WEST COAST VETERINARIAN

MARCH 2016 | Nº 22

THE VANCOUVER AQUARIUM MARINE MAMMAL RESCUE CENTRE

VETERINARY MEDICAL RECORDS
WHAT DO THEY CONSIST OF?

OSTEOSARCOMA IN DOGS

TAYLOR

TWO VIEWS OF ONE VERY SPECIAL HEART

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CVMA-SBCV Chapter

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COREY VAN'T HAAFF
EDITOR

TO THE EDITOR

Letters from members are welcome. They may be edited for length and clarity. Email us at wcveditor@gmail.com.

ON THE COVER

Taylor recuperating after his open-heart surgery. Photo by Shelley Moore.

By the time this issue is in your hands, the CVMA-SBCV Chapter will have moved. Please note our new mailing address on the masthead. Our email addresses (wcveditor@gmail.com for magazine enquiries, and cvma-sbcv@cvma-acmv.org for Chapter enquiries) remain the same. Effective March 16, 2016, our phone number will be 604.406.3713. As always, the office and the Board and committees want to hear your ideas for new activities and your suggestions for change.

I was so excited when the media picked up the story of Taylor, the seven-month-old German Shepherd/Doberman cross who was the recipient of ground-breaking cardiac surgery last year, and is the subject of this issue's feature story. For sure, part of the debate was around money and the question of whether spending that much on one dog outweighed spending the same amount spread around for many dogs. I've long felt that although the financial considerations of funding healthcare for your own pets is an intensely personal decision, public funding strategies are often emotional decisions. Money donated to fund Taylor's surgery may not have been donated to some general health fund, and would not necessarily have been available for other dogs. In this case, in my view, the story of one dog created an outpouring of concern and financial donations. A side benefit of this type of awareness-raising is that some people then become curious about the organization the animal is from, or the plights of other animals, and those people might continue to donate. In this case, Taylor—one dog—may well raise the profile of many.

Perhaps our own Chapter can mimic this type of awareness-raising. Right now, we have some especially active committees filled with volunteers who shine bright lights on Chapter programs, such as the Fall Conference (CE Committee), the Equine Seminar (Equine Committee), Membership (enhancement and retention led by the Membership Committee), and this very magazine (the Editorial Committee). Maybe knowing all these activities are driven by a handful of your colleagues who volunteer their time and talent will be what spurs you on to offer your help? Or perhaps you'd rather get involved as a mentor in the CVMA-SBCV Chapter's mentorship program? Or perhaps you can't commit to something this formal; but maybe you could suggest a story for the magazine, or a speaker for the Fall Conference, or even help us find the right sponsor for a particular speaker? Whatever your contribution, know it is welcomed here. We'd like to hear from you.

Email: wcveditor@gmail.com

ELP
THE NEW & IMPROVED PROGRAM

The Canadian Veterinary Medical Association (CVMA) is excited to introduce a new and improved Emerging Leaders Program (ELP) to be held in Niagara Falls, Ontario on July 7 and 8, 2016. With the generous support of our exclusive sponsor, Virox Animal Health, this highly interactive program will now be an eight-hour workshop spread over the course of two days. This allows our Emerging Leaders to attend CVMA signature events such as the CVMA Summit as well as the CVMA AGM and Awards Luncheon.

Low staff morale, burnout, financial challenges, workplace drama, and a host of related challenges can easily make our veterinary careers less joyful. The ELP can help bring joy back into the workplace by teaching you how to cope with a variety of challenges encountered in veterinary practice.

ELP facilitator Dr. Rick DeBowes will show you that practice can be fun, if you let it be! As Professor of Surgery and Director of the Professional Life Skills Program at the Washington State University, College of Veterinary Medicine, Dr. DeBowes has practised in both private small animal practice and academic equine practice settings. He is a frequent speaker and presenter of leadership programs and co-developed the AVMA Veterinary Leadership Experience and a series of other interactive, experiential leadership education experiences for health care team members. These unique programs have been presented to students, faculty, practitioners, and health care team members in numerous countries across four continents.

WCV CONTRIBUTORS

SARAH CHARNEY, DVM, DACVIM (Oncology), **DACVR** (Radiation Oncology), graduated from University of Illinois College of Veterinary Medicine. She is a founding partner of Boundary Bay Veterinary Specialty Hospital in Langley, BC. She is also an adjunct professor at University of Illinois and the director of CyberKnife Radiosurgery at the Animal Specialty Center in NY.

LINDA CREWS, BScH, DVM, graduated from Ontario Veterinary College in 1997. She is involved in reviewing, investigating, and teaching the benefits of medical records to veterinarians—previously with the CVO for nine years, and for the past five years with the CVBC. She is the founder of Advise a Vet Services which helps teach veterinarians the benefits of good quality medical records.

JENELLE HEBERT, RVT, graduated from Thompson Rivers University in 2013. Since graduation, she has worked at the Vancouver Aquarium Marine Mammal Rescue Centre, working mostly with seals, sea otters, and porpoises. She also works with small animals at the Animal Emergency Clinic of the Fraser Valley and Boundary Bay Veterinary Specialty Hospital.

MICHAEL KING, BVSC, MS, DIPLOMATE ACVS, graduated from Massey University Veterinary College in New Zealand in 2000. After completing an internship, he attended Virginia Tech in the USA for a residency in small animal surgery and became a Diplomate of the ACVS in 2007. In 2011, Michael took a position as a surgeon at Canada West Veterinary Specialists, in Vancouver, BC. He has an interest in all areas of small animal surgery, with particular focus on joint disease and replacements, minimally invasive surgery, urinary surgery, and wound reconstruction.

MARCO L. MARGIOCCO, DMV, MS, DIPL. ACVIM-CARDIOLOGY & DIPL. ECVIM-CA (CARDIOLOGY), graduated from the University of Pisa, Italy, in 1992. He did a cardiology internship at the University of Turin, Italy and started a cardiology residency at the University of Illinois, completing it at Oregon State University, where he also completed his Master's Degree. He has taught and practiced veterinary cardiology since 2007 and has been part of Canada West Veterinary Specialists since 2010.

AMY MORRIS is the Policy and Outreach Officer for the BCSPCA. With a Master's degree in Public Policy from Simon Fraser University, Amy works on community projects that promote animal welfare, such as spay/neuter and microchip clinics. She also researches and promotes balanced animal welfare policy in partnership with municipal and provincial governments in British Columbia.

KATHRYN WELSMAN, DVM, graduated from OVC in 2007 and practised emergency medicine in the Lower Mainland until moving to the Interior of BC and started working as a locum.

WCV

MARCH 2016

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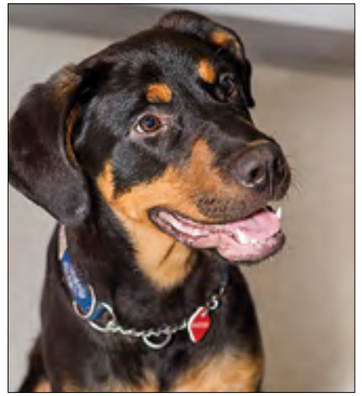

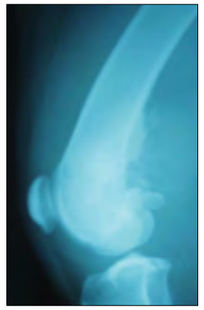

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As President of the Canadian Veterinary Medical Association (CVMA), I welcome you to 2016, and I look forward to working with our valuable members in British Columbia in the year ahead.

The CVMA Emerging Leaders Program, sponsored by Virox Animal Health, will be held during the 68th Convention in Niagara Falls, July 7 to 10, 2016. The program helps identify and develop leadership skills within Canadian veterinarians, technicians, and technologists, while building a leadership network within the veterinary profession. Visit the CVMA website for more information.

Did you know that CVMA members can subscribe to the global edition of *Clinician's Brief* for free? The monthly digital edition provides practical clinical diagnostic and treatment information to companion animal practitioners. To request your free subscription, visit the CVMA website, Member Benefits & Services section. You will be asked to log in to access the CVMA subscription form (passwords can be requested from the system or by contacting the CVMA). Members can also receive an exclusive 30 per cent discount on *Plumb's Veterinary Drugs*. The online version provides fast access to drug dosing information from your smartphone, tablet, or computer, at any time, and from any location. To purchase the discounted individual or practice subscription, CVMA members must enter a special coupon code at checkout which can be obtained by contacting the CVMA office.

"IDENTIFY AND DEVELOP LEADERSHIP SKILLS WITHIN CANADIAN VETERINARIANS, TECHNICIANS, AND TECHNOLOGISTS"

In April 2015, the Public Health Agency of Canada announced that Health Canada's Veterinary Drugs Directorate will, tentatively by the end of 2016, introduce new federal regulations requiring veterinary oversight of antimicrobials administered to food animals, including those administered in feed or water. These initiatives are part of the Government of Canada's Action Plan on Antimicrobial Resistance and Use in Canada, which builds on the Federal Framework for Action announced in October 2014. The Canadian Council of Veterinary Registrars (CCVR) recognizes the pivotal role of provincial and territorial veterinary regulatory organizations in the implementation of increased veterinary oversight of antimicrobial use. The CVMA's Veterinary Pharmaceutical Stewardship Advisory Group is currently working with the CCVR to develop a pan-Canadian framework of professional standards for veterinarians regarding veterinary oversight of antimicrobial use.

The CVMA Business Management Program examines the results of the 2015 Survey of Veterinarians in Government, Industry and Academe. Visit the Practice Management Resources tab under the Business Management section of our website to access the report.

I am pleased to welcome four new council members. Dr. Juanita Glencross-Winslow joined Council on August 1, 2015 as the representative of CVMA members in Prince Edward Island. Dr. Timothy Arthur, the representative of CVMA members in Ontario, and Dr. Enid Stiles, the representative of CVMA members in Quebec, began their terms on January 1, 2016. Mr. Justin Kristjansson, the Students of the CVMA President, began his term on August 1, 2015. I want to thank Dr. Bernhard Pukay for his many years of service. His term as the representative of CVMA members in Ontario came to an end on December 31, 2015, but he remains a member of the Communications Advisory Group.

I, and the rest of the CVMA staff, value your continued support as a CVMA-SBCV Chapter member in 2016 so that we may continue to provide a voice for Canadian veterinarians. I look forward to continuing an engaging term as the CVMA's President.

The CVMA welcomes your comments and inquiries. Please contact us at admin@cvma-acmv.org or 1-800-567-2862.

Upon graduating from the Faculté de médecine vétérinaire at the University of Montreal in 1983, Nicole Gallant, DVM, returned to Prince Edward Island to practice at the Kensington Veterinary Clinic, a mixed animal practice. She became a partner in the practice in 1990, and what was supposed to be one year of practice turned into more than 30 years. Dr. Gallant became a councillor on the P.E.I. Veterinary Medical Association in 1988, and was its registrar from 1989 to 2002. She became the PEIVMA representative on the CVMA Council in 2007 and joined the CVMA Executive in 2012, becoming President of the CVMA in 2015.

BY SARAH ARMSTRONG, DVM

It's been a busy year so far. In November, we held our annual CVMA-SBCV Chapter Conference with great speakers and an amazing trade show. I don't know if it's just my perception, but I think our conference is getting better each year. None of our success would be possible without our executive Director Corey Van't Haaff and our CE committee. They are already underway organizing next year's big event, and I look forward to it. Same location as last year, so please save the dates: November 5 and 6, 2016.

At our AGM, we welcomed two new board members, Drs. Christiane Armstrong and Jessica Robertson. We are very happy to have both of them with us this year and look forward to their input. Sadly, Rick Stanley stepped down from the board this year. We will sincerely miss him on our board as he contributed so much knowledge and experience to our group, but we're happy that he is staying on as Chair of the *West Coast Veterinarian's* editorial committee.

"THE BC ECONOMY WILL OUTPERFORM OTHER PROVINCES FOR 2016 AS ITS GROSS DOMESTIC PRODUCT IS THE HIGHEST IN CANADA. THIS IS VERY GOOD NEWS FOR OUR PROFESSION"

We recently had a teleconference with Darren Osborne, Director of Research for the OVMA, about BC's Small Animal Fee Guide recommendations for 2016. Darren consults and provides feedback to us annually, based on the previous year's survey results. His report and analysis form the basis of his recommendations for the fee guide. Darren predicts that the BC economy will outperform other provinces for 2016 as its gross domestic product is the highest in Canada. This is very good news for our profession. The full report will be released to CVMA-SBCV Chapter members only. One area where we can help with this fee guide is by increasing your participation in the annual surveys. We encourage our members to participate in the survey sent out each year. The more participants, the more accurate the report.

Now, I would like to talk a bit about social media and marketing. I watch a lot of YouTube after my many late night shifts. YouTube has over a billion users, almost a third of all people using the Internet, and the number of people who watch increases every year. People have individual YouTube channels in which they vlog (video log) their daily activities, or have tutorials on a particular subject (e.g., cooking, how-to videos, home improvement, self-help), and vloggers have dedicated followers who subscribe to the channels. This got me thinking that YouTube is something that veterinary medicine can take advantage of to reach out to the public and our prospective clients. It's something I'd like to see the CVMA-SBCV Chapter take on, maybe in conjunction with the CMVA, to create some public awareness videos, pet tutorial videos, spotlights on veterinarians doing great things for the public. In the meantime, I encourage you all to look at some of your colleagues' YouTube videos and maybe think about creating some yourself for the public, highlighting the great things we are doing as a profession.

The CVMA's annual convention is being held in Niagara Falls this year from July 7–10. It promises to be an excellent conference, full of timely subject matter. I'm from Southern Ontario, and I strongly encourage you and your families to make the trek. Niagara is a spectacular horseshoe-shaped fall, over 180 feet high, and is the most powerful in North America. Niagara Falls is right next door to Niagara-on-the-Lake which is renowned for its vineyards and now also some craft breweries. The CVMA-SBCV Chapter, along with the CVMA, will as always sponsor two BC veterinarians to participate in the Emerging Leadership Program. Past participants (including myself and board member Koharik Arman) have all had rave reviews about this program, which has been expanded to a two-day program, with speakers and group activities that help nurture and teach about leadership and communication skills. Applications will be closed by the time you read this, but if you graduated within the previous ten years, bookmark your calendar to view the application next December. Do take a look at the piece on the new ELP program on page 4.

Sarah Armstrong, DVM, graduated from OVC in 2007. Following graduation, she worked full time in general practice and worked part time at a local emergency practice in Southern Ontario before moving to Vancouver, BC, where she currently works at the Vancouver Animal Emergency Clinic.

BY JANE PRITCHARD, DVM, MVetSc

NEW FEE SCHEDULE AT THE ANIMAL HEALTH CENTRE

The BC Ministry of Agriculture's Animal Health Centre (AHC) in Abbotsford moved to a new fee schedule on February 1, 2016. Two priorities formed the basis for the changes coming in: the first is value to our clients, and the second is the taxpayers of British Columbia's level of subsidy for our services.

The AHC introduced the previous fee schedule in 1999. Since then, the majority of laboratory expenses have increased considerably, as most things do over a 16-year period. The AHC will continue to spend carefully, using technology and products that offer the needed quality, while helping keep costs as reasonable as possible.

The full listing of current fees and services is on our website. The new fee list replaced the old fee list on February 1, 2016. Most of the increases are in the range of $10 to $20, depending on the service. We have greatly expanded the information on our website with details on all tests offered, correct tissues to send for each test, and shipment information. (www.gov.bc.ca/animalhealthcentre)

"THE AHC WILL CONTINUE TO SPEND CAREFULLY, USING TECHNOLOGY AND PRODUCTS THAT OFFER THE NEEDED QUALITY"

The AHC is introducing some new services along with the fee changes. As of February 1st, the AHC offers the possibility of having remains of companion animals weighing less than 40kg prepared for release and sent directly to a pet crematorium service, for a fee of $250. This will allow for return of remains for pets requiring post mortems. This service has not been offered before. If necessary, the pathologist may have to apply some biosafety restrictions to this service.

One fee that has changed noticeably is for a routine post mortem. This fee has moved up to $140 from $70 for a production animal, and the fee for a companion animal has moved from $125 to $250. A routine post mortem examination includes: the logging in of the animal, opening the animal, grossly examining all systems, selecting appropriate tissues for further testing, disposal of the animal, preparing and reading of up to ten histology slides, culturing and interpreting the findings from up to three tissues for bacteria and three additional tests such as PCRs or virus culture, and finally entering all the test result and comment data into our lab information system to prepare a report to send back to the submitter. Individually, these tests would add up to much more than the new fee, and the actual costs for a production animal would be well above the new fee.

Other changes are smaller, for example a routine bacterial culture for a production animal moved from $30 to $40. All Polymerase Chain Reaction (PCR) tests were $25 previously and have changed to $35.

A new ability to "package" testing on samples sent from a post mortem on a production animal done in the field will actually cost less within the new fee schedule. Previously, these charges either were the same as a full post mortem or were charged per test. Under the new fee schedule, a package charge lower than the full post mortem fee will provide the submitter with the same full access to diagnostic tests as performed for the full post mortem fee. This fee is only available for production animals and will be $110, as compared to the full post mortem fee of $140.

I am more than happy to discuss any of these changes.

Jane Pritchard, DVM, MVetSc, graduated from OVC in 1977, and completed a Masters in Anatomic Pathology at WCVM in 2000, continuing as an Associate Professor in the Department of Pathology for two years before embarking on a career with the BC Ministry of Agriculture in 2004. With the exception of a two-year international development project in China from 2007–2009, she has remained with the BC Government. In 2013, she was appointed to the role of Director of the Plant and Animal Health Branch, and Chief Veterinary Officer for the Province of British Columbia.

PHOTO BY ENTERLINE DESIGN / SHUTTERSTOCK.COM

RURAL MIXED ANIMAL PRACTICE & THE NEW GRADUATE

BY STEVEN CHAPMAN

As an undergraduate student, I used to drive from Northern British Columbia down to Kelowna for school. By no means am I a distinguished world traveller, but so far this is still my all-time favourite drive. When I surveyed the landscape and drove through all the smaller towns, I was impressed with how varied and beautiful British Columbia really is. As someone interested in rural mixed practice, I could see myself working as a veterinarian in almost any of these areas. However, my ideas do not seem to be shared by my classmates as after talking with several small town practice owners, it appears that their number one difficulty is attracting and keeping veterinarians, particularly new graduates. This is especially so in areas away from the Lower Mainland and further north. And yet, when the topic is discussed among my classmates or students in other years, a large number say that they want to work in BC as a rural mixed animal veterinarian. So what then is the reason for this disconnect between new graduates and practice owners looking to hire?

After talking with students, faculty, and practising clinicians, the general consensus is that new graduates are looking for four major things in their first years of practice. In no particular order, these are mentorship, fair on-call schedules, lifestyle, and wage. The desire for good mentorship is more important than ever before. From a student's point of view, clinics with three or four veterinarians offer a greater amount of support and mentorship than one-clinician practices. Multi-vet practices also offer more people to share the nights on-call with, again making them more attractive to the new graduate. The definition of a good lifestyle is very individual, dependent on hobbies and regional preference, but a significant portion of this relates to the area that one grew up in. For example, I imagine that is it difficult for someone from the city to see any benefits to living in northern BC, but I grew up there and I can attest to its great qualities. Then there are lifestyle considerations such as spouse and children, things I personally know very little about and therefore cannot comment on, but which are very important considerations in the current demographic of veterinarians. Lastly, new graduates need a fair wage. If a multi-vet practice in a larger city, with good mentorship and fewer on-call hours, and a one-vet practice in a smaller community both offer a new graduate the exact same salary, the choice is almost made for them. It may be more difficult for small rural clinics to pay the wages needed to attract new graduates as there needs to be almost double the amount of work seen by the current veterinarian. This is not to mention the initial financial hit for an employer in training a new vet, only to have them leave the practice shortly thereafter.

It seems that rural clinics either cannot find veterinarians or have trouble keeping them. Within one or two years, approximately 25 per cent of new graduates will leave their first practice. Some new graduates are looking for a place to learn, make their mistakes, and then move on to somewhere new to start a practice of their own. Others go into mixed animal practice to keep doors open, use all the information they learned in school, and then later shift to areas or disciplines they find more appealing. Some may like the idea of rural mixed animal practice but then, after nights doing C-sections at freezing temperatures, they start to reconsider. Finally, perhaps new veterinarians are not satisfied with the lifestyle or mentorship of the place they have chosen and therefore move on.

I imagine that it is quite frustrating to practice owners to continually invest and train new graduates only to have them leave after a few years. Larger city clinics can more easily offer at least two of the four job aspects that students are looking for: mentorship and sharing on-call shifts. If the wages are similar across the board, then a new graduate easily leans towards the larger city clinic. From here, one may start a family, settle down, and get accustomed to the city. There are exceptions, like the individuals who would never leave their small hometown for anything, but in general, the idea of the rural veterinarian who works all day and night for little pay is coming to an end. New veterinarians also need to make some compromises and realize that they cannot have everything they want all in one place like a perfect gift waiting for them after graduation. From a student point of view, new graduates and practices that are hiring need to have open communication and discussion about mentorship, on-call duties, lifestyle, and wages to continue the flow of veterinarians to rural mixed animal clinics.

Steven Chapman was born and raised in Fort St. John, BC, and over the summers has returned home to work at the local small animal practice. He likes to spend his spare time playing guitar, carving stone, and being outdoors, particularly camping, hiking, and fishing. He is the CVMA-SBCV Chapter student liaison and is in his third year at WCVM.

OSTEOSARCOMA IN DOGS

BY SARAH CHARNEY, DVM, DACVIM (ONCOLOGY), DACVR

Hypothetical Harley, an eight-year-old male Rottweiler, presents for right hind-limb lameness of two weeks' duration. A physical exam uncovers a bony mass on the distal tibia. Radiographs reveal an osteolytic/osteoproliferative lesion of the tibia most consistent with osteosarcoma. After a discussion of diagnostic, staging, and treatment options, the owner says he wants to aggressively treat Harley but is adamant that he does not want to do an amputation. Is there another option for Harley?

A new treatment option, stereotactic radiotherapy (SRT), may be a good option for some dogs with osteosarcoma.

> "OSTEOSARCOMA CAN BE TREATED AGGRESSIVELY OR PALLIATIVELY"

OSTEOSARCOMA

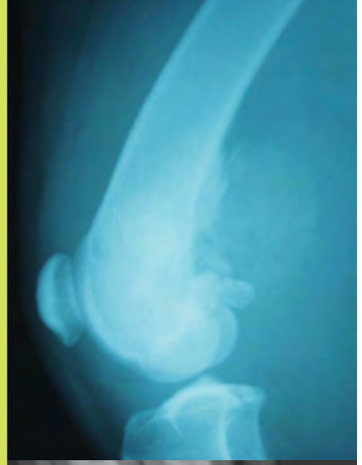
Osteosarcoma is the most common canine primary bone tumour. It is largely a disease of middle-aged dogs and is classically a cancer of large and giant breeds. Osteosarcoma is a highly metastatic tumour with an eventual metastatic rate of 95 per cent. Young age, large tumour size, high histopathological grade, tumour location in the humerus, and elevated serum ALP levels are associated with a poor prognosis.

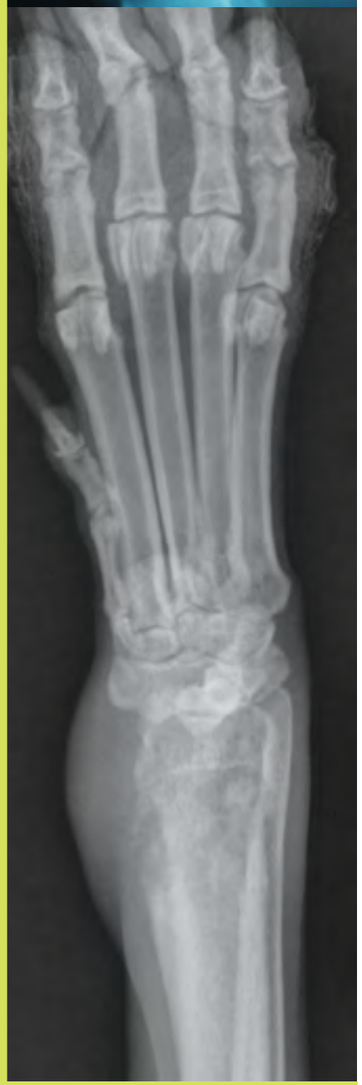
Definitive diagnosis can be made by fine-needle aspiration and cytology, bone biopsy and histopathology, or excisional biopsy at the time of amputation.

Prior to treatment, staging with blood work, three-view thoracic radiographs, and abdominal ultrasound are recommended; additional staging with CT is occasionally warranted.

Osteosarcoma can be treated aggressively or palliatively. Aggressive treatment options include amputation followed by chemotherapy, limb spare surgery followed by chemotherapy, or SRT followed by chemotherapy. Median survival time (MST) for dogs treated aggressively is one year with about 20 per cent of patients alive at two years.

Palliative treatment options include amputation alone, palliative radiation therapy, and aminobisphosphonates (osteoclast inhibitors). Sometimes, radiation therapy will be combined with aminobisphosphonates and/or chemotherapy. The MST for palliative treatments ranges from three to seven months. Chemotherapy alone and analgesics may help with pain, but are unlikely to extend life beyond one to two months.





> "GOOD CANDIDATES FOR SRT ARE THOSE DOGS WHOSE TUMOUR CHARACTERISTICS MAKE IT LESS LIKELY THAT A FRACTURE WILL OCCUR"

OSTEOSARCOMA AND SRT

WHAT IS RADIATION THERAPY?

Radiation therapy uses ionizing radiation to deposit large amounts of energy in a localized area. The deposited energy disrupts atomic structures which in turn damages biological structures (usually DNA). When the DNA is damaged, it interferes with the cell's ability to divide, and the cell dies. Tumour cells are rapidly proliferating and are thus sensitive to radiation. Unfortunately, proliferating cells of normal tissues are also sensitive to radiation. Therefore, the total radiation dose that can be given is determined by the most radiosensitive normal tissue in the treatment volume.

TYPES OF RADIATION

There are two basic types of radiation therapy: conventional radiation and SRT. Conventional radiation is performed on any gantry-based linear accelerator. SRT can be performed with a gantry-based machine with on-board CT imaging and a multi-leaf collimator.

Conventional radiation is the most common type of radiation in veterinary medicine. With conventional radiation, two to four beam angles that are quite large are used to ensure the entire tumour area is treated. As such, for any given beam angle, the normal tissue surrounding the tumour will get 25–50 per cent of the total dose. If normal tissue were to receive 25–50 per cent of the total dose in one treatment, life-threatening side effects would occur. In order to avoid these side effects using traditional linear accelerator radiation, it is necessary to divide the total dose into multiple (usually 15–20) fractions given over a period of three to four weeks.

Machines capable of SRT have on-board imaging which allows the tumour to be readily identified, multi-leaf collimators, and often the ability to do arc therapy, all of which allow a high degree of conformation and an increase in beam angles, which concentrates the radiation on the tumour while sparing normal tissue. Because the radiation is more conformal and more beam angles are used, the normal tissue in each beam path receives a small dose of radiation while the beams converge to deliver a high dose to the tumour. Thus, it is possible to use fewer treatments (usually one to three) while often achieving a better outcome. SRT is currently available only in Calgary, at WCVM, and at OVC.

CONVENTIONAL LINEAR ACCELERATOR RADIATION THERAPY FOR OSTEOSARCOMA

Traditionally, radiation therapy for osteosarcoma has most commonly been palliative only. Palliative radiation consisting of two to four non-conformal treatments has been used to decrease the pain associated with osteosarcoma; pain relief occurs in ~75 per cent of patients, but does not significantly slow tumour progression.

PAGE 18, FROM TOP Radiograph of a good candidate for SRT; Radiograph of a poor candidate for SRT; **ABOVE, FROM LEFT** Giant breed dog post-amputation for osteosarcoma; Patient post-SRT.

OSTEOSARCOMA PEARLS OF WISDOM

- The gold standard of treatment is amputation with chemotherapy.
- The size of the dog is almost never an impediment to amputation; Newfies, Danes, Pyrenees, and the like all do well with amputations. It is almost unheard of for a dog to be unable to walk after amputation unless there is *severe* pre-existing orthopedic disease.
- SRT is a great limb sparing option for dogs deemed to be good candidates based on CT.
- If SRT is going to be considered, it is best to obtain a tissue diagnosis by fine-needle aspiration and cytology rather than by biopsy as a biopsy may increase the risk of fracture.
- After either amputation or SRT, chemotherapy should always be recommended; the survival time without chemotherapy is only about five months, and 90 per cent of dogs will die before one year.

SRT FOR OSTEOSARCOMA

SRT is an exciting new treatment option for dogs with osteosarcoma. Unlike coarse fraction radiation, SRT is not a palliative treatment; the goal of SRT is to eradicate the primary tumour and extend survival. In preliminary studies, SRT followed by chemotherapy has been shown to have survival times that are similar to amputation followed by chemotherapy when SRT is used in good candidates.

Although SRT limits dose to normal tissue, there are some risks and possible side effects associated with treatment. As with conventional radiation, both acute and late effects may occur. Acute side effects are much less likely with SRT than with conventional radiation; skin burns are unlikely. The late effect radiation-induced necrosis of bone can occur which may result in a fracture of the bone. Late effects may require amputation and in some cases may be life-threatening. In early reports of dogs treated with SRT before eligibility criteria were established, fracture of the bone was reported in up to 40 per cent of dogs post treatment. Thus, it is critical to try to determine whether a dog is a good candidate or not.

Good candidates for SRT are those dogs whose tumour characteristics make it less likely that a fracture will occur. Dogs that do not have extensive lysis of the cortical bone, do not have extension of the tumour into the subchondral bone area, and have no evidence of a fracture are generally good candidates. In addition, it is ideal if there is at least 0.5–1cm of soft tissue overlying the tumour. The extent of both the tumour and the lysis is best evaluated by a CT scan and should be considered before referring for SRT.

Poor candidates for SRT can still be treated with SRT, but the risk of fracture is much higher and the survival times are usually not significantly better than the survival time for dogs treated with palliative radiation, and the cost for SRT is much higher. Occasionally, prophylactic plating of bone post-SRT can be used to try to prevent a fracture in a poor candidate.

If SRT is going to be considered, appropriate staging as above, along with a CT scan of the affected leg, should be performed. Ideally, a tissue diagnosis should be made with a fine-needle aspirate and cytology rather than with a bone biopsy as a bone biopsy disrupts the cortex of the bone and may increase the risk of a fracture.

While the gold standard of treatment remains amputation followed by chemotherapy because amputation permanently removes the primary source of pain, SRT is a great option to consider for dogs whose tumours are amenable to SRT. WCV

TAYLOR

TWO VIEWS OF ONE VERY SPECIAL HEART

PART 1 | TAYLOR'S STORY

BY KATHRYN WELSMAN, DVM

Here's a question for you: What do Mount Currie and Cor Triatriatum Dexter have in common? Don't worry if you are stumped, I was too. The answer lies in Taylor, a seven-month-old German Shepherd/Doberman cross.

Maybe you are also asking yourself where Mount Currie is and what Cor Triatriatum Dexter (CTD) is. You might not be alone. I had heard of Mount Currie before writing this story but have never had the opportunity to visit the small community north of Whistler. With respect to CTD, I have to confess that if I ever learned about it in vet school, I've forgotten all about it, and in the past eight years I've never seen it or diagnosed it. I likely wouldn't be the only one who hasn't seen this condition as it is one of the more rare congenital heart defects, not only in dogs and cats but also in humans, according to my quick search of the Internet, which explains why I probably don't remember too much about it.

The story of Taylor and his ultimate diagnosis of CTD started in Mount Currie where the puppy lived for the first few months of his life. This is where the kind folks at Whistler Animals Galore (WAG), a non-profit shelter, first met Taylor. WAG, in partnership with Dr. Laura White, the owner of Pemberton Veterinary Hospital, provides animal wellness clinics in Mount Currie. These clinics provide low-cost physical exams, vaccines, parasite control, education, and access to affordable spays and neuters. Dr. White says overpopulation and parvovirus are ongoing issues in this community, which is what prompted the creation of the clinics. It was at one such clinic, run in a mechanic's workshop, that this story started to unfold.

Despite the services offered by WAG and Dr White, Taylor's owner decided to surrender him to WAG. Unbeknownst to the owner, that decision started the ball rolling in what has ultimately become the first successful canine open-heart surgery in British Columbia.

After Taylor was surrendered, he lived at the WAG shelter as well as in foster care. Throughout all of his time in WAG's care, he was a fairly happy and energetic puppy, which seems to fly in the face of his ultimate diagnosis. Dr. White initially treated Taylor for a massive parasite burden because he had a markedly distended abdomen. However, Taylor's abdomen continued to increase in size despite treatment, so further diagnostics were done at the Pemberton Veterinary Hospital. No conclusive diagnosis was made.

Much of this story seems to rely on acts of kindness and the alignment of stars. One of those alignments is that Dr. Lopez, a veterinarian who had worked at Canada West Veterinary Specialist Hospital (CWVS), was also volunteering at WAG while spending some time in Whistler. She was able to help refer Taylor to CWVS.

CWVS's Dr. Marco Margiocco, BC's only veterinary cardiologist, diagnosed Taylor with CTD. It is at this point in the story that I started wondering how a non-profit shelter organization could afford to send one of their many needy dogs to CWVS. When I asked Catherine Mazza at WAG how they decided to commit resources of time and money for Taylor, not only to be diagnosed but also to undergo treatment at CWVS, she gave me a very poignant answer. "Taylor himself was a big part in everyone's desire to continue, as despite all that he had been through in his short life, he was always so happy and playful. He stole the hearts of everyone who worked with him, including the staff at Canada West. He was a little fighter with a great attitude."

"UNBEKNOWNST TO THE OWNER, THAT DECISION STARTED THE BALL ROLLING IN WHAT HAS ULTIMATELY BECOME THE FIRST SUCCESSFUL CANINE OPEN-HEART SURGERY IN BRITISH COLUMBIA"

My heart loves this answer, but my brain still wondered at the prudence of this decision, given there are likely hundreds of animals that WAG could have helped with the money spent on one little puppy. Catherine answered this skeptical question by explaining that WAG is always fundraising for their current Critical Care Case, which at the time happened to be Taylor. The initial money raised allowed for the workup to be started. She said, "When it became clear that he needed the surgery, we launched another, more specific, campaign through online crowd funding, and through our own marketing channels, which was able to raise the money … many in our community wanted us to save this puppy, and showed us by supporting us with the funding and encouragement." People really do love to support the underdog as I found out when I learned that the 12-person team at CWVS, including Drs. Michael King, Alan Kuzma, Marco Margiocco, Carsten Bandt, and Laurence Braun, as well as several technicians and assistants, had all donated their time for Taylor's surgery. Catherine explained that she was "encouraged by the optimism of the surgeons and veterinarians at Canada West. They were so generous and willing to help us with this case and did as much as possible to mitigate the costs and save this puppy."

Now that I understood the logistics of how Taylor even had the opportunity to become a significant milestone for veterinary medicine in BC, I thought I should educate myself a bit more on CTD and what the crew at CWVS actually did. Prior to reading their information, I had done some reading in Fossum's surgery text about cardiac surgery in general. I found this quote a little entertaining: "Cardiac surgery is not fundamentally different from other types of general surgery." Okay, so if that's true, we should all feel comfortable doing this procedure. I beg to differ, especially after watching the video of the procedure released by CWVS. Further on, Fossum did clarify that "Cardiac surgery differs from other surgeries in that motion from ventilation and cardiac contractions adds to the technical difficulty of performing these procedures." Yes, one might think that could create some problems. Considering also the actual procedure needed to be complete in under two minutes, I've determined that Dr. King and his team must have some serious skills and be cool as cucumbers as they managed it in 1 minute and 40 seconds! That's only 100 seconds.

Taylor was discharged from CWVS a few days after his surgery and was adopted by the family that had been fostering him. Unfortunately, his newly adopted family couldn't keep Taylor, as he wasn't getting along with the other family dog. A few weeks later, just before Christmas, Taylor found his way into the home of a fantastic family. They had heard about Taylor's surgery through WAG, and they had recently lost their own dog, adopted from Mount Currie, to heart failure. They thought it was fitting that they adopt a new dog that had just been saved from ending up with the same fate.

This really is a feel-good story for various reasons, including all the community support involved, the sad story of an unloved and very sick dog finding his forever home, as well as about an advancement in veterinary medicine. There are some who will criticize both WAG and perhaps even the veterinarians involved for investing so much money into one dog when there are so many more that could have been helped. The comments sections of the online news stories about Taylor reveal the full range of emotions and ethical questions. When I first heard of this story, I too was somewhat critical. In the end, however, I may not know all the motivation behind everyone's involvement, but we all need something positive to work towards, especially in veterinary medicine where we are so often constrained by finances. But most importantly, every time a medical professional has the opportunity to perform a seldom-seen procedure, something new is learned, and really, knowledge is priceless.

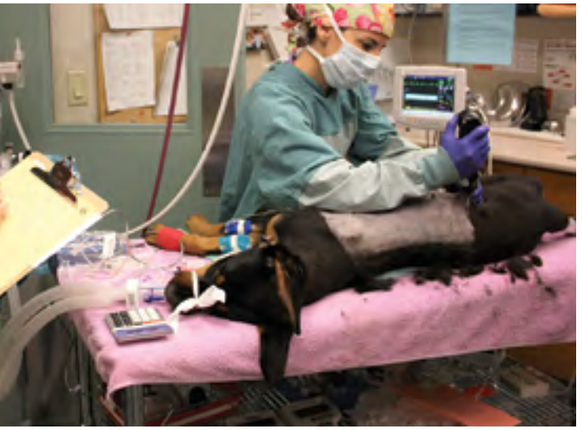
PART 2 | TAYLOR'S TREATMENT

BY MICHAEL KING BVSC, MS, DACVS &
MARCO MARGIOCCO, DVM, MS, DACVIM (CARDIOLOGY)

Taylor was referred to Canada West Veterinary Specialists in September of 2015 for a history of recurrent ascites. Internist Dr. Jefferson Manens and cardiologist Dr. Marco Margiocco were the primary clinicians consulting on Taylor's case. The presence of a recurring modified transudate in the peritoneal cavity was suggestive of post-sinusoidal portal hypertension—increased hydrostatic pressure resulting from increased vascular resistance at any level between the hepatic veins and the right heart. Therefore, the most likely differentials included veno-occlusive disorders (similar to Budd-Chiari Syndrome in people and rare in dogs), caudal vena cava obstructions, pericardial disease (effusive or constrictive in nature), and finally disease of the right atrium, tricuspid valve, right ventricle, or pulmonary valve/artery. The absence of a heart murmur and jugular venous distension/pulses helped rule out conditions such as pulmonic stenosis, severe mitral valve dysplasia, or severe pericardial disease. The recommended diagnostic tests at that point included echocardiography and, if necessary, CT angiography.

Echocardiography confirmed Taylor was suffering from Cor Triatriatum Dexter (CTD). Though well-described, it is a relatively uncommon congenital heart disease in dogs. In the past 15 years, Dr. Margiocco had diagnosed only two previous patients with CTD. Though it carries a poor prognosis if left untreated, Taylor appeared to be a very good candidate for correction of the defect.

CTD is a congenital heart defect secondary to the abnormal persistence of the right valve of the sinus venosus. This structure is responsible, in the fetus, for directing most of the venous return from the caudal vena cava through the foramen ovale and then the left atrium. This obligatory right-to-left shunt is beneficial to the fetus since the caudal vena cava carries the well oxygenated, nutrient-rich blood from the maternal placenta. Although there are a few different anatomic variants, the most common scenario is the presence of a membranous division within the right atrium. This creates a caudal chamber that receives the flow from the caudal vena cava (and coronary sinus), and a cranial chamber that receives the flow from the cranial vena cava, and includes the right auricle and the tricuspid valve. This division includes a perforation through which blood does flow from the caudal to the cranial chamber. This opening is extremely small, however, and therefore offers significant vascular resistance, creating high hydrostatic pressure in the caudal vena cava. It was this defect and the resulting abnormal hydrostatic pressure that was causing Taylor's ascites.



In addition to the standard echocardiogam, a "bubble study" was also performed to assess for any intra cardiac shunting. This is a contrast study where agitated saline is injected in a peripheral vein during the echocardiogram. The theory is that micro bubbles of air within the saline are large enough to get trapped within the pulmonary capillaries, and are then exhaled. A bolus injected into a peripheral vein would then appear within the right atrium, right ventricle, and pulmonary arteries, before being exhaled. The bubbles should not appear within the left side of the heart, unless there is an abnormal right-to-left shunt, such as a patent foramen ovale, small atrial septal defect, or ventricular septal defect. The bubble study we performed in Taylor ruled out the presence of such a defect.

More importantly, in evaluation of a CTD, separate agitated saline injections in the cephalic vein and saphenous vein help confirm the nature of the defect and rule out concurrent abnormalities. In an uncomplicated CTD, it is expected that contrast injection from the cephalic vein would highlight the cranial right atrial chamber and then the right ventricle, while injection from the saphenous vein would appear first in the caudal right atrial chamber. In Taylor's case, while injection in the cephalic vein yielded the expected result, contrast appeared in the cranial right atrium also after injection in the saphenous vein. The only explanation for this was the presence of abnormal venous return from the abdomen. Since the azygous vein drains into the cranial vena cava in normal dogs, a caudal vena cava-to-azygous shunt (acquired in response to the presence of CTD and the increased hydrostatic pressure) was suspected and subsequently confirmed by a CT angiogram. This concurrent abnormality did not change Taylor's prognosis since the shunt itself was located in the caudal abdomen, with no expected hemodynamic or metabolic consequences.

A minimally invasive interventional procedure was attempted under fluoroscopic guidance. The intention was to pass a dilation balloon through the small perforation in order to widen it sufficiently to improve blood flow, and resolve the excessive hydrostatic pressure. Catheterization of the approximately 3.5mm opening was, however, not possible and therefore surgical correction of the defect via an open-heart surgical procedure was discussed with surgeons Dr. Michael King and Dr. Alan Kuzma.

Successful surgical treatment of CTD has been previously described and reported in several publications in the veterinary literature. While it was therefore not a completely novel procedure, this was to our knowledge the first time an open-heart surgery was to be performed on a canine patient in British Columbia.

The surgical goal was relatively straightforward: through a right intercostal thoracotomy isolate the heart, make an incision into the right atrium, remove a portion of the abnormal membrane dividing the atrium, and close the incision. The challenges particular to this surgery arise from having to complete the procedure while the heart continues to beat, and avoiding immediate fatal blood loss upon incising into the atrium.

In considering whether to go ahead with the surgery on Taylor, we consulted with a veterinary cardiac surgeon at Colorado State Veterinary School, Dr. Chris Orton, who has completed many open-heart procedures. Through discussions with him, we confirmed that we indeed had the equipment and personnel needed to perform this surgery and were able to prepare a detailed surgical and anesthetic plan.

On the day of surgery, Taylor was placed under general anesthesia, and a right intercostal thoracotomy performed. The cranial and caudal vena cava, and the azygous vein were all isolated and occluded with Rummel tourniquets—strands of silk suture passed around each vessel, through a section of red rubber tubing, clamped with a hemostat to temporarily prevent blood flow into the right side of the heart. The standard recommendation is to keep such inflow occlusion to less than three minutes, and ideally less than two, in order to minimize hypoxic damage to vital organs.

With blood flow to the heart occluded, an incision was made into the right atrium, the abnormal membrane identified, and excised. A vascular clamp was placed to temporarily close the atrium incision, which allowed the tourniquets to be released and blood flow restored. The incision could then be sutured closed. The total time of vascular occlusion was kept to 1 minute and 40 seconds, and thankfully no cardiac resuscitation was needed. Though things were obviously very tense during those couple of minutes, everyone was focused on doing their job and communicating constantly with other members of the team. Though everything went as smoothly as could have been hoped for, there was still a huge sense of relief when blood flow was restored, and the sound of normal peripheral pulses returned on the Doppler monitor.

Taylor recovered exceptionally well from surgery and was eating and walking around normally the next day.

Taylor's ascites resolved within 48 hours after surgery and never recurred. He was rechecked at two weeks and one month post-surgery. Diuretics were discontinued at the two-week recheck. Based on echocardiographic measurement, surgery had successfully created a 13.2mm perforation in the abnormal membrane. As this "new" opening approximates the size of Taylor's caudal vena cava (14.9mm), the remaining abnormal membrane within the right atrium now offered no hemodynamic resistance to blood flow, resolving Taylor's problem. He is expected to live out a normal active life, with no future issues from his CTD. WCV

"THE TOTAL TIME OF VASCULAR OCCLUSION WAS KEPT TO 1 MINUTE AND 40 SECONDS, AND THANKFULLY NO CARDIAC RESUSCITATION WAS NEEDED"

PAGE 20: Taylor recovering post-surgery; **OPPOSITE:** Taylor pre-surgery and during the operation; **THIS PAGE:** Taylor's surgery in progress.

PHOTOS COURTESY OF CANADA WEST VETERINARY SPECIALISTS & WAG.

VETERINARY MEDICAL RECORDS

WHAT DO THEY CONSIST OF?

BY LINDA CREWS, BScH, DVM

"WITHOUT THESE DETAILS, IT IS DIFFICULT TO DEMONSTRATE THE QUALITY AND QUANTITY OF MEDICAL CARE THAT VETERINARIANS ARE PROVIDING"

Every day, medical professionals around the globe create medical records to capture, summarize, and detail the events of any given interaction between a patient and a caregiver. These records are required by governing and regulatory bodies to demonstrate the level, quality, and quantity of medical care provided. Veterinarians are similar to other medical professionals in that they provide health care to patients daily and are therefore required to keep accurate, legal, and legible documents that serve as a comprehensive account of the events which took place.

Veterinarians, however, are unique because of five main outstanding factors:

1. Guardianship of their patients is held by a client.
2. Patients are unable to advocate for themselves.
3. The cost of certain types of medical care can be potentially life threatening.
4. Variations in species, their diseases, and their environments create a vast, almost endless, base of necessary medical knowledge.
5. Veterinarians are required to maintain this knowledge base and to successfully perform the services encompassed by 30 different health care professional specialities in the human medical system (for example, surgery, radiology, pharmacology, anesthesia, dentistry, physiotherapy, behavioural therapy, and internal medicine.)

These factors demonstrate why a veterinary medical record is becoming ever more important. The definition of a veterinary medical record has changed drastically in the past 20 years and still varies among the Associations and Authorities in North America. Currently, it is believed that a standard veterinary medical record is made up of 18–25 different components with more than 130 criteria. The legally required components are designed to create the most accurate story, and the peer-expected elements are postulated to support the clinical, moral, and financial decisions being made in a case. If these components and criteria are present, the medical record will successfully support the practitioner in providing above average health care, while avoiding confusion and errors.

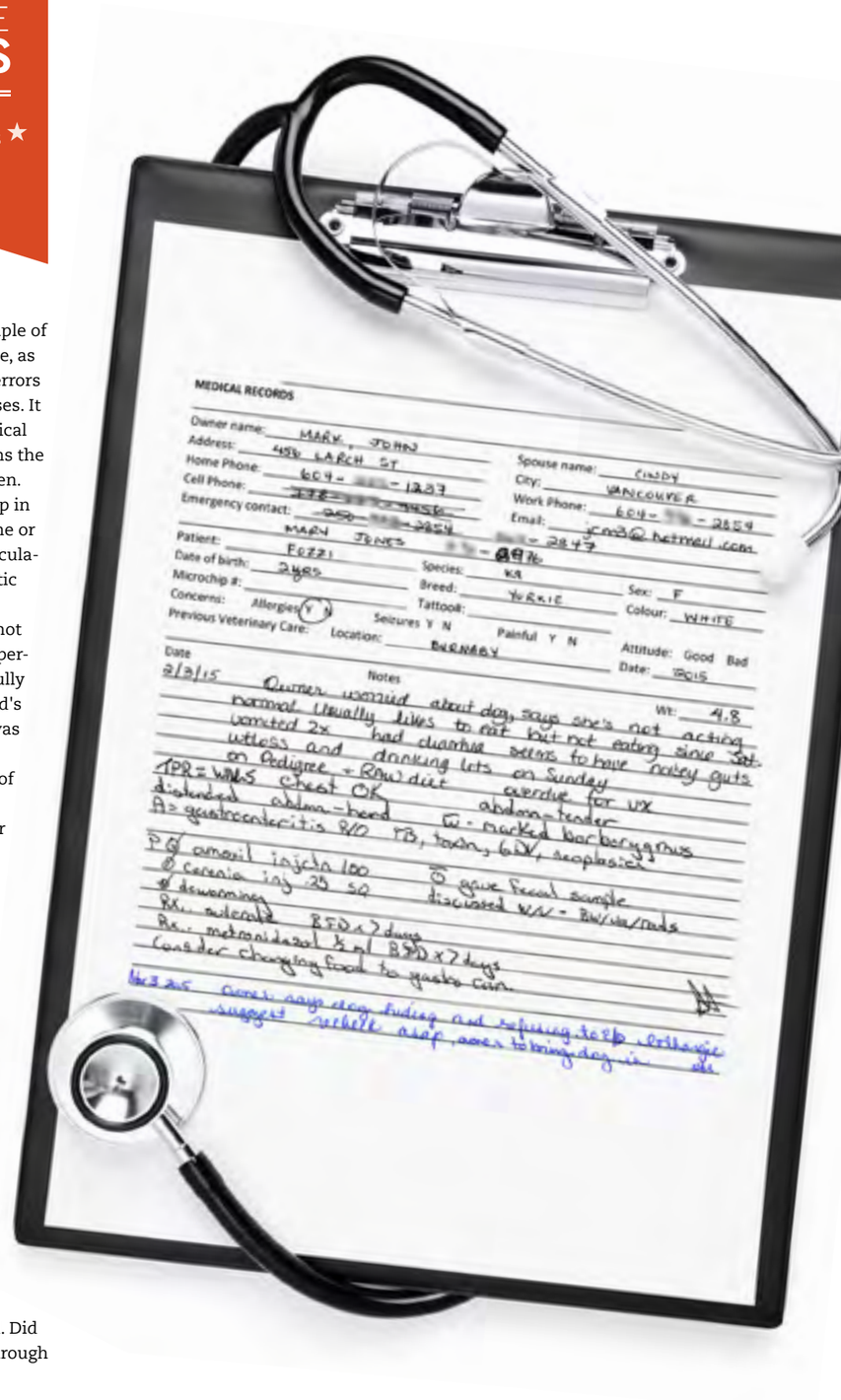
Veterinary medical records contain the following components:

1. Patient information
2. Up-to-date client information
3. Emergency contacts and authority
4. Date of every visit and entry
5. History (past care and current)
6. Current weight (every visit)
7. Complete physical exam data
8. Assessments and differentials (rule-outs)
9. Any professional advice given (phone, in-person, written)
10. Medical treatments (fluids, drugs, therapies)
11. Surgical treatment (prep, surgery, post-op care)
12. Anesthetic monitoring (before, during, after)
13. Reports (labs, pathology, referrals, autopsies)
14. Dental records (charting and procedures)
15. Final summary diagnoses/conclusion
16. Prescription diets
17. Recommended supplements, shampoos, therapies
18. Fees and charges
19. All logs, X-rays, ultrasound, drugs, surgical, lab
20. Photos, videos
21. Forms (consent, AMA, alternative therapy, insurance)
22. Estimates and declined care
23. Initials of all participants
24. Identifier and time stamp at top of each page
25. Standard operating policies and procedures

This is a comprehensive list. It may contain information that some practitioners do not consider to be a necessary part of the patient's immediate medical record, but without these details, it is difficult to demonstrate the quality and quantity of medical care that veterinarians are providing. With a tool as simple as a functional stethoscope, a doctor can potentially save a patient's life if the doctor knows how to use it accurately. The same can be said of a good medical record.

SPOT THE **ERRORS**

★ MOST COMMON ERRORS & OMISSIONS ★



This first record is NOT a typical example of the veterinary medical records we see, as it contains an overwhelming number of errors and omissions, solely for teaching purposes. It does, however, represent the type of medical records commonly seen, in that it contains the errors and omissions that occur most often. As you read through these examples, keep in mind that a medical record only needs one or two of these errors to cause or create speculation about a sequence of care, or diagnostic events. It is extremely important to acknowledge that most of these errors are not generated out of neglectful practice. The person writing the record was present and fully aware of what occurred, so that the record's details are sufficient. For someone who was not present, the record does not provide enough information. Herein lies the root of medical record grief.

Veterinarians write medical records for one of three common reasons:

- They are required to as professionals
- They need a brief source of recall at future appointments of what events occurred, how they handled them, and how those events worked out
- They need a format to transfer information or instruction to others

Structurally, medical records do fulfill those reasons, but the principal foundation of medical records is not for the attending veterinarian. It is, in fact, for everyone else. In this ongoing series, we will investigate how and why that is true, once we have established just what is missing from the sample record.

DID YOU FIND THEM?

There are 45 errors in this medical record. Did you find them all? Stay tuned, as we go through all 45 errors in issues to come. WCV

PHOTO BY RANGIZZZ / SHUTTERSTOCK.COM

"MOST RESCUES ARE ANIMALS WHO ARE FOUND ABANDONED AND IN DISTRESS, USUALLY DUE TO HUMAN IMPACT"

PHOTOS BY THE VANCOUVER AQUARIUM

THE VANCOUVER AQUARIUM MARINE MAMMAL RESCUE CENTRE

BY JENELLE HEBERT, RVT

In 2013, Levi the harbour porpoise made history for the Vancouver Aquarium Marine Mammal Rescue Centre (VAMMRC). Levi was the first harbour porpoise ever rescued in Canada to be released back into his natural habitat. Through the extraordinary efforts of the VAMMRC over the past 50 years or so, thousands of marine animals have been rescued, rehabilitated, and released due to the expertise and local knowledge of the veterinarians, RVTs, and staff at the Centre.

The VAMMRC is a hospital for ill, injured, or abandoned marine mammals, first established when the Vancouver Aquarium saw the need to help local marine wildlife in distress. Since opening, the Centre has expanded and become known worldwide for its expert care and rehabilitation. More than 100 animals each year are rescued and rehabilitated, with the main goal being release back into their natural habitat. The VAMMRC is the only rescue organization in British Columbia capable of rehabilitating marine mammals.

Most rescues are animals who are found abandoned and in distress, usually due to human impact. Causes include habitat destruction or loss, reduction of food stocks, pollution, or boat strikes. In past years, we have seen patients such as sea lions, sea otters, harbour porpoises, false killer whales, and sea turtles at the Centre. Our most commonly admitted patients, however, are neonatal harbour seals (Phoca vitulina). In BC, harbour seal pups are born from late June into early September, with peak pupping season in July and August. During the peak months, we receive multiple calls each day from concerned members of the public who are observing what they believe to be orphaned or injured seal pups. When we receive these calls, we go through a series of questions, such as, "How long have you observed the animal for?" "Have you seen any adult seals in the area?" "Can you see any injuries on the animal?" Most importantly, we ask for a photo for assessment. A photo tells the story of the animal in question, and gives us an idea of the pup's body condition and level of alertness. A seal pup that has been away from its mother for even a short amount of time will already begin to look emaciated, lethargic, and dehydrated, and a maternally dependent pup that has been separated from its mother has no chance of survival in the wild. When we receive calls about species in distress other than harbour seals, before taking action we report to Fisheries and Oceans Canada (DFO) with whom we work closely when rescuing animals such as cetaceans (dolphins and porpoises), sea lions, and sea otters.

The Vancouver Aquarium also has a sea lion disentanglement program in place to aid Steller sea lions and California sea lions entangled in fishing gear and other ocean debris. This is particularly important because Steller sea lions are listed as a species of special concern under Canada's Species at Risk Act. Staff

PHOTOS LEFT TO RIGHT COURTESY OF THE VANCOUVER AQUARIUM & JENELLE HEBERT

ABOVE, FROM LEFT California sea lion with deep wound around its neck, likely from a packing strap; a rescued neonatal harbour seal named Octavio; **PAGE 28** Dr. Haulena performing ultrasound on rescued harbour porpoise Levi; **PAGE 29** Collecting a blood sample from Whiffen, a rescued sea otter, soon after being admitted.

veterinarian Dr. Martin Haulena has worked over the last 20 years to perfect a tranquilizer cocktail that will safely and effectively immobilize sea lions enough to allow him and the veterinary team to carefully remove the entanglement.

In addition to helping animals in need, the VAMMRC also plays a role in educating and offering invaluable hands-on experience not found anywhere else in Canada to many veterinary students, practising veterinarians, veterinary technician students, and biology students. Each year, we are host to ten to fifteen veterinary externs, one veterinary intern, and eight practicum students for varying lengths of time. In their time at VAMMRC, students learn to perform examinations, collect samples, gavage feed, assist in procedures, as well as care for various marine mammals.

> "MARINE SPECIES ALWAYS KEEP US ON OUR TOES DURING SEDATION OR GENERAL ANESTHETIC PROCEDURES, AS THEY TEND TO BECOME APNEIC"

The role of a VAMMRC veterinary technologist has many similarities to that of a vet tech in a small animal clinic; there are many differences as well. After admitting a seal pup to the Centre, it is up to veterinary technologists to perform a thorough physical examination. All findings are then reported to the veterinarian, and an individualized treatment plan is started for that patient. Treatments may include rehydration, wound therapy, parasite removal, pain management, and/or antibiotic therapy. In cases where an even more thorough assessment of the condition of an animal is required, the veterinary team will perform further diagnostics (radiographs, ultrasound, CT scans, etc.,) or surgery if necessary. Just like veterinary technologists in a clinic environment, VAMMRC veterinary technologists assist the veterinarian in such diagnostics and surgeries, as well as monitoring the patient while under sedation or general anesthesia. Marine species always keep us on our toes during sedation or general anesthetic procedures, as they tend to become apneic. This makes for an exciting anesthetic, and as technologists we will almost always be required to manually ventilate the patient.

Other daily technologist duties include sample collection, daily husbandry and cleaning, prescription preparation, medication administration, gavage feeding, wound care, and fluid therapy.

We all know well that feeling when we watch a dog walk out the clinic doors with its owners after making a full recovery from being seriously ill and hospitalized for an extended amount of time. We get that same feeling when we watch a seal or other marine mammal—one that was critically ill when admitted—make a full recovery and swim away into the ocean. All the hard work and long hours spent rehabilitating emaciated and helpless neonatal seal pups pay off when we get to watch them flop down the beach into the waves, 15 to 20 kilograms heavier than when they arrived at the rescue centre. It's also the feeling we get when we are able to help animals beat the odds, even when survival doesn't seem at all possible. Stranded cetaceans (whales, dolphins, and porpoises) rescued and brought into rehabilitation centres typically have a less than 10 per cent chance of survival and an even smaller chance of being deemed releasable. It's why many of us get into marine rescue and rehabilitation work. We do it for patients like Walter.

In the winter of 2014, we gave Walter, an elderly wild sea otter, riddled with birdshot pellets after having been shamelessly shot by humans, a second chance at life. Walter was an estimated 13 to 15 years old when we rescued him, suffering from injuries directly caused by humans that left him blind and unable to forage for food. After his successful rehabilitation, it was apparent he would not survive in the wild without his vision, and so he was deemed non-releasable by DFO and given a permanent home with other rescued sea otters at the Vancouver Aquarium. A pretty cozy retirement.

To learn more about the Vancouver Aquarium Marine Mammal Rescue Centre, please visit http://www.vanaqua.org/act/direct-action/marine-mammal-rescue. WCV

NEW PAIN CONTROL REQUIREMENTS FOR LIVESTOCK

PROVIDED BY THE BCSPCA

Beginning in 2016, new requirements for the use of pain control will kick in for farmers conducting castration and other routine procedures on pigs and cattle, according to the Canadian Codes of Practice for the care and handling of farm animals.

Published by the National Farm Animal Care Council through a consensus process involving producers, veterinarians, and SPCAs, the Codes represent Canada's minimum expectations for livestock care and housing. While the Codes themselves are not technically legislation, they have been adopted into regulations to animal cruelty law in seven provinces. In every province, causing pain to an animal without legal justification as part of a generally accepted practice is an offence.

"By requiring pain control to be used for certain procedures at specific ages, the Codes are saying it is no longer a generally accepted industry practice to cause an animal pain in the process," says Marcie Moriarty, the BCSPCA's Chief Prevention and Enforcement Officer.

"IN EVERY PROVINCE, CAUSING PAIN TO AN ANIMAL WITHOUT LEGAL JUSTIFICATION AS PART OF A GENERALLY ACCEPTED PRACTICE IS AN OFFENCE"

BCSPCA Special Provincial Constables have no proactive inspection role on farms, unless animals are offered for sale, exhibition, or hire. Constables respond to complaints of animal cruelty from those who have witnessed it. When responding to such complaints on commercial farms, BCSPCA constables involve industry specialists and veterinarians to assist in assessing the animals.

"As with any animal owner, farmers are provided an opportunity to correct the situation and come into compliance with the law, unless violations are so egregious as to warrant immediate intervention and pursuit of charges through the Crown," says Moriarty.

The Codes will also be monitored more proactively through new on-farm assurance programs being developed by each industry association. These programs generally piggy-back on existing food safety programs, and will be required as a condition of sale by most meat processors, effectively making them mandatory. The Canadian Meat Council has indicated its members want all farms that supply them to be audited for animal welfare by 2020.

The new requirements for beef cattle and pigs will bring those sectors more into line with the existing requirements for painful practices published in the Codes for dairy cattle, sheep, and equines. See the sidebar for a summary of the pain control requirements from all of the Codes.

In every Code, pain control has been defined loosely, including the use of anesthetics or analgesics determined appropriate in consultation with a producer's veterinarian. In most cases, the use of both anesthetic and peri-operative analgesic is included as an additional voluntary recommendation for producers to consider. WCV

CODE OF PRACTICE	PAIN CONTROL IS REQUIRED FOR
PIGS (2014)	• Castration over 10 days of age, effective immediately • Tail docking over 7 days of age, effective immediately • Castration and tail docking at any age, effective July 1st 2016
BEEF CATTLE (2013)	• Castration of bulls over 9 months of age, effective January 1st 2016 • Dehorning after horn bud attachment, effective January 1st 2016 • Castration of bulls over 6 months of age, effective January 1st 2018 • Also: spaying requires veterinary consultation, effective immediately
DAIRY CATTLE (2009)	• Castration, disbudding, dehorning, and branding at any age
SHEEP (2013)	• Surgical castration over 4 weeks of age • Clamp castration over 6 weeks of age • Ring castration over 10 weeks of age • Surgical tail docking at any age • Ring tail docking over 6 weeks of age • Disbudding, dehorning, or substantial horn trimming at any age
EQUINES (2013)	• Castration at any age, including both a local anesthetic and NSAID • Consult the Code directly for details on who is authorized to perform castration • Tail nicking and blocking are unacceptable and must not be performed • Tail docking for cosmetic purposes is unacceptable and must not be performed

PET IDENTIFICATION

AND THE BC PET REGISTRY

BY AMY MORRIS

When my neighbour's husky, Cross, escaped her window at 8 am into morning traffic for a romp around the neighbourhood, people were frantic. After finding the collarless dog, her rescuers knocked on all the doors in the area looking for her owner. Generally speaking, when people see a dog running loose alone, they assume the dog is lost. If there is a collar, they call the number on the tag or the municipality where the licence is registered. If not, they look for an ear tattoo or microchip.

Fortunately, dogs make themselves conspicuous when at-large. Cats are an entirely different story. In British Columbia, only 14 per cent of stray cats turned in to BCSPCA animal shelters are returned to owners, compared with 72 per cent of dogs. This dismal statistic is a result of two behaviours that are socially acceptable: the notion that cats roaming outside aren't lost and the reality that cat guardians are not providing their indoor or outdoor cats with any form of permanent identification.

Tattoos have, for a long time, been a useful way to identify an animal that has been spayed or neutered. As long as the tattoo can be read, the animal can be traced back to the veterinary clinic where the tattoo was provided, and further detective work should lead to the guardian. The downside is that this can take days or even weeks, depending on the opening days of the respective veterinary clinic and whether the guardian still has the same phone number or has forwarded their veterinary records to a new clinic.

As a newer form of permanent identification, the dependability of microchips has evolved with the technology. With the new, tiny standardized ISO chips, microchip ID has become a more reliable method of identification than tattoos. Central databases allow guardians to enter their address and phone information and update it easily through the Internet and call centres.

In consultation with the College of Veterinarians of British Columbia, the BCSPCA launched the BC Pet Registry in April 2015 to provide a consistent service for BC pet guardians to register their animals' permanent IDs, whether as a tattoo or microchip. Making it easy to microchip and register pets, our goal is for all cats and dogs to be permanently identified and registered in British Columbia, making it possible for veterinarians, animal control agencies, and the BCSPCA to get them home the same day they are lost.

The impact that microchips and this registry can have on our province is enormous. It provides veterinarians the opportunity to talk to cat guardians about the value of their bond, demonstrating their love of their cat by making sure they always find a way home. It also improves their welfare, shortening the time spent in a shelter if they are ever lost. As more BC municipalities adopt mandatory permanent identification bylaws for cats and dogs, animal control agencies will be able to scan any dog or cat found in the field and contact the owner immediately, bypassing the need to bring these animals back to the shelter altogether. Veterinarians can search microchip numbers, as well as licences and tattoos, in the BC Pet Registry by signing a data privacy agreement with the BCSPCA. We are eager to partner with BC's esteemed veterinarians to advance this program for the benefit of all our province's pets and their guardians.

> "THE DEPENDABILITY OF MICROCHIPS HAS EVOLVED WITH THE TECHNOLOGY"

As we transition into a world using the latest technology, the BCSPCA is confident that we will see an increase in people providing warm, loving homes for their cats and dogs. Paired with increased spay and neuter projects across the province, the BCSPCA is increasingly optimistic about a future where it is the social norm for BC pet guardians to spay or neuter, microchip, register, and provide veterinary care for their beloved pets.

To become a clinic partner and access the BC Pet Registry, visit www.bcpetregistry.com, or contact Aidan Miller at amiller@spca.bc.ca or 1-800-665-1868. WCV

CLASSIFIED ADS

PRACTICE FOR SALE

Vancouver Lower Mainland Small Animal Hospital. Well established 25 years, single veterinarian personable practice, consistent loyal clientele, great potential for expansion in rapidly growing, diverse Surrey, BC. Owner wishing to retire, will help new owner phase into practice. Great opportunity to have your OWN practice. Contact: dvmpx4sale@gmail.com

PENDER ISLAND VETERINARY CLINIC

BC Southern Gulf Islands. Well established (17 years), single veterinarian practice with loyal, appreciative clientele, rewarding work environment and high net return. A rare opportunity to live and practice in a beautiful place with unique access to amazing outdoor activities and regular ferry service to Victoria and Vancouver. Option for purchase of real estate also (house and waterfront property, with separate purpose-built clinic). Contact: oudstone@shaw.ca for more information.

NICOLA VALLEY VETERINARY CLINIC LTD

Buy this established turnkey profitable practice in Interior BC. Multiple options. Enjoy sunshine & recreation year round. Seller motivated by retirement age. Can transition. Visit www.nicvet.com. Contact lisladyman@shaw.ca

VETERINARIAN POSITION AVAILABLE

Do you absolutely love being a vet? Will you get down on the floor to say hi to a dog or pick up and hold the small dog or cat who comes in? Do cats allow you to handle them with minimal restraint? Do you easily connect with owners personally and achieve compliance for the best possible health care? Are you able to handle a busy workload with unexpected drop ins or emergencies and still find the time to complete charts and call clients back in a timely manner?

How would you like to practice where you have more time to spend with your patients in the exam room? We are a 5 star service oriented practice. We have an established clientele who are very compliant with our recommendations and are some of the nicest people on the west coast. We are looking to add a second full time doctor who will keep the practice vibrant and who has an interest in expanding our team's capabilities to better meet the increasing demand for our services.

This area on the east side of central Vancouver Island is the perfect blend of country living where you can enjoy the outdoors year round -it rarely snows! There are many lakes which make this area popular for recreational boating or you can be minutes to the ocean and enjoy some of the best kayaking & paddle boarding on the west coast. We have the premiere ski hill on the island - Mt. Washington and are the gateway to Strathcona Wilderness Park. Hiking galore! Visit discovercomoxvalley.com sunrisevet.ca If this sounds like the place for you send us your CV to VETAD@SHAW.CA

PRACTICE CLIENT COORDINATOR NEEDED

Busy state of the art family oriented vet practice looking for enthusiastic people person who loves phone work to manage our client activation system and follow up on our treatment plans by handling client education, financial arrangements & scheduling. The majority of your day will be speaking with clients on the phone or in the practice & educating clients on procedures, answering their questions and working with them to get the recommended treatment done- that's is your major responsibility. Your client education duties would include handling our marketing line- newsletters, brochures, reminders, etc. If you are high energy, upbeat & love talking with people on the phone, you may be a match for us! Vet experience a must & experience as a tech & front desk a big plus!

If this sounds like a place for you, send us your resume along with a phone number we can reach you at for a phone interview Monday between 11:00AM until 1:00PM.
TO: RECEPTIONAD@SHAW.CA

RVT - AHT REQUIRED

Do you absolutely love being a tech? Will you get down on the floor to say hi to a dog or pick up and hold the small dog or cat who comes in? Do cats allow you to handle them with minimal restraint? Do you easily connect with owners personally and achieve compliance for the best possible health care? Are you able to handle a busy workload with unexpected drop ins or emergencies and still find the time to complete charts and call clients back in a timely manner?

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If this sounds like the place for you, send us your resume along with a phone number we can reach you at for a phone interview on a Monday between 11:00AM until 1:00PM
RECEPTIONAD@SHAW.CA

To place a classified ad in West Coast Veterinarian please contact Inga Liimatta at ingal@telus.net. Deadline for ad booking is April 22, 2016 for the Summer issue.

INDUSTRY NEWS

» The Canadian Veterinary Medical Association (CVMA) is excited to introduce a new and improved Emerging Leaders Program (ELP) to be held in Niagara Falls, Ontario on July 7 and 8, 2016. With the generous support of our exclusive sponsor, Virox Animal Health, this highly interactive program will now be an eight-hour workshop spread over the course of two days. For more information, see page 4 for further details, and visit www.canadianveterinarians.net.

» The Vaccination Guidelines Group of the World Small Animal Veterinary Association (WSAVA) has updated the Vaccination Guidelines it offers to veterinarians. The WSAVA's Canine and Feline Vaccination Guidelines aim to provide globally applicable recommendations on best practice for the vaccination of dogs and cats to help veterinarians to undertake the practice in a standard and scientifically justified fashion. For more information, visit www.wsava.org/educational/vaccination-guidelines-group.

Continued on page 38…

WCV BUSINESS DIRECTORY

VETERINARY CONTINUING EDUCATION APRIL–JULY 2016

APRIL

1–3 **Veterinary Forensics Workshop**
Calgary, AB
www.abvma.ca/Continuing-Education.asp?month=4

2–3 **Basic Echocardiography**
Kelowna, BC
www.scilvet.ca

2–3 **Cruciate Extracapsular Repair**
Calgary, AB
www.focusandflourish.com

8–10 **Veterinary Wellness Workshop Retreat**
Banff, AB
www.criticalcarevet.ca

9–10 **Pathology Pearls of the Liver/Spleen**
Kelowna, BC
www.scilvet.ca

17 **Cardiology**
Calgary, AB
Idexx Laboratories & Purina Veterinary Diets
www.cavm.ab.ca/ce_calendar.html

22–24 **27th Annual Convention of the AMVQ**
Montreal, PQ
www.amvq.qc.ca

22–24 **Atlantic Provinces Veterinary Conference**
Halifax, NS
www.apvc.ca

30–1 **Cat Healthy**
Calgary, AB
Bayer, Merial, Idexx, PetSecure, Hills
www.edmontonvetinfo.com/event.aspx?id=69

MAY

7–8 **Orthopedic Conditions of the Hind Limb**
Edmonton, AB
www.scilvet.ca

7–8 **Basic Ultrasound**
Langley, BC
www.scilvet.ca

11 **Anesthesia**
Calgary, AB • WVSC
www.cavm.ab.ca/ce_calendar.html

14–15 **Pearls of GIT/ Adrenals Ultrasound**
Calgary, AB
www.scilvet.ca

JUNE

5 **Behaviour**
Calgary, AB • Vetoquinol
www.cavm.ab.ca/ce_calendar.html

6–10 **Basic Small Animal Surgery**
Calgary, AB
www.vet.ucalgary.ca/node/1488

8–10 **VetHealth Global 2016**
Charlottetown, PEI
www.vethealthglobal.com

JUNE

13–17 **Small Animal Internal Medicine**
Calgary, AB
www.vet.ucalgary.ca/node/1488

28–1 **CE and Ski Radiology Retreat**
Banff, AB
www.scilvet.ca

JULY

7–10 **2016 CVMA Convention**
Niagara Falls, ON
www.canadianveterinarians.net/scienceknowledge/annual-convention

SAVE THE DATE

Save the date for our **CVMA-SBCV Chapter Fall Conference & Trade Show** at Pinnacle Hotel Vancouver Harbourfront, on **November 5 and 6, 2016**.

To publicize your continuing education event in West Coast Veterinarian, please email the following details to wcveditor@gmail.com with CE Event in the subject. List the date, title of event, location, sponsor, and website.

INDUSTRY NEWS continued

» One of the world's most distinguished veterinarians, Professor Emeritus Marian Horzinek, is to support the work of the African Small Companion Animal Network (AFSCAN) in rabies control as part of a project he is undertaking as a Fellow of the Stellenbosch Institute for Advanced Study (STIAS). He has also highlighted to STIAS the importance of involving veterinarians at a high level in human health projects, including those involved with rabies control.

» Boehringer Ingelheim (Canada) Ltd. has announced the winners of #PerfectWithoutPain video contest. The grand prize winner is the Orleans Veterinary Hospital in Orleans, Ontario. Placing second was the Island Veterinary Hospital, Richmond, BC. All 36 video submissions can be viewed on the PerfectWithoutPain YouTube channel. For more information, please visit www.boehringer-ingelheim.ca.

» Elanco Canada has launched Onsior® Injectable for cats. Onsior® is now indicated for cats as an adjunctive medication in the control of postoperative pain and inflammation associated with onychetomy, ovariohysterectomy, and castration. For more information, visit www.elanco.com.

» Vetoquinol has officially launched its new brand image and revamped website and has adopted a new slogan, Achieve More Together. For more information, please visit www.vetoquinol.ca.

» Trupanion has launched Trupanion Express, new web-based veterinary software, to veterinary hospitals throughout the United States, Canada, and Puerto Rico. For more information, visit www.Trupanion.com/Trupanion-Express.

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Urinary + Calm

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Urinary + Hydrolyzed Protein
Urinary + Satiety