PULSE OXIMETRY

Pulse oximeters are now the most commonly used instrument to monitor anesthesia in pets. Most people have seen these instruments on TV or in use in human hospitals. In people the sensor device slips over a finger. The sensor measures the heart rate and the oxygen saturation level of the blood – in other words, what percent of the red blood cells that carry oxygen to the body are saturated with it. A healthy person or pet has red blood cells that are over 95% saturated with oxygen. Decreased oxygen levels may be due to anemia, heart or lung disease, or a decreased respiratory or heart rate due to anesthesia, pain, shock or dehydration.

Pulse oximeters can detect pulse strength as well as rate – an indirect way to gauge the strength of the heart as it contracts and the patient's blood pressure. Attachments to pulse oximeters can allow us to measure respiratory rate and core body temperature during anesthesia. Using this data we can adjust our therapy or anesthesia to keep the oxygen level and heart rate in the normal, healthy range.

The sensor device that picks up the oxygen level and heart rate reflects light off an artery. The artery must be close to the surface of the body. The sensor devices used in animals are different than the finger sensor used on people. The finger sensor sends light through the skin or, in darker skinned people, the fingernail. For pets we use a toe or hock clip that looks like a c-clamp. This picks up the heart rate and oxygen level from an artery located near the surface of the skin. With pets, too, dark skin decreases the ability of the sensor. If we can't get a reading from a toe or hock area we use a tongue clip, which finds a vessel under the tongue, or a rectal sensor that uses an artery in the wall of the colon. Body temperature and respiratory rate are detected with a different sensor that is passed down the throat into the esophagus.

Anesthetic monitoring is the most common use of pulse oximetry in pets, because it is difficult to keep the sensors in place when a pet is moving around. Pulse ox equipment has made anesthetizing pets safer than ever before because oxygen saturation is the most important statistic to watch when monitoring the status of the heart and lungs. Early detection of a problem allows for quick correction, before damage to the brain or tissues can occur.

Pulse oximetry is not perfect, however. Small patients with small arteries, such as cats, are difficult to monitor because of decreased circulation to the extremities under anesthesia and their small blood vessel size. The tongue sensor cannot be used if the procedure being done involves the mouth or head of the patient. The rectal probe is subject to dislodgement by stool in the colon. Sometimes other monitors are used instead.

Most good quality veterinary clinics own at least one pulse ox machine. They are readily available, both specially made for veterinary use and second hand from the human market. Ask your veterinarian what monitoring equipment is used for anesthetic procedures. If the practice doesn't own a pulse oximeter it may not be a state of the art facility.