Lions and Tigers and Masimo Pulse Oximetry, Oh My!

The Situation
Lin Klein, VMD, DACVA, has provided anesthesia services for large cats for many years, specifically tigers, leopards, cheetahs, and lions, in zoos in the U.S. and for a lion project in Africa. Large cats are often given high doses of alpha adrenergic agonists as part of the anesthetic “cocktail,” which has to provide reliable restraint and anesthesia for medical staff safety.

The Problem
The biggest challenge when using alpha agonist drugs is that they severely limit peripheral perfusion due to vasoconstriction, often making it virtually impossible to get accurate SpO\textsubscript{2} and pulse rate readings with conventional pulse oximetry. This is especially true just after anesthetic induction when respiratory depression is likely to be most significant.

Questions have risen concerning the accuracy of conventional pulse oximeters in the animal health care setting, especially during periods of poor perfusion and during varying degrees of patient motion such as light anesthesia, muscle twitching, or emergency CPR.

Dr. Klein had been using a conventional pulse oximeter during routine procedures to monitor blood oxygenation and pulse rate with limited success. Low perfusion due to vasoconstriction would often cause the conventional hand-held pulse oximeter to fail to give a reading or to provide inaccurate low pulse rates along with unexpectedly low oxygenation readings.

The Masimo Difference
Dr. Klein switched to a Masimo SET\textsuperscript{®} Radical\textsuperscript{®} pulse oximeter and used it on big cats. She was able to get consistent, accurate readings in almost every situation. In the case of a cheetah undergoing a series of diagnostic procedures, the Radical was able to accurately monitor the large cat’s arterial Hb saturation, which was 98%, while the conventional pulse oximeter underestimated the SpO\textsubscript{2} at 82%.

The false reading on the conventional unit was due to low perfusion, caused by the alpha agonist drugs used to induce anesthesia. Masimo’s advanced pulse oximetry algorithms has spared Dr. Klein and colleagues from performing unnecessary diagnostic testing and treatment for perceived hypoxemia and saved them time and concern during medical procedures. Additionally, having confidence in a technology they use routinely makes a difference in how they care for animals – making all their lives easier.

“Masimo SET\textsuperscript{®} technology has shown that pulse oximetry can be used reliably in field procedures as well as in the hospital setting and has all but eliminated perfusion-related issues as a source of worry and frustration due to failed or inaccurate SpO\textsubscript{2} readings. Thank you, Masimo, for your help!”

— Lin Klein, VMD, DACVA

All accuracy specifications and claims are based on human volunteer studies with sensors placed on specifically determined sites for a given sensor type. Accuracy may vary for SpO\textsubscript{2} depending upon species, sensor type, and monitoring site. Refer to operator’s manual for complete description, instructions, warnings, cautions, and specifications.