech) and Pimobendin (0.5mg/kg PO BID V-Tech); with ACE-inhibitors like Enalapril (0.5mg/kg PO q48h, can be increased to SID V-Tech). Care must be taken not to cause hypotension.

Insulinoma

Tumours of the pancreatic beta cells commonly occur in the middle to older aged ferrets. It is thought that the overfeeding of sugary treats resulted in an overactive pancreas. Metastases are uncommon. Clinical signs are generalised weakness, ataxia, hypersalivation, collapse and coma. The clinical signs are due to the overproduction of insulin. Diagnosis is made on serum blood glucose levels (3.4-3.8 mmol/l). Surgery is the treatment of choice; however, one should be careful not to remove too much of the pancreas as it can result in diabetes mellitus. Medical management Prednisolone (0.2-2mg/kg PO BID V-Tech); in some cases, you might have to add Diazoxide (5-30mg/kg PO BID). Hypoglycaemic episodes can occur; therefore, educate your client on how to deal with them. Monitoring blood glucose levels at home is an excellent skill for these owners.

Lymphoma

Unfortunately, quite commonly diagnosed in ferrets. Clinical signs are vague and may include weight loss, coughing or lymph node enlargement. Lymphomas in young ferrets are often much more aggressive. Diagnosis made same as with dogs and cats. Chemotherapy has been tried with some success, and there are anecdotal reports of radiation therapy being helpful.
Respiratory disease

Ferrets can contract Influenza from humans and vice versa. Antibiotics are rarely indicated and should only be used if you are concerned about secondary infections. A thorough history can aid in the diagnosis. Another common presentation is waxing and waning cough associated with bacterial and fungal infections. I have diagnosed inflammatory airway disease in ferrets; therefore, a sample via bronchoalveolar lavage is ideal for cytology and culture. If there are financial constraints with mild clinical signs, I have started these cases on Doxycycline (10mg/kg PO BID V-Tech) with some success. This half dog half cat species does have its nuances, and I hope this article gave you a quick reference to some of the presentations that this species can have.



SAVA Community Veterinary Clinics

An initiative of the SOUTH AFRICAN VETERINARY ASSOCIATION

Non-profit Company: 1998/016654/08
Non-profit Organisation: 000-234 NPO
Public Benefit Organisation: 130001321

How COVID has affected rabies vaccination campaigns and what are we doing about it

In 2016, South Africa committed to the WHO (World Health Organisation)'s project to end human deaths due to dog mediated rabies by 2030 and ..... then COVID happened. To prevent the spread of COVID, mass rabies vaccination campaigns were halted to prevent large gatherings of people which has unfortunately lead to an increase in rabies cases.

High dog population areas logically have rabies vaccination campaigns (however irregular it might be) but outbreaks also occur in these areas for the same reason. Low dog population areas normally do not have rabies vaccination campaigns and these areas likely feed the disease back into your high dog population areas. Therefore if you do not vaccinate the low dog population areas around your outbreak, then your chance of successfully bringing the outbreak under control is greatly reduced.

Interestingly, the more successful projects tackling rabies outbreaks have applied a "One Health" approach by educating the human health sector too. Social workers received training about the importance for humans to vaccinate their dogs which spread the message successfully. Health professionals received training on the correct use of PEP (post exposure prophylaxis) which also prevented the overuse of PEP due to "panic treatments" by untrained professionals. Increasing the spend on education of children to prevent dog bites not only reduced human deaths but likely resulted in cost saving of funds required for PEP.

One of the challenges is achieving a high number of experienced vaccinators in your outbreak area – vaccinating dogs in low income communities can be dangerous and therefore experience is essential! The cost of travel and accommodation from other regions can be prohibitive but necessary for a successful project. Ensuring that the rabies teams are equipped with a public address system, cooler boxes to ensure a proper cold chain handling as well as safety equipment like catch nets and pole syringes make a very difficult job a bit easier. Animal health workers in outbreak areas are often burned out and concerns about being highjacked and attacked are very real.

Quick access to sufficient vaccines and medical supplies for your project can help you a long way to achieve your 70% goal in the shortest period of time, therefore your procurement process must be streamlined.

Establishing all of the elements requires funds and political support which is unfortunately not always forthcoming. Rabies projects often run for several years and a change in political leadership results in new introductions and campaigning for support all over again. SAVA-CVC has obtained international funding for the Qqeberha rabies project and hope that showing results over a short period of time will ensure more donors for this long and expensive project.

This article was written with input from the DALRRD "National Strategy for the Elimination of Canine Mediated Human Rabies in South Africa (2019-2030)"

For access to the full document, please follow this link:

https://www.dalrrd.gov.za/Branches/Agricultural-Production-Health-Food-Safety/Animal-Health/information/dahpolicy .



Each AHT received a backpack with a cooler box, syringes, gloves, booklets, state required forms, high visibility jackets, raincoats.



In front with the reflective vests – Lumko (left) and Sindi (right), Baxo (in the back) training small children about rabies and dog bites on 22 July at Ntlemeza Primary School.Lumko, Sindi, Baxo and Vava are Animal Health Technicians that commenced employment with SAVA-CVC on 18 July 2022 and are supervised by Dr Renee van Oudtshoorn from Optima CVC.



Map of Kwa Nobuhle, an area outside of Qqeberha. Optima CVC vaccinated 1564 cats and dogs between March to June 2022 in the red areas. Areas in blue were covered by our employed Animal Health Technicans and they vaccinated 760 dogs between 20 and 25 July. An average of 86% of dogs observed are vaccinated - this is achieved by walking from house to house to educate owners and vaccinate.

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Students 1-DAY Conference	R1,300	R1,495
Gala Dinner & Awards	R500pp / R950 per couple / R4,500 per table of 10	
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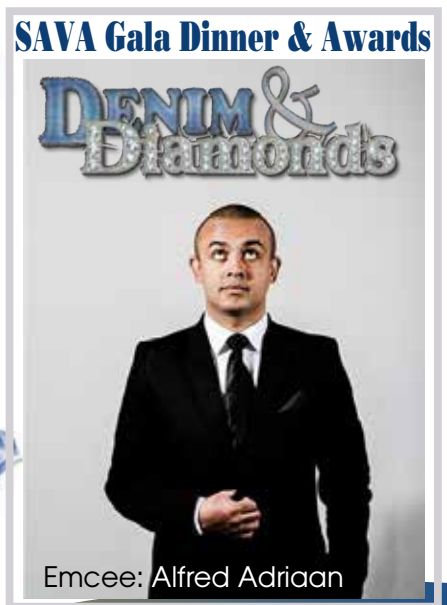
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https://savetcon.co.za/SAVA2022/

Dr David Gerber

Meet the SAVA team



I grew up in a small farmer's village outside Zurich, Switzerland. In 1994 Rosmarie, my wife, and I were lured to South Africa by Henk Bertschinger for a three-year stint at Onderstepoort. It seems like I cannot count very well because we are still here and delighted about it.

Early in the millennium, just before an equine breeding season, no ovarian steroids were available to synchronise horses for breeding. To help the veterinarians in this field, including myself, I imported the raw material and made these over weekends. Soon there were more opportunities, the idea of compounding medicines for veterinarians was borne, and V-Tech was founded in 2003. Since the beginning, I have been responsible for research and development. We are proud of the products we can make available to our colleagues.

Our three children who grew up here are currently in Switzerland, which gives us an excellent reason to stay in touch with the beautiful country we grew up in.

However, the African bug has bitten us badly, and we recently bought a beautiful farm close to Hopetown in the Northern Cape – let's see where life will take us.

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HULDEBLYK AAN ANNE FRASER (GEBORE DE VOS)
10 Mei 1954 – 27 Maart 2022

Anne Pienaar Fraser (Anne) is op Sondag 27 Maart 2022 in die ouderdom van 67 jaar oorlede na verskeie jare se stryd teen 'n rare tipe leukemie wat haar loopbaan as toegewyde veearts en rol as ma en ouma kortgeknip het. Sy is in haar tuisdorp Ladybrand in 'n begrafnisdiens, wat sy in haar laaste dae self gekoreografeer en van 'n roerende klankafskeidsboodskap voorsien het, ter ruste gelê. Sy het daarop aangedring dat geen huldeblyke tydens die geleentheid voorgedra word nie, maar dat daar slegs op haar onwrikbare geloof as Christen gefokus word.

Anne is in 1954 op Waterval Boven gebore, het in 1970 aan die Afrikaanse Hoër Meisieskool, Pretoria met vyf onderskeidings matrikuleer en in 1975 met 'n BVSc-graad aan die Onderstepoort Veterinêre Fakukteit gradueer. Tydens haar studies het sy 'n medaljetoekenning as beste student in varksiektes verwerf. Sy het 'n deelnemende, waarderende benadering tot die studentelewe gehad. Anne is in 1976 met medestudent Adam Fraser, 'n plaasseun van Ladybrand se omgewing in die Vrystaat, getroud. Die egpaar het een dogter en drie seuns gehad.

Anne het kort na graduering 'n praktyk in die destyds veeartslose Ladybrand gevestig waarby Adam hom na hulle troue aangesluit het. Sy het aanvanklik hoofsaaklik die troeteldieraspekte van die praktyk behartig terwyl Adam die plaasdiere hanteer het. Na Adam se tragiese dood in 'n voertuigongeluk in 1996, het 'n vennoot vir 13 jaar die plaasdierwerk behartig, maar daarna, tot sy om gesondheidsredes afgetree het, het Anne self die mas opgekom. Nie dat sy nie 'n liefde vir plaasdiere gehad het nie. Soos haar moeder, het sy baie graag perd gery. Die liefde het begin terwyl sy nog op hoërskool was. Die betrokke perd het saam met haar ma se ander perde later op die Frasers se plaas beland waar Anne hulle en hulle nageslag, volgens menige begrafnisfotos, nie net self benut het nie, maar ook met groot vreugde aan haar kinders en kleinkinders voorgestel het. In haar fleur het sy met oorgawe as ruiter aan die bekende perde-uithouritte by Fauresmith en elders deelgeneem en was sy ook veral betrokke as geregistreerde toesighoudende veearts. Sy het ook in later jare die beesboerdery en 'n Arabierstoet op die plaas bestuur.

Anne was 'n entoesiastiese lid van verskeie groepe en takke van die Suid-Afrikaanse Veterinêre Vereniging. Haar grootste bydrae tot die georganiseerde strukture van haar beroep was haar intensiewe betrokkenheid by die regulatoriese aspek, wat groot lof verdien.



Sy is in 2004 deur die lede van die veterinêre professie as lid van die Suid-Afrikaanse Veterinêre Raad (SAVR) verkies en het aanvanklik op die Raad se Opleidingskomitee gedien.

In 2007 word sy voorsitter van hierdie komitee, 'n pos wat sy tot 2013 beklee. Vanaf 2013 tot 2018, toe sy om gesondheidsredes uittree, dien sy as voorsitter van verskeie ander komitees, soos die Raad se Transformasiekomitee en Spesialiskomitee. Sy word in 2010 as vise-voorsitter van die SAVR verkies en vul hierdie pos tot 2013. In postume huldeblyke oor haar betrokkenheid by die SAVR word sy as besonder bekwaam, uitsonderlik toegewyd, baie hardwerkend en deurgaans onselfsugtig en nederig beskryf. Sy het ook in die SAVR se portefeuljeposisie vir streshantering gedien en met haar deernisvolle benadering 'n blywende indruk op mederaadslede en SAVR-personeel gemaak.

Anne se ontydige heengaan laat 'n pynlike leemte by haar kinders en kleinkinders, oorlewende broer en susters en almal wat die voorreg gehad het om haar te leer ken.

Rudolph Bigalke & Albertus de Vos

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PROGRAMME

DAY 1 - Friday, 19 August 2022

11:30 Registration
12:00 Lunch
13:00 Welcome & Opening
13:10 Congestive heart failure and other co-morbidities in a dog | Johan Schoeman
13:55 The corneal ulcer is not healing - What now? | Izak Venter
14:40 Tea
15:00 Renal failure (and more) in a cat | Johan Schoeman
15:45 Practical approach to IMMK and stromal abscess in horses. | Izak Venter
16:30 Sponsor Session: | Digitail
16:40 SAVC (Tbc)
17:00 AGM
17:45 Dinner

DAY 2 - Saturday, 20 August 2022

07:30 Fun Walk
08:45 SAVA Paul van der Merwe
09:10 Keynote address: How chronic activation of the stress response makes us sick | Johan Schoeman
10:05 Ocular neoplasia in cats | Izak Venter
10:50 Tea
11:20 Effective prophylaxis for neonatal cryptosporidiosis | Mrs Jackie Tucker sponsored by Huvepharma
12:05 An unusual cause of acute nystagmus in a dog | Johan Schoeman

SPEAKERS:


Johan Schoeman


Andrew Christie


Izak Venter

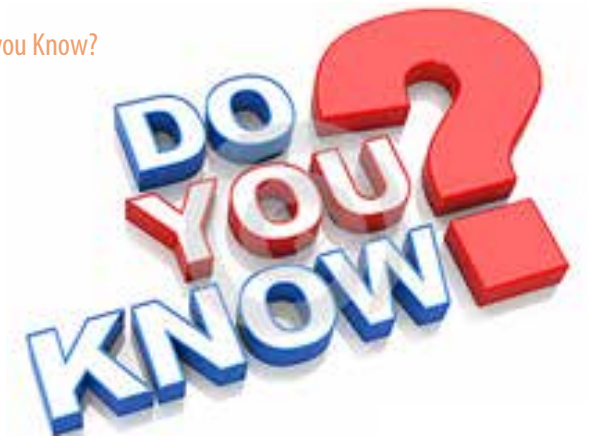

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KING OF BEASTS: THE LION

Silvia Nicolás Alonso Ph.D. in Veterinary Medicine
Biblical and Oriental Institute (León, Spain)

The metaphor of the lion as the king of beasts is common in many cultures. Among the big cat species that inhabit the world, lions have significantly impacted ancient societies, arousing both fear and admiration since prehistoric times.



Lion-man of Stadel. Sculpture of a cave lion (Panthera spelaea) in mammoth ivory. Aurignacian (40 000 BC). Museum of Ulm (Germany). The lion, as a predator of man, aroused great fear among prehistoric hunter-gatherer groups, but also a deep admiration that it shared with other totemic animals such as bears, bison or mammoths, whose survival skills man aspired to. Thus, the lion figures in many of the earliest examples of works of art and has been considered a symbol, image and incarnation of various deities.

Climate changes and anthropogenic activity have influenced ecosystems, causing the disappearance of many large predator species. In the case of the lion, its distribution area was drastically reduced. On the one hand, North Africa began to dry up around 5000 years ago, coinciding with the Uruk culture in Mesopotamia and the rise of the pharaohs in Egypt. On the other hand, anthropic pressure due to population growth, with the appearance of the first cities, caused constant clashes against what was considered one of the main threats to man. It is accepted that there are currently two lion subspecies: the Asiatic (*Panthera leo persica*) and the African (*Panthera leo leo*), both initially present in the lands of Ancient Mesopotamia. Like all felines, they are specialised for a carnivorous diet and a predatory life, being able to detect and kill man easily, like any other prey.

In the symbolic field, the lion is a creature endowed with a marked dualism. As a predator of man, it symbolises chaos and evil. Assyrian texts tell how hordes of these animals harassed travellers, shepherds and their livestock. However, they do not always have a nefarious meaning since, at the same time, they represent royalty and its associated virtues, such as the courage and strength of heroes and kings.

This dualism is transferred to divinities that lions embody or represent, such as Innana / Ishtar in Mesopotamia or Sekhmet in Egypt, among other feline goddesses. They are warrior divinities, fearsome but also loving and protective of their people.

This double idea could also be applied to the king. In Mesopotamia and Egypt, a practice with an important religious significance was carried out, the *royal hunt*, in which the king captured and killed lions in a controlled environment.



Lion hunt of Ashurbanipal: detail of a relief depicting Ashurbanipal with an attendant subduing and killing a ferocious lion. Neo-Assyrian Empire, (645-640 BC.). British Museum. The earliest depictions of royal hunts date from the Uruk period (3500-3200 / 3100 BC). Creatures such as the lion usually appear at the entrances or gates, endowing the monuments with both their power and their terror.

The monarch, as being the one in charge of putting an end to evil and restoring the prosperity of his people, is shown as a victorious hero, not only before his subjects but also before his enemies. This way of displaying authority and ennobling his reign was emphasised during important religious festivities. Monarchs also liked to display trained lions as a symbol of their power and dominion over all creatures.

Nutrition in pregnant dogs and cats





Reproduction starts long before the actual event of mating and the hopeful outcome of healthy puppies and kittens. Although we all have different opinions on animal reproduction, the truth is that we will at some stage be faced with either breeders or pet owners asking for our advice on feeding these animals. It is important to note that our canine and feline patients have very different requirements.

Canines

It is easy to remember and understand the basics of pregnancy in dogs since up to day 35 of gestation is termed the embryonic phase, where organ development takes place, so it's also known as the qualitative development stage. After this, they move into the foetal growth phase or the quantitative development stage, where rapid foetal growth occurs until whelping, usually around 63 days. So, looking at the above numbers, it can be understood that 70% of the final birth weight in puppies is acquired during the last 20 days of gestation.

Before mating until the end of day 35, bitches need to be maintained at an ideal body condition score (BCS). Before this time, there is no need to increase the amount of energy the bitch receives. It may lead to unnecessary weight gain and potential complications, such as dystocia at whelping. Essential nutrients to be considered during this stage of gestation would be Folic acid (to reduce cleft palates, especially in our brachycephalic breeds), EPA-DHA (for brain development), and antioxidants, including beta-carotene.

From day 42, however, things start to change, and there is a spike in the bitch's maintenance energy requirements which continues until birth. It is why it is recommended that owners transition these bitches around day 35 so that by day 42 she is on a diet that provides her with enough energy to support this increase in energy requirements. During gestation, it is crucial to stick to the recommended feeding guidelines. With the added pressure of the growing foetuses, her stomach capacity will be reduced, making it important to feed energy-dense food so that we don't overload the volume of food per feed. It is only after whelping has taken place and the bitch is lactating that ad lib feeding is recommended; lactation is the most nutritionally demanding period for the bitch.

Felines

Our cat friends are a little different - as they prefer to be - so we feed them differently during this period. Like our dogs, we want our cats to go into the breeding period at an ideal BCS. Unlike our dogs, queens start to gain weight just after ovulation; this is what we want and need them to do.

This early fat deposition is what influences lactation several weeks later. During the first half of pregnancy, the embryonic phase (usually up to day 31), queens tend to eat more fat to store away (Wichert, 2005). During the second half of pregnancy, the foetal growth phase (from day 31), the increase in energy intake, is dedicated to the growing foetuses (very similar to the bitch).

If weight gain is insufficient during pregnancy, the queen will be in poor condition moving into lactation. A queen should gain around 40% of her initial body weight before delivery. We obviously do not want these cats to become obese, so we work on the guideline that they should not be gaining more than 45% of their original body mass and should not be gaining less than 30% (Guilloteau/Royal Canin 2005).

Regarding nutrients required during this period, EPA-DHA and Taurine are essential both in lactation and gestation.

More specific nutrients necessary for gestation in felines include Beta carotene, folic acid, and trace elements. For lactation, essential nutrients include L-carnitine, Antioxidant, and Lutein. These additional requirements during this very demanding period are not the same as what one would feed during the maintenance stages of a non-pregnant cat. It is important to advise on the best nutritional solution during these periods.

In conclusion, communicating to our pet owners about their animals' needs and requirements at all stages of their lives is utterly important.

As veterinarians, we will be expected to educate them on all aspects. V

REPORTING ANIMAL DISEASES TO YOUR STATE VETERINARIAN – A GUIDE FOR PRIVATE VETERINARIANS

Dr Trudie Prinsloo, Legalvet Services; E-mail: trudie@legalvetservices.co.za



This article is intended to provide information and educate veterinarians on relevant aspects of the law. It is not intended as personal legal advice. Neither SAVA nor Dr Trudie Prinsloo is responsible or liable for any advice or other information provided herein.

Disease control is vital for protecting our national herds, food security, zoonotic diseases, and protecting individuals' interests concerning their animals. Reporting of diseases is an integral part of disease control, and this is where private veterinarians play an essential role.

What About Client Confidentiality?

Veterinarians are often concerned about confidentiality and their duty to protect their clients' information. But let me assure you, there are a few instances where other duties will trump that. Disease reporting as required in terms of the Animal Diseases Act ("the Act") is one such instance. Reporting must, however, be done correctly.

How to Report

Veterinarians must immediately report any incidence, or suspected incidence, of a controlled or notifiable disease; this includes veterinarians or persons in control of a laboratory. Please note that not only confirmed diseases must be reported, but the suspicion of these diseases must be reported too. It is especially important when it comes to diseases where the confirmation may take long or where the implications of the presence of the disease are significant. If in doubt, discuss it with your local state veterinarian and instead err on the side of over-reporting than underreporting.

Reporting must initially be done verbally to the responsible state veterinarian and followed up in writing as soon as possible. Always keep your local state veterinarian's contact numbers and e-mail address where it is easily accessible.

What information must be provided?

Provide your name, practice name, and contact details to the state veterinarian and the contact details of the owner or manager of the animals. A description of the infected animals and any identification marks or numbers where that is available must be given. Describe the symptoms you have seen or the history you have clearly. Also, please provide a detailed description of where the animals are kept, making it easy for the state veterinarian to locate them.

What should you do if you cannot reach the state veterinarian?

The Regulations stipulate that controlled and notifiable diseases must be reported to the responsible state veterinarian; this means a state veterinarian who has been allocated to the specific area. There are instances where a position is temporarily vacant, or the veterinarian may be unavailable. In less urgent instances, you can send an e-mail to the responsible state veterinarian and copy it to the provincial state veterinarian responsible for epidemiology or the provincial director of veterinary services. In urgent cases, you should contact the provincial director of veterinary services directly if you cannot get hold of the responsible state veterinarian. Immediately follow this up with e-mails to the responsible state veterinarian and the provincial director. In serious emergencies, and if you can repeatedly not get hold of a responsible provincial state veterinarian, you must **report it to the National Director of Animal Health.**

Which Diseases are Controlled and Notifiable Diseases?

The list of controlled diseases is provided in the Animal Disease Regulations under Table 2 of Annexure 2. Please remember that by definition, diseases that are not indigenous or native to the Republic are considered controlled diseases. These diseases are not listed in Table 2. An example of such a disease is Peste des Petits Ruminants (PPR). This means that if you suspect PPR is present in a herd, you must immediately report it.

A list of the notifiable diseases is provided in Annexure 3 of the Regulations. Currently, there are only six diseases listed, i.e., blue tongue, bovine malignant catarrhal fever, lumpy skin disease, Rift Valley fever, strangles, and swine erysipelas.

Both these lists may be amended from time to time, and the latest lists will be in the most updated Regulations. However, the Department of Agriculture, Land Reform, and Rural Development also provides an updated list on their website.

If you have any questions in this regard, you are welcome to contact me at trudie@legalvetservices.co.za or let us know if there are any aspects you feel should be discussed in more detail in this column.

[i] **Animal Diseases Act 35 of 1984**



Influential Life Coaching

LESSONS FROM AN ICEBERG



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http://www.life-coach-directory.co.za/mats-abatzidis

I hope this article finds you and your families well and safe!!! Last month we discussed various myths about success. This month I would like us to use the analogy of an iceberg and learn some important lessons. As we know, the power of an iceberg lies within the part that we cannot see (only ± 10% is visible) – below the surface (the other 90%; think of the Titanic).

1. **People are like icebergs.**

   Your appearance perceived by others, including your skills and talents evident in work produced or performance, is only 10% of who you are. **Character is the far more significant and vital part of you, which lies below the surface. Character determines whether you sink in life or not.** We should always spend more time developing the 90% below the surface, which ultimately is our foundation. An example of this would be talented and skilful business leaders that have driven companies into bankruptcy, ruined careers, and lost employees' retirement funds due to their weak/poor character.

   Another well-known example would be Adolf Hitler, with great talent, excellent skills (especially communication), natural charisma and high ambition. His giant character flaws led to the murder of millions of people worldwide. People of character don't take advantage of position and power.

2. **Is your foundation as firm as that of an iceberg?**

   Have you ever seen how deep the foundations of a skyscraper building go? It can take months to years to lay down those foundations – the real strength and power of the building lie below the surface. The same applies to good leaders and long-term achievers. Storms and earthquakes are inevitable in life – we can only survive or thrive if we build our lives on a strong and solid foundation of good character. Some believe that good character is laid in early childhood and is never adjusted or developed after the person becomes an adult. That is not true at all. **You must be the architect of your character and its continuous development throughout life**. Character development is not something that is taught at any school/university. It entails forming personal values and habits based on timeless principles/truths and respect for others. It must be **continuous and intentional**. Character development starts with what you think, your daily practices and **actions**. Skills, personality, drive, motivation, and talent may get you to the top, but character will keep you there.

3. **Long-term Thinking.**

   Never be fooled by the apparent success of someone who seems to reach the top quickly. A quick downfall often follows instant success. **Consistent and profound achievement is built over time**. Ego (out-of-control competitive nature to achieve "at all costs"), pride (fear of embarrassment or failure) and a false definition of success (appearance is everything) may tempt us to take shortcuts to success. Think back to people you have met in your life; amongst them, you will have met some who have taken shortcuts. Looking a little closer, you may even see their moral failures, financial dishonesty, exaggerated results, and unreported errors. **Only those who stick to high-character principles survive with integrity and have a positive influence will inspire future generations**.

4. **Character assessment.**

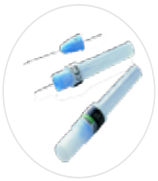
   - Have you ever exaggerated the features or benefits of your product/service to close a sale?
   - Have you misled a client in discrediting your competition to give yourself the edge?
   - Have you misinterpreted facts or your CV to hide a significant failure?
   - Have you ever taken credit for reaching a goal when the actual results are still in question?
   - Have you ever manipulated facts or statistics to your advantage?



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Life Coaching <<< 34

- Have you ever enhanced, exaggerated, or distorted your achievements to appear more successful to others?
- Have you misrepresented income or expenses at tax time or on an expense report?
- Have you ever failed to claim something on a customs form after an international trip?
- Have you ever gone somewhere and then lied about it?
- Have you ever repeated something told to you in confidence?
- Have you ever accepted money or an award you didn't earn?
- Do these questions sound harsh or unrealistic?

The truth is character is what and who you are when nobody is looking!!

Character is the foundation for self-esteem.

Like an iceberg, the 90% of you that is character is what will support your skills, talents, and other aspects of outward appearance (the 10% that is "show"). It is your character that ultimately allows you to shine in ways that are lasting – in good times and bad times.

Next month, we will continue looking at other concepts and ideas and improving our quality of life and overall performance at work and home.

The more unusual ocular neurological findings in cat eyes

Dr Antony Goodhead,
Specialist Veterinary Ophthalmologist,
Johannesburg and Cape Animal Eye Hospitals,
www.animaleyehospital.co.za

1] Congenital Esotropia

Visual system abnormalities associated with forms of albinism have been reported in animals for years. The most well-known one probably relates to the Siamese cat, which demonstrates a form of partial albinism (i.e.pointed colour cats) with iris and retinal hypopigmentation. The colour-pointed Siamese (i.e. possessing darker pigmentation on extremities) are the result of temperature-dependent genetic alleles in *tyrosinase* (*TYR*). Tyrosinase is the rate-limiting enzyme in melanin production. The retinal hypopigmentation in these cats is the critical factor resulting in misrouting of many of the projections of the retinal nerves to the brain. The nature of the projection error and the developmental consequences of the relay of the misrouted retinal inputs to the visual cortex result in the typical clinical signs seen. The abnormal retinogeniculate projections in Siamese cats result in reduced ipsilateral retinal projections because of many axons originating in the temporal retina, which normally project ipsilaterally, actually project contralaterally in Siamese cats.

Consequently, each LGN contains an abnormally superior representation of the ipsilateral visual field resulting in convergent strabismus with or without involuntary horizontal or rotary nystagmus. To compensate for their abnormal neural connections, the muscles controlling the position of the eyes react by rotating both eyes toward the middle, resulting in the cross-eyed look that is so familiar.



2] Feline Dysautonomia (Key-Gaskell or Dilated Pupil Syndrome)

Feline dysautonomia is an unusual disturbance of the systemic autonomic innervation with a reduction in the number of neurons in autonomic ganglia. It results in autonomic denervation of the eye and other organs. The exact cause is unknown. Most cats are less than three years old and are mainly male domestic shorthairs. Diagnosis is based on bilateral protrusion of the third eyelids and dilated pupils.

Common systemic signs of feline dysautonomia include general malaise, dehydration, reduced appetite or anorexia, dysphagia, vomiting or regurgitation, xerostomia, bradycardia, urinary bladder distention, and constipation. Vision is unaffected, and photophobia is variable.

Pharmacologic testing with ocular autonomic stimulants can aid in establishing the diagnosis of feline dysautonomia. Results of these tests are based on denervation supersensitivity. As such, the dysautonomic eye will respond to dilute concentrations of drugs that will not affect a normal eye. Pilocarpine, a direct-acting parasympathomimetic agent at a concentration of 0.1%, will rapidly constrict the pupil.

The prognosis for cats with dysautonomia must be viewed as being guarded to poor. However, some cats have been maintained long-term on supportive therapy or recovered after a prolonged period.



3] Nictitating Membrane Protrusion

Idiopathic bilateral protrusion of the feline third eyelids is a common, poorly understood ophthalmic disorder. The retraction of the nictitating membranes after the instillation of topical adrenergic drugs in affected cats is suggestive of a loss of sympathetic innervation such as that seen in Horner's syndrome; however, other ophthalmic signs of Horner's syndrome are absent in these cats.

Cats with this syndrome have normal intraocular structures, and vision is unaffected unless the nictitating membranes protrude to the extent that they cover the pupil. Affected cats often have concurrent watery diarrhoea that precedes nictitating membrane protrusion. Some cats may have diarrhoea for weeks. Many cats recover from diarrhoea quickly yet will still have nictitating membrane protrusion.

A Tora-like virus has been isolated from the faeces of several affected cats. The prognosis for this condition is good. The diarrhoea and nictitating membrane protrusion are self-limiting, although clinical signs may be long-lasting. Therapy is not indicated, but a topical adrenergic agent may be helpful if the nictitating membrane protrusion is severe.

4] Anisocoria:

Anisocoria refers to the presence of unequal pupil sizes. There are many causes of this [to be discussed in detail in a future Vetnews article]. Still, one condition referred to as internal ophthalmoparesis/ophthalmoplegia [IO/O] is characterised by the decreased [ophthalmoparesis] or absent [ophthalmoplegia] motor function of the iris sphincter and ciliary body muscle as a result of loss of the parasympathetic innervation from the oculomotor nerve [CNIII] and seen as areflexive mydriasis of the pupil.



Most cases of IO/O reported in the veterinary literature include the cavernous sinus syndrome, which is characterised by IO/O, paresis or plegia of the extra-ocular muscles [known as external O/O] and decreased or absent facial and corneal sensation. The dysfunction is due to several cranial nerves that pass at the level of the middle cranial fossa. The cranial nerves include CNIII [motor and parasympathetic], CN IV [trochlear], CNVI [abducens], the ophthalmic branch of CNV [trigeminal] and postganglionic sympathetic nerve fibres.

The maxillary branch of CNV may also be affected as it passes through the round foramen. The general cause of this in cats is intracranial or retrobulbar masses invading the orbital fissure or the middle cranial fossa. The reasons are osteochondromas, lymphoma, squamous cell carcinoma, chondrosarcoma, trauma, orbital abscessation, infectious diseases [FIP/ FeLV and Cryptococcus] and idiopathic. Lesions only affecting CNIII alone and causing internal IO/O are more uncommon.

IO/O generally occurs in older cats of all breeds and sexes. When performing the diagnostics of such cases, it is vital to check on the history regarding the use of Atropine drops. The neurological assessment of the anisocoric patient must be done carefully, taking into account the facial sensation [CNV], corneal reflex [touching the cornea with a cotton bud, CN V] and careful assessment of the palpebral reflex [CNV].

There will be reduced menace response with normal vision, poor palpebral reflex, poor corneal reflex and depressed vestibulo-ocular reflexes. Ocular ultrasound and CT /MRI should be performed to confirm a diagnosis. Cats with a systemic disease should have an abdominal ultrasound performed.

Poor mental status is often reported in these cats and is most likely related to an intracranial mass causing compression of the forebrain/brainstem. The poor menace response with intact vision may also be associated with this pathology.

Provocative testing of mydriasis can be performed using Pilocarpine 0.1% solution to assess the parasympathetic innervation of the oculomotor nerve to the eye. The results of this, however, are somewhat unreliable.

IO/O is a serious condition carrying a very guarded prognosis due to the high prevalence of neoplasia in this population of cats.

5] Feline Leukemia Virus (FeLV)

Anisocoria or dyscoria may arise because of the neurological effects of FeLV on the ciliary ganglia and short ciliary nerves of affected cats. Alternatively, dyscoria [irregular pupil shape] may result from lymphocytic infiltration of the ciliary body and iris. In particular, spastic pupil syndrome, involving a static anisocoria during dark adaptation, has been reported in FeLV-positive cats. Anisocoria may have been noted by the patient's owner over time, alternating with periods of normal pupil behaviour. Other ophthalmic abnormalities are absent, however, and vision is unaffected.

These cats are positive for FeLV but may have no clinical signs other than the anisocoria. It has been found that C-type viral particles have been identified in the ciliary ganglia and short ciliary nerves of these cats, suggesting that the virus has invaded these nerves. The prognosis for long-term survival in these cats is poor.



Antiviral Effect of Ivermectin Against BHV-1

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Back to the future with Ivermectin, an antiparasitic drug developed in nineteenvoetsek is back with a bang! Not only was it proposed as an antiviral medication for the revered COVID-19, but multiple viruses across various species.

Recent studies have demonstrated a dose-dependent effect against Bovine Herpesvirus 1 (BHV-1), and this article will briefly describe the mechanism of action of the antiviral effect ivermectin has against BHV-1 infection.

BHV-1 causes a potential array of clinical diseases, ranging from reproductive disease and encephalitis to respiratory disease.

The latter, the most essential and clinical disease, is termed Infectious Bovine Rhinotracheitis (IBR). BHV-1 is considered the primary viral pathogen in the Bovine Respiratory Disease Complex (BRDC), responsible for massive economic losses to the beef industry worldwide. Vaccination and proper management provide valuable tools to decrease morbidity and mortality. Although antimicrobials can potentially treat the bacterial fraction of BRD, there are currently no commercially available, effective antiviral drugs against the common BRD viruses.

BHV-1 is a double-stranded DNA virus with the nuclear material encased in a protein capsid, which in turn is enveloped in a lipid membrane that is dispersed with spike proteins.

Let's consider a swift view of the Herpesvirus life cycle: Viral spike proteins attach to the host cell membrane, enabling the virus to enter the cell.

Once in the cell, the viral genome enters the cell nucleus and uses cellular and viral material to replicate itself. If the replication cycle is complete, the DNA gets encased in protein capsids and buds through the cellular membranes, creating viral envelopes.

Infected cells undergo programmed cell death (apoptosis) and release numerous infective extracellular viruses (virions), infecting nearby cells and repeating the cycle.

A closer look needs to be taken at viral DNA replication to explain the antiviral effect of Ivermectin. Inside the cell's nucleus, the DNA polymerase holoenzyme (DNA polymerase) is responsible for viral genome replication.

The holoenzyme is, however, formed in the cytoplasm, outside the cell's nucleus, and needs to be transported into the nucleus via an assisted transport process. Large protein molecules, such as DNA polymerase, enter the nucleus via a Nuclear Pore Complex (NPC), with the assistance of another protein called an importin. To simplify this, you can visualise the outside of the nucleus (cytoplasm) as the ground level of a building and the inside of the nucleus (karyoplasm) as the first level of the same building.

The Nuclear Pore Complex is the elevator shaft, and the importin is the actual elevator in which a person moves from one level to the next.

In this analogy, the "person" is a DNA polymerase that gets into the elevator (i.e. attaches to the importin) and gets transported through the elevator shaft (the NPC) to level 1 of the building (karyoplasm). The polymerase then leaves the 'elevator' to go about its designated duties (dissociates from the importin to perform its function in the viral replication process).

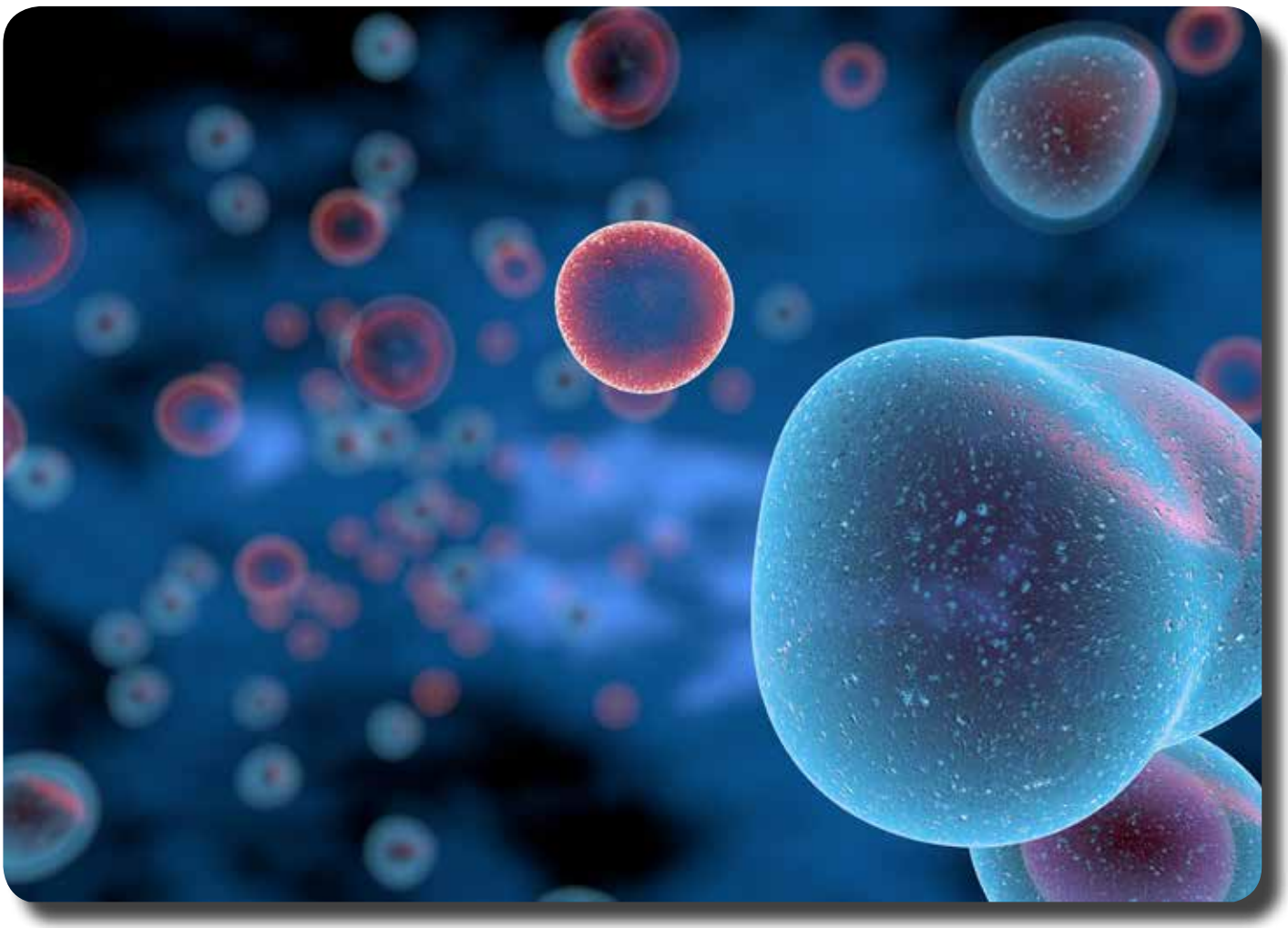
The process of attaching to the importin is precisely where Ivermectin comes into the picture. Ivermectin gets into the elevator and does not allow DNA polymerase to enter, thus prohibiting it from being transported into the nucleus. We know that there are numerous 'elevators' along this building (NPCs throughout the nuclear membrane). Therefore, looking at this analogy, it would make sense that Ivermectin would affect inhibiting the importation of DNA polymerase in a dose-dependent function. If one importin got blocked by Ivermectin, there could be many others to continue the importation function.

Two recent in vitro studies proved a dose-dependent inhibition of BHV-1 replication with Ivermectin. Although much research still needs to be done, these are promising results for potentially adding another tool to the toolbox in the fight against BHV-1.

This article was originally published in the Livestock Review, Issue 02, 2021.

Further reading:

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VETERINARY NURSE / VEEARTSVERPLEEGSTER

WESTERN CAPE / WES-KAAP

GEORGE

Eden Small Animal Hospital: Dedicated and enthusiastic vet nurse needed for small animal practice in George. Fully equipped 3 vet practice, competitive salary and package, full or flexible part-time position available. Send CV to susi@edenvets.co.za or contact 0840212427. Ref22AU02

PRACTICE FOR SALE / PRAKTYK TE KOOP

KWAZULU-NATAL

DURBAN

Long established (50 years +) one-to-one and a half vet small animal practice for sale in Durban. Computerised (Avimark) with extensive client database, Catalyst, CR X-ray, Isoflurane anaesthetic machines, surgical instruments, etc. Large purpose-built premises. Seller is willing to discuss any options, e.g. lease/ rental/ business purchase. Price negotiable. Contact 0832648132 or yebojt@yahoo.com. Ref21NV07

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FOR SALE / TE KOOP

ANAESTHETIC MACHINE

A new veterinary anaesthetic machine with MSS3 vaporizer or TEC4 refurbished vaporizer. All machine assembly, servicing and calibrations continue to be applied in accordance with the Blueprint of the former Ebrahim Cassim Chief Anaesthetic Technician of Groote Schuur Hospital. For further information call Cassim Veterinary Anaesthetics on 021 705 2880 / 082 681 9742. Email: encassim@gmail.com or visit www.cvanaesthetics.co.za Ref13JA01

ADVANCED ANAESTHETIC EQUIPMENT

A lifetime investment. World-renowned cost-saving anaesthetic equipment– DESIGN AND ENGINEERING AWARDS reducing running costs/pollution by 80%. Dr Humphrey (renowned international anaesthetist) designed the simplest, "greenest" anaesthetic equipment. Result? The multi-purpose "Humphrey ADE-circle system® with "FREE-OX", "WALL-MOUNT", or new "PACK-FLAT MINI-PORTABLE" machines. Beware cheap copies. Details www.aesmedical.co.za. sales@aesmedical.co.za. Ref21MY10

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2021 NEW LIGHTWEIGHT "PACK-FLAT" CONCEPT.
Designed as START-UP or HIGHLY PORTABLE
cost-saving unit for all environments, this new model includes everything you need; frame, handle, the "Multipurpose Humphrey ADE-circle breathing system", vaporiser, drip stand. Free-standing/wall mounted. Just 11.4 kg complete.
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AOHUA VETERINARY VIDEOSCOPE & ENDOSCOPE IMAGING PROCESSOR

Aohua Veterinary Videoscope VET-1330 and Endoscope Imaging Processor VET-OR1200HD for SALE. R250K neg.
Please contact Dr F Lampen 0313288231, flampen@seaworld.org.za for more information.
Ref22AU04



EQUINE VETERINARIAN REQUIRED IN KZN

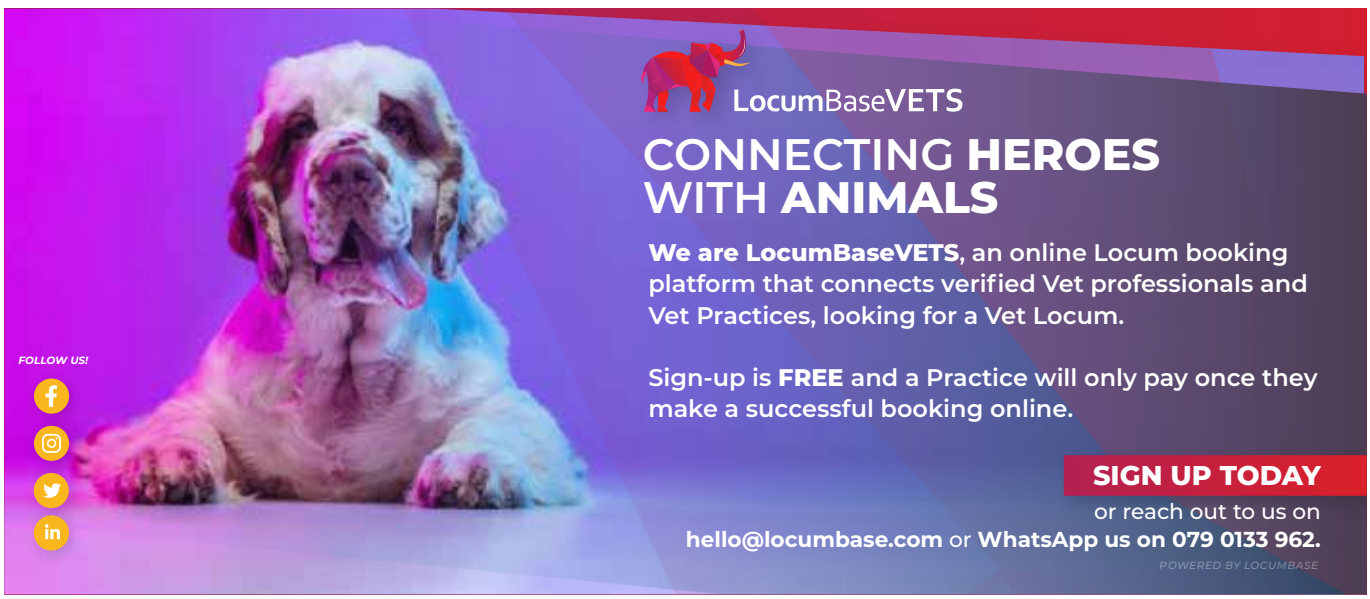
SUMMERVELD EQUINE HOSPITAL provides a 24-hour emergency ambulatory, medical and surgical service for racehorses and sport horses. Our hospital has in-house patient facilities for 20 horses and a fully equipped lab.

TO APPLY PLEASE SEND A COVERING LETTER AND CV TO equinevet@savets.co.za

Perks include competitive salary, company car, cell phone, vet assistant, subs for SAVC and SAVA. Competitive salaries commensurate with relevant experience.

For more information, the website address is: www.savets.co.za

WE LOOK FORWARD TO HEARING FROM YOU.



Life plus 23 without parole



Mike Lowry

Mike Lowry has been in veterinary practice for "life plus 23" years.
In this column, he shares his experiences and opinions.

I have not stopped thinking about my beautiful student who took her own life last week. This cloud of sadness has been looming over me for days. I'm so sad for her, her family, friends and all who knew her …… what an inspirational light she was!

I've heard more and more about other veterinarians and horse trainers who have taken their own lives after my post went viral last week. I can't speak from a veterinarian's perspective, but I certainly have a word for most other professionals in the horse industry.

People who are horrible to you are NOT worth your life. It is only a reflection of their shortcomings, problems, drama, baggage or insecurities. But man, it is so hard to remember that when you're inconveniently in the position to be the punching bag.

I used to be there; I was a horse trainer. People were horrible to me. I was miserable. I wanted to help everyone, so I played the role of the proverbial punching bag for a long time. One client at a time. Honestly, those feelings of misery did not leave me until the last few months. I wanted out desperately. I don't feel that way for the first time in years anymore. I don't have those kinds of clients anymore. Here's why……

The best advice I can give you – stop selling cheap seats. Figuratively and financially. Get rid of those seats in your life and your business. There are seven billion people on earth, and plenty who will see your worth, respect you and learn to love you. Don't waste a second thought on those who don't value you!

Stop selling cheap seats, and the toxic people will never show their face
Stop selling cheap seats; you won't have to work yourself into the ground.
Stop selling cheap seats, and you will attract a different level of clients, friends etc.,
Stop selling cheap seats, and those not meant for you will get uncomfortable and see themselves out your door.
Stop selling cheap seats, and you will enjoy your work and be rewarded.
Stop selling cheap seats, and you will enjoy your work because you will be working with YOUR tribe.

Raise your standards. Raise your vibration. Raise your prices.

The rest will fall into place, I promise you.

You are more than enough.

Author Unknown.



NVCG EVENTS 2022

Medicine & Endocrinology

3 & 4 Aug | Hazendal, Cape Town
10- 11 August | The Gateway Hotel, Durban
12 &13 |Midrand Premier Hotel, Johannesburg

Register/more info
https://bit.ly/ENDOCRINOLOGY22



Professor David Church

BVSc PhD MACVSc FHEA MRCVS
Deputy Principal, Professor of Small Animal Studies, The Royal Veterinary College

David is currently Professor of Small Animal Studies at the Royal Veterinary College. He has spent over 30 years in small animal specialist practices and is the author of over 180 peer-reviewed publications on companion animal endocrinology and small animal medicine. He has been a long standing advocate of the benefits of veterinarians developing a logical approach to clinical reasoning to complement their pattern recognition skills. As a co-founder of VetCompass, he is also passionate about developing mechanisms to define and understand the disorders encountered in general practice and how to optimise their management.



Professor Jill Maddison

BVSc, DipVetClinStud, PhD, SFHEA, MRCVS, Royal Veterinary College, London, United Kingdom

Jill is currently Professor of General Practice at the Royal Veterinary College (RVC) and Director of Professional Development overseeing the college's continuing education programmes. She is course director for the BVetMed and CertAVP programmes. She is actively involved in undergraduate teaching and continuing professional development (CPD) at the RVC in the areas of clinical reasoning in small animal medicine and clinical pharmacology. She is the senior editor of Small Animal Clinical Pharmacology, the 2nd edition of which was published by Elsevier in 2008. She is also senior editor of Clinical Reasoning in Small Animal Practice published by Wiley-Blackwell in April 2015. She has lectured extensively around the world on clinical problem solving, small animal internal medicine and clinical pharmacology. Jill is coordinator for the main small animal clinical CPD streams at The London Vet Show. To keep in touch with the realities of private general practice she regularly consults at a local veterinary practice and at the RVC's first opinion practice, the Beaumont Sainsbury Animal Hospital.

DAY 1

08:30	Registration
08:45	Welcome
09:00	Are we all the same? Thinking and learning styles and their impact on clinical decision making (Jill Maddison)
09:45	Introduction to clinical decision making - what we do and why we do it? (Jill Maddison)
10:30	TEA BREAK
11:00	Case conundrums I - the vomiting patient (Jill Maddison)
11:45	Case conundrums II - the jaundiced pa tient (Jill Maddison)
12:30	Sponsor: Hill's
12:45	LUNCH
13:45	Case conundrums III - the patient with coughing and dyspnoea (David Church)
14:30	Case conundrums IV - the weak patient (David Church)
15:15	TEA BREAK
15:45	Antimicrobial stewardship - a One Health issue (Jill Maddison)
16:45	Close

DAY 2

08:30	Registration
09:00	Diagnosis and management of hypoadrenocorticism in the 21st century (DBC)
10:30	TEA BREAK
11:00	Diagnosis and management of hyperadrenocorticism in the 21st century (DBC)
12:30	Sponsor: MSD
12:45	LUNCH
13:45	Management of the complicated diabetic (David Church)
14:45	Case conundrums V - the patient with PU/PD (JEM or DBC)
15:30	TEA BREAK
16:00	Grand Rounds (JEM & DBC)
17:00	Close

REGISTRATION FEES

NVCG Member - Full Programme	R2,050.00
Non Member - Full Programme	R2,700.00
One Day Attendance	R1,650.00
SAVA KZN-Branch Member Full Pro	R1,700.00

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vetlink

Info: conferences@vetlink.co.za
Register: https://bit.ly/ENDOCRINOLOGY22

Vet·ED ONLINE

CONTINUING PROFESSIONAL DEVELOPMENT FOR VETERINARIANS



As a registered veterinarian, you have a responsibility to improve your knowledge and skills on regular basis for the end benefit of your patients. This responsibility is the driving factor behind the Continuing Professional Development (CPD) programme implemented by the South African Veterinary Council (SAVC).

What to expect as a practising veterinarian regarding your CPD requirements as set out by the SAVC?

SAVA
South African Veterinary Association
Suid-Afrikaanse Veterinêre Vereniging

WHAT IS CPD?

CPD is a process of lifelong learning whereby a Veterinary or Para-Veterinary Professional systematically engages in activities that maintain abilities, skills and knowledge required for a professional practice.

HOW DOES CPD WORK?

According to the SAVC's guidelines, veterinarians who enter the CPD system during their Compulsive Community Service, must accumulate a minimum total of sixty (60) CPD points, of which twenty (20) points must be Structured CPD, within every three-year cycle from commencement of the CPD system.

Visit our VetEDonline Platform for a detailed breakdown of your Structured and Unstructured CPD requirements. As a practicing veterinarian, the SAVC advises that you continuously accumulate your CPD points as part of your professional development portfolio which starts during your community service year.

It remains the responsibility of veterinarians to keep record and documented proof the of their CPD activities. A summary of all activities is to be submitted on an annual basis to the council on a form that is obtainable from the registrar.

MANAGING YOUR CPD COMPLIANCE

We understand that managing your CPD requirements can be a time consuming and somewhat frustrating process, which is why we want to introduce you to VetEDonline.

VetEDonline is an online CPD Management and Education Platform endorsed by the South African Veterinary Association (SAVA), which provide veterinarians with state of the art CPD Compliance and Education Solutions that assist them on their journey to CPD compliance.

VETEDONLINE SUPPORTS PRACTICING VETERINARIANS WITH THEIR CPD COMPLIANCE BY PROVIDING THE FOLLOWING SOLUTIONS AND SERVICES:

ONLINE COURSES

Online Courses from leading providers

JOURNALS & ARTICLES

CPD accredited articles from SAVA

ONLINE LEARNING PORTFOLIO

To manage your CPD certificates and keep track of your CPD points

Contact us for more information and guidance on your CPD compliance

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