Training Playbook:

Disease Control: The Role of Sanitation

Overview & Introduction:

When most shelters think of disease prevention we often think of vaccinations and medical care or treatments, and often forget the important role of **sanitation**.

Unlike a more controlled/sterile environment, like a veterinary hospital, animals in shelters have contact with numerous surfaces including floors, walls, outdoor yards, walking paths, communal living spaces, and an array of people (public, staff, and volunteers). Additionally, many animals enter shelters in non-optimal health, stressed, and more to often than not - with no history of vaccination; a perfect cocktail for infection. In some cases, animals might have already been exposed to various diseases prior to coming into the shelter and will be "shedding" with or without showing any blatant symptoms. So, with diseases everywhere and far too many opportunities for transmission, many might think that disease spread is inevitable. However, there's hope!

With appropriate intake protocols (such as completing vaccinations and physical exams before animals go into the general population or the adoption areas, providing adequate enrichment for ongoing stress reduction, and following a comprehensive sanitation plan), shelters can reduce exposure and increase their animals' overall immunity to disease. Thus, increasing public health and herd health are likely positive outcomes.

Sounds good in theory right – "just keep things clean and your animals will stay healthy", but many of us know our housing configurations, workforce, and budgets play significantly into how well or often we clean our shelter environment. This playbook will give a brief overview of considerations that every shelter can and should make when it comes to sanitation. Additionally, a few sample SOPs and video tutorials have been provided to demonstrate best practices that can easily be modified to fit within an existing operation and/or budget. For more specific feedback on your Sanitation Plan, please contact your regional team or the Best Friends National Shelter Support Team at team2025@bestfriends.org.

Sanitation Considerations & Needs:

The following describes considerations and/or steps to create a customized Sanitation Plan, relating workforce needs, chemical needs, and any other additional steps that should be taken into consideration for successful disease prevention:

Step One: Establish a Sanitation Plan Leader

While this role traditionally falls on the Kennel Manager, regardless of your organization's workforce structure, someone will
need to be responsible for evaluating current protocols, researching efficacy of practice, writing new or revising old practices, and training staff or volunteers tasked with on-

going sanitation. Since efficacy of practice is critical for success, Best Friends recommends that a veterinarian or someone equally as knowledgeable with shelter medicine is advised throughout this process.

Step Two: Understand the Difference Between Cleaning & Disinfecting

Looks can be deceiving! For all intents and purposes, cleaning simply refers to the removal of organic material and debris. Many shelters appear clean but are still breading grounds for disease. Disinfecting, however is the actual application of chemical to remove pathogens and is the most important part of effective sanitation. Protocols should be written to reflect this difference as well as the expectations for these differences, as some items may simply need to be cleaned daily, but not disinfected. Excessive cleaning can in fact lead to unnecessary stress, lowering the immune system, and aiding in the spread of disease.

Step Three: Determine What Needs to be Cleaned vs. Disinfected

As noted above, some items may need more than just simple cleaning. Germs are often spread throughout the shelter environment via animal and human traffic. So instead of focusing solely on animal housing areas such as cat and dog kennels, communal rooms, etc., we suggest looking at things with the following lens:

- **High-Contact Areas/Surfaces**: items or surfaces that many animals will come in contact with (should be disinfected regularly)
- **High-Risk Areas/Surfaces**: Surfaces that will touch juvenile animals or those not protected by vaccination or surfaces that have had contact with an ill animal (should be disinfected in between use/animals)
- **Low-Contact Areas/Surfaces:** items or surfaces that few animals and people will come in contact with but have potential for some disease transmission (e.g. fomite transmission) (should be cleaned regularly and disinfected as needed)
- **Low-Risk Areas/Surfaces:** items or surfaces that animals and people will NOT come into contact with (should be cleaned as needed/required)

As outlined below, an example of this step would be to identify all areas/surfaces of your shelter and rate them accordingly:

Area/Item	Risk Rating
Office Areas (animal not permitted)	Low-Risk Area/Surface
Office Areas (animals permitted)	High-Contact Area/Surface
Main Lobbies & Hallways	High-Contact Area/Surface
Animal Intake Housing Areas	High-Risk Areas/Surface
Transport or Field Service Vehicles	High-Risk Areas/Surface
General Population Housing	High-Risk Areas/Surface
Office Furniture	Low-Contact Area/Surface

Appliances & Computer Equipment	Low-Risk Area/Surface
Hands, Shoes, and Clothing – Staff (with all animal access including intake animals)	High-Risk Areas/Surface*
Hands, Shoes, and Clothing – Volunteers (with limited animal access)	High-Contact Area/Surface
Bedding, toys, etc. – reusable	High-Contact Area/Surface
Bedding, toys, etc. – non-reusable	Low-Risk Area/Surface
Storage Areas – non animal materials	Low-Risk Area/Surface
General Laundry – shared throughout population	High-Risk Area/Surface

Step Four: Select Cleaning & Disinfecting Agents

Now that you have outlined what items/areas/surfaces need to be cleaned and/or disinfected, it's time to decide what with. First and foremost, know there is no one perfect product that works for every environment, operation, surface, or situation. Animals with contagious diseases may need different disinfectants than those without. Certain areas of your shelter may be fine with regular household cleaning agents, while other may not. As with choosing medications/treatments for efficacy, scientific research and veterinarians experienced in shelter medicine should be consulted before committing to a particular product. Even the "almighty" Bleach can be rendered significantly ineffective when coming into contact with biomaterial and truly has no cleaning/detergent properties. So, what does one to do decide? We suggest looking at an array of products and consulting both vendors and medical professionals about the particulars of your operation and population. To make the decision process slightly easier, we've included an outline of available products by U.C. Davis Koret's Shelter Medicine Program. The chart below provides insight into each available product as well as its efficacy for certain contagions, and the cautions of use. Keep in mind, you may need to keep several products on hand if your situation varies regularly.

Note: Once a product is selected for a specific surface/area, the manufacture or vendor will dictate the frequency of cleaning, the proper application, and setting/contact time for best efficacy; all critical pieces of your sanitation plan and protocols.

Disinfectant Product	Good points	Cautions
Rescue™, formerly branded as Accel ® (accelerated hydrogen peroxide) http://ogenasolutions.com/rescue-for-companion-animals/ Formulations: Rescue Concentrate (most economical), Rescue RTU (faster-acting), Rescue Wipes (faster-acting)	Good detergent activity and effective in the presence of organic material making it a one-step product. Short contact time (1-10 min. depending on concentration or formulation). Marketed efficacy against non-enveloped viruses and dermatophytes.	No independent research available yet to verify Pure Oxygen (product by the same company) shampoo's efficacy against dermatophytes (m. canis).

	Liquid concentrate for easy dilution. Various application (e.g. spray bottles, hose-end applicators, centralized systems, pump up foamers). 90 day shelf life once diluted.	
Potassium peroxymonosulfate (e.g., Virkon® or Trifectant®) http://www.tomlyn.com/products/cat-dog-dog-cat-ferret/sanitizer/trifectant%C2%AE-tub	Completely inactivates un-enveloped viruses and dermatophytes when used correctly. Some detergent activity. Relatively good activity in the face of organic matter. Short contact time (5-10 min. depending on pathogen).	Dry powder form. Not designed for easy application through hose-end applicator systems (can be applied through specialized delivery systems). Leaves visible residue on some surfaces. 7 day shelf life once diluted.
Sodium hypochlorite (Bleach) Usually used at 1:32 dilution of 5% household bleach (1/2 cup per gallon), applied to clean, non-porous surface	Completely inactivates un-enveloped viruses when used correctly. Effective against dermatophytes at high concentration (1:10) – however this dilution is caustic. Very inexpensive. Stable for 30 days once diluted if stored correctly.	Significantly inactivated by organic matter, exposure to light, or extended storage. *No* detergent activity. Surfaces must be pre-cleaned and all organic matter removed prior to disinfection – thus always a two-step process. Corrosive to metal.
Calcium hypochlorite (e.g., Wysiwash®) https://www.wysiwash.com/	Completely inactivates un-enveloped viruses when used correctly. Can be used in hose-end applicator system (specific to this product).	Dry tablet form. No detergent activity. Dry form is irritating to mucous membranes if inhaled.
Sodium dichloroisocyanurate (e.g., Bruclean®) http://www.brulin.com/productdetails.aspx?pid=52&cid=26	Completely inactivates un-enveloped viruses when used correctly. Less corrosive to metal than bleach. Less of a respiratory irritant than bleach.	Dry tablet form. Dry form is irritating to mucous membranes if inhaled. Requires multiple step process for cleaning and disinfection via a specialized applicator.
Quaternary ammonium compounds (e.g., Roccal, Parvo-sol, A33, Maxxon, many others)	Some detergent activity. Only moderate inactivation by organic matter (less than bleach). Low tissue toxicity when diluted correctly.	*Not* reliably effective against un-enveloped viruses or dermatophytes. Potential to be toxic to cats causing tongue ulcers.
Chlorhexidine (e.g., Nolvasan®) https://www.zoetisus.com/products/cats/nolvasan-solution.aspx	Very low tissue toxicity.	Relatively expensive. Not reliably effective against un-enveloped viruses or dermatophytes.
Alcohol (e.g., Ethanol, Isopropyl alcohol) Usually in hand sanitizers	Less irritating to tissue than quaternary ammonium or bleach. Moderately effective against calicivirus at higher concentration.	Not reliably effective against parvovirus or dermatophytes.

Step Five: Establish Order of Cleaning

Once you know what needs to be cleaned, with which products, and its relating application, you will need to outline the order of cleaning in your Sanitation Plan. Order is particularly important and not simply because we want our public areas cleaned before opening to the public, but because this step represents the largest chance for transmission. Unless each area/surface is cleaned by a new person, or Personal Protective Equipment (PPE) such as gloves, gowns and foot-coverings are changed in between individual areas and surfaces, transmission rates are nearly doubled.

In order to minimize this risk, Best Friends recommends cleaning the areas where the healthiest animals are housed first, followed by stray/intake holding areas, and finally isolation areas or quarantined areas where sick animals are housed. Additionally, we recommend that within each area, when possible, juvenile or younger animals are cleaned first. While the time it takes to make these shifts and determinations can seem burdensome, the payoff is a healthier, likely quicker moving, population.

Step Six: Establish Written Protocols for Cleaning and Disinfecting

After outlining what areas and surfaces, products and order of sanitation, the next step will be establishing written protocols for each area/surface. At minimum, each written protocol should include:

- **Schedule:** How often the area/surface is to be cleaned/disinfected (after each use, daily, weekly, annually, during or after an outbreak?)
- **Product:** What cleaning and disinfection products are to be used and how should they be applied? (Including in detail: the correct process for dilution and contact time)
- **Responsible Party:** Who is responsible for writing the protocol, following the protocol and ensuring the protocol is being followed?
- **Quality Check:** Who, How, and how often, will you check to make sure the process is being done correctly?

For convenience we've provided a few sample protocols in the Sample Procedure section below.

Step Seven: Train Staff & Volunteers (AND THE PUBLIC)

Now that you have written protocols, it's time to train, or in many cases "re-train" your team on your new protocols. Training staff and volunteers is already such an engrained

part of most progressive shelters and should come naturally. If not, we've provided two video links below by the ASPCA that can act as tutorials for staff and volunteers to learn the basics of cleaning (daily/spot cleaning) and disinfecting (deep cleaning). While reviewing these videos alone likely won't speak to the specifics of your operations, we recommend that each staff and volunteer be given a copy of the written protocol to reference back to, and on-going training is offered.

- Spot cleaning cat kennels
- Deep cleaning cat kennels
- Spot cleaning dog kennels
- Deep cleaning dog kennels

Training shouldn't stop there either. Best Friends recommends that you work equally on training members of the public or shelter visitors as you do your staff. As noted above, human traffic is one of the biggest reasons for poor sanitation and spread of disease. Cleaning a contaminated environment is only half of the battle, so having adequate signage about animals with health concerns/risk, your relating protocols (i.e. no hands in kennels, wearing gloves when visiting certain populations, etc.), as well as amply-available hand sanitizers or hand-wash stations, is a great way to reduce risk and keep your population healthy.

Step Eight: Verifying Efficacy

With new products and protocols in place, you might feel like you have completely reduced your risk for disease spread and have air-tight sanitation practices; the question remains – are they working? And how do you know?

Occasional review of practices within a healthy population, and frequent review for at-risk population can ensure these practices are serving their purpose. In many cases, it can not only reaffirm the practice itself, but can motivate the workforce responsible to continue them.

While options vary depending on what disease you are trying to prevent, most veterinarians can easily access efficacy via live-culture. Streaking bacterial cultures from non-sanitized cages, exam surfaces, and other high-contact surfaces and comparing those to ones that were recently cleaned is one way to go about verifying success. Another great tool is "glo-germ", a product which fluoresces under an ultraviolet light designed to mimic the spread of germs (available at www.glogerm.com for under $20 a bottle). This can be used in a variety of ways, for example: glo-germ can be secretly sprinkled in the backs of kennel or cages prior to cleaning, and staff can be rewarded if they successfully get it all out.

The larger point being, make sure your protocols are working for you, not against you, and try to have fun while doing it!

Sample Procedure & Other Sanitation Resources:

Following the steps above will likely help you create and maintain a well sanitized and healthy environment, but we know that's easier said than done. So, to help guide you along your journey we're also including a few sample procedures and other resources you might find helpful as you finalize your Sanitation Plan. If you need further assistance or clarification, please reach out to your regional strategist, regional director or the Best Friends National Shelter Support team at team2025@bestfriends.org.

- Presentations about Sanitation or Cleaning Protocols
    - Dr. Karsten's lecture slides on sanitation from the 2015 CVC conference in Washington DC.
    - Dr. Kate Hurley's presentation on sanitation in animal shelters at Tony La Russa's Animal Rescue Foundation's 8th annual "The Business of Saving Lives" conference
    - Dr. Julie Levy and Dr. Jan Scarlett Maddie's Fund Training Video: Cleaning & Sanitation

- Sample Protocol Documents
    - Association of Shelter Veterinarians Guidelines for Standards of Care (see section Sanitation starting on page 14)
    - University of South Florida Standard Operating Manual (see section 9 cleaning)
    - UC Davis Koret: Sanitation in Animal Shelters
    - Best Friends Animal Society's Los Angeles Program Kennel Cleaning SOPS:
        - Dogs (see "kennel cleaning")
        - Cats (see "cleaning routine outline")