**Anesthesia and Pre-Surgical Information**

Anesthesia and surgery are often necessary to ensure the health of our pets. Before any procedure is performed it is important to verify the health of your pet’s organs. The drugs used for anesthesia are processed by different organs and the health of these organs can affect how smoothly your pet tolerates anesthesia and recovery. Pre-anesthetic testing provides the doctor with valuable information about the health of your pet’s organs and allows them to alter the protocol to best fit your pet’s needs. The test results become part of your pet’s permanent medical record and are used as a baseline for future reference.

When your pet is admitted for a surgery or anesthetic procedure, we will ask you to approve or decline pre-anesthetic testing. Please allow yourself 10-15 minutes to approve these tests when dropping off your pet. We recommend that all surgery and anesthetic patients receive a complete blood work-up and an electrocardiogram (ECG). Please review the information on the following pages for full details.

Blood tests allow us to evaluate organ function, immune status, electrolyte levels, hydration status and risk of anemia. We offer two levels of blood tests: a minimal screen for patients considered low risk, and a complete blood panel for patients of high risk. We also include a panel for pets with high risk of clotting disorders. Please ask one of our staff members if you have questions relating to pre-anesthetic testing. The cost of these tests are $36.00 for a Screen 1 and $124.00 for a Screen 2.

A pre-anesthetic ECG (Electrocardiogram) a base-line of heart activity before sedation is administered. An ECG allows assessment of heart rhythm and rate as well as changes in electrical activity that could indicate hidden heart disease (diseases that do not cause an audible murmur). Should any abnormalities on ECG be noted, your veterinarian will contact you to discuss whether surgery and anesthesia should be postponed to allow further work-up of the heart. The cost of an ECG is $21.00.

In addition to the ECG and pre-anesthetic blood testing, we also offer laser surgery. Laser surgery is a safe and comfortable treatment option that provides less pain, less bleeding, and less swelling. The advantages of laser surgery can reduce the amount of anesthetic drugs needed and reduce post-operative healing time. The cost to use the laser is $56.50.

If someone other than you will be bringing your pet for surgery, make sure they are prepared to fill out a medical and health check-list and to authorize or decline testing on your behalf. Please advise us of any medications, supplements, topical agents, or over-the-counter products you have given your pet in the past 3 weeks. Please provide the names, doses and when they were last administered.

 Your pet should not have any food for 8-12 hours before any surgery or anesthesia. Water should be withheld for 6-8 hours. We recommend your pet be admitted early in the morning or the night before the scheduled procedure to give her time to calm down from transportation and to allow us to perform any authorized testing. You will receive a phone call the day prior to your pet’s procedure as a reminder and you will also be given an admission time.

 We do our best to ensure that at all times your pet is not unduly stressed and undergoes a smooth procedure. While all of our procedures are performed by our trained staff and with the best equipment possible, please understand that no guarantee can be made about your pet’s individual risks of anesthesia. Please discuss any concerns you may have about the procedure or anesthesia and any questions you have about pre-anesthetic testing before admission.

Sincerely,

Sunbury Animal Hospital Veterinarians and Staff**Clinical Benefits of Laser Surgery**

**Customers value the clinical benefits of laser surgery for veterinary care.**

Laser surgery is recognized in human and veterinary medicine for its benefits to both patient and surgeon. While several types of lasers are used for different applications, the primary device for soft tissue surgery in small and mixed animal practices is a carbon dioxide laser.

Reduced Pain

The CO2 laser beam seals nerve endings as it cuts through tissue. This reduces the amount of pain the patient feels during and after surgery. Less pain during operation can reduce the amount of anesthetic drug used. This is especially true for declaw surgeries in cats.

Reduced Bleeding

The CO2 laser beam cauterizes and seals small blood vessels as it cuts. This laser energy achieves hemostasis which reduces blood loss and provides the surgeon with a bloodless surgical field in most procedures.

Reduced Swelling

There is no physical contact between the laser and the surgical region, eliminating the tearing and bruising of tissue associated with traditional surgical methods. Lymphatic vessels, the vessels that carry inflammatory cells, are also sealed. The reduction in post-surgical swelling reduces the healing time.

Reduced Infection

Laser energy acts as an antibacterial agent by producing high temperatures, effectively eliminating microorganisms.

Quicker Recovery

As a result of the above mentioned, laser surgery provides the benefit you and your pet will appreciate the most: a quicker recovery and healing time.

Laser surgery is an additional option to most of our procedures. Due to the benefits, laser surgery is automatically included in the cost for ALL declaws, soft palate and nostril surgeries. We recommend the use of the laser for mass removals, canine and feline spays, canine castrations and wart removals.

Your pet will be treated with the utmost of care using the latest, state of the art CO2 Surgical Laser available in Veterinary Medicine. As part of our commitment to quality care, we are proud to be one of the only clinics in the area that is offering Laser Surgery. We are pleased to offer this service as a safe and comfortable treatment option. We feel that laser surgery with all its benefits provides the best possible care for your pet.

**Laser Surgery Frequently Asked Questions**

**Why Laser for Pets?**

Laser technology, with its medical use dating back to the early 1960's, reduces trauma to your pet, shortens recovery, and often decreases the length of hospital stays for your loved ones. Your Veterinarian is amongst the Top 20% of hospitals nationwide offering laser surgery.

What is a Laser?

Laser is an acronym for Light Amplification by the Stimulated Emission of Radiation. A laser is a device that generates an intense beam of coherent light that can cut, seal or vaporize tissue.

What types of lasers are there?

Lasers come in a variety of modalities, each suited for particular needs. CO2, diode, YAG and other types of lasers are all used in human and veterinary medicine. While no laser suits all applications, CO2 lasers are by far the most common laser in use by small and mixed animal practices in veterinary medicine, for the reasons below.

**What is a CO2 Surgical Laser?**

The carbon dioxide (CO2) laser emits a colorless, infrared light at a specific wavelength of 10,600 microns, which has an extremely high affinity for the intercellular water of cells.

**How does a CO2 Surgical Laser work?**

The main constituent of cells is water. Water readily absorbs the wavelength of light produced by the CO2 surgical laser. The spectral absorption of water provides the CO2 laser with the ability to coagulate, cut, char, or ablate/vaporize tissue depending on the power density and the energy level applied by the surgeon. The surgeon can control the extent by which the laser beam is absorbed into surrounding tissue, resulting in an extremely precise tissue incision.

Why should I choose laser surgery for my pet?

A summary of the benefits the laser will provide you and your pet are:

 Less pain

 Less bleeding

 Less swelling

 Extreme precision

 Reduced risk of infection

 Quicker recovery

With the associated laser benefits, your pet will recover quicker and return home sooner.

Are lasers new?

Laser technology has been helping doctors to safely and effectively treat patients since the early 1960's. The principles necessary for the concept of laser development date back to the early 19th century with Bohr's theory of optical resonance. The technology is well proven and it is now being adopted by veterinarians worldwide to improve patient care.

What Type of Procedures Can a Laser Perform?

A laser is ideal for a wide variety of procedures for dogs, cats, birds, reptiles, horses and other animals. The most widely recognized procedure amongst pet owners is the feline laser declaw. Additional procedures include but are not limited to the removal of cysts, tumors and warts, as well as specialized internal procedures.

**Blood Work: CBC and Chemistry Panel**

Authored by: Becky Lundgren, DVM and posted on VIN.com

What does it mean when a veterinarian says she needs to run some blood work on your pet? Blood work - presurgical or otherwise - is usually a combination of a complete blood count (CBC) and a blood chemical analysis. Blood work is a basic evaluation tool. Pets, particularly senior ones, should have a CBC at every annual examination. In addition, blood work allows a veterinarian to monitor the progression of a pet's disease.

When the blood sample is drawn from your pet, both the cells and the fluid they "travel" in are examined. The cell part of the blood is examined in the CBC. The CBC determines the number of erythrocytes (red blood cells), the number and type of leukocytes (white blood cells), the number of platelets (thrombocytes), the hemoglobin level, and the hematocrit (packed cell volume, PCV). Erythrocytes carry oxygen throughout the body. Leukocytes fight infection and are part of the immune system. There are five different types of white blood cells: neutrophils, lymphocytes, basophils, eosinophils, and monocytes. Platelets are clotting proteins and indicate how fast your pet's blood can clot; slow clotting can be a serious problem. A CBC can tell your veterinarian if your pet has an unusual number of erythrocytes (anemia, polycythemia), leukocytes (leukopenia, leukocytosis), or platelets (thrombocytopenia).

A chemistry panel (blood chem, chemistry screen), tests kidney function, liver function, electrolyte levels, etc. Blood chemistries are run on the fluid in the blood sample. (The CBC is the examination of the cells in the blood sample.) The chemistry panel usually includes the following tests: alkaline phosphatase (SAP, ALP), alanine transaminase (alanine aminotransferase, ALT), bilirubin total (T Bili), blood urea nitrogen (BUN), creatinine, creatine kinase (CK, CPK), sodium, potassium, glucose, total protein, albumin, etc. Alkaline phosphatase, alanine transaminase, bilirubin, and albumin give your veterinarian information about the pet's liver function. Blood urea nitrogen, creatinine, and creatine kinase tell your veterinarian how well your pet's kidneys are functioning.

*Alkaline phosphatase:* Elevated levels are present in liver injury, bone injury, pregnancy, or skeletal growth. Growing animals also normally have higher levels of this enzyme. Elevated levels can be used as a tumor marker, particularly with tumors that have metastasized to the liver. Low levels of alkaline phosphatase may not be clinically significant. However, in humans, decreased serum levels have been observed in hypothyroidism, scurvy, achondroplastic dwarfism, magnesium deficiency, malnutrition, cardiac surgery, cardiopulmonary bypass, and hypophosphatasia.

*Alanine transaminase*: Decreased ALT in combination with increased cholesterol levels is seen in cases of a congested liver. Increased levels are also seen in liver damage, kidney infection, chemical pollutants, or myocardial infarction.

*Bilirubin (total)*: Elevated in liver disease, hemolytic anemia, low levels of exposure to the sun, and toxic effects to some drugs. Decreased levels are seen in people with an inefficient liver, excessive fat digestion, and possibly a diet low in nitrogen bearing foods.

*Blood urea nitrogen*: Increases can be caused by excessive protein intake, kidney damage, certain drugs, low fluid intake, intestinal bleeding, exercise, or heart failure. Decreased levels may be due to a poor diet, malabsorption, liver damage, or low nitrogen intake.

*Creatinine*: Low levels are sometimes seen in kidney damage, protein starvation, liver disease, or pregnancy. Elevated levels are sometimes seen in kidney disease due to the kidneys job of excreting creatinine, muscle degeneration, and some drugs involved in impairment of kidney function.

*Glucose*: Elevated in diabetes, liver disease, obesity, and pancreatitis due to steroid medications, or during stress. Low levels may be indicative of liver disease, overproduction of insulin, or hypothyroidism.

*Total protein*: Decreased levels may be due to poor nutrition, liver disease, malabsorption, diarrhea, or severe burns. Increased levels are seen in lupus, liver disease, chronic infections, leukemia, etc.

*Albumin*: High levels are rarely seen and are primarily due to dehydration. Low levels are seen in poor diets, diarrhea, fever, infection, liver disease, inadequate iron intake, third-degree burns and edemas, and hypocalcemia.

Remember, sometimes lab results are faulty. If you find several elevated or decreased values, but your pet acts as though illness is not an issue, there could be problems with the tests and they may need to be repeated – after all, who are you most likely to believe, a dog who is running around normally and thinks he’s healthy or scary lab numbers? If your pet acts normal but the values are odd, it's usually better to repeats the tests and eliminate all doubt about the results than to medicate a healthy animal.

**Clotting Disorder Screening Profile**

When a body tissue is injured and begins to bleed, it initiates a sequence of clotting factor activities -the coagulation cascade-  leading to the formation of a blood clot. This cascade is comprised of three pathways: extrinsic, intrinsic, and common.

Two laboratory tests are used commonly to evaluate coagulation disorders: **Prothrombin Time** (PT) which measures the integrity of the extrinsic system as well as factors common to both systems and **Partial Thromboplastin Time** (PTT), which measures the integrity of the intrinsic system and the common components.

**Understanding Your Coagulation Testing Options aPTT/PT vs. ACT**

*Rick L. Cowell, DVM, MS, MRCVS, DACVP and Michelle Frye, MS, DVM*

**Abstract:** aPTT and PT testing helps differentiate between intrinsic, extrinsic, common and multiple pathway deficiencies. Together, these tests are the testing protocol of choice when testing for coagulation disorders.

**Discussion:** While both the Activated Clotting Time (ACT) test and the Activated Partial Thromboplastin

Time (aPTT) test screen for defects in the intrinsic and common pathways, there are some important differences.

 The ACT test is generally less sensitive than the aPTT test.

o The ACT test will only detect a factor abnormality when there is a 95% or more decrease in single factor activity (less than 5% normal factor activity).

o The aPTT test can detect a factor abnormality with a 70% or more decrease in single factor activity (less than 30% normal factor activity).

 ACT test results may be affected (prolonged) by thrombocytopenia, thrombopathy and hemodilution. The aPTT is not affected by platelet numbers.

 The ACT can be run only on fresh whole blood and is only available as a patient-side test. The aPTT can be run on fresh or citrated whole blood samples and is available both in-house and at the reference laboratory.

o Citrated samples provide a more standardized and repeatable methodology, resulting in more accurate results.

o Citrated samples can be run within two hours of sample collection, allowing for a flexible time frame in which to perform the assay. This is why citrated aPTT and PT tests are preferred over fresh whole blood coagulation testing.

 PT and aPTT tests help differentiate between intrinsic, extrinsic, common and multiple pathway deficiencies.

o When used in combination, the PT and aPTT tests allow the practitioner to specifically detect the location of the coagulation disorder to one or more of the three pathways. This can only be done when all three pathways are determined.

o Factor VII (tested by the PT test only) has the shortest half-life and is the first factor to decrease with vitamin K deficiency/antagonism. Factor VII deficiency/dysfunction would not be detected if only the ACT or aPTT tests are performed.

**Conclusion:** PT and aPTT testing is the suggested testing protocol of choice when a coagulation disorder is suspected, as well as with heparin therapy, suspected factor deficiencies, liver disease, GI disease (especially in cats), and before internal organ biopsy or aspirate. The cost of the coagulation profile is $34.00.