COMPANION ANIMAL HEALTH FUND • WESTERN COLLEGE OF VETERINARY MEDICINE

Vet Topics

SUMMER 2021

JESSICA COLBY

Tracking UTIs in dogs

By Jessica Colby

Results from a large surveillance study show that western Canadian dogs with urinary tract infections (UTIs) caused by *Escherichia coli* (*E. coli*) can still be effectively treated with most antibiotic drugs — but antimicrobial resistance still warrants monitoring.

Researchers tested more than 500 *E. coli* isolates from canine urine samples collected between 2013 and 2018. Their results showed that over 80 per cent of the bacterial isolates were still susceptible and can be treated with first-line antibiotic treatments recommended by the Canadian Veterinary Medical Association.

The bacterium *E. coli* is a very common uropathogen and the most common cause of UTIs in dogs.

The study, which was published in a recent issue of the *Journal of Veterinary Internal Medicine*, was conducted by Dr. Joe Rubin of the Western College of Veterinary Medicine (WCVM) and Dr. Rachel Courtice, one of Rubin's former graduate students who now works at Health Canada.

These findings confirm that antimicrobial resistance is still rather uncommon in canine UTIs caused by *E. coli* in the western provinces, points out Rubin, an associate professor in the WCVM's Department of Veterinary Microbiology.

"There's no reason to be reaching for fluoroquinolones or third-generation cephalosporins when empirically treating an uncomplicated UTI in an otherwise healthy dog. Resistance is not terribly common, so first-line therapies are still absolutely appropriate."

Antimicrobial resistance (AMR) could become more of a problem as bacteria evolve and develop resistance.

"Resistance is problematic because when these bacteria cause infections in both humans and animals — we need to treat those infections," says Courtice, who conducted the study as part of her Master of Science program research work in Rubin's lab. "Bacteria are so crafty; they figure out ways to evade the treatments or the antibiotics."

The research team worked with *E. coli* cultures isolated over five years by Prairie Diagnostic Services, the provincial veterinary laboratory, from the urine of dogs with UTIs. This long-term study is helping researchers monitor trends in antimicrobial resistance among UTI-causing *E. coli* in dogs.

"We're trying to identify changes in resistance over time [and] we just want to collect as many of these organisms as possible to test to make sure that we aren't missing anything," says Rubin.

Rubin and Courtice tested the samples of *E. coli* that were found against a panel of drugs to test their antibiotic resistance.

UNIVERSITY OF SASKATCHEWAN | cahfpets.ca

A boost for pet health research

Eight research teams at the Western College of Veterinary Medicine (WCVM) have received just over $102,000 in funding from the Companion Animal Health Fund (CAHF) to conduct vital pet health research.

Can grain-free, legume-based diets cause heart failure in dogs?
Drs. Lynn Weber, Matheus Costa and Dylan Olver, and Elise Bokshowan, WCVM.

How can cancer-destroying molecules target canine osteosarcomas more efficiently?
Drs. Behzad Toosi and Valerie MacDonald, and Evelyn Harris, WCVM; and Dr. Franco Vizeacoumar, Saskatchewan Cancer Agency.

Does yeast cause skin conditions in guinea pigs?
Drs. Allison Foster and Isabelle Desprez, WCVM.

How can we distinguish between two feline oral cancers?
Drs. Bruce Wobeser, Helene Philibert, Shelagh Copeland and Vasyl Shpyrka, WCVM.

What's the best way to administer pain medications to ferrets?
Drs. Barbara Ambros, Isabelle Desprez and Dennilyn Parker, WCVM; and Dr. Heather Knych, University of California Davis.

How does hyperthyroidism affect blood clots in cats?
Drs. Kevin Cosford, Tony Carr, Elisabeth Snead and Daniel Moreno Reyes, WCVM.

Can a surgery to prevent lameness in large dogs be equally as effective in small dogs?
Drs. Koji Aoki and Ariel Schlag, WCVM; and Dr. Kei Hayashi, Cornell University College of Veterinary Medicine.

Can a fluid-to-tissue conversion method diagnose conditions in cats and dogs more effectively?
Drs. Melissa Meachem and Bruce Wobeser, WCVM.

The CAHF awarded its 2021 Dr. Michael Powell Award of Excellence to **Rina Nabeta**, a Master of Veterinary Science (MVetSc) student whose supervisor is Dr. Melissa Meachem of the WCVM's Department of Veterinary Pathology. Nabeta's work focuses on finding a novel plasma biomarker for feline pancreatic carcinoma, an aggressive tumour in cats, that will facilitate earlier diagnosis of the disease.

Nabeta received $1,000 through the award, which honours the memory of Saskatoon-area veterinarian Dr. Michael Powell. She also earned a CAHF tuition award, along with eight other WCVM graduate students whose research studies target pet health issues. For more details, visit cahfpets.ca.

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Tracking UTIs in dogs (continued)

When a resistant organism was found, they were further characterized using molecular techniques to identify which genes were responsible for the resistance.

The study came about because there isn't a great deal known about the prevalence of antimicrobial-resistant *E. coli* in companion animals. In comparison, much more is known about the topic when it comes to food animals, where perceived food safety risks have stimulated a great deal of research interest.

Because UTIs are common in both people and dogs, Rubin describes it as a very useful model infection for making comparisons between the frequency of resistance in people and companion animals.

"One thing that I think is really important from the perspective of the epidemiology of resistance is that people live in really close contact with their dogs: they're sleeping in bed with them, they're eating off their plates, they're in the kitchen, we pick up their poop, they're drinking out of our toilet," says Rubin.

"This very intimate contact provides ample opportunity for the transmission of microbes including resistant bacteria."

While AMR is still uncommon in *E. coli* causing canine UTIs in Western Canada, the researchers did find extended spectrum beta-lactamases (ESBLs) in some isolates. These enzymes can degrade many of the beta-lactam antibiotic drugs— a group including penicillins and cephalosporins.

"These [ESBLs] are incredibly problematic in human medicine and for treating UTIs in people," says Rubin.

The researchers also found one isolate which possessed a plasmid-mediated quinolone resistance gene, an emerging resistance mechanism associated with multi-drug resistance and difficult to treat infections. Another isolate was identified as *E. coli* sequence type 131 (ST131).

"This is sort of a globally pandemic strain that's very notorious for causing urinary tract infections among women and is frequently resistant to antimicrobials," says Rubin, who begins another phase of the study in January 2022.

"It's certainly not the end. We have three years' worth of *E. coli* following this study in our -80 C freezer that we'll be investigating."

The Companion Animal Health Fund and the Natural Sciences and Engineering Research Council of Canada provided financial support for this study.

Jessica Colby of Montmartre, Sask., was the WCVM's research communications intern for summer 2021.

Bacteria and corneal ulcers

By Xiao Ma

The cornea is one of the most important components of the eye, but what happens when it's no longer healthy?

CAITLIN TAYLOR

The cornea is a key component of the eye that allows it to focus on light, enabling people and animals to see clearly. But what happens if a dog's cornea is no longer clear and healthy?

Corneal health can be affected by diseases such as bacterial ulcerative keratitis, a common eye infection that causes inflammation and severe pain and can lead to blindness.

"Ulcerative keratitis is one of the leading causes of vison and globe loss in dogs," says Dr. Stephanie Osinchuk, a veterinary ophthalmologist and assistant professor at the Western College of Veterinary Medicine (WCVM). "We are treating corneal ulcers several times a week."

When bacterial ulcerative keratitis occurs, the bacteria produce enzymes that cause corneal malacia — a melting of the cornea that can cause the ulcer to deepen and the eye to rupture. Bacterial keratitis can be managed medically or surgically.

"When the ulcer on the surface of the eye exceeds 50 per cent of the depth, we recommend [conjunctival pedicle graft] surgery that can essentially patch the defect," says Osinchuk.

DR. STEPHANIE OSINCHUK

However, the WCVM ophthalmology team has recently encountered problems with their surgical patients that may be associated with necrotizing bacteria. A number of ulcer cases at the WCVM Veterinary Medical Centre have developed postoperative complications that have caused the graft to become devascularized and necrotic.

"When the failed cases were cultured for bacteria, a lot of them came back positive for *Streptococcus canis*, a bacterium that is a part of the normal skin microflora in dogs," says Osinchuk.

Now, Osinchuk and veterinary ophthalmologist Dr. Lynne Sandmeyer are conducting research to determine if there is an association between the graft failures and the presence of *S. canis* bacteria. They are also investigating the most common bacterial pathogens associated with complex ulcers to determine their antimicrobial resistance profiles.

"I think the bacteria that are present in the ulcer are a contributing factor to the outcome," says Osinchuk. "Given the changing bacterial population that we see, it is critical that we monitor that over time as well as their response to antibiotic treatments, especially in an era of increased antimicrobial resistance."

Although several other studies have identified the most common bacteria associated with corneal ulcers, this investigation will be the first one to describe the corneal bacteria found in Western Canada.

The project will investigate potential predisposing factors that are associated with the development of complex corneal ulcers. Previous studies have found that brachycephalic breeds such as pugs and bulldogs may be more susceptible because their eyes are more prominent, and they have decreased corneal sensitivity and insufficient tears.

With a better understanding of the bacterial populations and the predisposing factors, more targeted and more effective antibiotics and treatments can be used — and more eyes can be saved.

Xiao Ma of Winnipeg, Man., is a third-year veterinary student at the Western College of Veterinary Medicine (WCVM).

REMOTE CLINICS

RETURN TO THE NORTH

By Jessica Colby

A clinical team performs a surgical procedure in the temporary surgery area, set up in the Jonas Roberts Memorial Community Centre at La Ronge, Sask.

DR. JORDAN WOODSWORTH

Despite challenges caused by COVID-19, the Western College of Veterinary Medicine (WCVM) resumed its annual remote veterinary clinics for northern Saskatchewan communities this spring.

The college's team, along with community volunteers, held two clinics in Saskatoon and La Ronge in May and June after a one-year break.

"I think being able to get there, honestly, was a bit of a mark of success," says Dr. Jordan Woodsworth, WCVM clinical associate and remote clinic co-ordinator. "Everything was a little bit last minute in terms of figuring out whether we can go or not."

Since 2014, the WCVM has been working with northern organizations and community members of the La Ronge area to provide veterinary care. The remote clinics also provide valuable learning experiences for students in the college's Doctor of Veterinary Medicine program.

Saskatchewan's high COVID-19 case counts and an outbreak at the WCVM forced the college to change its plans for a northern clinic in May. Instead, volunteer organizations and owners brought animals to the WCVM Veterinary Medical Centre for wellness examinations and spay-neuter procedures.

When organizers received the go-ahead for La Ronge's June clinic, volunteers converted the local community centre into a veterinary clinic with the ice surface serving as the temporary surgery area. Due to COVID-19 restrictions, owners weren't allowed to accompany their pets into the building where clinical team members conducted wellness examinations, gave vaccinations and performed spay-neuter surgeries.

Between 80 and 100 volunteers usually operate the clinic, but this year, the clinical team consisted of only 20 people. Over four days, the team performed 56 wellness examinations and 38 spay and neuter surgeries for local cats and dogs.

The La Ronge clinics are part of the WCVM's clinical training for senior veterinary students. Three fourth-year veterinary students took part in the May clinic, while in June, Megan Meardi and Taylor Davies spent five days in La Ronge completing surgeries and wellness appointments as part of their rotation.

Davies participated in the rotation as a means of getting some more experience after having limited hands-on opportunities through the pandemic, while Meardi signed up due to the positive reviews she'd heard from other students.

"I looked into it and originally it was, 'Wow, that would be a lot of good surgical experience and a lot of good clinical experience' … but it was so much more than that," says Meardi.

Woodsworth says that the team is hoping to expand the program and organize a future clinic in Île-à-la-Crosse, Sask.: "Hopefully in the fall we'll be getting up to the northwest part of the province, and then we'll see from there how that goes."

The donation of a lifetime

By Jessica Colby

Jacqueline Shumiatcher, 1923-2021

DAVID STOBBE

Jacqueline (Jacqui) Shumiatcher, a dedicated supporter of the Western College of Veterinary Medicine's (WCVM) Companion Animal Health Fund (CAHF) and long-time member of its advisory board, passed away on February 1, 2021, at the age of 97.

Jacqui and her husband, Dr. Morris Shumiatcher, were well known throughout Saskatchewan for their generous philanthropy initiatives.

"Jacqui and her husband Morris had several dogs that brought them so much joy," said Jennifer Molloy, WCVM director of development. "Like so many of our supporters, they just had a very deep, genuine love for animals."

Over the past seven decades, the Shumiatchers supported a wide variety of organizations in both Regina and Saskatoon, including the University of Regina, the Conexus Arts Centre, the University of Saskatchewan (USask) College of Law and the WCVM.

After her husband's death in 2004, Jacqui continued to uphold her family's community work in supporting organizations representing the arts, education and health care research. Her efforts earned her the Saskatchewan Order of Merit in 2001 and an honorary doctorate degree from the University of Regina in 2002. In 2017, Jacqui was inducted into the Order of Canada — an honour that her husband received in 1981.

Jacqui's relationship with the WCVM began in the 1970s after one of her family's beloved dogs, Mr. Pickwick, was hit by a vehicle and required specialized treatment at the WCVM's veterinary teaching hospital. The experience prompted the Shumiatchers to make an annual gift to the CAHF.

"I suppose you can call our annual donation a memorial for all of our little animals that have come and gone," said Jacqui in a 2000 interview for *Vet Topics*.

Her genuine interest in the college's research program also led to an invitation to join the advisory board of the college's pet health research fund. In this role, Jacqui helped to review and advise on the annual research projects that should receive funding support from the CAHF.

The CAHF advisory board is comprised of animal owners, veterinarians and industry representatives who all come together "with the one goal of improving companion animal health," added Molloy.

"I think they're such a dedicated lot at the college, and they do excellent work," described Jacqui in an earlier *Vet Topics* interview. "When they give as much as they do to improving the health of companion animals, we should do our part as well."

After Jacqui's passing, a gift of over $100,000 to the CAHF was realized through her estate.

"This very generous gift will advance the research priorities of the fund. Jacqui loved animals so much that she prioritized helping them, even after her passing, to live longer, healtheir lives," said Molloy.

"If anything, we wish that we could thank people more before these gifts are realized. But we're just extremely grateful for the commitment and generosity of our donors — those like Jacqui."

If others wish to donate to the pet health fund and to the WCVM, Molloy suggests that potential donors visit the CAHF website (cahfpets.ca) to view the latest research projects and to learn more about donating. They're also welcome to contact her or her colleague, Lindsay Royale, in the WCVM's Development Office (wcvm.supportus@usask.ca).

Study will help fine tune ferrets' pain control

By Andrew Crookes

One of the project's ferrets looks out of the thermal plantar test machine, which researchers use to evaluate the effectiveness of pain medication

ANDREW CROOKES

There's no room for assumptions in pain management — that principle has prompted a research team at the Western College of Veterinary Medicine (WCVM) to initiate a study investigating the efficacy of pain relief medications in ferrets.

Ferrets are now considered the fourth most popular pet mammal, and veterinarians in the WCVM's avian, exotic and wildlife medicine service regularly see the species in their practice.

"[Ferrets] are the second most common species we see. We see rabbits the most and then ferrets are just after that," says Dr. Isabelle Desprez, a small mammal medicine and surgery specialist at the WCVM.

But despite their popularity, there's still little scientific understanding of how medications such as opioids — drugs that are used to manage pain — affect ferrets.

"I think [pain management comes] mainly from extrapolation … [we] started with cats and dogs and extrapolated from humans," says WCVM veterinary anesthesiologist Dr. Barbara Ambros.

"From species to species, you have different opiate receptors or a different distribution of opioid receptors in the brain and the central nervous system. That is why every species responds differently to different opioids."

For example, a particular opioid that causes sedation in one species may cause hyperactivity in another. Even animals within the same species may have dissimilar responses to opioids if the distribution or the number of opioid receptors in certain regions is different.

As this trend of dubious extrapolation has continued with assumptions about non-traditional pets, veterinarians' understanding of pain control in ferrets has remained limited, with few scientific studies aimed at the species' response to opioid pain killers.

Veterinarians currently treat pain in ferrets using pain medication protocols for cats — a practice that's based on the questionable assumption that the two species have the same physiology.

Desprez and Ambros are now investigating the effectiveness of that practice.

"I cannot be quite sure that [how we are managing pain in] clinics at this point is still helpful to ferrets," says Desprez. "So, [the aim of] this project is to try to assess, in a more scientific way, whether or not these drugs are indeed causing pain control in ferrets."

To measure the pain-relieving effects of the drugs, the researchers are using a thermal plantar test instrument that applies a heat stimulus to the ferret's footpad. Since the animal will remain on the heat source longer if the drug is effective, the scientists can use the withdrawal times of the study's participants to determine the effectiveness of the medication.

"It actually doesn't reflect the pain process … as pain is an emotional experience, and we don't assess that in our research. We just assess the reflex … [as] it's an unconscious response," says Ambros, stressing that the pain inflicted during the study is transient with no long-lasting effects. "So, [the pain] didn't get processed in the brain yet."

In fact, accurately measuring pain is very difficult. Since the researchers must inflict a reasonable and consistent amount of pain to elicit the similar type of response, they have to control each participant's pain stimulus to achieve consistency.

"The catch with that ... [is] that pain is such an individual experience. So, there is also this dimension of pain that cannot be accounted for when we tried to do standardized studies," Ambros explains. "[Our study] is very different from clinical pain, but this is a first step to get an idea about efficacy and duration of these drugs in ferrets."

Once their initial investigation is done, Desprez and Ambros plan to conduct a follow-up pharmacokinetic study using the same opioid medications.

Their study's results will establish a baseline for understanding pain control in ferrets, enabling veterinarians to provide sufficient and compassionate care. The WCVM's research study is especially significant for ensuring the ferrets' welfare since the mammal has become a common animal model for studying novel diseases such as the SARS-CoV-2 virus that causes COVID-19.

"What is cool with this study is we are using ferrets for research, for the benefit of ferrets," says Desprez.

"These ferrets are not going to be sacrificed. These ferrets are being tested for the benefit of their own kind [to] start trying to improve the care of pet ferrets and animal research across the board, but we are not doing that because of a benefit to humans."

The WCVM's Companion Animal Health Fund (CAHF) is providing financial support for this study.

Andrew Crookes of Saskatoon, Sask., is a third-year veterinary student at the Western College of Veterinary Medicine (WCVM).

Canine pathogens on the Prairies

By Jessica Colby

CAITLIN TAYLOR

A research project at the Western College of Veterinary Medicine (WCVM) aims to identify disease-causing organisms among dogs — an overlooked population on the Canadian Prairies.

"This is a group of animals we really should be more interested in," says Dr. Erica Sims, a WCVM graduate student who leads the canine portion of the Companion Animal Surveillance Initiative.

A 2016 WCVM graduate, Sims practised veterinary medicine for several years until she returned to the college in 2019 to begin a Master of Science program in veterinary epidemiology with WCVM associate professor Dr. Tasha Epp.

"We really don't monitor companion animal diseases from either the animal health side or the public health side of things," says Sims, adding that the project grew from an interest in how companion animal health concerns relate to potential public health incidents.

The research project encompasses three types of disease-causing agents. Zoonotic pathogens are directly transmitted between humans and animals — through tissue, direct contact or shared environment — while anthroponotic pathogens are directly spread from people to animals. Sapronotic pathogens are acquired though a shared environment where the pathogen can survive. A single pathogen can act in more than one way; some may be zoonotic and sapronotic.

Ontario, Quebec and the Maritime provinces all have their own surveillance initiatives, so it made the most sense to start one for the western provinces, says Sims.

Starting with dogs, the WCVM research team scoured veterinary textbooks and other literature to compile a list of nearly 600 pathogens and then used three criteria to pare down the number. They looked at whether the pathogen is zoonotic, sapronotic or anthroponotic; whether dogs are involved in transmitting the pathogen to humans or maintaining the pathogen; and determined the level of risk to occur in Canada.

With these criteria, researchers narrowed down the list to 84 pathogens that apply to Alberta, Saskatchewan and Manitoba.

"Dogs are more commonly seen in [veterinary] clinics than overall pet populations," says Epp. "Far more of the dogs go on a regular basis and cats maybe only go once or a few times."

The research team's paper, "Defining important canine zoonotic pathogens within the Prairie Provinces of Canada," was published in the May 2021 issue of *Canadian Veterinary Journal*. A second article will highlight and define selected pathogens in the surveillance initiative.

Both WCVM clinical trials are investigating whether PET-CT technology adds to oncologists' ability to identify and treat cancer.

CHRISTINA WEESE

Studies evaluate PET-CT's value for cancer diagnosis

By Nykole King

Oncology researchers at the Western College of Veterinary Medicine (WCVM) are looking at whether Canada's only PET-CT unit for the clinical use of animals can improve the diagnosis and staging of cancer in dogs.

The two oncology clinical trials focus on oral melanoma and mast cell tumours in dogs. These novel studies have the potential to improve outcomes in canine patients and advance the field of veterinary oncology.

"The access to a PET-CT in veterinary medicine is quite limited, but it's becoming more widespread and more available," says research lead Dr. Monique Mayer, a professor of radiation oncology in the WCVM's Department of Small Animal Clinical Sciences.

"It's an area of active research because we're finding out how we can use it to make our patients better, and that will apply to all patients in the future that will have access to a PET-CT. As it becomes more accessible, oncologists need to know how they can use it for their patients."

Operating since 2019, the WCVM's PET-CT (positron emission tomography-computed tomography) unit is used for diagnosing cancer, brain disorders and other conditions in animals as well as for animal-human research studies.

Currently in oncology, a computed tomography (CT) scan is exclusively used in diagnostics and staging for tumours in animals, as it provides information about the tumour and the patient's organs and lymph nodes. While oral melanoma and mast cell tumours behave differently, both WCVM clinical trials are investigating whether PET-CT technology adds to their ability to identify and treat the cancer.

PET-CT scans combine anatomical information from a CT scan with a PET scan, providing information about the metabolic activity in tissues. This type of nuclear medicine imaging is commonly used in human medicine but has limited use in veterinary medicine.

Mast cell tumour clinical trial

The mast cell tumour trial's objective is to determine whether PET-CT technology adds to the oncology team's ability to diagnose early metastasis — where the cancer spreads from the primary tumour to the draining lymph nodes.

Dr. Alison Williams is a medical oncology resident in the WCVM Department of Small Animal Clinical Sciences and a researcher on the mast cell tumour study. As she explains, taking a needle aspirate is the standard diagnostic technique used to determine whether cancerous cells have spread to the patient's lymph nodes. But the method lacks the same details that a scan may provide.

"We can miss tumour cells with our aspirate because we might only obtain a small number of cells each time we go in with our needle. But we're not going to get the whole picture of the lymph node," says Williams.

"So, we're hoping that PET-CT might be a more sensitive way of detecting metastasis ahead of time and then prompting us to go ahead and remove that lymph node, and subsequently improving the survival of our patients."

Once scans are taken of the mast cell tumour and the draining lymph nodes, the study's canine participants will undergo surgery to remove the tumour and the lymph nodes. After the procedure is done, a histopathologist will examine the excised tissues to determine the tumour's grade — an indicator of how quickly the cancer is likely to spread — and whether the lymph node is positive for metastasis.

"We can run analysis on the PET-CT images and calculate a value called a standard uptake value for the tissue of interest," says Williams. "And so, we can look at that standard uptake value and see if it correlates with whether there is actually metastasis to that lymph node."

WCVM researchers are aiming to recruit 16 canine patients for this trial. Eligible dogs must have a visible tumour that has not been surgically removed and have no previous record of radiation therapy or chemotherapy. For each dog, the study will cover fees associated with the PET-CT scan, regional lymph node surgical removal and histopathology examination.

Oral melanoma trial

Oral melanoma is highly metastatic, which means it's likely to spread to local lymph nodes as well as to more distant sites such as the lungs and liver. Mayer says the challenge to treating cancer is not knowing exactly where the cancer cells are located in the body. A PET-CT scan may help to better identify those cells so the oncology team can target radiation dose delivery better.

"For patients that have access to this imaging, we might identify lymph nodes that looked completely normal on regular imaging," says Mayer. "We would then treat that lymph node either by removing it or giving it radiation, and for that particular patient, that might be the difference between a longer remission or the cancer coming back more quickly in the lymph node."

The WCVM research team is recruiting 12 canine patients for this study, and each participant will undergo both PET-CT and MRI scans. Eligible dogs must have a visible tumour that has not been surgically removed and have no previous record of radiation therapy or chemotherapy. In addition to $500 toward the cost of diagnosis or treatment, the oral melanoma research grant will cover fees associated with the PET-CT and MRI scans as well as anesthesia costs.

The WCVM Companion Animal Health Fund (CAHF) and the WCVM Faculty Recruitment and Retention Fund have provided funding for the two studies.

For more information, visit https://vmc.usask.ca/care/research-requests/radiation-oncology-owners.php.

DENTAL HEALTH

Keeping periodontal disease at bay

By Meara Munn-Patterson

"Dental disease" includes many oral-dental conditions in pets, but the most common one is periodontal disease — a type of bacterial infection that can greatly affect an animal's general health and well-being if left untreated.

"Material collects along the gumline in a ditch (the sulcus) around each tooth and attracts bacteria," explains Dr. Erinn Hilberry, a clinical associate in the Veterinary Medical Centre's (VMC) dentistry service. "The infection that ensues leads to destruction of the tooth's bone and surrounding structures, leading to tooth loss or death."

The disease process is painful and can cause negative, downstream effects in other organs that result from bacteria entering the bloodstream through the inflamed tissue surrounding each tooth. Chronic dental disease may also affect a dog's behaviour and reduce its ability to cope with other diseases such as diabetes or kidney disease.

Fortunately, periodontal disease is preventable and treatable. Once a dog begins treatment, the effects are instantaneous: "The tissue looks healthier as you go [through a dental procedure], and owners often comment afterwards that their dog is a 'new dog' and acts like a puppy again," says Hilberry.

In addition to regular dental checkups, Hilberry emphasizes the importance of regular home dental care. Daily brushing of your dog's teeth promotes healthy teeth and prevents disease. Regular brushing is particularly important for smaller dogs and specific breeds that are more prone to periodontal disease.

"Small dogs are much more likely to get periodontal disease and have more severe forms than larger dogs," Hilberry explains. "Their teeth are proportionately too large for the amount of bone. This results in increased crowding and malocclusion which increases the likelihood of dental disease."

Small dogs are more commonly afflicted with skeletal malocclusions (such as underbites and overbites) that often lead to an increased incidence of periodontal disease.

Hilberry also points out that some dog breeds are prone to specific types of dental issues. For example, dachshunds frequently have "pockets" around the inside of the upper canine teeth that can develop into oronasal fistulas — holes in the bone of the upper jaw connecting the nasal cavity and mouth.

However, finding these pockets early allows for treatment that can prevent oronasal fistulas and save the canine teeth from extraction.

Because early diagnosis is so important, a research team led by veterinary dentist Dr. Candace Lowe at the Western College of Veterinary Medicine (WCVM) has been investigating the use of computed tomography (CT) scans for detecting dental disease in dogs. For more details, visit cahfpets.ca.

Meara Munn-Patterson of Fort McMurray, Alta., is a third-year veterinary student at the Western College of Veterinary Medicine (WCVM).

Bits & Bites

NEW WCVM DEAN: After serving as the Western College of Veterinary Medicine's (WCVM) interim dean for one year, Dr. Gillian Muir became the college's dean on July 1. She is the first WCVM graduate as well as the first female to be named dean of the western Canadian veterinary college.

Originally from Calgary, Alta., Muir graduated from the WCVM in 1988 and completed two years of graduate studies at the University of Saskatchewan (USask) before earning her PhD degree in neuroscience at the University of British Columbia. She joined the WCVM faculty in 1996 and is a professor and researcher in the WCVM's Department of Veterinary Biomedical Sciences.

Muir's research program investigates recovery after spinal cord injury and her work on a novel therapy has been translated to clinical trials for people with spinal injuries. A gifted instructor, Muir teaches neuroscience to first-year veterinary students and has received multiple teaching awards.

Muir's term as WCVM dean is from 2021 to 2026.

ANIMAL COMMUNICATION: Dr. Karen Machin is hoping to help pet owners better understand what their pets are trying to tell them. Machin, an associate professor in the WCVM Department of Veterinary Biomedical Sciences, is also a resident in animal behaviour and pain with Dr. Sagi Denenberg, a board-certified behavioural specialist in Thornhill, Ont. Through her residency, Machin is gaining experience with dogs, cats and other species so she can provide behavioural services at the WCVM's Veterinary Medical Centre (VMC).

Earlier in her career, Machin completed a residency in avian, exotic and wildlife medicine at the WCVM. She also earned MSc and PhD degrees in anesthesia and analgesia at the veterinary college.

"Behaviour has always been my metric for determining whether or not veterinarians could alleviate pain," she says. "And a lot of measuring stress is behaviour. Everything in my life, regardless of how I've approached it, comes back to behaviour."

Machin's love for animals comes naturally, and her family's acreage is home to seven dogs, a cat, chickens and horses. She also helped found New Hope Dog Rescue in Saskatchewan and still fosters dogs occasionally.

"Experience has given me a better understanding of canine behaviour," she says. "A lot of animals are relinquished to shelters because of behavioural problems."

As part of her training, Machin is working through cases with Denenberg, her residency supervisor. Her goal is to take on patients at the WCVM's veterinary teaching hospital. For these cases, Machin will look exclusively at behavioural issues and also see if she can link those issues to chronic pain.

"Part of providing this service is to help offer some of those preventive measures as well as intervention. The earlier the intervention comes, the greater the likelihood of success. Owners that seek behavioral expertise are more likely to succeed," says Machin.

"It's not a magic fix … it's a long process because those abnormal behaviours can be learned over time. It's about identifying the problem and understanding why the problem happened. When we know this, we can train alternative behaviours and treat the underlying problem which can involve medication."

JEANETTE NEUFELD

RESEARCH IN PRINT

A roundup of WCVM-related companion animal research articles that have been recently published in peer-reviewed journals.

SHMON RECEIVES TEACHING AWARD: Small animal surgeon Dr. Cindy Shmon is the WCVM's 2021 CVMA (Canadian Veterinary Medical Association) Teacher of the Year. The annual award, which is presented to an instructor at each Canadian veterinary college, is a special honour since each college's students select the recipient. Shmon, a professor and head of the WCVM's Department of Small Animal Clinical Sciences, is passionate about teaching — mainly because of the rewards associated with seeing future veterinarians learn and grow in the profession. Her advice to undergraduates and graduates: "Keep an open mind and explore all parts of the profession as there are so many aspects that are interesting and exciting …. When you love what you are doing, it never feels like work."

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Ellis, JA. "COVID-19: Is it raining (on) cats and dogs?" *Advances in Small Animal Medicine and Surgery*. Sept. 2020. 33(9):1-3.

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Dr. Pam Goble

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