Death is the owner’s number one concern when their pet is anesthetized. Based on multiple published studies the general mortality of dogs is close to one death in 1000 anesthetic episodes.

It is generally believed that the risk of anesthetic related morbidity or mortality is related to the patients body condition score. Animals that are overweight are of higher anesthetic risk than animals of ideal body weight. Over half of pet dogs and cats are overweight with approximately 25-35% of Dogs and Cats being obese.

Obesity is the most common nutritional disorder in dogs and cats. These animals are expected to have a shorter life span, increased osteo-arthritis, increased incidence of diabetes mellitus, cardiovascular disease, pancreatitis, mammary tumors and renal disease.

Excessive body weight is the most common disease affecting the anesthetic care of the patient. Although it is unknown what the actual increase in anesthetic risk is due to excessive body weight we believe that the likelihood of anesthetic complications will be greater in the overweight animal.

Drug Calculations:

Drug dosages should be calculated based on the animal’s estimated ideal weight. Dosing for the actual weight will result in overdosage. The high dosage coupled with the animal’s reduced ability stand results in a slower recovery.

Site of drug injection may be affected and care should be taken to inject the drugs into muscle rather than fat. Injections into fat will be absorbed more slowly than drugs administered intramuscularly. The slower onset can also result in longer duration of effect than is expected in the lean animal.

Frequently the overweight animal is less active and is in poor condition. The cardiovascular system is both weaker and has a greater demand due to the increased animal’s weight.
The overweight animal also has more difficulty dissipating body heat resulting in hyperthermia. Monitoring of body temperature is critical to prevent overheating. Hypothermia can also be a problem and rewarming of the animal can be difficult.

Drug dosages based on the body surface area are more accurate and provide a better method for accurate effects. Straight line dosages based on body weight (kgs) will lead to relative over-dosages.

The route of administration depends on how the drug works in the animal. Receptor bound drugs work at specific sites in the animal. For the most part these sites do not increase as the animal becomes overweight. Drugs that work based on a blood or brain concentration need to be absorbed or inhaled to enter the blood.

The spinal canal space is reduced in obese animals so the volume of drug administered epidurally will not increase as the animal become overweight. As a rule epidural drugs should be dosed on the lean animal’s weight.

Some breeds are associated with obesity. Bulldogs, pugs and Boston Terriers have smaller airways and this is made worst when they are overweight. Extra care should be taken to assure a patent airway is maintained in these animals.

The presence of excessive visceral fat repositions and adds pressure to abdominal organs increasing the efforts of the animal to inhale. Ventilation is limited by the fat and breathing is easily compromised by placing the animal in a recumbent position. Dorsal recumbency is the worst position as it puts the largest portion of the lung in a dependent position.

Monitoring the overweight animal can be more challenging. The normal heart rate of the obese animal may be higher due to the increased cardiac work. Ventilation will often be faster but shallower than for the lean animal due to the reduced tidal volume associated with excessive weight. End tidal CO2 is an excellent method of assessing the adequacy of ventilation.

Blood pressure should be similar but caution should be taken to insure that all parts of the animal are well perfused. Checking pulses in each leg and the tongue aids in the assessment of blood flow to all areas.

Recovery for the overweight animal is one of the critical aspects of anesthetic management. Make sure that the animal is well padded and is positioned to prevent pressure points on the nerves and muscles. Positioning the patient to facilitate ventilation is also important. Remember that the overweight animal may not have normal muscle strength and will need more assistance in regaining sternal recumbency or standing. Drug elimination and metabolism will likely be slower in the overweight animal so timely discontinuation of the gas anesthetics should be preformed.
When managing the overweight animal it is important to have a well prepared plan of action.

- Treat overweight conditions as a disease.
- Prepare and condition animal for elective anesthesia by improving general health.
- Pre-emptive monitoring and supportive care during anesthetic management is critical to minimize both morbidity and mortality.
- Appropriate drug dosages are based on the ideal body weight.
- Provide fluids for cardiovascular support.
- Be prepared to provide ventilatory support for all overweight patients.