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A needs-assessment and demographic survey of infection-control and disease awareness in western US animal shelters

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ABSTRACT

A cross-sectional needs-assessment survey was used to characterize animal shelters in a 6-state region in the western US and describe infection-control practices and disease awareness. Survey questions focused on shelter demographics, infection-control practices and policies, awareness and concern over infectious and zoonotic diseases, staff and volunteer training relating to infection-control and disease awareness, use of diagnostic tools, and isolation procedures and protocols. Fifty percent of shelters responded to the survey and represented a wide variety of shelter types, sizes and locations. The top-three diseases of concern to shelters were feline upper respiratory disease (FURD), canine parvovirus and ringworm. Concern over these diseases was greater in open-admission shelters (compared to limited admission or no-kill/sanctuary) (OR 3.7, 95% CI 1.1–12.5) and in shelters with a desire for more zoonotic-disease training (OR = 6.1, 95% CI 1.5–24.8) (compared to shelters desiring infectious-disease training, training on cleaning and disinfection or those who have no need for further training). In 45% of responding shelters many to most animals arrive with infectious diseases. Written protocols for preventive medicine exist in 88% of shelters, cleaning and disinfection protocols in 75%, specific disease protocols for outbreak situations in 36% and infection-control manuals in 15%. Veterinarians are in charge of infection-control in 6% of shelters. Approximately 45% of shelters vaccinate dogs and cats for rabies. Infectious-disease training is provided to 30% of staff and 35% of volunteers upon hire. Overall, volunteers received less training in infectious- and zoonotic-disease identification, prevention and control than staff members. Ninety percent of shelters said they would benefit from training in infectious and zoonotic disease. Results from this study can be used to assess and address needs in animal shelters relating to infection-control, infectious and zoonotic-disease awareness and can help guide development of shelter staff and volunteer training.

1. Introduction

Animal shelters are facilities that house lost or abandoned animals until they are reclaimed, adopted, transferred or euthanized. Animal shelters in the United States began with the impounding of roaming livestock in colonial times (Zawistowski and Morris, 2004). In the past as well as today animal shelters in the US are often supported by concerned local citizens and sometimes local municipalities. Although national animal shelter-groups such as the Humane Society of the United States (HSUS) and the American Humane Association (AHA) exist as informational entities, animal shelters maintain their local structure and management with little or no national oversight.

Animal shelters in the United States and worldwide vary tremendously in their size, intake, facility, budgets, oversight, personnel, and training. Animal shelters today range

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from rescue groups that house a few animals a year to major city facilities where thousands of animals pass through yearly. Some provide no other services than impounding of strays and/or relinquished animals, and some provide full spay and neuter services for the shelter as well as surrounding community (Scarlett, 2004). This variety adds to the difficulty in characterizing animal shelters. Although millions of animals (mostly dogs and cats) enter these facilities each year, information on basic shelter characteristics and disposition of their animals is lacking. Data on the number of animal shelters in the country, the number of animals entering and leaving, the number euthanized, and the number adopted is not available (Scarlett, 2008). Research into the nature of animal shelters must continue for animal shelters and their funders to determine their programs' efficacy and whether they are allocating resources wisely (Scarlett, 2008).

Control of infectious and zoonotic diseases are a major problem in animal shelters (Foley and Bannasch, 2004) where newly introduced animals can carry a variety of pathogens, stressed animals are more vulnerable to infection, and crowded and less-than-excellent hygiene conditions promote the spread of infection (Spain et al., 2001; Helps et al., 2005; Petersen et al., 2008). Outbreaks of infectious feline upper-respiratory disease (FURD), for example, are a common problem on a regular basis in US animal shelters (Gaskell and Dawson, 1994; Bannasch and Foley, 2005). Risk of outbreaks of and exposure to zoonotic pathogens such as methicillin-resistant *Staphylococcus aureus*, and *Leptospira* spp. is largely unknown. The level of knowledge and awareness of shelter staff members and volunteers for these diseases is also largely unknown.

Shelters are primarily staffed by lay people with a strong passion for animal care but whose medical training and shelter experience vary greatly. Because of the nature of animal shelters and animal-shelter work and the volume of animals with unknown histories encountered and handled on a daily basis – shelter animals, workers and volunteers are potentially vulnerable populations which might experience greater exposure to zoonotic diseases than the general population. Knowledge of infection-control principles and practices, zoonotic diseases, their clinical signs and methods of spread can help reduce the risk of infection in both human and animal populations.

Our primary objectives were to characterize animal shelters in a 6-state region through a needs-assessment survey and to assess infection control information to direct future training efforts. A secondary objective was to determine whether disease concerns varied with shelter demographics.

2. Methods

2.1. Study population

Animal shelters in the US states of Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming were identified through internet searches using keyword searches for animal shelters; animal-rescue organizations; and animal sanctuaries. Only organizations that identified themselves as having a physical shelter facility were included in the sampling frame. One hundred and fifty-seven animal shelters were identified in the six states.

2.2. Survey design

The survey was developed with guidance from shelter veterinarians, survey-research experts and epidemiologists and focused on four major areas: demographic information, infectious and zoonotic-disease concerns, infection-control policies and worker training. All respondents were asked questions about shelter characteristics during the previous year (2006) including admission and administration, medical records, source and disposition of animals, number of staff, species accepted and condition of animals on arrival. In addition, respondents were asked to rate their level of concern (low, medium, high or no concern) for specific infectious and zoonotic diseases. Respondents were asked about diagnostic tools, and policies used in the practice of infection-control including available equipment, isolation and preventive-medicine protocols and vaccination and deworming practices. Questions were included to characterize the amount and extent of training offered to staff and volunteers including desire for future training. An introductory letter was sent to each shelter with the survey explaining the purpose of the study and ensuring that responses and shelter information would remain confidential. Surveys were mailed out during the first quarter of 2007. Those shelters not responding within two weeks were sent an additional letter and survey; those not responding within two weeks were mailed a third letter and survey. No further attempts were made to contact non-responding shelters. The survey was pre-tested at an animal shelter not included in the study and revised based on their recommendations. Response choices were limited to specified response choices or based on a Likert scale ("no concern", "slight concern", "moderate concern", "great concern" valued as 1–4). Some questions included an "other" category to give respondents the ability to provide what they felt was the most correct answer. Approval for this study was obtained from the Institutional Review Board at Colorado State University.

2.3. Data analysis

All analyses were carried out using Stata version 10.0 (Stata Corp., College Station, TX, USA). Descriptive statistics were calculated for each variable of interest. Likert-scale results were summed within specific disease concerns to generate an ordered list of diseases of concern among respondents and identify the top-three diseases of concern. Because this list contained both common and rare diseases, a surrogate was sought that would capture a shelter's overall concern for common infectious and zoonotic diseases. The variable "concern" was collapsed dichotomously into "no concern" and "concern" for each of the top-three diseases and used to give each shelter a score based on their concern over these top three diseases (0 = no concern for any of the top-three diseases, 1 = concern for one of the top-three diseases, 2 = concern for two of the top-three diseases and 3 = concern for three of the top-three diseases). Shelter demographic variables were then evaluated for their asso-