The Corner Informer

The Newsletter of The Southeastern Michigan Veterinary Medical Association

Volume 25 Issue 1 March 2019

Our President's Address

The Membership Celebration Dinner opened 2019, which promises to be a great year of fellowship and CE. The remainder of our current season of CE are Anesthesia and Pain Management for veterinarians and an evening of the same for technicians. You will be pleasantly surprised (spoiler alert) to find out that our well received guest speaker from the Membership Dinner, Dr Jenifer Chatfield, will be returning in the 2019-2020 session to present a full day seminar on Zoonotic and Emerging Diseases.

Dave Smith

I would like to thank our Past President, Dr. Norman Bayne for his dedication and leadership for 2018. Norm kept the council on point and ran each meeting with efficiency. I would also like to thank our Secretary, Barb Locricchio, who works behind the scenes to make our organization run very smoothly. You may not realize that the council members meet regularly not only to plan CE, but to coordinate the function of this organization. This assures that we are financially viable, have a continuity plan and provide for an organizational structure with outreach to the MVMA. It certainly takes the entire council, working together, to make it work. I am proud to have the opportunity to be President of such a strong and respected professional organization with fellow veterinarians committed to educational excellence and community.

Lastly, I'd like to encourage all of us to be mindful of our young and future veterinarians. I think we are all realizing that there are stressors in place now that did not seem to exist during our early years in the profession. Consider mentoring, guiding and offering externships to those with an interest in our profession. It will be a win: win situation for all of us. Additionally, I would like to encourage you to consider attending the Practice Management Seminar in May by Dr. Pope-Robinson regarding well-being in the veterinary community. It should benefit us individually and collectively to understand the struggle that many veterinarians have in career contentment, balance, challenges and connections.

–Dave

Southeastern Michigan Veterinary Medical Association

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SEMVMA Veterinary Continuing Education Program

03/27/2019 – Dr. Tamara Grubb: Anesthesia & Pain Management
Sponsored by Aratana Therapeutics

10/23/2019 – Dr. Jennifer Chatfield: Zoonotic & Emerging Diseases

02/05/2020 – Dr. Stephan Carey: Respiratory

Sign-in for the conference begins at 8:15 am, with the seminar beginning at 9:00 am. Continental breakfast and full lunch are included. The seminars will conclude at 5:00 pm.

SEMVMA Technician Continuing Education Program

03/27/2019 – Dr. Tamara Grubb: Anesthesia & Analgesia Overview

Sign-in and dinner for the conference begins at 5:45 pm with the seminar starting at 6:30 pm. The seminars will conclude at 8:30 pm.

For each SEMVMA member in your practice, one technician or staff member can attend each of the seminars at no expense. The cost for additional staff members or for the staff of non-SEMVMA members is our regular charge of $35. You must RSVP to ensure a meal and proceedings.

Seminars will be held at the Management Education Center

Management Education Center
811 West Square Lake Road
Troy, MI
(248) 879-2456
http://www.mectroy.com/

For more details, please visit our website at www.semvma.vet.

Mandatory Continuing Medical Education Has Now Become Law in Michigan

From the SEMVMA CE Committee
Lucy Shields Henney, DVM and chair of the SEMVMA CE Committee

Below is a summary of the new requirements and how they relate to the SEMVMA CE program.

For **Veterinarians**: Beginning in 2020, an applicant for a veterinarian license renewal who has held a license for 3 years should have earned 45 hours of continued education. This should be completed within the 3-year period immediately preceding the date of application. However, If your license expires in 2018 or 2019, you will not have to provide proof that you've attended Continued Medical Education (CME) when you renew. From then on, the Veterinarians will be required to complete 45 hours of CME every 3 years

What will be counted as approved CME:

Any of the following can be sources for CME:

· AAVSB Registry of Continuing Education (RACE). · American Veterinary Medical Association (AVMA). · World Veterinary Association (WVA). · Michigan Veterinary Medical Association (MVMA). · A state veterinary board of another state. · **Local, state, or regional professional organization.** · Member institution of the Association of the American Veterinary Medical Colleges (AAVMC). · AVMA constituent allied organizations and recognized veterinary specialty organizations. · Centers for Disease Control & Prevention (CDC).

Please note that the SEMVMA CE is considered a local profession organization therefore a certificate of attendance is sufficient and it does NOT need to be RACE approved.

A minimum of 30 hours of continuing education needs to be scientific in nature.

A minimum of 10 hours shall be completed live and in person.

Submission of an application for renewal constitutes the applicant's certification of compliance with the requirements of this rule. The department may require a licensee to submit evidence to demonstrate compliance with this rule. The licensee shall retain documentation of satisfying the requirements of this rule for a period of 4 years from the date of applying for license renewal.

If audited, the licensee shall submit a copy of a letter or certificate of completion showing the licensee's name, number of continuing education hours earned, the sponsor's name or the name organization that approved the activity, and the date on which the program was held or the activity completed.

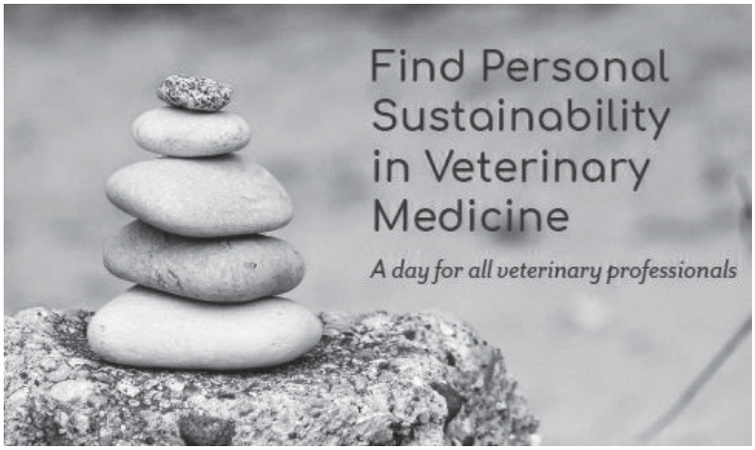
Specific Requirement for 1 hour related to medical records and 1 hour related to state veterinary law and/or federal or state controlled substance laws.

One of the new requirements that may be more difficult to obtain is 1 hour of CE on medical records and 1 hour of CE on state veterinary law and/or federal or state-controlled substance laws. The MVMA has provided an on-line course where you can fulfill this requirement. Sarah Babcock, DVM, JD created both a 1 and 2-hour Michigan-specific medical record keeping online training that satisfies the new CE requirements. These online courses can be taken at any time and are designed not only to fulfill the new requirements, but also to improve your efficiency at creating a legally defensible medical record, compliance with state, federal and other regulations, and strengthen client relationships. We believe the 2-hour course will satisfy both the medical record and veterinary law requirements. The MVMA is making this available in person at the Michigan Veterinary Conference in January and the Great Lakes Veterinary Conference in the summer. You can also access it online by visiting http://www.animalandveterinarylaw.com/courses

If you have specific questions or want more detailed information you can contact the MVMA office at 517-347-4710 or at mvma@michvma.org

Save These Dates! Upcoming Activities

May
1
2019



SEMVMA Practice Management Session

SEMVMA is pleased to present a wellness seminar for the entire veterinary team. Dr. Kimberly Pope-Robinson from 1 Life Connected will present a workshop designed to help each individual on his or her own personal journey to career resiliency.

This wellness program will look at:

- Finding balance between the negative and the positive
- Harnessing the core principles of connection
- Overcoming challenges with empathy and humor
- Recognizing, embracing, and connecting to life again

For more information, please see the flyer insert within this issue or visit our website to watch a video in which Dr. Pope-Robinson explains her seminar approach in her own words: https://www.semvma.vet/ce-special-events.pml

SEMVMA thanks Zomedica and Faithful Companions for their generous support, allowing us to make this seminar possible.

August
14
2019

26th Annual SEMVMA Golf Outing

at Tanglewood Golf Club in South Lyon.
Four person scramble - all proceeds benefit Leader Dogs for the Blind.

In Memorium

Dr. Alan Berger passed away April 7, 2018. Dr. Berger graduated from Michigan State University, College Veterinary Medicine in 1959. He joined the SEMVMA in 1960. Dr. Berger founded Macomb Veterinary Associates where he practiced for 40 years. Dr. Berger was a Life Member of the SEMVMA.

Dr. Morley Burns passed away June 11, 2018. Dr. Burns graduated from Michigan State University, College Veterinary Medicine in 1958 at which time he joined the SEMVMA.Dr. Burns owned and operated Burns Animal Hospital in Dearborn, MI before his retirement. Dr. Burns was a Life Member of the SEMVMA.

Membership Committee Report

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

Tahseen Syed, DVM (Hyderabad, India, CVM, 1970) Pet Doctor, P.C. Clinton Twp., MI

Beth Kimmitt, DVM (VMR, CVM, 2014) Veterinary Vision of Rochester, Rochester, MI

Nancy Flanagin, DVM (MSU, 1998) Ortonville Animal Hospital, Ortonville, MI

Sarah Sewick, DVM (U of Illinois, 2012) Sewick Veterinary Services, PLLC, Farmington Hills, MI

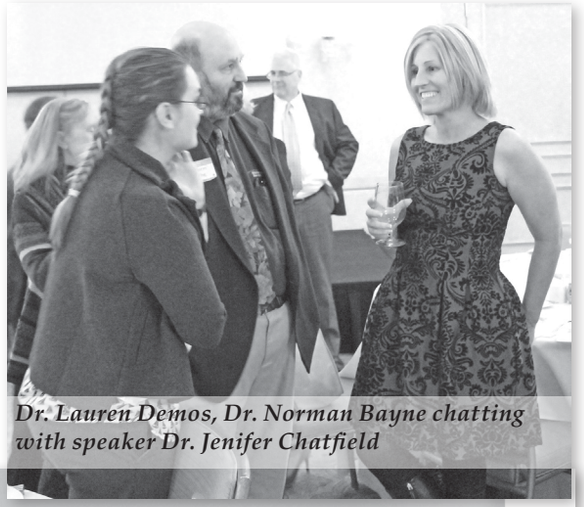
The 2019 membership committee is composed of 3 members: Nicole Grube, DVM (Chair) snikki1912@yahoo.com , Tim Duncan, DVM, Duncan@oaklandanimal.com and Tari Kern, DVM tkerndvm@yahoo.com. Please feel free to contact any of us if you have any questions. If you know of a veterinarian in the area who is not 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.

Membership Celebration Dinner

Our Membership Celebration Dinner was held January 9th at the Townsend Hotel. It was well attended and an exciting success. Dr. Jenifer Chatfield gave an engaging presentation on Rabies disease, its presentation at home and abroad, and an approach to control the disease in third world countries. Her presentation was sponsored by Merck. The Membership Celebration Dinner occurs each January to honor existing members, induct new members and install the newly elected council. All SEMVMA members and a guest are encouraged to attend at no charge. This is an excellent opportunity to meet other members on a social level or catch up with existing friends. The repeat sponsorship of the cocktail hour by Faithful Companion was truly appreciated.

Lifetime membership was awarded to Drs. Lance Adams and Dan Marshall. Dr Adams graduated from MSU in 1972 and has been a member since that time. He retired from Beverly Hills Veterinary Associates. Dr. Marshall graduated from the University of Illinois in 1982 and has been a member since 1993. He retired from Cats Veterinary Hospital. Dr. Steve Bailey received the 'Contribution to SEMVMA' award, which he humbly accepted. Karlene Belyea, MBA, also received our award for 'Contribution to SEMVMA.' Dr. Richard Walshaw, retired MSU professor and surgeon, received our award for 'Contribution to Clinical Practice.' Finally, we announced the Veterinary Technician Scholarship winners including first place - Glen McDonald (Macomb Community College), second place - Sade Williams (Baker College), and third place - Michelle Gosselin (Macomb Community College). We wish all recipients best of luck in the future.

Incoming President, Dave Smith, presenting the plaque to Past President Norman Bayne for a job well done.

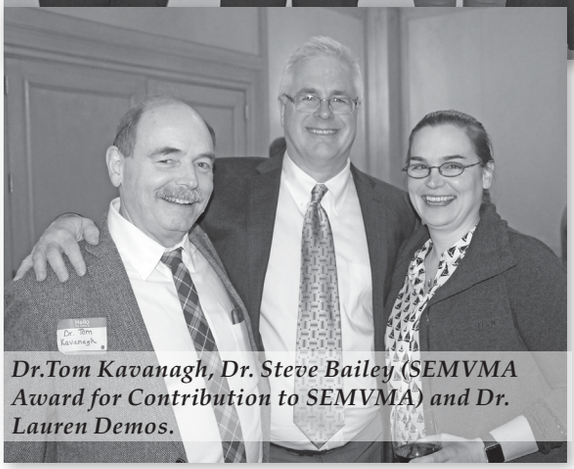


Dr. Lauren Demos, Dr. Norman Bayne chatting with speaker Dr. Jenifer Chatfield

President Dave Smith and new SEMVMA members, Kaitlin Lonc, Barbara Wright, and Jacklynn Holifield.

Dr. Tari Kern and the 2019 Veterinary Technician Scholarship winners, 1st - Glen McDonald from MCC, 2nd - Sade Williams from Baker, and 3rd - Michelle Gosselin from MCC.

Our speaker, Dr. Jenifer Chatfield discussing the worldwide problem of rabies.



Dr.Tom Kavanagh, Dr. Steve Bailey (SEMVMA Award for Contribution to SEMVMA) and Dr. Lauren Demos.

-2018 Academy Members-

Steve Bailey, DVM, DABVP – Exclusively Cats Veterinary Hospital
Michelle Carter, DVM – LaFond Veterinary Hospital
Grace Chang, DVM – Southfield Veterinary Hospital
Kathy Christy, DVM – Oakland Hills Veterinary Hospital
Jill Crisp, DVM – VCA Beech Road Animal Hospital
Lauren Demos, BVMS, honsBSc - Exclusively Cats Veterinary Hospital
Melissa Doolin, DVM – Serenity Animal Hospital
Judy Duderstadt, DVM – Cahill Veterinary Hospital
Ashley Elzerman, DVM, MS – Oakland Veterinary Referral Services
Marj Field, DVM – Furever Friends Veterinary Services
Tari Kern, DVM, CCRP, CVMA, CVSMT – Pawsitive Steps Rehabilitation & Therapy for Pets
Laura Kulinski-Masell, DVM – Levan Road Animal Hospital
Molly Lynch, DVM – Ann Arbor Cat Clinic
Michelle Meyer, DVM – Serenity Animal Hospital
Karen Michalski, DVM – Serenity Animal Hospital
Shelby Motoligin, DVM – Animal Emergency Center
Kathleen Murphy, DVM – Nucci Veterinary Hospital
John S. Parker, DVM – Briarpointe Veterinary Hospital
Julie Sherman, DVM – Serenity Animal Hospital
Dave Smith, DVM – Leader Dogs for The Blind
Sandy Smith, DVM – Animal Health Clinic of Fenton
Emily Socks, DVM – Oakland Hills Veterinary Hospital
Stephen Steep, DVM – Oxford Veterinary Hospital
Kelly Wilson, DVM – Leader Dogs for The Blind

OLD DOGS & NEW TRICKS: AFFORDABLE DRUGS EVERYONE SHOULD KEEP ON HAND IN 2019

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

New medications, gizmos and gadgets are being introduced into veterinary practice on a daily basis. In addition to these new discoveries, novel uses for established medications are frequently being updated as new research is presented. While the evidence for some of these products is linked to their novelty, clinical recommendations are based on experience and reports from company representatives. Clinicians should be critically reviewing the evidence published on these emerging therapies whenever available to determine efficacy and safety of their use.

Maropitant citrate (Cerenia®) Maropitant citrate (Cerenia®, Zoetis, Florham Park, NJ) is the only veterinary FDA-approved antiemetic for use in dogs (>8 weeks old) and cats (>16 weeks old). Maropitant is a neurokinin-1 (NK1) receptor antagonist that acts in the central nervous system by inhibiting Substance P, the key neurotransmitter involved in vomiting. Maropitant is a potent anti-emetic that suppresses both peripheral & centrally mediated emesis. It has also been shown to lower MAC requirements of sevoflurane and reduce visceral pain in dogs (although it should not be used as a single agent analgesic at this time). In patients with potential gastrointestinal obstructions that are awaiting diagnostic testing, Maropitant does not affect gastric emptying times or intestinal transit times. Until recently only the subcutaneous (SC) injection was FDA-approved for the prevention & treatment of acute vomiting (dogs) and for the treatment of vomiting (cats).
In January 2016, Zoetis received approval from the FDA for the intravenous (IV) use of injectable Maropitant in both dogs (> 16 weeks old) and cats (> 4 weeks old). Maropitant can be administered intravenously over 1-2 minutes or subcutaneously at 1 mg/kg of body weight once daily for up to 5 consecutive days. This FDA label update gives veterinarians the flexibility of delivery options and prevention of painful subcutaneous injections. In standard pharmacokinetic studies, IV injections are administered within a time frame of 1-2 minutes. The dogs and cats used in these safety studies were 16 weeks of age, thus the 16 weeks of age and older language on the label. The study was also originally conducted for 5 consecutive days (at up to 3x the label dose of 1mg/kg IV). Therefore, the label recommendations come directly from these study designs. The intravenous use of Maropitant may be safe to use in younger patients and for longer durations. However, until further studies are conducted this would be considered off-label use. The duration of onset is approximately 5 minutes (IV), 45 minutes (SC), and 2 hours (PO). This is important to keep in mind when choosing your route of administration. The IV route should be considered the standard of care for hospitalized patients, especially in those patients where the SC route may be contraindicated (patients with a coagulopathy or thrombocytopenia). A recent study (Marquez M, et al. PLoS ONE. 2015) compared Maropitant to morphine as a preanesthetic agent (administered 30 minutes prior to induction) for canine ovariohysterectomy and found that patients are more comfortable and return to feeding more quickly when Maropitant is prescribed prior to anesthesia for surgical and medical procedures. The effect of dosing interval on efficacy of maropitant for prevention of hydromorphone-induced vomiting and signs of nausea in dogs prior to elective surgery was evaluated by Dr. Hay Kraus. The most effective dosing interval to prevent nausea/vomiting was 60 minutes. When the oral effectiveness of Maropitant in preventing vomiting after hydromorphone administration in dogs was reviewed they found that it was 100% effective at preventing vomiting but not nausea (60% of dogs showed signs of nausea). At the author's hospital, Maropitant is administered intravenously (60 minutes) preoperatively in the majority of surgical patients (both selective and emergency surgeries). If Maropitant is given orally, it is administered two or more hours prior to the procedure. For selective procedures it may be more convenient to have the owner dose the patient the night before or morning of the surgery.

In addition to the updated label dosing on injectable Maropitant, the oral formulation is now approved (June 2015) for extended use (study periods up to 93 days were evaluated) in dogs (7 months of age and older) at 2 mg/kg body weight as long as needed once daily until resolution of acute vomiting. This is particularly

helpful for certain patient populations, such as those with chronic kidney disease, long-term chemotherapy protocols, and hospice care/palliative care patients.

Pantoprazole/Omeprazole (Prilosec) Gastric mucosal integrity can be compromised by a variety of mechanisms including gastrointestinal (GI) hypoperfusion, decreased gastrin secretion associated with renal failure, and administration of anti-inflammatory medications. In addition, conditions resulting in increased endogenous cortisol release including hyperadrenocorticism and persistent critical illness have the potential to induce gastritis. Gastroprotectant therapy has become almost universal in the critical care setting despite a lack of efficacy partly due to the largely benign nature of therapy. Traditionally, H2-receptor antagonists (Famotidine, Ranitidine, Cimetidine) were the first line of antacid therapy but current research has proven them to be largely ineffective. The recent literature indicates that twice-daily administration of proton pump inhibitors (PPIs) is more efficacious at reducing gastric acid production in cats and dogs; in fact it's the only regimen that has even approached the therapeutic efficacy for acid-related disease when assessed by criteria used for people. The increasing availability and declining price of an injectable PPI, pantoprazole sodium (Protonix® 1mg/kg IV Q12 hours; Wyeth Pharmaceuticals Inc., Philadelphia, PA) coupled with strong evidence in both human and veterinary patients have made PPIs the first-line agent for GI protection in dogs and cats. Omeprazole is also available over the counter (Prilosec OTC®; Procter & Gamble, Cincinnati, OH) and can be given at a dose of 1mg/kg PO Q12 hours (rounding up if needed). Based on current research, clients can safely use fractionated enteric-coated tablets (i.e. ¼ of a 20mg tablet) in cats for easy dosing. PPIs should be given approximately 30 minutes prior to a meal. In people, H2-receptor antagonists are administered at night in conjunction with PPIs to help minimize nocturnal acid breakthrough. However, further studies are warranted to determine effectiveness of this strategy in our veterinary species.

MEDIHONEY® Wound Products MEDIHONEY® is currently the leader in medical-grade honey products for the management of wounds and burns. The product is derived from the Leptospermum species of plant in New Zealand and has properties which are beneficial throughout all phases of wound healing. MEDIHONEY® offers a full line of dressing, gels and pastes to provide versatility for varying wound management needs. MEDIHONEY® is supported by over 180 publications of evidence demonstrating its clinical ability to promote the removal of necrotic tissue and advance a wound toward healing in people. In a randomized controlled trial, the mean healing time was significantly faster for wounds treated with MEDIHONEY® impregnated dressings when compared to conventional dressings. Factors that can affect wound healing include necrotic tissue, elevated pH which can alter the composition of wound exudates, and recurring physical trauma (i.e. pulling of a wet-to-dry bandage with both non-viable and healthy tissue attached). MEDIHONEY® helps to promote healing by providing the wound with a high osmolarity environment which in turn promotes a moist environment conducive to wound healing and autolytic debridement. MEDIHONEY® (with a pH of 3.5-4.5) helps lower the pH levels within the wound to promote healing. Recent studies evaluating MEDIHONEY® as compared to other "supermarket brands" of honey showed that MEDIHONEY® had in vitro efficacy against MRSA and A. baumannii. When using the other "supermarket brands" of honey all cultures showed bacterial and fungal growths. They concluded that the use of "supermarket brand" honey for wound treatment should be discouraged. While MEDIHONEY® likely has efficacy against veterinary infections with MRSA, MRSP, Pseudomonas, and other resistant bacterial infections, further studies evaluating these products in our veterinary population are warranted. However, our clinical experience with this product over the past year has been successful. It's important to evaluate the wound frequently during initial wound management to ensure there are no signs of secondary infections or poor wound healing. With experience, we have found that the MEDIHONEY dressings will leave a residue which should be gently removed with sterile flush and dried thoroughly before the next dressing application.

Handheld Lactate Meters (Point of Care Test) Identifying and correcting tissue hypoxia is a cornerstone of critical care medicine and is fundamentally important for successful treatment of the critically ill patient. Hypoxemia and hypoperfusion produce an anaerobic tissue environment, leading to the cellular production of lactate. A comprehensive understanding of lactate kinetics, appropriate sample handling, and pitfalls of testing are important for accurately interpreting results. Knowing the prognostic value of lactate in specific diseases, indications for timely application and serial monitoring is pivotal to critical care patient

management. Hyperlactatemia describes an elevated lactate concentration, while lactic acidosis is an elevated lactate concentration accompanied by acidemia. Most commonly, lactic acidosis is produced as a result of tissue hypoperfusion and hypoxia; however, lactic acidosis can also be a result of various drugs/toxins, mitochondrial defects, and disease states (sepsis). Lactate has been extensively researched in critically ill humans and veterinary patients and found to be useful in assessing severity of illness as well as response to resuscitation efforts. More recently, *serially monitoring of lactate* has become regularly utilized to monitor the effectiveness of therapy. With the addition of handheld point-of-care lactate analyzers, lactate testing is now easy, affordable and can be performed bedside. Lactate was previously only able to be measured on large laboratory blood gas analyzers, that required anaerobic, arterial samples; large sample volumes (100-200 microliters); and long analysis times (up to 2.5 minutes). In addition, these blood gas analyzers are complex to operate, fixed in location, and expensive to purchase and use. Handheld lactate analyzers provide a fast turnaround time (13 seconds), on the smallest whole blood sample (0.6 microliters), and can be easily operated by nursing staff. The introduction of affordable and readily accessible hand-held analyzers has made lactate measurement a valuable test in the assessment of a patient's hemodynamic status and response to therapy. Point-of-care (POC) lactate analyzers have been validated in dogs and cats. While there are several point-of-care lactate meters, care should be taken to research their accuracy prior to purchase. In one study, the Lactate Pro (Arkray Inc, Kyoto, Japan) had a high degree of agreement when compared with the gold standard laboratory critical care blood analyzer (NOVA). Common POC analyzers in veterinary medicine that include lactate are the i-Stat (Abbott Point of Care Inc., Princeton, NJ), Element POC (Heska, Loveland, CO), and Nova chemistry analyzers (Nova Biomedical, Waltham, MA).

In veterinary medicine, plasma lactate concentration has been a predictor of survival in gastric dilatation-volvulus, babesiosis, immune-mediated hemolytic anemia, severe sepsis/septic shock, critical illness and injured dogs. In addition to reflecting the severity of systemic hypoperfusion secondary to various disease states, lactate has also been evaluated as a diagnostic test in septic abdominal effusions, neoplastic abdominal effusions, pericardial fluid and in cats with arterial thromboembolism. Septic peritoneal fluid was found to have a higher lactate concentration than blood, and a fluid-to-blood lactate difference of >2.0 mmol/L (18 mg/dL) was found to be suggestive of septic peritonitis. Since the majority of these studies have evaluated dogs, further studies are warranted in cats to determine if plasma lactate measurements can be utilized as a diagnostic or prognostic biomarker.

New research described lactate concentrations collected during and immediately after cardiopulmonary resuscitation (CPR) in dogs and cats. Median lactate concentrations were 16 mmol/L (144 mg/dL) during CPR and 12.8 mmol/L (115.3 mg/dL) within 5 minutes of return of spontaneous circulation (ROSC). Hyperlactatemia ranging from 2 to 12 times the normal value was evident in all the samples evaluated in this study. Lactate concentration measured during CPR was not significantly different between patients that had ROSC (13.6 mmol/L; 122.5 mg/dL) compared to those that did not (17.5 mmol/L; 157.6 mg/dL). The therapeutic and prognostic relevance of lactate during CPR requires further research and may prove to be useful to guide patient management in the future.

Assessment of perfusion can be challenging in veterinary patients. In veterinary practice, mucous membrane color, capillary refill time, heart rate, pulse quality, body temperature, urinary output, bedside echocardiogram and central venous pressure (CVP) are commonly used to assess perfusion and volume status. In addition to physical exam findings and vital sign monitoring, some biochemical markers can serve as useful biomarkers of hypoperfusion. Lactate is one of the most commonly accepted of these biomarkers. Clinically, lactate measurement is a minimally invasive tool that is helpful in assessing perfusion in conjunction with these markers of hemodynamic status. Several recent studies in dogs with gastric dilatation and volvulus has shown that the ability of a patient to clear lactate is a better predictor of response to therapy and outcome than single measurements. Although lactate can be a predictor of outcome it is also useful in serial monitoring of critical ill patients. Occult hypoperfusion is characterized by an imbalance between tissue oxygen demand and oxygen delivery. When oxygen delivery is inadequate to maintain normal tissue oxygenation, anaerobic metabolism and subsequent lactic acidosis occur. The author most commonly utilizes serial lactate monitoring cage-side as a predictor of transfusion requirements in anemic patients (i.e. immune-mediated hemolytic

anemia patients and blunt trauma), serial evaluation in resuscitation efforts of trauma patients, supportive evidence for the diagnosis of aortic thromboembolic in dogs and cats, and septic abdomens in dogs. We are currently utilizing the StatStrip Lactate analyzer (Nova Biomedical, Waltham, MA) and Elemental POC (Heska, Loveland, CO) in our in-house laboratory. Handheld lactate analyzers are a cost effective device that is practical and affordable in any size ER, ICU, or surgical unit.

Redi-Heal Wound Dressing Imagine treating wounds with cotton candy-like glass fibers that simultaneously slow bleeding, fight bacteria and other sources of infection, stimulate the body's natural healing mechanisms, resist scarring, and because they are quickly absorbed by surrounding tissue, will never have to be removed in follow-up care. RediHeal Wound Care is a borate-based biological glass that contains trace elements to promote a strong angiogenic response. The borate glass reacts with the body's fluids quickly, releasing elements that stimulate the body to generate new blood vessels. This improves the blood supply to the wound, allowing the body's normal healing processes to take over. RediHeal Wound Care can be used with the most difficult wounds that veterinarians face. Decubitus ulcers, hot spots, abscesses and trauma injuries are just a few applications where RediHeal has found success where other products have failed. RediHeal is effective at treating the following conditions: acute moist dermatitis (hot spots), aural lick dermatitis, feline idiopathic ulcerative dermatosis, dermonecrotic lesions, chronic staph infections, tail tip trauma, traumatic injuries, and much more. The product does not require removal, however in the author's experience a small amount may be flushed out during wound treatments and reapplied every two to three days as needed.

Trazodone Trazodone is an antidepressant of the serotonin antagonist and reuptake inhibitor (SARI) class with a long track record of safe use in humans for the treatment of anxiety, depression, and to facilitate sleep, particularly in combination with selective serotonin reuptake inhibitors (SSRIs). In mammals tested, trazodone has a wide safety range. To date, the LD50 in dogs has not been determined, however is as high as 500mg/kg in mice, rats and rabbits. Trazodone has minimal if any effect on seizure threshold. In its generic formulation, trazodone is widely prescribed. In dogs, trazodone has been used in the treatment of anxiety disorders, alone or in combination with other behavioral medications. It is commonly used in dogs as an anti-anxiety agent with great success, particularly in intensive care situations. The drug enhanced behavioral calmness and reduced anxiety thereby improving patient welfare with few side effects. In a retrospective study of 56 dogs evaluating trazodone as an adjunctive treatment for anxiety disorders, it was found to be well tolerated over a wide dose range and enhanced behavioral calming. A recent single dose pharmacokinetic study of trazodone in six dogs, found that when given orally, trazodone produced mild sedation with no observable side effects. These characteristics make trazodone an ideal agent to decrease anxiety, agitation, and distress associated with confinement in post-surgical dogs. A pilot study done on dogs prescribed trazodone at a dosage range of ~3.5–7 mg/kg q12hr (up to 8-10mg/kg was permitted) following orthopedic surgery. All dogs remained on the medication for a minimum of 4 weeks after surgery. No adverse effects were reported by any client, and no dogs were taken off of the medication due to any complications. Eighty-eight percent (88.2%) felt that the medication was helpful for their dog, while the other eleven percent (11.2%) felt it was helpful after an increase in the initial dosage. In one study, the owner-reported median onset of action of trazodone was 31 to 45 minutes, and median duration of action was ≥ 4 hours which seems to correlate with what we see clinically. Based on these results, and a number of recent publications trazodone has been used extensively in our hospital for the purpose of facilitating post-surgical confinement and to reduce hospital-associated anxiety in dogs. Trazodone has also been clinically shown to be successful in the medical treatment of collapsing trachea, especially during hospitalization. The dose range used at our hospital is 3-8mg/kg PO q8hrs as needed. It is safe to use in conjunction with tramadol, non-steroidal therapy and opioid analgesia. In people, trazodone can potentiate cardiac arrhythmias and therefore should be avoided in patients with known arrhythmias. Trazodone is primarily metabolized by the liver and should be avoided in patients with end-stage liver disease.

Trazodone can be used safely and effectively used with many other adjunct therapies to help reduce anxiety in cats and dogs. In our hospital we will use Trazodone in conjunction with a quiet environment, pheromone therapy (Adaptil and Feliway spray), Thundershirts, ThunderCaps, and classical music for dogs and cats (Music thru a dog's ear; Music thru a cat's ear). These adjust therapies can be used in the hospital environment and at home, especially for the separation anxiety patients.

Vasopressin *Cardiopulmonary Resuscitation:* Compared to epinephrine, vasopressin (AVP) has several advantages. The vasopressor effects are non-adrenergic and mediated through the peripheral V1 receptors located on vascular smooth muscle. This mechanism of action is completely independent of the α1 effects of epinephrine. Unlike α1 receptors, V1 receptors remain responsive in the face of acidosis or hypoxia, and AVP has no inotropic or chronotropic effects that could worsen myocardial ischemia. AVP has the further advantage of eliciting less pronounced vasoconstriction in the coronary and cerebral vascular regions. Consequently, it is suggested as an alternative to epinephrine during CPR. Studies using a variety of animal models have demonstrated improved cerebral and coronary blood flow, neurological function, and higher rates of ROSC when AVP is used in place of epinephrine. While studies in humans have suggested a possible advantage of vasopressin during resuscitation this has only held true of certain subgroups of patients, particularly those with asystole, prolonged CPA, or with CPA secondary to hypovolemia. There is limited evidence suggesting a benefit of vasopressin when compared to epinephrine in dogs and cats undergoing CPA. Currently, there are three veterinary studies evaluating the use of vasopressin. A single case report documented the use of vasopressin in a dog being successfully resuscitated from CPA. A retrospective study by Hofmeister suggested a survival advantage in dogs receiving vasopressin in comparison to epinephrine. Of dogs undergoing CPR, only 8 received vasopressin, 5 of which survived. It is difficult to deduct any strong evidence for its use based on the small population size. Recently, a prospective pilot study evaluating the use of vasopressin during spontaneously occurring CPA in sixty dogs has been published. Dogs with CPA were randomized to receive low-dose epinephrine (0.01–0.02mg/kg) or vasopressin (0.5–1 U/kg) in a blinded fashion. There was no significant difference between vasopressin and epinephrine in ROSC at 6 minutes. Although a large portion of the dogs in the vasopressin group received less than the recommended dose (0.8U/kg IV) this study supports that AVP was at least equivalent to epinephrine in its ability to aid in the return of spontaneous circulation. This recommendation has been extended to the treatment of CPA in dogs and cats in the 2012 Reassessment Campaign on Veterinary Resuscitation (RECOVER). **The use of vasopressin (0.8 U/kg IV) as a substitute or in combination with epinephrine every 3–5 minutes may be considered (IIb-B) as a reasonable intervention during CPR.** If venous access is not obtainable, intratracheal administration of vasopressin may be considered. No information on vasopressin use in CPR exists in cats.

Vasodilatory Shock/Septic Shock: Vasopressin deficiency plays an important role in animals with vasoplegia secondary to sepsis, prolonged hemorrhagic shock, or cardiac arrest. Initially, during the compensatory phase of shock, AVP levels are significantly elevated. During the later phases of shock vasopressin levels are diminished secondary to degradation and exhaustion of vasopressin stores. This biphasic response seen with vasodilatory shock is secondary to the slow recovery time of vasopressin, which can take one to two hours to resynthesize. At this time, strong support for vasopressin as a first-line therapy for vasodilatory shock is lacking. However, vasopressin can play an adjunct role in animals with 'catecholamine-resistant vasodilatory shock', characterized by refractory hypotension despite intravascular fluid resuscitation and catecholamine administration (dobutamine, phenylephrine, norepinephrine, or epinephrine). Vasopressin has non-adrenergic mediated direct and indirect effects on arterial smooth muscle. In vitro, AVP is a more potent vasoconstrictor than angiotensin II, norepinephrine, or phenylephrine, and it has been shown to enhance the sensitivity of the vascular endothelium thus potentiating other vasopressor agents. Patients can be subsequently weaned off of catecholamine support by the addition of vasopressin therapy. The canine dose has been extrapolated from human medicine (0.5 to 2 mU/kg/min intravenously) and should be titrated to achieve normotension (MAP > 70 mmHg) and heart rate < 140 beats/min. A case series of vasopressin use for dopamine-resistant hypotension and vasodilatory shock in dogs showed an increase in MAP after AVP (0.5–1.25 mU/kg/min). Three of the five dogs achieved normotension at a dose < 0.6 mU/kg/min (onset of activity within 15 minutes). The dose in cats is unknown but the author has used low-dose AVP to achieve normotension with success.

HemaBlock Powder HemaBlock Hemastatic powder is a safe, easy to use, biodegradable product to control bleeding. HemaBlock is 100% plant based and utilizes Microporous Polysaccharide Bead (MPB) from potato starch for clot formation combined with resorbable oxidized cellulose from cotton fiber. The sterilized micro-beads act like a molecular sieve to rapidly dehydrate the blood, thereby accelerating the natural clotting process. The clot breaks down enzymatically inside the body in a matter of days to insure no adverse issues

with patient healing, making HemaBlock the safest and most effective blood clotting powder available to veterinarians. HemaBlock comes in single 1cc applicators or sachet with a re-sealable tube. This product is cost effective as it can be purchased as single packets and has a 3-year shelf life. The product comes sterile and is therefore safe to control bleeding during surgical procedures such as liver biopsies. The excess product can be kept and used for non-sterile procedures such as nail trims and dental extractions. HemaBlock meets the needs of veterinarians searching for a simple and safe product that can be left inside the body to control problem bleeding (within 1-2 minutes) in a wide variety of surgical procedures. We have even used HemaBlock on veterinary patients with persistent bleeding skin tumors, open wounds and severe epistaxis that were all unresponsive to traditional therapies (ice pack, epinephrine drops, Yunnan Baiyao, and San Qi capsules). HemaBlock is available for purchase through a variety of US distributors including Patterson, Henry Schein Animal Health, Merritt Vet Supply, Midwest Vet Supply, NEVSCO, First Vet Supply and Victor Medical.

Intravenous Lipid Emulsion Therapy (IVLE) The use of intravenous lipid emulsion IVLE therapy as an antidote for various toxicities in veterinary medicine is becoming more prevalent in private practice in recent years. This is a result of several factors. Numerous research studies has been published on the use of lipids in toxicology in the past five years providing evidence-based medicine. Veterinary poison control helplines and veterinary toxicologist are advocating the use of lipids in various toxicities. Lipid emulsion therapy has recently become a cost effective therapeutic option again– while veterinarians are still affected by the market availability. We generally purchase our lipids from a human compounding pharmacy for approx. $35 per a 250mL bag – which will treat most patients regardless of size. Most have a shelf life of two years, further justifying this expense. IVLE has a low risk of adverse events and is generally well tolerated. However, there are reports of pancreatitis after administration of IVLE therapy so caution should be taken with its use and dose in the lipemic patient. The author has used lipid therapy for a number of Ivermectin and Pyrethrin toxicities with good success. Human medicine literature reports of the use of IVLE in local anesthetic (lidocaine/bupivacaine) and cardiac drugs (Ca-blockers/Digoxin) overdoses with good success. While further research is warranted, veterinary medicine has been using lipids safely for many years in the form of parenteral nutrition (TPN/PPN). IVLE can be safely administered through a peripheral catheter. Following standard resuscitation and traditional therapies IVLE (Intralipid 20%) can be administered as a bolus (1.5 – 4 mL/kg IV over 20-30 minutes; every 4-6 hours for 24 hours) followed by a continuous rate infusions: 0.25mL/kg/min (30-60 minutes) or 0.05 mL/kg/hr (do not exceed 24hrs). A maximum total dose of 8 mL/kg is recommended. Further information on protocols for dosage and frequency can be found in the JVECC state-of-the-art review. (Fernandez, AL JVECC 2011)

End-Tidal CO2 Monitor: EMMA II Capnograph A new capnography option that makes end tidal carbon dioxide (EtCO2) monitoring more affordable for veterinary clinics everywhere is now offered through DRE Veterinary. The EMMA II Capnograph is a small, portable capnograph that delivers immediate waveform readings. Its continuous capnogram function helps veterinary staff to confirm correct endotracheal tube placement, assess the effectiveness of CPR (>15mmHg), early identification of ROSC during CPR (>30mmHg) and help guide ventilation. The EMMA II is easily programmable and flexible for a wide range of care settings, including emergency medicine, operating rooms, intensive care units and even long-term ventilation. The high prices for most veterinary EtCO2 monitoring systems has made purchasing them impractical for most small practices, but the low price point of the EMMA II is the solution. The use of a capnometer is widely recommended by many animal health organizations, including the American Animal Hospital Association and the American College of Veterinary and Anesthesia and Analgesia. Capnography is one of the most effective ways to ensure patient safety during anesthesia and intensive care. EtCO2 readings can reflect anesthetic machine function, blood flow and pulmonary ventilation. Capnography is superior to pulse oximetry in detecting apnea and other ventilatory problems. Abnormal EtCO2 measurements are often the first warning signs that something is amiss during anesthesia. A capnometer is the author's anesthetic monitor of choice if you are limited to only one machine. Capnograph readings can notify caregivers of machine malfunction or patient distress before pulse oximeters and other monitoring devices, allowing them to quickly change the course of care. Low EtCO2 levels signal the patient may be suffering from hyperventilation, hypoxemia, hypotension, or hypothermia. Hypoventilation, central nervous system depression and respiratory failure are all associated

with high EtCO2 levels. The EMMA II Capnograph provides clear, continuous carbon dioxide values and respiratory rate with up to 10 hours of battery life. It has both visual and audible alarms for No Adapter, Clogged Adapter, No Breath (Apnea), and Low Breath. No routine calibration is required.

Drip-Assist Device The DripAssist is a battery operated (standard AA battery), portable monitor and alarm for gravity IV fluid applications. It's a low cost device that simplifies IV fluid administration for the veterinary team by providing precision measurement and monitoring without the complexity of expensive infusion pumps. The DripAssist is designed to be placed on the drip chamber of a tubing set. When using the DripAssist, you still control the rate of flow using the roller clamp on the tubing set. The DripAssist provides visual feedback and displays values that accurately reflect the rate that you set using the manual clamp. The DripAssist does NOT control the rate of flow. The DripAssist uses optical detection to track drop intervals across all standard tubing sets for IV infusion (10, 15, 20, 60 gtt/mL). Proprietary algorithms convert irregular drip rate information into actionable information displayed on an LCD screen. Flow rates can be displayed as mL/hr, drops/minute and total volume. Alarm functionality allows the device to remotely monitor manually established flow rates. The DripAssist is useful for many tasks. The author's hospital currently uses it for gravity blood product administration, especially in lieu of recent publications indicating that mechanical pumps damage the red blood cells, decreasing the value of the transfusion. Busy surgery, emergency and referral services may benefit from having a DripAssist to substitute for broken IV pumps or during higher caseloads. Smaller day practices may find the DripAssist useful if they want to start providing more IV fluid therapy.

Verafloxacin Pradofloxacin (Veraflox®; Bayer HealthCare) is a new FDA-approved fluorquinolone (The only other FDA-approved fluoquinolones include: enrofloxacin, orbifloxacin, difloxacin (dogs only), and marbofloxacin). These drugs are classified into generations based on their spectrum of activity. Enrofloxacin, difloxacin, marbofloxacin and ciprofloxacin are all second-generation fluoroquinolones. Whereas, third-generation fluoroquinolones have an increased gram-positive and anaerobic spectrum, while orbifloxacin and pradofloxacin are third-generation fluoroquinolones. Pradofloxacin (Veraflox; Bayer HealthCare) is now licensed in Europe for a broad range of bacterial infections in dogs and cats, but is only licensed for cats in the USA. The antibacterial action of fluoroquinolones is achieved through inhibition of topoisomerase activity. Pradofloxacin inhibits both topoisomerase I (DNA gyrase) and topoisomerase IV, resulting in a broader spectrum of activity compared with earlier generation fluoroquinolones. Pradofloxacin maintains excellent gram-negative coverage and has shown efficacy against Pasteurella multocida, Streptococcus canis, Streptococcus aureus, Staphylococcus felis and Staphylococcus pseudintermedius. Veraflox® comes in a flavored, once daily oral suspension with an easy to administer dispenser – which may help increase owner compliance.

Alfaxalone Alfaxan® consists of the active ingredient alfaxalone in an aqueous solution with a pH of 6.5-7, and is registered for use in dogs and cats for both the induction and maintenance of anesthesia. Alfaxalone is a neuroactive steroid molecule, with central effects. Despite being an analogue of progesterone, Alfaxan® does not bind to sex hormone, glucocorticoid, or mineralocorticoid receptors. Alfaxalone induces anesthesia through activity at the gamma amino butyric acid sub-type A receptor (GABAA) present on cells in the Central Nervous System (CNS). Alfaxan® is safe and tolerated at doses 5 times the registered dose (i.e. 25 mg/kg) in cats and 10 times the registered dose (i.e. 20 mg/kg) in dogs was demonstrated, where animals required only ventilation to allow recovery with no residual effects. Repeated overdosing with Alfaxan® - 5 times the registered dose every 48 hours over a five day period caused no adverse effects. Alfaxan® does not cause tissue irritation after peri-vascular or subcutaneous injection. Hemodynamic studies have shown Alfaxan® to be safe with little effect on the cardio-respiratory system. Alfaxan® can be safely used in puppies and kittens (6-12 weeks of age), in canine cesarean sections and site-hound breeds (greyhounds, salukis, whippets, etc.). The author has limited experience with Alfaxan® due to the high cost compared to Propofol. In healthy patients undergoing routine procedures, some stimulation/excitement was noted during induction and the fast metabolism caused some patients to wake up during surgical preparation. However, all patients in our Alfaxan® trial remained hemodynamically stable. Currently, Alfaxan is significantly more expensive compared to propofol and with the lack of substantial evidence to prove its superiority it will likely be awhile before its use is mainstream. Please visit the company website for dosage recommendations and further information. www.alfaxan.com.

The iWarm IV Fluid Warmer The iWarm IV Fluid Warmer utilizes advanced technology that quickly brings the temperature of the fluid up to that of the patient (maximum of 113F/45C). This portable, lightweight product is useful as it can be placed directly next to the patient's IV catheter to minimize heat loss during resuscitation. The iWarm IV Fliud warmer can be used with universally with fluid pumps (flow rate of 0.1 to 338mL/hour). The easy to read indicator on the unit shows if it is warming (orange), at temperature (green) or is over-heating (red). It also has visual and audible alarms with overheat protection.

Green-Certified Disinfectants (Accel® Concentrate) Accel® Disinfectant is a one-step disinfectant, cleaner and deodorizer. It uses Accelerated Hydrogen Peroxide technology for enhanced potency and cleaning performance against a broad spectrum of bacteria (including MRSA/MRSP, Leptospirosis) fungi (Ringworm) and viruses (including Parvovirus, Calici and Bordetella). This product is non-toxic and environmentally sustainable. It converts to water vapor and oxygen as it dries, making it safe for everyday use against infections. All of the ingredients are listed on the FDA "Generally Regarded as Safe" list, so it's safe for the user and the environment. Accel® Concentrate will sanitize surfaces in 3 minutes and disinfect in 5 minutes.

Summary As veterinary medicine is constantly evolving we should be researching and making evidence based decisions on new gizmos, gadgets and drugs that are out on the market. It's easy to "jump on the bandwagon" but we need to do our due diligence and ensure that these products are safe, reliable and beneficial to our patient care.

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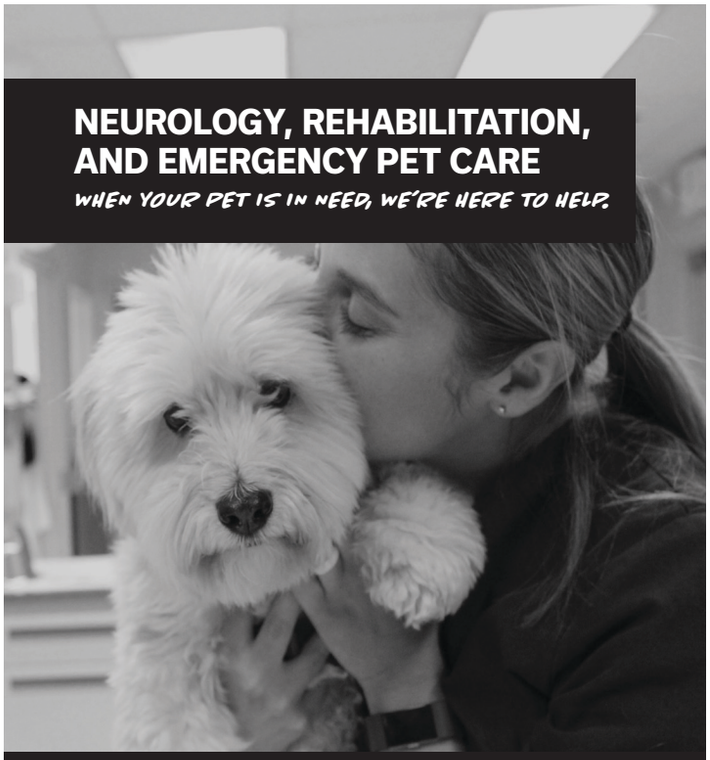

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In order to preserve the educational and informative purpose of the SEMVMA newsletter, the SEMVMA council adopts the following policy regarding advertising. Ads should be submitted to Barb at adminsemvma@semvma.com

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.adminsemvma@semvma.com.

Newsletters are published quarterly: on March 15th, June 15th, September 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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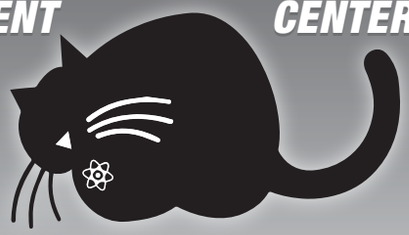

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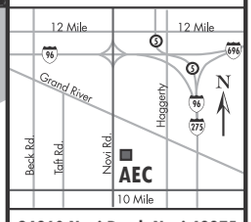

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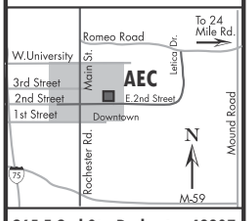

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