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MERRY
XMAS

FROM THE TEAM @ EA TO ALL OUR CLIENTS



Cats Are Not Small Dogs

Why cats are not just small dogs is a common title in veterinary conferences and it applies to many pharmacology lectures as well. The Veterinary Pharmacology and Therapeutics Conference held jointly by the University of Sydney CVE and the ANZCVS Pharmacology Chapter in Melbourne just prior to the Covid chaos featured just such a talk by keynote speaker and world renowned veterinary pharmacologist Mark Papich.

The difference involve metabolic differences in the way that they absorb, metabolise and eliminate medications and also in susceptibility to adverse events which are often caused by differences not just in metabolism but also in receptors.

Compliance can also be an issue as cats are often more difficult to medicate and there are few formulations specifically designed for cats. This means that palatability and ease of administration are vital when prescribing drugs for cats. Most animal drugs have been designed for dogs and not much consideration has been given to the needs of cats.

First of all the dog and the cat's saliva differs from humans in that they lack the enzyme amylase, which is responsible for the initiation of starch digestion in the mouth. This explains why dogs tend to swallow most foods rapidly with minimal chewing and why cats select for a low starch diet eating small but frequent meals. This explains why it is easier to put tablets into dogs via the food than it is with the more fussy eating cats.

However the main physiological differences between cats and dogs, as any animal nutritionist can tell you, is in the digestive systems. The differences between these two

monogastrics in their food assimilation, stems from the fact that dogs are omnivores, whereas cats are carnivores.

Intestinal length, as determined by the ratio of intestine length to body length, is markedly shorter in cats (4:1) versus dog (6:1). Cats compensate by having a slower intestinal transition time and also higher permeability of drugs and other compounds.

Cats also have smaller stomachs than dogs because their eating patterns are associated with smaller, more frequent meals. The gastric emptying time and intestinal transit of medications is affected by feeding, with food having a significant slowing effect in cats. Poorly soluble drugs that require dissolution before absorption will undergo too rapid a transit time when administered to an unfed cat resulting on poor oral absorption. This may explain the problem with efficacy from oral prednisolone.

Cats resist frequent dosing therefore slow release or sustained re-

"This explains why dogs tend to swallow most foods rapidly with minimal chewing"

lease oral medications are preferred but few are available.

Because most drugs are approved for dogs or humans it creates a problem deriving accurate dosing guidelines for cats.

Without specific pharmacokinetic studies it is risky to extrapolate from dogs or humans to cats, supreme examples being acetaminophen and aspirin.

Reference:

Papich M, Feline pharmacology; Why cats are not just small dogs. Veterinary Pharmacology and Therapeutics Conference, CVE Proceedings no. 446 March 2020



Examples of Adverse Drug Reactions Unique to Cats	
Drug	Reaction
Acetaminophen	Liver injury, blood cell injury
Doxycycline hyclate	Oesophageal injury from oral formulations
Methylprednisolone acetate	Increased risk of congestive heart failure
Enrofloxacin	Blindness
Cisplatin	Pulmonary reaction
Potassium bromide	Bronchitis, coughing
Azathioprine	Bone marrow suppression
Lidocaine	Cardiovascular depression, death
Spirolactone	Facial dermatitis
Chloramphenicol	Increased risk of bone marrow depression
Voriconazole	Neurological and ocular problems
Diazepam	Liver injury
Aspirin	Acidosis, salicylate toxicity

The Miracle Cure

While the world has hung out for a vaccine the overselling of the benefits means that some expectations could be quite unrealistic. A vaccine is not a panacea as many, especially politicians would have us all believe.

Never has vaccination been a substitute for sanitation, and Covid is not going to magically disappear with the arrival of a vaccine; it is still going to need persistent efforts at disinfection and hygiene to get on top of the situation.

In other words there is no magic bullet where the population at large can relax standards.

We saw the worst of political interference, with accountants having a larger say in proceedings than qualified medical personnel at the start of the epidemic. Sweden's attempt at herd immunity was always not going to end well. Herd immunity is a valid concept but is gained more by mass vaccination than natural attrition.

All this episode did was to possibly give herd immunity a bad name to be bandied about by anti-vaccination fanatics on social media.

The latest has been the straw grasping exercise by a desperate president claiming that a vaccine was nigh and all would be well.

Unfortunately because the claims were loud and often the message was that as soon as we had a vaccine the crisis would be over. This is a very dangerous situation created merely for political expediency.

The one big message from 2020 should be hygiene above all else. It is no accident that normal influenza numbers were down world-wide this year, along with many other infectious diseases. Social distancing, mask wearing and hand washing all had an effect.



It is also no coincidence that the common cold, scourge of every winter, was not prevalent until after lockdown. It is after all a corona virus, the same family as Covid and so the

same measures that kept Covid in check, mask wearing, social distancing and hand washing, will work for the common cold as well.

The challenge will be to keep these steps to the forefront of the mind once the pandemic does subside around the world. Already there is a dangerous complacency afoot and the sheer fact that the common cold arose after lockdown indicates that general hygiene levels had probably dipped.

A widespread vaccination program will definitely slow viral spread and be a vital tool in controlling the pandemic, but will be much more effective and rapid in action if the general populace does not take it as a panacea but still continues to practice hygiene and disinfection.

A miracle cure, as looked upon by politicians and media it certainly is not.

"Never has vaccination been a substitute for sanitation"

Trying Hard

When Tony was in primary school one day he came home and said to his mother, "Mummy we learned about the alphabet today, everyone else messed up around the letter F but I made it all the way through,"

"That's good Tony, "well done" said his mother, "that's because you tried very hard."

The following week he came home and said, "Mummy, Mummy, I counted to one hundred today. No-

body else could get past sixty but I made it to one hundred."

"That's good Tony, "well done, that's because you tried very hard." said his mother again.

A few days later he comes home again and says "Mummy today they measured us in class and I was taller than anyone else, is that because I tried very hard?"

"No Tony, that's because you are 26."



Dosing Large Dogs

It's not that large dogs are difficult to pill, they are much easier than cats and the snappier natured little dogs. The issue is finding tablets of a convenient size.

Dogs lack the enzyme amylase in their saliva, which is the enzyme responsible for the initiation of starch digestion in the mouth. Therefore dogs tend to swallow most foods rapidly with minimal chewing.

Large breeds such as Labradors are particularly prone to this behaviour so giving them a pill via food is often not difficult. Often medication is better absorbed when given on an empty stomach and in that situation direct pill administration is necessary, although larger breeds do tend to be easier to pill than smaller ones and definitely easier than cats.

However there are medications that are best given with food and one of these is the antibiotic combination amoxicillin/clavulanic acid. In this case the recommendation is

"much easier than cats and the snappier natured little dogs".

not for reasons of absorption, all penicillins are better absorbed on an empty stomach, but it has been widely noted in humans, and there is no reason to doubt the same applies to dogs, that clavulanic acid commonly causes nausea.

This effect is negated by giving the antimicrobial with a meal.

The requirement for larger dogs then is just a larger pill for logistical convenience and cost reasons, with no need of fancy flavouring, just like humans really.

This is where Vetamox comes to the fore, containing a large 625 mg of the

combination in a single tablet. Tablets are individually shrink wrapped for longer shelf life and cost is extremely competitive.

Amoxicillin/clavulanic acid combination is probably the most widely used antimicrobial in dogs and having a convenient, economical option for larger dogs is of great benefit to the profession.

In addition the tablets are scored so are easily divided for administration to smaller dogs.



Another 20 Years

An 80 year old man, concerned about his health, was saying his prayers one night.

An angel appeared to him and said, Don't worry my son, you are going to live to be 100 years old."

Relieved the old man went to sleep. The next morning he got up and thought, "If I am going to live to 100 I better start taking care of myself."

He went to a gym, worked out for a couple of hours then had a massage and a facial. Then he went to the barbers for a haircut.

Finally he dropped by an exclusive menswear and bought a new suit.

Seeing that it was noon he decided to walk across the street and have lunch. He stepped out on to the street and was run over by a truck, killing him instantly.

A few moments later he was in heaven standing outside the Pearly Gates. The same angel who appeared to him the night before was checking in the new arrivals.

'Excuse me' said the old man, "last night you said I'd live an-

other 20 years. What happened?"

"Sorry," the angel replied, "we did not recognize you!"



Out With The Old

It seems that the whole world cannot wait to see the end of such a troublesome year.

While we are not out of the woods with the Covid situation there is a glimmer of light at the end of the tunnel, especially now vaccines are coming on board.

It has not been easy for many businesses, the veterinary profession included.

Revenue was predicted to fall from 5 to 7% for the year for veterinary practices and it seems this is the case in the small animal field at least.

While real estate agents are making a killing there are still a lot of people struggling and the economy, while not the worst in the world, is still struggling.

In the pharmaceutical world and many other areas such as car parts, overseas supply chains have struggled.

However a New Year certainly looks like a turning of the corner, with political fresh air in the US, Covid vaccines coming on line and prospects for economic growth.

EA is not immune to the expected upturn, with a couple of new prod-



ucts, one dairy and one equine, being launched very soon and announced in the February EA News.

Reliable Performance - Reliable Supply

'Tis the season to be jolly which means it is also velveting time, a time when local anaesthesia is at the forefront. This puts pressure on the profession and, in the past there has been some angst about availability.

No worries this year or in the foreseeable future with Lopaine, supplies aplenty and reorders from just across the ditch.



The Last Resort

Nigel was so sick and tired of the world; of Covid, the Chinese aggression, of Global Warming, of BLM and the rest of the stories that our media deem important to broadcast.

Nigel drove his car into his garage and then sealed every doorway and window as best he could.

He got back into his car and wound down all the windows, selected his

favourite radio station and started the car.

Two days later, a worried neighbour peered through his garage window and saw him in the car.

She notified the police and ambulance and they broke in and pulled Nigel from the car. A little sip of water and surprisingly he was in perfect condition but his Tesla had a flat battery.



The Effect of Covid on AMR



The latest most up to date treatise on antimicrobial resistance has a world-wide panel of experts discussing all the issues and pertinently a section is devoted to the effect of the Covid 19 pandemic on AMR. The document, sponsored by pharmaceutical giant Wellcome, is titled “Wellcome (2020) The Global Response to AMR” and is quite wide ranging and well researched.

According to this document Covid 19 can affect the global response to AMR in at least two possible ways. One is on the level of resistant development itself, either increasing or decreasing it and the other is on funding, advocacy, and research.

The ‘here and now’, i.e. the effect on actual level of resistance development Covid-19 has exerted both upward and downward pressure on resistant infections through several mechanisms but the net effect remains in doubt.

As far as upward pressure on antimicrobial use and resistance development, first and foremost was the standard treatment protocol across most countries to prescribe broad-spectrum antibiotics to any patient presenting with Covid-19 symptoms out of a concern for bacterial co-infection.

This naturally resulted in a large number of prescriptions for a set of patients that may not have needed them in a non-Covid-19 world.

At the same time, there may be some downward pressure on antibiotic use in humans, possibly leading to downward pressure on resistance development. This could arise in three ways:

- 1) Following fears of catching the virus (and overwhelming healthcare facilities), the reduction in primary care visits and postponement of routine medical procedures

may result in fewer patients presenting overall.

- 2) Community transmission of resistant pathogens, especially where sexually transmitted infections are concerned, will have reduced in lockdown and socially distanced settings.
- 3) Finally, increased awareness of hygiene and infection control practices will further limit pathogen transmission more broadly, including that of resistant pathogens.

Overall the experts reported increased use of antibiotics in inpatient settings, but decreased use in outpatient settings, so the jury is still out on this issue.

The ‘going forward’ is the effect of Covid 19 on funding, advocacy, and research for AMR and that likewise could be both positive and negative.

Opportunities include and elevation of overall healthcare funding and innovation financing, expanded laboratory capacity and surveillance and improved infection prevention and hygiene.

Increased understanding of infection prevention and control (IPC), increased surveillance and lab capacity (and awareness of its importance), or even a clearer pathway into finance ministries for preventive healthcare conversations are all factors.

However risks include suspended hospital surveillance programmes, research priorities shifting disproportionately towards viral infections (a very real possibility), resource constraints for implementation (AMR-specific activities that do not offer immediate benefit to

Covid-19 patients are likely to fall by the wayside or be viewed as expendable in times of crisis), ineffective stewardship, and a decrease in the availability of funding for the global health agenda.

Accordingly, there is a clear need to rethink AMR’s position as part of the global health agenda. This raises the question of what that agenda may look like post-Covid-19. Broadly, experts perceived three (perhaps overlapping) possibilities:

- 1) The status quo of a limited, technical, and niche pandemic preparedness and recovery agenda.
- 2) An expanded pandemic preparedness and recovery agenda, prominent in political and social attention, and funded accordingly.
- 3) A much broader, revitalised infectious diseases agenda that focuses on preparedness and response to novel pathogens in tandem with tackling existing endemic and pandemic diseases (e.g. Tuberculosis and HIV).

Crucially, experts were broadly confident that the first option was less likely than the other two; which of those two would be likelier is uncertain.

Three options were put forward for future action:

- 1) The AMR agenda should tie itself to an inclusive pandemic preparedness and response agenda. In this scenario, the response to AMR would tie its fate (as meas-

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The Effect of Covid on AMR

(Continued from page 6)

- ured in resourcing and policy attention) closely to an anticipated accelerating focus on emerging infectious disease threats post-Covid-19.
- 2) The AMR agenda should remain distinct because AMR is better served by distinctive narratives. The impact of AMR is far more certain and tangible than a hypothetical future pandemic, and requires immediate measures.

- 3) The AMR agenda should remain distinct because linking AMR to a broad pandemic preparedness agenda is not feasible. Others believe that tying AMR to a post-Covid-19 infectious diseases or pandemic preparedness and response agenda is not feasible: differences between the two topics are too large for policymakers and the general public to make the link. This is exemplified by the public focus on a vaccine

as the panacea for Covid-19, compared to the much smaller role of vaccine-based solutions for AMR.

The final paragraph in this section was telling, “Given the perception that the AMR agenda was at risk of losing momentum even before Covid-19, and its subsequent disruptions, starting a broad exploratory dialogue sooner rather than later on which perspective best mobilises resources for the continued response to AMR may be imperative.”

Animals and AMR

The same massive document of 56 pages has only three devoted to the use of antimicrobials in animals but makes some very pertinent point, some well-known, some not so.

Livestock accounts for the majority of global antibiotic consumption, with estimates indicating that approximately 70 to 80 per cent of consumption is from animals. (We knew that)

To facilitate a transition away from antimicrobial usage, experts

point to the criticality of improvements to animal husbandry systems and biosafety.

This requires significant capability and awareness building with stakeholders, especially in low income countries. Basic veterinary services need to be established to enable the behavioural change required.

While the overall volume of antibiotic use is much lower in companion animals, zoonotic or gene transmission events to humans

may be higher due to closer physical contact. (We knew that too).

Yet it is unlikely that the transmission likelihood is high enough relative to that from livestock (or aquaculture) to make companion animals a significant target for AMR control interventions.

In addition, resistance is less likely to spread from animal to animal among pets due to less contact with other animals, as is the case in intensive farming systems. (Very valid point to consider).

No Crocodiles

While spear fishing off the Northern Territory Coast a tourist capsize his boat. He could swim but his fear of crocodiles kept him clinging to the overturned boat.

Spotting an old beachcomber standing on the shore the tourists shouted. “Are there any crocodiles around here?”

“Nah, The old chap hollered, there ain’t been any around here for years.”

Feeling safe the tourist started swimming leisurely towards the shore.

About halfway there he asked the guy, “How did you get rid of the crocs?”

“Didn’t do anything,” the beachcomber replied, “The sharks got them.”





The Golfing Gorilla

There were these two guys that played golf together frequently. One guy was several strokes better than the other but the lesser player was very proud and did not want to take lesser strokes to even up the game.

Finally one day he shows up with a gorilla at the first tee. He says to his mate, "You know I've been trying to beat you for so long I am about to give up. But I heard about this golfing gorilla and wondered if it was OK if he plays for me today.

I'd like to get back all the money I have lost to you this year which I figure is about one thousand bucks. Are you game?"

His mate thought about it for a minute then decided to play. He thought, "After all how good can a gorilla be at golf?"

The first hole was a par 4 450 metres. The guys hits a beautiful tee shot 250 metres down the middle leaving himself a 6 iron drive to the green.

The gorilla takes a few powerful practice swings then sends the ball 450 metres right at the pin, stopping a few centimetres from the hole.

The golfer turns to his friend and says, "That was amazing. I would not have believed it if I had not seen it with my own eyes. But you know what? I've seen enough. I've no interest in being humiliated by this gorilla golfing machine.

You send this gorilla back where he comes from. I need a drink—better make it a double, and I will settle up our bet."

After paying up and settling into

his double he asks, "By the way, how good is that gorilla at putting?"

"Same as his driving," said his mate.

"That good eh?"

"No, I mean he putts the same way as he drives, 450 metres straight down the middle."

