MEDICAL DIRECTORS’ COLUMN

Dear Colleagues,

We hope you have enjoyed your summer and are ready for a nice and hopefully cooler fall. As we continue to strive to provide the requested referral and emergency care for you and your patients, we are happy to announce the expansion of several services.

Dr. Simon Dennis will be seeing cardiology appointments at our Downtown hospital on Wednesdays and at our Brooklyn hospital on Tuesdays, Thursdays and Fridays. Dr. Gretchen Singletary will continue seeing cardiology appointments in Midtown and Queens.

Dr. Matthew Raske has joined Drs. Danielson, Greenberg, Kyles, Levy, and Pavia on our surgery service and will be splitting his time between Midtown and Downtown, thus allowing us to provide scheduled surgical services seven days per week in Manhattan.

As the needs of the veterinary community continue to grow, we will continue to expand our services. We thank you for your continued support and for the opportunity to work together. We are always open to feedback and suggestions, so please don’t hesitate to give us a call.

Sincerely,

Marc Greenberg, DVM, DACVS
Medical Director

Timothy Rocha, DVM, DACVIM-Oncology
Medical Director

Chemotherapy Safety is our Responsibility

DOG BITES AND CAT SCRATCHES are an everyday risk in our field. We work hard to train our staff how to restrain our patients in order to minimize this danger. But are all of us paying as much attention as we should to less obvious dangers, such as handling of cancer drugs? Chemotherapy administration has been linked to infertility, abortion, miscarriage, leukemia and other forms of cancer in human studies. More immediate side effects such as headaches, skin irritation and intestinal upset have also been associated with the handling of anti-cancer agents.

Strict rules and government regulations exist in many industries for managing hazardous materials. If these rules are broken, OSHA can take action against the employer. Most of us would consider chemotherapeutic agents to be hazardous materials. However, there is limited government oversight of chemotherapeutic agents in both the human and veterinary medical fields. What does exist are voluntary guidelines created in 1986 by the National Institute for Occupational Safety and Health (NIOSH).

It is up to us to educate ourselves and our staff about the risks and safety steps, which should be taken when administering cancer agents. Wearing gowns and gloves is strongly recommended to prevent direct contact of the drug with skin and clothing if any drips or spills occur. Face protection with goggles or shields is also recommended in case there is splashing or spraying of the drugs.

One of the biggest means of human exposure is aerosolization of the cancer agent when drawing up the chemotherapy drugs and during their administration. To reduce exposure while drawing up the drug, a biological safety hood is recommended. Many injectable chemotherapy drugs are vesicants, i.e. they cause damage to the tissues outside the vein. It is important to know the side effects and risks of the drugs you are using. Intravenous drugs should be given through a catheter. A butterfly catheter may not be adequate for many vesicant drugs as it can easily pierce the vials to further minimize the chance for aerosolization or spillage.

Proper handling of chemotherapy medications is just as important to our safety as proper restraint techniques. Both are displayed here.

Sincerely,

Marc Greenberg, DVM, DACVS
Medical Director

Timothy Rocha, DVM, DACVIM-Oncology
Medical Director

MANY CHEMOTHERAPY DRUGS COME AS TABLETS OR CAPSULES. IT IS IMPORTANT TO NOT CRUSH, SPLIT, OR BREAK OPEN THESE TABLETS OR CAPSULES AS THIS ALSO CAUSES AEROSOLIZATION.
Dr. Matthew Raske recently joined Dr. Marc Greenberg, Dr. Andrew Kyles, Dr. Mark Levy and Dr. Philippa Paiva on our surgery team and will be seeing cases in Midtown and Downtown Manhattan. Dr. Raske completed his residency in small animal surgery at The Animal Medical Center in New York City. He also completed an internship in small animal surgery at Capital Area Veterinary Specialists in Austin TX and an internship in small animal medicine and surgery at VCA Emergency Animal Hospital & Referral Center in San Diego. Dr. Raske earned his DVM from Kansas State University.

Skilled in all areas of orthopedic, soft tissue and oncologic surgery, Dr. Raske especially enjoys using new technology, including minimally invasive procedures (arthroscopy, thoracoscopy, and laparoscopy). He is interested in advanced orthopedics and has completed specialized training in tibial plateau leveling ostotomy (TPLO) for cranial cruciate ligament injury and is certified in both total hip and total knee replacement. His interests also include sports medicine and offering both nonsurgical and surgical treatments.

Why did you become a veterinarian?

Ever since I can remember, I have loved all animals, domesticated or wild. I had an intrinsic yearning to understand the science behind their behavior and physical needs. This led me on the path to veterinary medicine.

What keeps you interested day after day?

I am fortunate to be able to treat a wide variety of species and cases. I enjoy managing complex cases, and I strive to tailor my patients’ treatment to meet their specific needs. I am driven to do all that I can for these wonderful animals, thus my insatiable drive to continually enhance my knowledge and skill set.

How do you help ease the concerns of an upset client?

Our animals are family in every sense. The distress of a loved one must be met by understanding and compassion. I strive to achieve great client service and communication from the initial visit and to provide comprehensive client education.

How do you collaborate with the primary care veterinarian?

I value the importance of ongoing collaboration with the primary care veterinarians in order to ensure continuity of care. I also enjoy working with patients and veterinarians in postsurgical rehabilitation.

Why did you choose surgery?

I enjoy the hands-on nature of surgery with the goal of helping each individual patient restore function and improve quality of life.

Feel free to contact Dr. Raske or any member of the surgery service to discuss cases and potential options for treatment.
HEAT STROKE IN CANINES occurs when the core body temperature exceeds 105.8°F (41°C) leading to multiorgan dysfunction in which encephalopathy predominates. This will occur either when animals are exposed to high temperatures (classical heat stroke) or if physical exertion causes the creation of excessive body heat (exercise heat stroke). In both situations, the body’s normal cooling mechanisms are overwhelmed. Unlike humans, dogs do not sweat; instead, panting causes heat to be ‘blown off’ from the nasal passages and oral mucosa through evaporation. This mechanism quickly loses efficiency as environmental temperature and humidity increases. Diminished radiational and convective heat loss from the skin may occur as a result of hypovolemia, poor cardiac output, obesity, extremely thick hair coat or lack of acclimatization to heat.

Pathophysiology and presentation
High body temperatures cause release of interleukin-1 and interleukin-6 from the muscles and endotoxin from the gastrointestinal tract. These, in turn, cause activation of white blood cells and the endothelium. Proinflammatory cytokines along with endothelial activation lead to microvascular thrombosis and organ damage. Ultimately coagulation failure will occur leading to bleeding diathesis. Due to the systemic nature of this insult, all organ systems will be affected.

Common organ systems affected include CNS, cardiovascular, pulmonary, coagulation and gastrointestinal.

The diagnosis of heat stroke may be readily apparent with a high body temperature and a patient who is mentally abnormal. The dog may stumble, act drunk, be mentally dull, experience seizures and possibly even present comatose. If the patient presents a considerable time after the heat stroke event has passed, the body temperature may be normal or even low. Patients will often present in some form of shock with signs of cardiovascular compromise. Vomiting and diarrhea are common. If coagulopathy and/or thrombocytopenia are present, ecchymotic and/or petechial hemorrhages may be seen. Melena and/or hematochezia may occur.

First aid and treatment
Steps taken prior to presentation at the veterinary clinic can be life saving. Moving the pet to a cool area, wetting down the skin with tepid water, and using a fan to increase airflow can bring down the body temperature rapidly and effectively. Use of ice or freezing cold water should be avoided as it will cause peripheral vasocostriction (thus slowing heat conduction) and can cause cutaneous injury with prolonged contact. It is not recommended to cover a patient with a wet towel or blanket as this will trap warm air between the skin and the fabric delaying the dissipation of heat from the skin surface. It must be stressed that the provision of first aid in the field should not delay the presentation to a veterinarian for further evaluation and treatment. Delays such as this have been shown to have a negative effect on outcome.

How reliable are these vaccine titers?
Vaccine titers have been the cornerstone of the change in our knowledge about vaccine protection. They measure the presence of serum antibody able to neutralize the virus and prevent infection. IgG is the antibody class measured by vaccine titer assays. Studies have shown that for specific viral diseases in dogs (parvovirus, distemper, adenovirus) and cats (panleukopenia virus) protection after initial appropriate vaccination can last for 4 to 10 years based on serologic titer results and challenge studies.

The “gold standard” assays for these virus titers are the viral neutralizing titer (VN) and hemagglutination inhibition (HI). Most state diagnostic labs utilize the gold standard methodologies. Most, if not all, commercial veterinary laboratories have qualified and standardized alternative methodologies including enzyme immunoassays (ELISA) and immunofluorescence assays (IFA) to provide similar titer information compared to the gold standard VN and HI assays. Due to variations in lab assay methodologies, different titers may be reported and potential change in titers from the pet over time, titers should not be compared between different laboratories. In-clinic titer test kits for canine distemper, parvovirus, and adenovirus and feline panleukopenia virus are now available. TiterCHECK® (Zoetis) and VaccCheck® are the names of two commercially available in-clinic titer kits. Both test kit systems have been validated independently and correlated with the gold standard titer assays.

Rabies virus titers can also be assayed by the fluorescent antibody virus neutralizing titer, but the assay is available only through a limited number of certified laboratories.

How are these titers interpreted?
Depending on the individual lab and test methodology used, vaccine titer results may be reported as “protective” or “positive” (high antibody titer), “not protective” or “negative” (low antibody titer), or “borderline.” Some assays will provide an actual titer level from the laboratory to use in interpretation. The in-clinic titer test kits provide either a protected or not-protected result (TiterCHECK® or a semi-quantitative score for serum antibodies (VaccCheck®). Protective, positive or high titers indicate that there is a high antibody titer to that virus either from vaccination or previous natural exposure or disease. For pets with a not protective, negative or low titer, lack of virus protection is of concern and booster vaccinations are recommended.

The best correlation between antibody and protective immunity are for the viruses previously discussed (canine parvovirus, distemper, adenovirus, feline panleukopenia, rabies). It is important to remember that other factors may affect titer interpretation and risk for the pet. The immune system is complex. Antibodies target the foreign invaders for destruction, but other immune system cells actually destroy the invader. An insufficiency in the cell-mediated immune system (immunosuppression) may leave a pet at risk for disease even if protective titers are present. Even if a titer is considered low, exposure to the same antigen may result in a rapid immune response with new antibodies produced within hours to days. These animals may be susceptible to infection but may be fully protected due to immune-cell memory and

CONTINUED ON PAGE 4
VACCINES OR TITERS? CONTINUED FROM PAGE 3

- Determination of antibody level in pet with unknown vaccination status
- Management of infection risks and infectious disease outbreaks in shelters

Vaccine titers may be helpful in determining the need for specific vaccines in the individual pet, but it is important that the owner understand the factors other than titer results that may affect the decision to vaccinate. Each veterinarian must determine the appropriate vaccination schedule for a patient based on risk of exposure, age of the pet and current medical status of the pet.

Vaccine titers should not be considered a substitute for an appropriate core vaccine protocol for most clinically healthy pets.

The recent outbreak of measles in children exposed to the virus at a national amusement park was suspected to be correlated with a decline in vaccination for this virus. This is a warning to us all and a reminder of the importance of consistent vaccination for "herd health." All puppies and kittens should complete the recommended core vaccination protocols recommended with the last vaccine being at or beyond 16 weeks of age. An evaluation of pathogen exposure risk, lifestyle, age of the pet and concurrent medical problems along with vaccine titer status are all factors that should affect the decision to vaccinate the individual adult pet.

We thank our colleague Susan Yohn, DVM, MS, DABVP Canine/Feline, DACVIM, from BluePearl in Illinois for allowing us to use this article for Companion.