



THE CORNER INFORMER

The Newsletter of The Southeastern Michigan Veterinary Medical Association

Volume 23 Issue 1 March 2017

OUR PRESIDENT'S ADDRESS

Wow! 2017 started with a bang. The Consumer Electronics Show displayed exactly how smart our homes can get (personally, I'm waiting for the smart toilet paper roll), the Presidential Inauguration gave us a glimpse of the next four years (for better or worse), and Tom Brady proved to the nation that he can win without cheating (who knew?). AND, on top of it all, Tim Duncan was installed as the President of YOUR association, the Southeastern Michigan Veterinary Medical Association (in case you missed the banner above). In all seriousness (I can be serious, sometimes), I truly am thankful, and honored for the opportunity to serve. We have a phenomenal council, I look forward to working with them to bring YOU, our members, a great year filled with education and comradery.

The annual Installation Dinner at the Townsend Hotel in Birmingham was a spectacular evening. The purpose of this dinner is to welcome new members, honor existing members for their achievements, and to install the new council for the upcoming year. All SEMVMA members and a guest are welcome to attend the Installation Dinner, free of charge. Please see the enclosed article for more information, and if you have never attended, please consider joining us next January.

I would like to take a moment to say thank you to this year's past president, Dr. Colleen Beach. The post of president is challenging, and it requires a significant time commitment to ensure the association continues

to function at its finest. Dr. Beach accomplished this with panache, always upbeat and striving to keep this association great. We thank you very much for your service Colleen.



Tim Duncan

Our upcoming continuing education calendar is filling out nicely. We are planning on offering seminars in ophthalmology, orthopedic surgery, infectious disease, and dermatology for the 2017-2018 DVM series. Finishing out the 2016-2017 series, we have Dr. Joe Bartges speaking on diseases of the urinary tract on March 15th, 2017. If you have not attended any of our seminars before, please consider doing so. The speakers we have lined up are all top-tier, the same you would enjoy at any of the larger national conferences, but with the advantage of being located at a local

venue.

One of the primary strengths of this association is the social interaction. Evenings such as the installation dinner are an opportunity to interact with our colleagues, forging bonds that make us stronger as a whole. We have multiple social events planned throughout the year, please take note of them in the quarterly newsletters and / or e-mail communications, and take advantage of what we have to offer. This is our centennial year, let's get out and have some fun!

I am very excited to see what the rest of 2017 will bring. Thank you very much for giving me this opportunity to serve YOU as the Southeastern Michigan Veterinary Medical Association's Centennial President!

– Tim

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Veterinary Medical
Association**

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Tari Kern

Emily Socks

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Andrea Zelten, DVM – Jeffrey Animal Hospital

MEMBERSHIP SPOTLIGHT

Dr. Tari Kern, from Pawsitive Steps Rehabilitation & Therapy for Pets, has been accepted for a practice experience Residency through the American College of Veterinary Sports Medicine and Rehabilitation. She is looking forward to the opportunity to expand her knowledge, contribute to research in the field and bring the benefits of the learning process to her patients. *Congratulations, Dr. Kern!*

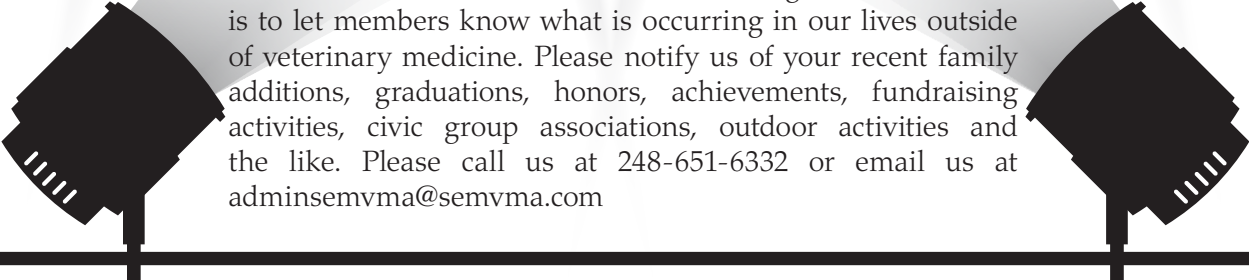
Dr. Barbara McBride, from Animal Emergency Center, and her husband **Ryan** welcomed their first baby, **Greta Jane** into the world on January 28, 2017. Greta was 7lbs 4oz. and 19 3/4 inches long. Both mom and Miss Greta are doing great! *Best wishes to Barb and her new family member!*

Dr. Heather Robertson, of Animal Emergency Center, is very pleased to announce that **Christine Thieman, LVT** passed her Veterinary Emergency and Critical Care specialty boards this past fall. We are all so proud of Christine's hard work and dedication! She is already busy with the Veterinary Emergency and Critical Care Technician Association helping mentor other technicians. *Keep up the awesome work Christine!*

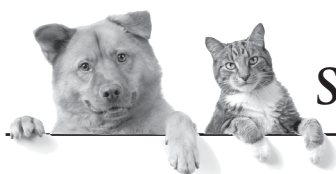
Dr. Sam Latra, from Oakland Veterinary Referral Services, and his wife, **Kristen**, welcomed a baby boy, **Owen Vincent**, to their family! Mom and baby are healthy and happy! *Congratulations Sam and Kristen!*

Dr. Norman Bayne is proud to announce his daughter, **Emily Bayne**, will marry **Justin Willis**, a lieutenant in the marines, on July 21st. They will get married on the island of Oahu where they both reside. *Congratulations Emily and Justin!*

Dr. Norman Bayne's son, **Justin Bayne**, once again performed with the San Diego symphony. They played Duke Ellington works where Justin had a solo in one of the pieces. *Way to go Justin!*



WE WANT TO HEAR FROM YOU! Our goal of this section is to let members know what is occurring in our lives outside of veterinary medicine. Please notify us of your recent family additions, graduations, honors, achievements, fundraising activities, civic group associations, outdoor activities and the like. Please call us at 248-651-6332 or email us at adminsevmva@sevmva.com



SAVE THESE DATES! UPCOMING ACTIVITIES



SEMVMA is pleased to welcome Dr. Ernie Ward as our guest speaker for our practice management meeting on Wednesday, April 2, 2017. You don't want to miss this event! Our registration flyer was included in the December 2016 newsletter. Email reminders have also been sent. Please contact the office if you need a flyer! We would like to thank the following sponsors for their support which has allowed us to bring Dr. Ernie Ward to southeastern Michigan: Patterson Veterinary Supply, Merck Animal Health, and Faithful Companions.



Attention golfers...Mark your calendars for the 24th annual SEMVMA Golf outing! The outing will take place on August 16th at Tanglewood Golf Club in South Lyon. The format will be a four-person scramble. Watch for registration fliers in the June newsletter and e-mail communication. All proceeds from the event will benefit Leader Dogs for Blind.

MEMBERSHIP COMMITTEE REPORT

Please join us in welcoming the following new members to SEMVMA...

Dr. Matthew Burke, (MSU, 1986) D'Adamo Veterinary Hospital, Livonia, MI
Dr. Gurpreet Kaur, (MSU, 2015) Waterford Veterinary Hospital, Waterford, MI
Dr. Vincent Rozyczko, (Cornell, 2003) Brookeside Veterinary Hospital, Ann Arbor, MI
Dr. Syed Samad, (CVS, Hyderabad, India, 1968) A-Care Animal Clinic, Troy, MI
Dr. Laura Miller, (MSU, 2015) Animal Emergency Center, Novi, MI
Dr. Haley Oates, (MSU, 2015) Animal Emergency Center, Novi, MI
Dr. Nate Kleefisch, (Purdue University, 2013) Animal Emergency Center, Novi, MI
Dr. Melissa Doolin, (Tufts University, 2013) Serenity Animal Hospital, Sterling Heights, MI

The 2017 membership committee is composed of 3 members: Norm Bayne, DVM, (Chair) (norman@baynevet.com)
Tim Duncan, DVM, (Duncan@oaklandanimal.com) and Steve Bailey, DVM (bailey@exclusivelycatsvet.com). Please feel free to contact any of us if you have any questions. If you know of a veterinarian in the area who is not a member but may be interested in joining, please contact any member of the membership committee of the SEMVMA office and we will be happy to send them information.

SEMVMA INSTALLATION DINNER

The annual Installation Dinner at the Townsend Hotel in Birmingham on January 10th was a fantastic evening. The purpose of this dinner is to welcome new members, honor existing members for their achievements, and to install the new council for the upcoming year. All SEMVMA members and a guest are welcome to attend the Installation Dinner, free of charge. Faithful Companion Memorials once again sponsored cocktail hour. Faithful Companion's support of our veterinary community is very much appreciated. Guests enjoyed jazz music performed by a section of the jazz band from Bloomfield High School during dinner hour.

Life membership awards were bestowed on two of our finest, Dr. Aunna Lippert and Dr. Jackie Pozniak. Dr. Lippert retired from Oakland Veterinary Referral Services in Bloomfield Hills, and has been a member of SEMVMA since 1990. Dr. Pozniak retired from Town Center Veterinary Association in Howell, and has been a member of SEMVMA since 1982. Congratulations to both!

Our speaker for the evening was Dr. Janver Krehbiel. Dr. Krehbiel has been active in both academia and organized veterinary medicine. A Diplomate of the American College of Veterinary Pathologists, Dr. Krehbiel served as Associate Dean for Academic and Student Affairs at Michigan State University's College of Veterinary Medicine from 1989 until 2006. During that time, he also served the college as Acting Dean for the year 2005. In organized veterinary medicine, he has served in roles including President of the Michigan Veterinary Medical Association, Chairperson of the National Board of Veterinary Medical Examiners, and as a member of the AVMA Council of Education. Directly or indirectly, he has influenced pretty much every person in the room, in some fashion. The highlight of his speech to us was a comprehensive history of the Southeastern Michigan Veterinary Medical Association. He confirmed that our association is



Dr. Colleen Beach introducing incoming SEMVMA president, Dr. Tim Duncan.



Dr. Tim Duncan welcoming Dr. Emily Socks as a new SEMVMA council member

SEMVMA INSTALLATION DINNER

turning 100 years old this year, we are celebrating our centennial!

Tracy Adams received the Contribution to SEMVMA Award. Tracy has been on SEMVMA council for the past 8 years and has served on several committees including ethics and grievance, membership, publicity and social events, website, and technician scholarship. She served as the SEMVMA President in 2012 and has been editor for the quarterly SEMVMA newsletter for the past 8 years. Thanks to Tracy Adams, for all of her contributions to SEMVMA.

Michelle Sauerbrey received the SEMVMA Contribution to Community Award during the Installation Dinner. Michelle spends a lot of time researching ways to help companion animals receive the best options and treatments for cancer. She runs an ultrasound wet lab for referring veterinarians, and is always willing to answer phone calls and emails during work, as well as on her own time. Michelle was given a donation by a grateful client whose cat she treated to use as she desired. Michelle, rather than spend the money on herself, started the Oncology Cancer Fund in 2009. The Oncology Cancer Fund merged with Oakland Veterinary Referral Service's TEAR Foundation and is now known as the TEAR Cancer Fund. This fund has provided hundreds of families whose dogs have cancer with financial assistance, and has also been used to partner with physicians at Karmanos Cancer Institute to study the correlation between feline breast cancer and breast cancer in women. Thanks to Michelle Sauerbrey for her contributions to both our veterinary community and the community at large.

SEMVMA received over 40 applications for the annual SEMVMA Technician Scholarships this year! This made the selection process quite challenging overall. There were so many thoughtful and wonderfully written statements about the important roles our veterinary technicians play in today's veterinary practice. As a profession, we



from LEFT to RIGHT are: Hannah Gubler (MCC, 2nd place), Megan Hauke (WCCC, 1st place), Jessica Gehrke (MCC, 3rd place), Dr. Tari Kern



Dr. Tracy Adams, recipient of the Outstanding Contribution to SEMVMA Award, Dr. Kathy Christy, and Dr. Michelle Sauerbrey, recipient of the Outstanding Contribution to the Community Award



Dr. Rick Nurse and Dr. Jim Wright enjoying good food and good company.

SEMVMA INSTALLATION DINNER

will be fortunate to welcome all of these applicants into our team in the near future. Nevertheless, we could only award 3 scholarships and the lucky SEMVMA Technician Scholarship recipients were:

1st place: Megan Hauke - Wayne Community College (\$1000 scholarship + free admission to all SEMVMA vet tech for the 2017-2018 cycle)

2nd place: Hannah Gubler - Macomb Community College (\$500 scholarship + free admission to all SEMVMA vet tech for the 2017-2018 cycle)

3rd place: Jessica Gehrke - Macomb Community College (Free admission to all SEMVMA vet tech for the 2017-2018 cycle).



*Mrs. Marlene Carron, Dr. Christian Ast
and Dr. Dave Carron*

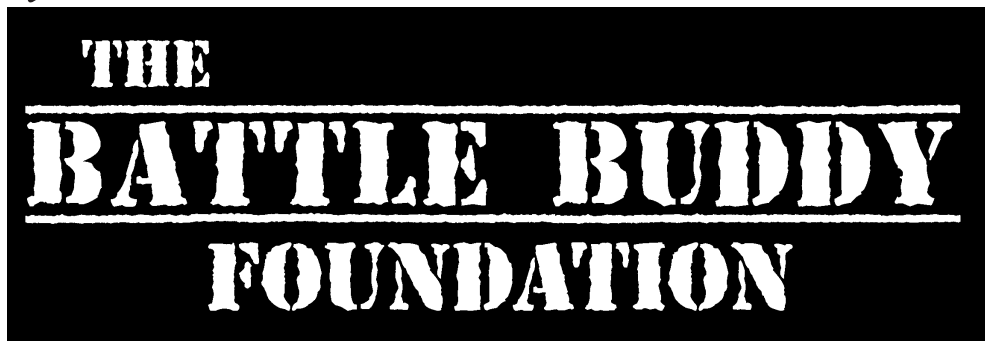


Drs. Tracy Adams, Jennifer Bartolucci and Lindsey Ramus



*Installation speaker, Dr. Janver Krehbiel and SEMVMA
president Dr. Tim Duncan*

Bowling for



SEMVMA hosted their 4th bowling fundraiser on Friday, March 3, 2017 at Drake's Lanes, to raise funds for The Battle Buddy Foundation. The Foundation provides trained service dogs to veterans suffering from PTSD at no charge to the veteran. Each service dog is trained for each individual's specific needs. The foundation covers the cost of veterinary care, travel costs, additional training and support for the dog's entire working life, which is around \$25,000 for each dog.

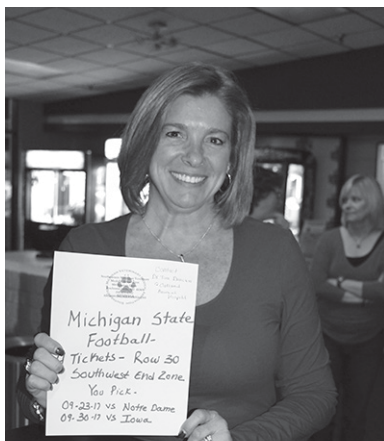
Our generous raffle gift sponsors were Faithful Companions (Four Detroit Tigers tickets), Idexx (\$100 Visa gift card), Oakland Animal Hospital (MSU football tickets), Merkel Furniture and Carpet One (\$75 gift certificate to Bravo restaurant), Premier Pet Supply-Livonia (Pet bed & assorted toys and treats), Tricho Salon & Spa Novi, and Bonaventure family skating center in Farmington Hills. A large thank you goes out to our lane sponsors - Animal Neurology and MRI Center, Belleville Animal Hospital, Exclusively Cats Veterinary Hospital, Oakland Animal Hospital, Oakland Hills Veterinary Hospital, and Pawsitive Steps Rehabilitation & Therapy for Pets.

Several of our bowlers were multiple raffle prize winners. We had 63 bowlers that helped raise \$1,981.58 for the Battle Buddy Foundation. SEMVMA wishes to thank the sponsors, bowlers, and volunteers for making this a successful event for a very worthy cause!



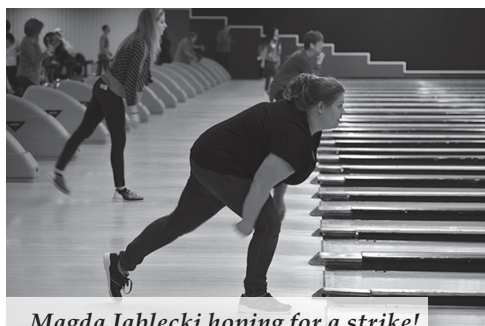


Donna Knies, winner of the Detroit Tigers ticket package



Michele Steinard (Plaza Veterinary Hospital), winner of the MSU football tickets, donated by Dr. Tim Duncan

Jessica Prieskorn with her son, Michael, winner of the virtual reality headset



Magda Jablecki hoping for a strike!



Kody Giummo is ready to roll at strike!



Dr. Kathy Christy, SEMVMA administrative secretary Barb Locricchio, and Dr. Dave Smith selling raffle and 50:50 tickets

Andrew Roth, 50:50 raffle winner, takes home \$195.00!



The ladies from Southpointe Veterinary Hospital.



The Plaza Veterinary Hospital crew with their family/friends.



Our generous SEMVMA sponsor, Faithful Companions, donated four Detroit Tiger tickets for a raffle prize. Thank you for helping the Battle Buddy Foundation!

THE LOW-DOWN ON LEPTOSPIROSIS

Melissa L. Holahan, DVM, DACVECC
Oakland Veterinary Referral Services, Bloomfield Hills, MI

Leptospirosis, a zoonotic disease of global significance, is caused by spirochetes of the genus *Leptospira*. Although incidence in the United States is relatively low, leptospirosis is considered to be the most widespread zoonotic disease in the world. Several pathogenic species exist; *Leptospira interrogans*, and *Leptospira kirschneri* (serovar Grippotyphosa) are the most common species and are further subdivided into serovars. While there are over 250 serovars, the pathogenic serovars infecting dogs in the US include: *Icterohaemorrhagiae*, *Canicola*, *Pomona*, *Bratislava*, *Grippotyphosa* and *Autumnalis*. *Icterohaemorrhagiae* and *Canicola* were previously the most common serovars, but more recently *Grippotyphosa*, *Pomona*, *Bratislava* & *Autumnalis* have emerged. Although serovar identification is of interest from an epidemiologic standpoint, clinical disease and treatment is similar for all serovars.

PREVALENCE

The prevalence of canine leptospirosis varies by region and season, and is considered an emerging infectious disease in humans as well as dogs. Geographic regional differences exist with temperate or tropical climates and locations with high rainfall having the highest prevalence. Approximately 100-200 human leptospirosis cases are identified annually in the US. While the incidence of leptospirosis in the US overall is 0.05 cases per 100,000 persons, the incidence in Hawaii is 12.8 cases per 100,000 persons. The most common locations for dogs include: Hawaii (over 50% of the infections), the west coast (northern California, Oregon, and Washington), the upper Midwest, Texas, Colorado, and the northeast and mid-Atlantic coastal regions. Results of one study in Michigan indicated that more than 20% of healthy, client-owned dogs had been exposed to *Leptospira* serovars. In another study, 8.2% of dogs were shedding pathogenic leptospires irrespective of health status. It is unknown what proportions of dogs with acute kidney injury have leptospirosis; however, given the high rate of exposure, leptospirosis should be considered in any dog presenting with acute renal abnormalities regardless of the dog's signalment, environment or geography.

Although serologic evidence of exposure of cats to leptospires exists (suspected due to rodent contact), clinical disease is rare and often mild. Recent literature verifies that cats do shed leptospires but their potential role in transmission is unknown. Seropositivity for *Leptospira* spp. was statistically higher in cats with kidney disease (14.9%) compared to healthy cats (7.2%) suggesting a possible role in the pathogenesis of feline kidney disease. The most common serovars detected were *Pomona* and *Bratislava*. Risk factors for seropositivity included outdoor and hunting lifestyles, the presence of another cat in the household, and the month of sampling (highest in June and August).

TRANSMISSION

Leptospira spp. is a highly motile, filamentous, spiral-shaped bacterium with hook-shaped ends that thrives in warm climates (~25°C or 77°F). The spirochete bacterium is an obligate aerobe that shares features of both gram-negative and gram-positive bacteria. Infected animal hosts shed spirochetes from their renal tubules into urine that subsequently contaminates the environment. Once shed in the urine, leptospirosis can survive in water, soil or mud for weeks to months. Susceptible animals and humans are most often infected through contact with contaminated water. Bacteria in the urine

enter through damaged skin or mucous membranes. Less common modes of transmission include: via bite wound, ingestion of infected tissue, and venereal or placental transfers. Risk factors for exposure include: stagnant water exposure (lakes, ponds, streams, etc.), roaming dogs (middle-aged male dogs), canine daycare facilities (direct contact with another dog's infected urine), urbanized wildlife, and rodent exposure. Outbreaks are more common in the fall and after a heavy rainfall. It was previously thought that Leptospirosis most commonly occurred in large-breed dogs with exposure to wetlands. However, the infection rate for small-breed dogs, in both urban and suburban areas (due to urbanized wildlife and rodent exposure) has increased in the U.S. over the past several years. Small dogs can contract leptospirosis by simply going outside in their own backyard and licking the ground, playing in a puddle or drinking from small pools of water where infected animals (raccoons, skunks, rodents, etc.) have urinated. This may be due to multiple factors including an increase in diagnosis, decrease in vaccination, global warming, and urban growth.

It is an occupational hazard for people who work outdoors or with animals, such as farmers, sewer workers, dairy farmers, veterinarians, animal caretakers, rice and sugarcane field workers, or military personnel. Approximately 15% of veterinarians and slaughterhouse workers show serologic evidence of infection. It is a recreational hazard for campers or participants of sports involving water or mud (i.e. adventure race, triathlon); infections have occurred from swimming, wading, rafting or flooding involving contaminated lakes and rivers.

Many diverse wild and domestic animals can be non-clinical carriers of the bacterium. These can include, but are not limited to: cattle (*L. pomona*), pigs (*L. pomona*), horses (*L. bratislava*), dogs (*L. canicola*), rodents (*L. icterohaemorrhagiae*), raccoons (*L. grippotyphosa*, *L. pomona* & *L. icterohaemorrhagiae*), and skunks (*L. grippotyphosa*, *L. pomona*). When these animals are infected, they may have no symptoms of the disease but continue to excrete the bacteria into the environment continuously or intermittently for months up to several years.

INCUBATION PERIOD & PATHOGENESIS

After penetrating the host, leptospires can replicate rapidly within one day of infection. This initiates the leptospiremic phase, which may last a few days and involves the rapid replication of the bacteria leading to endothelial damage. After this phase, tissue invasion occurs in the kidneys, liver, spleen, central nervous system, eyes and genital tract. The incubation period is typically four-to-seven days in dogs but is dependent on the virulence and dose of the organism, geographic location and host immunity.

The kidney is the most common site of colonization. *Leptospira* organisms persist and multiply in the tubular aspect of the renal tubular epithelial cells. Leptospires cause cytokine release and inflammatory cell recruitment, which leads to acute nephritis. A chronic carrier state can develop characterized by urine shedding for up to one month without treatment. The incidence of this carrier state is unknown. Hepatic injury is thought to occur through centrilobular necrosis and bile duct occlusion, which can account for icterus in some affected dogs. Acute endothelial damage results in tissue edema, vasculitis and disseminated intravascular coagulation. Uveitis, abortion and infertility can occur from natural and experimental infections. Meningitis with CNS involvement, and immune-mediated

diseases such as hemolytic anemia and polyarthritis, have been suspected but the true incidence in dogs is unknown.

CLINICAL SIGNS

Acute kidney injury (AKI) is the most commonly recognized sequelae in dogs, accounting for more than 90% of reported cases of leptospirosis. Hepatic disease occurs concurrently in 10%–20% of dogs with AKI but can also occur independently. Anorexia, lethargy, vomiting, diarrhea, polyuria and polydipsia are common signs. Icterus, fever, abdominal pain, muscle pain, uveitis, conjunctivitis, and coagulopathies occur as well but with less frequency. Coagulopathies may result from hepatic failure, vascular damage from spirochetes, or disseminated intravascular coagulation. Infected dogs may present with polyuria, oliguria or anuria. Small intestinal intussusception has been reported in five dogs with acute renal failure and suspected leptospirosis (*L. australis*). While pulmonary disease is uncommon, Leptospiral pulmonary hemorrhage syndrome leading to tachypnea, dyspnea and Acute Respiratory Distress Syndrome (ARDS) has been documented.

In humans, Leptospirosis can cause a wide range of symptoms, including: high fever, headache, chills, muscle aches, vomiting, jaundice, red eyes, abdominal pain, diarrhea and rash. Many of these symptoms can be mistaken for other diseases. In addition, some infected persons may have no symptoms at all. The time between a person's exposure to a contaminated source and becoming sick is two days to four weeks. Illness usually begins abruptly with fever and other symptoms. Leptospirosis may occur in two phases. Fever, chills, headache, muscle aches, vomiting, or diarrhea marks the first phase. The patient may recover for a time but become ill again. If a second phase occurs, it is more severe; the person may have kidney or liver failure or meningitis. This phase is referred to as Weil's disease. The illness lasts from a few days to three weeks or longer; without treatment, recovery may take several months.

CLINICOPATHOLOGIC FINDINGS & DIAGNOSTIC IMAGING

Azotemia, increased liver enzymes, hyperbilirubinemia and electrolyte disturbances are the most common biochemical changes. Leukocytosis characterized by mild-moderate neutrophilia, anemia and thrombocytopenia are the most common findings on the complete blood count (CBC). Coagulation abnormalities, including prolongation of prothrombin time (PT) and partial thromboplastin time (PTT), are not uncommon. Isosthenuria and markers of acute tubular injury—including glucosuria, granular casts and low-grade proteinuria—are often present on urinalysis. A urine culture is advisable to rule out cystitis/pyelonephritis as a potential cause.

Thoracic radiographs are recommended as a baseline and should be considered to identify concurrent conditions such as aspiration pneumonia (secondary to vomiting), pulmonary hemorrhage, or pulmonary edema (in patients with anuria). Characteristic changes on abdominal ultrasound (hyperechoic renal cortices) have been documented in patients with leptospirosis but should be interpreted in lieu of the clinical picture. Many dogs with acute kidney injury may also have concurrent pancreatitis; therefore further testing should be pursued if indicated.

OVERVIEW OF CONFIRMATORY TESTING OPTIONS

Serologic tests detect antibodies to *Leptospira* spp. The serologic methods available consist of fluorescent antibody, and microscopic and macroscopic agglutination tests. The lipoprotein LipL32 is the most abundant outer membrane protein found in pathogenic

species of *Leptospira*. An enzyme-linked immunosorbent assay (ELISA) for the detection of LipL32 antibodies in the serum of dogs is now available from IDEXX Reference Laboratories. The lower cost and rapid results afforded by the ELISA allows for increased screening to ensure adequate precautions when handling dogs with a zoonotic disease, and administration of therapy in a prompt manner. The new Canine *Leptospira* spp. Antibody by ELISA from IDEXX Reference Laboratories will provide a qualitative positive or negative antibody result. Similar to microscopic agglutination testing, some currently vaccinated dogs may have detectable antibodies on the assay. Duration of vaccine antibody reactivity may vary depending upon the dog and frequency of vaccination. Results can be reported with a same day turn around time.

Detection of antibodies using the microscopic agglutination test (MAT) has been the most common diagnostic method used for the diagnosis of canine leptospirosis. However the MAT serologic test lacks both sensitivity (negative results early in disease) and specificity (vaccination with commercially available leptospirosis vaccines will produce detectable MAT titers. A positive titer is typically not seen until seven-ten days after clinical disease appears, therefore the preferable testing method is to obtain an initial baseline sample at the time leptospirosis is suspected and then a convalescent titer one to two weeks later to confirm infection. The results of the MAT test can also vary dramatically between laboratories. Use of a laboratory with a high level of quality control is recommended, or a laboratory that participates in the International Leptospirosis Society's proficiency testing scheme. Results are reported in three to five working days.

Polymerase chain reaction (PCR) tests detect *Leptospira* spp. DNA. Whole blood (2mLs in EDTA tube; refrigerated) and urine (2mLs in a sterile container; refrigerated) are tested simultaneously to allow for diagnosis of sick animals in the early stages of infection and for the detection of urinary shedding in those sick animals. PCR assays are best performed on blood and urine concurrently. PCR on blood will be positive early in infection, usually prior to seroconversion. Urinary shedding and thus a positive PCR begins seven to ten days after the onset of infection, at which time DNA evidence of leptospires may or may not be detected in the blood. A negative PCR does not rule out disease. The sensitivity of PCR assays is still not well established, and does not provide accurate information about the infecting serovar. There is some anecdotal evidence that PCR may be insensitive for the diagnosis of canine leptospirosis, but the sensitivity and specificity may vary geographically depending on the serovars present and shedding patterns that occur for those serovars. Recent vaccination does not appear to interfere with the use of real-time PCR for the identification of acute *Leptospira* infection in dogs. Results are reported in one to three working days. A multimodal approach to diagnostic testing for leptospirosis that includes serology (acute and convalescent titers) and PCR (blood and urine samples) is recommended.

Other diagnostic testing options are available for leptospirosis but are not commonly performed due to low yield. Darkfield microscopy of the urine is no longer recommended as sole test for diagnosis because of the large number of false positives and false negatives. Silver staining and fluorescent antibody or immunoperoxidase staining of tissue specimens can also yield false negatives, and does not help identify the infecting serovar. Culture is difficult because of the fastidious growth requirements of leptospires and the need for specialized media, but is the only way to truly identify an infecting serovar. Cultures must be incubated for several weeks. Repeated sampling may be required due to intermittent shedding.

CONFIRMING DIAGNOSIS

The diagnosis of canine leptospirosis can be complicated and challenging. The new canine *Leptospira* spp. antibody test by ELISA (IDEXX Laboratories Inc., Westbrook, ME) provides early additional information when performing this complex diagnostic workup. Results should be interpreted in the context of clinical signs, physical examination findings, vaccination history and preliminary blood work and urinalysis. A positive PCR confirms infection though a negative PCR does not rule out disease. In general, when interpreting leptospirosis titers (MAT) the following holds true: cross-reactivity can occur between serovars (therefore positive titers can be seen to multiple serovars), the highest serovar is considered to be the infective serovar, and a four-fold increase in titers between acute and convalescent samples supports recent infection (titers may be blunted by antimicrobial therapy). A positive titer means antibodies and thus exposure, but not necessarily disease. Vaccination titers are generally low (1:100 to 1:400), compared to active infection, but, MAT titers $\geq 1:800$ can develop after *Leptospira* vaccination, which can complicate the clinical diagnosis of leptospirosis. Still, as with any infectious serology, changing titers (increasing in acute disease) help determine the accuracy of the diagnosis. Thus stressing the importance of both acute and convalescent phase (7-14 days after acute sample) titers to aid in diagnosis. For the most comprehensive diagnostic workup, it is important to consider both serology (ELISA & MAT) and PCR when a patient presents with symptoms consistent with leptospirosis.

TREATMENT

With early recognition and appropriate treatment (particularly early antibiotic administration), the survival rate for dogs with acute kidney disease is approximately 80%. For dogs presenting with acute kidney injury, treatment largely includes supportive therapy with intravenous fluids. Fluid therapy should be directed towards replacing the patient's deficit, supporting diuresis and replacing ongoing losses. Electrolyte disturbances and acid-base abnormalities should be rapidly corrected. Most dogs with leptospirosis are polyuric early in disease; however, urinary output should be closely monitored. In severe cases, especially if oliguria or anuria develops, referral for diuretic therapy and potential hemodialysis should be considered.

Early antibiotic therapy is the key to specifically treating leptospirosis. When leptospirosis is suspected, antibiotics should be initiated as soon as possible after diagnostic samples have been collected, prior to confirmation of diagnosis. Doxycycline (Pfizer Inc, New York, NY; 5mg/kg administered orally q12hrs) or penicillin and its derivatives (i.e., Ampicillin [22mg/kg intravenously q8 hrs] or amoxicillin [orally]; Pfizer Inc, New York, NY) are the antibiotics of choice for initial treatment. The author elects Unasyn® (ampicillin sodium/sulbactam sodium; Pfizer Inc, New York, NY) [30mg/kg intravenously q8 hrs] in the initial treatment phase to cover for leptospirosis and potential pyelonephritis.

All of these drugs will terminate leptospiremia within 24 hours, which, in turn, prevents urinary shedding and transmission of the organism, significantly decreasing the risk of zoonotic transfer. Barrier nursing and infection control with appropriate isolation from hospitalized patients should be performed in the first 24 to 48 hours of treatment. To clear renal infections and eliminate the carrier state/chronic shedding, doxycycline is the optimal drug of choice. A two to three-week course should be recommended once oral medication is achievable. If doxycycline is not well tolerated, a fluoroquinolone can be administered with a penicillin derivative. The author advocates two weeks of Clavamox® (Pfizer Inc, New York, NY)/Amoxicillin followed by two weeks of Doxycycline in confirmed leptospirosis cases.

PREVENTION

The incidence of leptospirosis infections can be limited with appropriate rodent control and vaccination. Controlling rodent populations and exposure to rodents can greatly decrease the risk of acquiring

leptospirosis. Vaccination is particularly important as we can help prevent this highly infectious and often life-threatening disease. The vaccine does not provide 100% protection as there are over 250 serovars, and the vaccine does not provide immunity against all possible strains. Today, the majority of leptospirosis vaccines protect against four serovars: Canicola, Grippotyphosa, Icterohaemorrhagiae, and Pomona. Puppies can begin vaccination series at eight weeks of age with a subsequent booster administered two-to-four weeks later. Annual vaccination is needed for continued protection. Vaccine failure appears to be rare with the current four-serovar vaccines. It is important to continue annual vaccination even after a pet recovers from leptospirosis because natural immunity appears to last the same duration as vaccination and dogs can become infected with a different strain. *Leptospira* bacterins have been associated with occasional, acute, severe allergic reactions, but the incidence of these reactions has decreased dramatically in recent years, and reaction rates appear to be approaching those of distemper-hepatitis-parvovirus vaccines, even in small-breed dogs. In a recent study, the quadrivalent leptospiral vaccine was no more reactive than other bacterin-based vaccines (ex. Lyme vaccine).

Veterinarians should be strongly encouraged to discuss options for prevention with pet owners to significantly decrease their pet's risk of contracting leptospirosis. It is advised that clients should be educated on the risks of vaccine allergic reactions, which are rare and often mild, compared to the benefits of this affordable means of disease prevention. Given the low incidence of adverse reactions, routine pre-treatment with antihistamines or glucocorticoids is not recommended. This strategy should be reserved for cases previously demonstrating hypersensitivity reactions, or high-risk cases (e.g. pugs and dachshunds). Veterinarians should encourage their clients to schedule these vaccinations earlier in the day so the pet can be observed throughout the day.

ZOONOTIC CONSIDERATIONS

About 75% of recently emerging infectious diseases affecting humans are diseases of animal origin, and approximately 60% of all human pathogens are zoonotic. Urinary shedding of leptospires poses a zoonotic risk to dog owners and veterinary hospital staff. Urine from infected dogs can infect humans if it comes in contact with mucosal surfaces or a break in the epidermal barrier. One study evaluating 500 dogs used PCR on urine to detect shed leptospires. The results revealed that, irrespective of health status, 8.2% of dogs were shedding pathogenic leptospires. Identifying dogs shedding leptospires allows veterinarians, their staff and the pet owner to take appropriate precautions (barrier nursing e.g., latex gloves, face mask, water-resistant gown and shoe covers) when handling the dog's urine and entering urine-contaminated areas. Barrier nursing and infection control with appropriate isolation from other hospitalized patients should be performed during the first 24 to 48 hours.

In addition, the follow the below prevention guidelines: Do not handle or come in contact with urine, blood, or tissues from an infected pet before it has received proper treatment. If you need to have contact with animal tissues or urine, practice appropriate barrier nursing, especially if you are occupationally at risk (veterinarians, veterinary technicians, farm and sewer workers). Pet owners should be advised to wear gloves or wash your hands after handling their pet or anything that might have their pet's excrement on it. If you are cleaning surfaces that may be contaminated or have urine from an infected pet on them, use an antibacterial cleaning solution or a solution of 1 part household bleach in 10 parts water. The Centers for Disease Control and Prevention does not currently collect data on dogs, although the information may be reportable in animals in some states (i.e. Michigan, Wisconsin, Ohio, Indiana, etc.).

REFERENCES AVAILABLE UPON REQUEST.

Keywords: acute kidney injury, hepatic disease, infection control, leptospirosis, zoonotic disease



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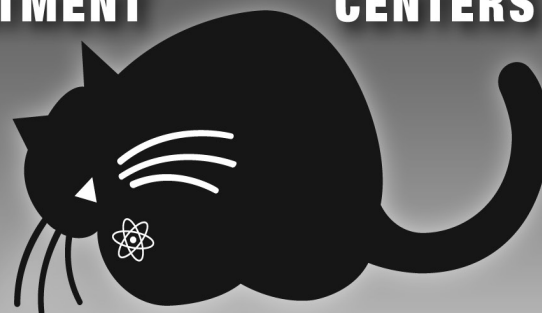
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NEWSLETTER ADVERTISEMENT POLICY

In order to preserve the educational and informative purpose of the SEMVMA newsletter, the SEMVMA council adopts the following policy regarding advertising. Ads should be submitted to Barb at adminsevmma@sevmma.com

Practices or businesses with a common owner shall be treated as one business or practice for the purpose of this policy (referred to as "Common Owner Business or Practice"). A common owner is a person or entity which owns 5% or more of an entity or practice. Shareholders or sole proprietors of an entity or practice shall be considered an owner along with the entity that holds an interest in the business or practice.

Corporate ¼ page ads are limited to one business, owner or corporation for each issue of the SEMVMA newsletter. This is in the interest of having the newsletter inform the association and not overwhelm them with ads. The SEMVMA council may modify or waive the application of this policy on a case by case basis at the discretion of the council.

Ads will run only once unless a request is submitted to the Administrative Secretary to run longer. Classified ads are \$15 for 60 words or less and \$25 for 61–100 words. Corporate ¼ page ads are \$135 per issue or \$500 for four issues. Payment is due at the time of the initial ad placement.

SEMVMA Members interested in providing Relief Veterinary Services can advertise in the newsletter at no charge. The classified ads must follow the same guidelines regarding number of words and deadline restrictions as all other classified ads. If you are a SEMVMA member interested in placing a classified ad, please contact Barb at 888-SEMVMA-5 or www.adminsevmma@sevmma.com.

Newsletters are published quarterly: on March 15th, June 15th, December 15th and December 15th. All ads should be submitted to the SEMVMA office by the 15th of the month preceding publication.



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SEMVMA 2017 Business Management Seminar

Featuring Ernie Ward, DVM

Presented by:



WHEN:
Wed., April 26, 2017
9 am to 5 pm
8:30 am sign-in and
continental breakfast

WHERE:
Management Education
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SCHEDULE:

Innovating the First Year: The 9-month Pet Visit

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Five Physical Exam Hacks to Improve Diagnostic Accuracy & Communication Effectiveness

The physical exam is the foundation of veterinary medicine and is perhaps the most important service we provide. The physical examination is also becoming a lost art as high-tech replaces touch, feel, and talk. Dr. Ward reveals why the physical examination is more important than ever before and five hacks to improve and enhance your hospital's expertise and compliance.

Five Ways to make your Clinic Happier, Healthier & More Productive

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REGISTRATION: \$200 for SEMVMA members & member practice staff, \$250 for non-members, *registration fee includes continental breakfast and lunch*. Registration deadline is Wednesday, April 12, 2017. Same day registration will be an additional \$25.

ADDITION INFORMATION:

For additional information call SEMVMA office, (248) 651-6332.

ABOUT THE SPEAKER:



Dr Ernie Ward is an internationally recognized veterinarian known for his work in the areas of general small animal practice, long-term medication monitoring, special needs of senior dogs and cats and pet obesity. He has authored three books, has been a frequent guest on numerous television programs and served as the resident veterinarian for the "Rachel Ray Show" for over seven years.

Dr Ward has authored and been featured in more than 100 practice management and medical journal articles. He was awarded the Speaker of the Year award for both the North American Veterinary Conference and Western Veterinary Conference and has spoken at every major North American veterinary conference as well as in

Europe, South America, and China, and has been a guest lecturer at most US veterinary schools. He established the Association for Pet Obesity Prevention in 2005 and is a founding member of VetPartners and the International Veterinary Senior Care Society.

SEMVMA 2017 Business Management Seminar

Registration Form

Date: Wednesday, April 26, 2017

Location: Business Education Center, 811 W. Square Lake Rd., Troy, MI (www.mectroy.com).

Sign-in and continental breakfast start at 8:30 am. Seminar begins at 9 am. Registration fee includes continental breakfast and lunch. Early registration is strongly suggested as seating is limited to 80 attendees. Payment is required prior to attending seminar. Registration deadline is April 12, 2017.

Registration Fees:

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____ Non-Members \$250

____ Same day registration = additional \$25

Total Enclosed \$ _____

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