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Definition

A detection dog (detector canine, detector dog) is defined as “a canine trained to detect and alert to the presence of certain scents or odors for which it has been trained.”⁵

Examples

The discipline of detection dogs is expanding even as this report is developed, and therefore, providing an expansive list of all types of detection dogs would not be practical. Detection dogs are often categorized by the specific odor/scent or category of odors/scents for which they are trained to detect, for example, explosives, narcotics, live humans, human remains, invasive or endangered plants or animal species, contraband and weapons, ignitable liquids, medical conditions, and tracking (Table 2). They can also be classified by how they work (e.g., trailing, tracking, and air scenting). Finally, detection dogs can be categorized by the industry or sector for which they work (e.g., agriculture, conservation, and search and rescue).

Relevant Information for Practitioners

Dogs are reported to be capable of detecting odor at 1–2 parts per trillion, 10,000–100,000 times better than humans.⁶ From a health and management perspective, it is important for the veterinary team to recognize that olfactory competence is of critical importance to a detection dog’s success, and preservation of olfaction when possible is essential when making treatment decisions. Practitioners should understand that medical conditions and therapies may affect olfaction, and this potential should be discussed with the handler so decisions can be made to remove a dog from service if a decline in performance is expected. For example, oral administration of metronidazole may degrade a dog’s ability to detect explosives.⁷ Therefore, practitioners should consider limiting the use of metronidazole in detection dog patients to conditions that have no reasonable alternative. Systemic steroids may either enhance or inhibit olfaction. Use of a steroid for an underlying nasal inflammatory condition can be of assistance; however, high-dose, long-term, systemic steroids may have a negative impact on olfaction. Functional odor recognition reassessment and possible recertification should be advocated when



placing the patient on an extended prescription of the aforementioned medications.

Although there is growing scientific data on the olfactory effects of some pharmaceuticals and biologics, there is limited information on many commonly used therapies. It is the consensus of the advisory panel that any drug that may cause inflammation or dehydration or alter neurovascular function within the olfactory system could result in temporarily decreased olfactory performance. Detection dogs can be at risk of toxic exposure to opioids or other drugs and toxins. Practitioners must collect a comprehensive history to determine the likelihood of exposure and be aware of the presenting clinical signs. A dog exposed to opioids may be a fomite and carry those opioids on its fur/face, thus putting in-contact humans at risk.

Detection dogs come in many shapes and sizes, as well as temperaments. Although just about any dog can be trained to detect an odor, there are some specific characteristics that make some dogs successful in a detection career. These characteristics can also make some detection dogs challenging to work with as patients in a veterinary setting. It can be helpful to develop specific guidelines for your practice team for interacting with and caring for working canines with their handlers in your practice. Many of the breeds and breed mixes that are used in detection work have low thresholds for arousal and may become highly aroused quickly. This response characteristic can make handling a challenge and underscores the importance of recognizing threshold levels, low-stress handling, avoiding over-restraint, and focusing on safety and caution of the veterinary team. For example, to reduce arousal, bring the handler and their canine directly into a separate room or area of the hospital upon arrival (or leave them in their vehicle until you have an available exam room or greeting room space). Unless recommended by the handler, do not separate the handler from the dog unless absolutely necessary. If needed, administer sedative drugs before separating the two and ensure the handler is present during recovery. Make sure all team members recognize the difference in handling, approach, and care required by these specialized working dogs. The use of muzzles should be advocated when there is any question regarding the patient's disposition and temperament.

TABLE 2

Examples of Detection Dog Sensory Target Odors

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DETECTION CATEGORY	SENSORY TARGET ODOR
Human remains	<ul style="list-style-type: none">Human bloodHuman decomposition material (tissue, adipose, wet and dry bone, body fluids)Burned human tissue
Narcotics	<ul style="list-style-type: none">CocaineHeroinMethamphetamine
Commercial pest control	<ul style="list-style-type: none">Bed bugTermite
Search and rescue	<ul style="list-style-type: none">Live humanDisaster setting, wilderness/wide area setting
Conservation	<ul style="list-style-type: none">Antipoaching (ivory, rhino horn, pangolin scales)Invasive animal species (zebra and quagga mussels, emerald ash borer)Invasive plant species (dyer's woad)Endangered and elusive animal species scat (kit fox, black-footed ferret, orca)
Medical and research	<ul style="list-style-type: none">Human diseases: cancer (ovarian, prostate, thyroid cancers), infectious diseases (COVID-19, bacterial infections, tuberculosis, malaria)Animal diseases: avian influenza, chronic wasting diseaseEnvironmental/plant diseases: citrus canker, Huanglongbing (HLB)

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