

Housing Modifications to Improve Physical and Behavioral Health for Shelter-Housed Cats

(Shelter Medicine Practice Category: Facilities)

Introduction

This case summary describes the impact of shelter housing on feline health, well-being, and stress. It demonstrates how modifications to feline housing in a shelter setting can substantially improve the emotional and physical health of the cats in residence. The author, the Medical Director at a not-for-profit, limited admission shelter based in the western United States, oversaw the modification and reconfiguration of the shelter's feline housing over four years from 2020 to 2024 with the goal of decreasing the prevalence of feline upper respiratory infection (URI) at the shelter.

The author's shelter was built in 2009 to house a small number of dogs and cats. It is located in the mountains, with abundant winter snowfall and summer temperatures ranging from 85-95°F (29-35°C). The shelter's annual intake is approximately 1100 animals (47% dogs, 53% cats), with a lifesaving rate of 96% (calculated as total live outcomes per year divided by total animals in care per year). The organization utilizes foster homes and a shelter to house animals, with a daily in-shelter population of approximately 80 dogs and cats and an average length of stay (aLOS) of 43-52 days. Since the shelter's construction, the number of animals living onsite has increased, and animal housing has been expanded into areas not initially intended for that purpose.

Shelters are inherently stressful for cats. Despite being predatory by nature, cats are very sensitive to their environment and will choose to hide or escape when faced with stressful or dangerous stimuli.³ New noises and odors may evoke powerful stress responses in many cats, and the experience of being in

the shelter is profoundly taxing for most cats.^{3,5} Stress suppresses the body's immune response, and cats experiencing stress are less equipped to fight off new pathogens.^{3,4} The link between stress and upper respiratory infections in sheltered felines has been well established, and thus feline housing in shelters must prioritize minimizing stressors to maintain cats' wellbeing.^{1,3,5}

Housing is arguably as important as robust intake and vaccine protocols in maintaining cats' health and moving them quickly to adoption. Shelters with inadequate housing for cats may see an increased incidence of upper respiratory infection, stress behaviors (i.e., hiding, aggression, anorexia), and longer aLOS. These stress behaviors may make cats less adoptable.^{1,3,5} These same problems can be identified in shelters that are overcrowded, have poor sanitation protocols, or do not practice active population management. The Association of Shelter Veterinarians (ASV) publishes guidelines describing acceptable and ideal feline housing that shelter leadership may utilize to evaluate their feline housing and plan improvements and modifications.²

Treatment/Management/Prognosis

Cat housing should be divided into four types: 1) public access/available for adoption; 2) healthy holding; 3) quarantine; 4) isolation.⁴ Density and cat numbers in any given housing area should be kept to a minimum, and different demographics should be housed separately.⁴ When constructing or renovating feline housing, several essential principles must be followed, all geared towards minimizing stressful stimuli and meeting cats' behavioral and physical needs.

Stress reduction must be the primary goal for feline housing.¹ Adequate housing areas should be quiet, kept away from busy walkways or rooms, and insulated from the sound of barking dogs.² Kennels must be constructed of durable, non-porous materials, must have a solid floor and adequate ventilation, and

must be functional so that escape is not possible. Grate or bar-front cages and latches designed to muffle sound are also recommended.²

Enclosures designed for single cats must be large enough for cats to display normal behaviors, provide 11 ft² (1 m²) of floor space with multiple compartments to separate feeding and elimination areas, and furnish a place to retreat during cleaning activity.¹ All items in an individual kennel must be disposable and replaceable if they cannot be adequately sanitized.⁴ Cats prefer to be elevated; therefore, kennels situated at least one foot off the floor or higher are preferred.⁴

Within the individual kennel, the cat must be provided with a soft bed, a spot to hide, a spacious litter box for elimination, and free access to food and water.¹ Enrichment items such as balls or toys, multi-leveled perches, and scratching substrates are also recommended for emotional well-being.^{2,5}

Co-housing can be an effective and enriching solution for keeping cats in the shelter. Although not all cats will enjoy it, co-housing can benefit some, providing social interaction and more active space.¹

Co-housing units must have the same attributes as single animal units and must provide at least 18 ft² (1.67 m²) of unobstructed floor space per adult cat.^{1,2}

Environmental temperature in housing areas should be between 64-80°F (18-27°C) and 30-70% humidity.² Exposure to natural light is also essential for maintaining circadian rhythms; artificial light should mimic the intensity and duration of natural light when windows to the outside are not available.²

Shelters that prioritize these principles experience benefits such as reduced incidence of URI, fewer stress-related behaviors, and length of stays within the recommended duration of 14 days or less.^{1,3,5}

Case History and Presentation

At the author's shelter, before housing modifications beginning in 2020, Healthy Cat Housing consisted of one large room containing eight laminate and stainless steel bar cat condos^a measuring 6.75 ft² (0.63 m²), eight laminate and plexiglass-front condos^b measuring 5 ft² (0.46 m²), and 8-10 temporary wire dog crates, each measuring 6-7.8 ft² (0.56-0.72 m²) in the middle of the room at floor level. The room had several large windows and an uninsulated garage door. Quarantine/Isolation was treated as one combined area and consisted of four separate rooms, each approximately 144 ft² (13.4 m²), with a single small window near the ceiling. These rooms each had a bank of stainless steel holding cages^c (each a single compartment measuring 6 ft² or 0.56 m²) for sick cats, with approximately eight kennels per room for a total of 32 kennels. The Group Cat Room, measuring 120 ft² (11.1 m²), was located off the Lobby, housing approximately 10-15 cats. The Lobby also housed about five additional cats in a group setting. Figure 1 shows a diagram of the shelter's animal housing in 2020 before the author initiated housing modifications.

Three of the four cat areas at the shelter shared an interior wall with a dog area; thus, barking was audible in most cat areas. Due to drafts and poor insulation, the ambient temperature in Healthy Cat Housing and Quarantine/Isolation was subjectively cold in the winter and hot in the summer. The Group Cat Room and Lobby had well-sealed doors and windows, central heating, and air conditioning. The Lobby was a high-traffic area, and unfamiliar dogs and cats frequently passed through it. There was no designated cat intake area, and vaccines and intake exams occurred in the veterinary suite. Cats were carried through dog housing to reach feline housing due to the lack of designated pathways.

Before the author modified cat housing, the daily onsite population was 40-50 cats. The intake-based aLOS for cats from 2020 to 2023 was 43-48 days, including any quarantine or time in foster care. The aLOS in adoptions during this same period was 30-37 days. Most days, cats with URI signs (sneezing, nasal discharge, and ocular discharge) occupied most or all the kennels in Quarantine/Isolation. Staff often observed more cats in Quarantine/Isolation than were available for adoption and struggled to fill the adoption ward with healthy cats. Understanding the link between feline URI and substandard housing and overcrowding,⁵ the author compared the shelter's feline housing facilities with those described in the ASV Guidelines² and identified multiple deficiencies, as summarized in Table 1. In this shelter, the consequences of using substandard housing included a high rate of feline URI and a prolonged aLOS.

Case Management and Outcome

Using the ASV Guidelines as a template, the author made gradual improvements to feline housing, which took several years due to budgetary constraints and because the original building was designed to hold no more than 15-20 cats.

The author installed portals to enlarge stainless steel cages and cat condos, providing cats with 12-13.5 ft² (1.1-1.3 m²) space per unit. Leadership removed wire crates from cat rooms, discontinued housing cats in the Lobby, and reduced the Group Cat Room population from twelve to five cats.

Because of inadequate climate control, Healthy Cat Housing and Quarantine/Isolation were relocated to a different area in the shelter to improve temperature management. This relocation had the benefit of improved noise control with greater separation from dog housing and multiple large windows with ample natural light. Quarantine and Isolation shared the same room in the new configuration, but a

partial wall divided the room to separate the exposed and ill cats. Leadership retrofitted the new dog Isolation area (occupying the former cat Quarantine/Isolation unit) to provide better temperature control for residents. Figure 2 shows these modifications.

Each cat kennel consisted of at least two compartments to separate the litter box from the feeding and sleeping areas, and included a place to retreat, such as a box or cat tent. Cat enrichment items were also provided (toys, substrates for scratching, and treats).

Over time, Quarantine/Isolation began to empty, with its primary purpose transitioning to a quarantine area for kittens transferring from high-risk shelters where panleukopenia was common. Isolation of adult cats with mild URI signs occurred in their regular housing, and staff handled URI cats last while using personal protective equipment. Despite ASV Guidelines recommendations to formally monitor population health,² shelter leadership does not utilize formal disease surveillance software programs. Still, a daily census of the number of cats living in Isolation and biweekly shelter rounds confirmed fewer cases of URI after these housing changes. The aLOS for cats decreased from 45-48 to 28 days, including time spent in foster care or on mandatory quarantine, and aLOS for cats in adoptions dropped from 30-37 to 14 days.

Discussion

The improvements to feline housing took several years to execute because of budgetary constraints and conflicting leadership priorities. Cats were housed with suboptimal noise buffering and climate control for years, leading to increased stress, disease, and prolonged aLOS. Over this period, the author gained knowledge of shelter facility design and acknowledges that they should have prioritized changes to feline housing earlier.

Even with the described modifications to the feline housing areas, some current practices do not comply with the ASV Guidelines. These include plexiglass-front cat condos (which limit fresh air exchange and reduce climate control) and having only one housing area with indoor-outdoor access. Plans are underway to exchange plexiglass fronts for vertical bars and install additional enclosed outdoor-access cat areas. Minimizing noise to cats remains a challenge during medical treatments, especially when moving between the veterinary suite and housing areas. Ideally, soundproof hallways and walkways would be available for transporting cats.

Finally, a formal disease surveillance system, rather than proxy measurement for tracking the incidence of feline URI, would have helped monitor the impact of the implemented housing modifications. Utilizing the shelter's software for tracking animal population health trends should be implemented in the future to help leadership recognize problems and exercise interventions when necessary.

This case summary documents how modifications to feline housing in a shelter can improve the behavioral and physical health of cats in care. When feline housing prioritizes preventing the spread of infectious disease while minimizing the exposure to stressful stimuli in the shelter, individual and population level outcomes are improved for cats, as demonstrated by a decrease in the prevalence of feline URI and a measurable reduction in aLOS.

Figures and Tables

Shelter Floor Plan Before Modifications

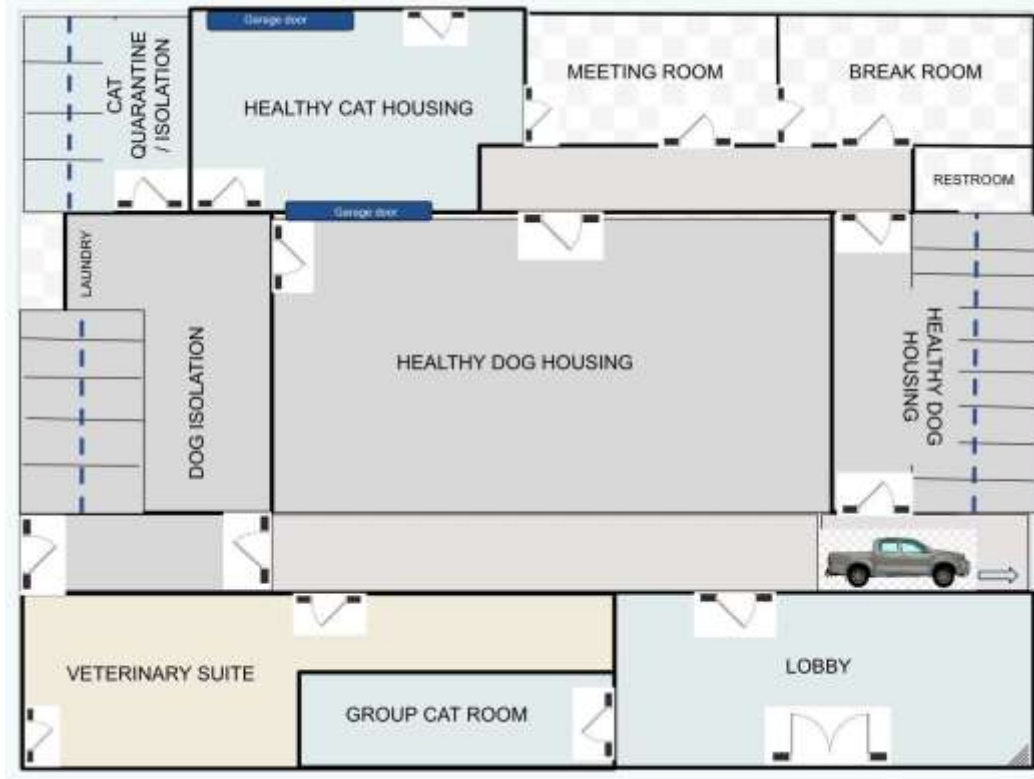


Figure 1. Notable problems with the original shelter layout include the need for more human pathways, the absence of a cat-intake area, and the proximity between cat and dog housing areas. Blue shading denotes areas used for housing cats. Pink indicates designated human walkways. Gray represents dog housing.

Summary of Deficiencies Identified in Cat Housing at the Shelter

Primary Enclosures	Housing Environment
Single compartment kennels	Ambient temperature too cold in winter
Wire crates used as permanent housing	Ambient temperature too hot in summer
Some kennels located at floor level	Barking dogs audible from all cat rooms
No hiding places	Cat housing located in high traffic areas
Litter box not separate from Food/Sleeping areas	No natural light in some areas
More than 6 cats in each group housing area	No separate intake room
Solid front kennels do not provide adequate ventilation	

Table 1. The author compared the shelter's feline housing to those outlined in the ASV Guidelines, identifying problems in individual cat housing units and cat housing rooms. Note that not all deficiencies apply to every cat housing area.

Shelter Floor Plan After Modifications

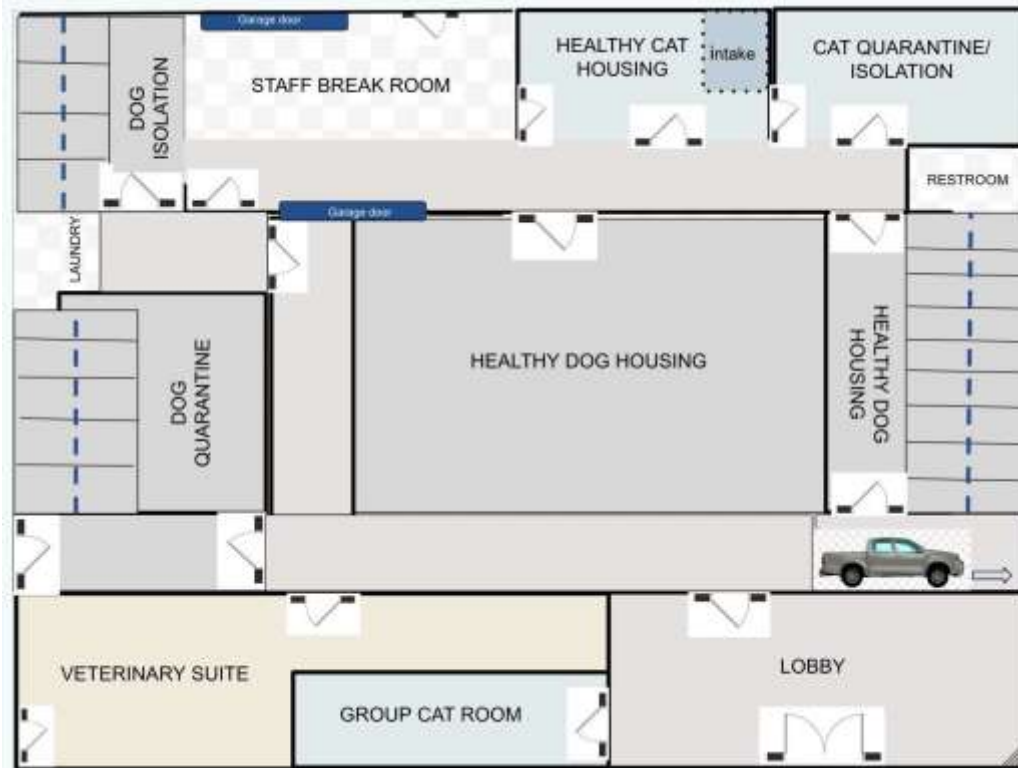


Figure 2. After housing modifications, cat housing areas are buffered from dog housing areas by hallways and other common areas. Leadership designated an intake area for cat intakes. Blue shading denotes areas housing cats. Pink indicates designated human walkways.

Endnotes

^a Shor-line[®], Kansas City, KS

^b Clark Cages Inc, North Bay, Ontario, Canada

^c Shor-line[®], Kansas City, KS

References

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3. DiGangi BA, Cussen VA, Reid PJ, et al. *Animal Behavior for Shelter Veterinarians and Staff*. 2nd ed. John Wiley & Sons, Inc; 2022.
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5. Dean R, Roberts M, and Stavisky J. *BSAVA Manual of Canine and Feline Shelter Medicine: Principles of Health and Welfare in a Multi-Animal Environment*. British Small Animal Veterinary Association; 2018.