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## HOUSE FIRES

**What is it?** A house fire can be limited to a single area or can result in the complete destruction of the entire home. No matter the size, it negatively affects the health of every occupant of the home with smoke inhalation, burns, carbon monoxide inhalation, and the inhaling of superheated particle matter.

**Which species are affected?** Both dogs and cats are affected by house fires.

**What are the clinical signs?** Animals are usually removed from the fire by owners or fire fighting personnel. Thermal burns may be noted on the skin. Respiratory distress may or may not be noted dependent upon the length of time the animal was exposed to smoke and carbon monoxide. If an animal has inhaled enough smoke, superheated particulate matter, and toxic gases they may have partial to complete closure of the airway. Facial swelling and edema may be present. Gum color may be pale, blue or dependent upon toxic gasses inhaled cherry red. The animal may have altered mental status and may appear depressed, non-responsive, or be in a coma. The animal's coat will often smell of smoke. Even if an animal is not showing outward signs of distress, damage to the lungs may have occurred, and it should still be evaluated as soon as possible by a veterinarian. It may take up to 24 hours after removal from the fire for full signs of respiratory compromise to develop.

**How is it diagnosed?** A complete physical exam will be done on the patient. Full vital signs including temperature, pulse rate, respiratory rate will be obtained. The doctor will carefully listen to the patient's heart and lungs for disruptions in normal heart rhythm and abnormal breath sounds. An ECG (electrocardiogram) may be run on the patient to further evaluate the heart. A neurological examination of the patient will occur. Laboratory analysis of the patient's blood and urine will be recommended to look at oxygen and carbon dioxide levels, blood pH and lactate levels, electrolyte imbalances, and complete blood count. Radiographs of the chest will be obtained to screen for injury to lungs. The airway of the patient will be examined to screen for injury.

**How is it treated?** Oxygen supplementation is the immediate priority. The patient's airway will be maintained as needed with bronchodilators, intubation, or a tracheotomy as needed. In severe cases, ventilator support may be required. Supportive care for other injuries includes: intravenous (IV) fluids, pain management, antibiotics, wound care, and other therapy depending on the severity of the injuries sustained.

**What is the aftercare?** Aftercare is dependent upon the stability of the patient on admission to the hospital. If the animal was removed quickly from the fire and presented immediately to their veterinarian or the nearest emergency clinic, then their prognosis is better than an animal with extensive smoke and carbon monoxide inhalation. Patients who receive oxygen supplementation from human paramedics at the scene of the fire are typically more stable upon arrival at a veterinary facility. Patients with thermal burns statistically do worse than patients without thermal burns.

**What is the prognosis?** Prognosis is dependent upon the status of the patient at arrival to a veterinary facility, length of time it was exposed to the house fire, and the number of secondary complications the patient develops. Patients that have burns on over 50% of their body have a guarded to poor prognosis. Patients that recover from and improve from carbon monoxide poisoning within 24 hours have a favorable

prognosis while those who are worse 24 hours after presentation do not. Patients who present with neurological abnormalities or who develop them within 2-6 days of being exposed to a house fire have much poorer chance of survival – roughly 50/50.

**Can it be prevented?** Common sense can go a long way in preventing a house fire. Don't leave candles burning unattended, especially in places where a curious cat or a dog with a wagging tail can knock them down and start a fire. Use fireplace grates to prevent hot ash or cinders from leaping out into the room and starting the carpet or furniture on fire. Don't use electrical appliances with frayed or worn plugs or wires. Cook carefully to avoid grease fires. Don't smoke in bed or on furniture. Stickers can be obtained that are placed on windows and doors alerting firefighters to the presence and number of pets in the house. These stickers can help emergency responders rescue your pets, which may save their lives.