

Rescue oxygen in veterinary medicine

a whitepaper by Aeronics, Inc. (Makers of Pawprint Oxygen)



Introduction

Pawprint Oxygen is a portable system used to provide oxygen USP, the same oxygen found in ambulances, hospitals, and veterinary facilities. Oxygen is a well-studied drug indicated to treat hypoxemia -- low partial pressure of oxygen in the blood. Patients (human and veterinary) that are hypoxemic are at risk for further decompensation and death. Oxygen is indicated for such patients to increase the blood oxygen level. Pawprint Oxygen provides Oxygen USP, therefore, it is indicated to use Pawprint Oxygen to treat hypoxemia.

JVECC Consensus

JVECC best practice recommendations for prehospital veterinary care of dogs and cats

JVECC lists administration of oxygen as one of three steps applicable to the prehospital care of every patient experiencing acute respiratory distress. JVECC asserts "Oxygen administration, when available, should be considered for every patient." Pawprint Oxygen increases the availability of oxygen, allowing JVECC guidelines to be followed in more situations. They go on to say that "in most situations, oxygen is not harmful and should be administered, when available, for any form of respiratory difficulty." Oxygen has a high therapeutic index, so it is unlikely to be detrimental [1].

ACVIM Consensus

ACVIM consensus guidelines for the diagnosis and treatment of myxomatous mitral valve disease in dogs

ACVIM consensus guidelines list oxygen supplementation as a treatment for acute treatment of Stage C MMVD (Class 1, LOE: expert opinion)[2]. Regarding prevalence, ACVIM asserts that "it is estimated that approximately 10% of dogs presented to primary care veterinary practices have heart disease, and MMVD is the most common heart disease of dogs in many parts of the world, accounting for approximately 75% of heart disease cases seen in dogs by veterinary practices in North America." Given the scale of MMVD and associated respiratory distress for which oxygen is indicated, the ethics of not providing oxygen must be considered.

ACVIM consensus statement guidelines for the diagnosis, classification, treatment, and monitoring of pulmonary hypertension in dogs

ACVIM consensus recommendations for targeting underlying diseases or factors contributing to pulmonary hypertension include oxygen supplementation. They specifically mention home oxygen: “At home, oxygen treatment is feasible in dogs and could be considered, especially if there appears to be a positive clinical response.” Additionally, in group 3a disorders (dogs with diverse respiratory disease, hypoxia, or both) recommended treatment is primarily symptomatic and includes oxygen supplementation (consensus in 7/7 members of the panel and 5/5 advisory reviewers)[3].

VCRS Retrospective Study

Pawprint Oxygen conducted a retrospective study of 581 patients that were prescribed rescue oxygen by their veterinarian for home rescue and transport use from January to November 2020. The study identifies the prevalence of conditions for which Pawprint Oxygen was prescribed (as indicated by the veterinarian on the prescription). The most prevalent condition was congestive heart failure (34.9%), followed by general respiratory distress (22.5%), tracheal collapse syndrome (19.3%), pulmonary hypertension (5.5%), laryngeal paralysis (4.8%), and feline asthma (4.0%). This study was presented at the 2020 Veterinary Comparative Respiratory Society Symposium. The results of the study show that Pawprint Oxygen is most frequently prescribed to manage respiratory distress related to heart failure in small dogs[4].

Pet Owner Impressions Survey

Pawprint Oxygen sent a survey to 422 clients who purchased a rescue oxygen kit in 2021. The survey was sent three months after the purchase of the product. Of the 78 respondents, 61% reported using the rescue oxygen kit more than three times in the first six months of purchasing it. 38% reported using it more than once per week. 52% reported that an average therapy session was less than 20 minutes before symptoms subsided. 20.5% used oxygen during emergency transport to the animal hospital. 79% said that the product gave them peace of mind knowing they had a way to support their pet at home. 37% said that the product prevented the need for an ER visit. 36% said it extended their pets life. 24 % said it saved their pet's life on at least one occasion. This study is ongoing.

Use factors at home

Patients that are hypoxemic are often diagnosed by clinical signs including cyanosis, increased respiratory rate and effort, and abnormal airway sounds. All of these signs are recognizable by the pet owner and are still used in veterinary medicine to diagnose hypoxemia in veterinary clinical settings even when pulse oximetry and blood gas are available. Unfortunately, despite JVECC guidelines to administer oxygen to the acute respiratory distress patient during prehospital care[1], oxygen is not always readily available in the home. As a result, pet owners are left with no option but to drive to the hospital without oxygen support resulting in increased morbidity and mortality. Pawprint Oxygen provides a more readily available source for oxygen that allows it to be administered in situations where it was previously not feasible.

Use factors during transport

Pawprint Oxygen is marketed as safe to use in a passenger vehicle due to the form factor, pressure, and overall design of the product. Where traditional oxygen tanks are dangerous due to high pressures (2000 psi), Pawprint Oxygen is safe due to its low-pressure design (200 psi). Veterinarians typically educate their clients to travel with a companion in order to administer oxygen during transport. However, there are mechanisms for keeping the mask and/or other delivery devices in place during transport in the event that only one person is making the trip.

Pawprint Oxygen is currently funding two studies to build on the work of Dunphy et al[5] to establish dosage guidelines for a variety of oxygen administration devices. This is an area of continued development at Pawprint Oxygen. Our current product has been credited by pet owners and veterinarians for helping pets “arrive alive” at the hospital.

Use factors in veterinary facilities

Pawprint oxygen is not designed to replace traditional oxygen systems in veterinary hospitals but to supplement them. Some clinics or house call practices simply do not have oxygen administration systems and Pawprint oxygen provides a source of oxygen for emergencies. Even in Veterinary Centers with centralized systems and portable “E”-tanks, veterinarians have reported using Pawprint Oxygen in triage performed in the parking lot, supporting oxygen-dependent patients during a walk outside, transfer from the ICU to an imaging suite, a visit with the pet parent in an exam room, or as a backup in the event of primary system failure.

References

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