

Hands Down, Feet First, Clean Clothing Not Optional

Minimizing the effects of common culprits in disease transmission

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To kill the most germs when washing hands, you need to scrub all skin surfaces for 20 seconds. Clean paper towels, which are kept near the sinks in this Japanese animal shelter, are essential to proper disinfection.

KATE HURLEY

Imagine you're a stray puppy, newly admitted to your friendly local animal shelter. With only your first vaccine under your belt, you remain precariously vulnerable to an assortment of deadly infections. Luckily for you, you find yourself gently placed in a freshly cleaned and disinfected kennel, where a caring staff member has scrubbed all the nooks and crannies and used a disinfectant guaranteed to wipe out every possible germ—even the dreaded parvovirus. Phew. You're safe now, right?

Well, maybe not. What if, somewhere down the hall, another puppy is shedding

some dreaded disease? Are you really safe there in your cozy kennel? You don't have any plans to be out wandering the aisles, but what's clinging to that pair of boots walking toward you? What hidden virus might be on the hands of the kind volunteer who reaches down to pet you? And what's that brownish smear on the caretaker's shirt as she carries you down the hall to meet a potential adopter?

You get my point. Though the animals don't freely roam about most shelters, we can efficiently transmit germs on our own hands, feet, or clothing, un-



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dermining our best efforts to provide a safe, clean environment.

Fortunately, we can take simple steps to decrease the amount of disease we carry from animal to animal in the course of a day in the shelter. In one study that demonstrated the role of human traffic in spreading disease between cats, the results were dramatic. A group of cats infected with feline calicivirus (one of the causes of feline upper respiratory disease complex) was housed in a wire cage in a small room. A group of healthy cats was housed just over four feet away in



If your shelter is battling an outbreak of parvo or another highly contagious disease, you can wear shoe covers or designate certain boots for certain areas, as staff at this shelter have done. KATE HURLEY

the same type of cage. Caretakers were careful to always handle the healthy cats with clean hands before touching the sick ones. The calici-infected cats sneezed away for 30 days, but amazingly, none of the healthy cats developed calicivirus infection in spite of the proximity. Then the order was reversed—with caretakers cleaning and feeding the infected cats before the healthy ones and failing to take precautions by cleaning up between groups. All the healthy cats were infected with calicivirus within a week.

As this study clearly illustrates, animals should be handled in a certain order; cleaning and feeding should start with the most vulnerable (healthy puppies and kittens) and end with those most likely to be ill. That's the ideal scenario, but the reality in most shelters is that caretakers often have to move between different subpopulations many times throughout the day. We even have to be careful when handling a group of apparently healthy puppies, who could be incubating germs

that will spread to human hands, feet, and clothing.

A Hand Handbook

My favorite research database pulls up 651 scientific articles that include the phrase “hand washing methods.” The interest in this subject no doubt reflects the enormous importance of hands in human disease transmission. Hands not only touch animals and objects in the environment; they are likely to make their way into contact with our own mouths and noses. To protect both human and animal health, experts recommend three primary methods for managing hands: wearing gloves, washing with soap and water, and using hand sanitizers.

Gloves are the most foolproof choice if they are actually changed between every animal—something that's often not feasible for people caring for hundreds of animals each day. They're also expensive and not environmentally friendly. Under certain circumstances, however, it's clearly

worth the hassle—particularly when handling animals who may be infected with especially resistant germs or when a zoonotic infection is suspected. Gloves are also necessary when handling animals under quarantine for parvo or ringworm. During a shelter-wide outbreak, gloves may be needed when caring for the whole population. For isolated incidences of disease, staff might choose to use gloves only with patients known or suspected to be infectious. For handling that does not require great dexterity—for instance, when moving cats from one cage to another—staff can wear lightweight food preparation gloves (basically plastic bags with fingers that serve as a cheap alternative to latex gloves, which should be used more for activities such as drawing blood or performing a physical exam). Food prep gloves can be found for less than a penny a pair, and they are quick and easy to take on and off.

I used to believe that hand washing was the next best choice at times when

gloves are impractical or when we've handled an animal without gloves and later realize he may have been infected. But the research doesn't necessarily support this opinion. It's true that proper hand washing removes even the most disinfectant-resistant germs and is therefore required under certain circumstances. But it's surprisingly hard to wash your hands correctly, and ineffective hand washing may actually be less helpful than correct use of a good hand sanitizer. According to the Centers for Disease Control and Prevention, the following procedure should be used:

1. Wet hands with warm running water.
2. Lather with soap.
3. Scrub all skin surfaces for a minimum of 20 seconds. (That's longer than you might think!)
4. Rinse.
5. Thoroughly dry hands using two single-use paper towels for 10 seconds each. If you're using cloth towels, use a fresh one for each hand washing episode. Dry hands for 10 seconds on one area of the towel and 10 seconds more on a fresh area.

The drying step is especially important. Not only do germs survive longer on wet hands, but moisture helps them clamber onto a vulnerable animal (or into your own body). One of my pet peeves is seeing an empty paper towel dispenser or one dirty old bath towel at a shelter sink—this is not the place to economize! Washing and failing to dry is sometimes actually worse than not washing at all. Hand washing stations—complete with liquid hand soap and paper towels—should ideally be placed in every animal housing area of a shelter.

Hand sanitizer gels provide another method of decontamination. They're cheap, easy to install, and easy to use. So they must be less effective, right? Not necessarily. Even a technique with lower results in lab tests might prove better in reality if it's used more consistently and correctly than other methods. In one study that compared the bacterial levels on vet students' hands, bacterial counts were actually lower on the hands of those who used a hand sanitizer than on the hands of those who washed and dried.

The best hand sanitizers for shelter use (due to better efficacy against feline calicivirus) contain 60 to 90 percent ethanol alcohol. Users should follow product directions, which usually say to rub hands for at least 10 seconds before allowing them to air-dry. Alcohol-free products should generally be avoided: in addition to being less reliable against calicivirus, some contain phenol (Triclosan) or quaternary ammonium (benzylalkonium) compounds, which can be toxic to animals in high concentrations. To ensure the best and safest products are used, shelters should provide hand sanitizer to staff and volunteers rather than encouraging folks to bring their own.

Of course, there's always a catch: no hand sanitizer is effective against some of our most durable enemies, including parvo, panleukopenia, and ringworm. In the face of these diseases, a sanitizer will simply create a sticky film that more efficiently carries germs from one place to another. That's why hand washing stations and gloves should always be available as well.

Germs Are A-Foot

If we were involved in human health care, I'd be more than halfway done now. Nurses don't tromp around on patients' beds with dirty feet, and human patients rarely roll around on the floor and then lick themselves all over. But the way many dog runs are set up, caretakers must walk in and out for cleaning, carrying with them whatever happens to be on the soles of their shoes. Germs can easily make their way into an animal's mouth through grooming, playing, or chewing of toys that have been on the floor. Animals housed in cages off the ground are less vulnerable to this concern, and foot sanitation is consequently less important in typical cage-bank-style housing areas.

Luckily, if your basic cleaning program is effective, the risk of transmitting disease on your shoes is probably not high. While you might track some germs into a cage when you enter to clean it, spraying the surface with a good disinfectant as you leave will effectively kill off whatever you tracked in. Foot sanitation should be

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a greater concern under a few special circumstances: when you're dealing with a durable germ; when you're dealing with an outbreak of unknown cause; and before caring for particularly vulnerable groups (e.g., puppies or kittens who have floor contact).

To avoid tracking germs through the shelter, you can use foot baths, shoe covers, or dedicated shoes that stay within a certain area. Foot baths are the most convenient—everyone can easily step into one on the way in and out of a given area. Unfortunately, they don't tend to work very well. All disinfectants require some amount of contact time for optimal effect, and this will not be achieved with a quick dip in a foot bath. Also, many disinfectants are significantly inactivated by dirt. That means the crud stuck up between the treads of a caretaker's shoe will still be just as cruddy after being dipped in a bath of bleach, and the bleach itself will be less likely to work the next time the foot bath is used.

To maximize effectiveness of foot baths:

1. Use a disinfectant that's effective against likely germs and reasonably efficient even when contaminated by organic matter.
2. Make sure the foot bath is deep enough to completely cover shoe treads.
3. Provide a stiff bristled brush to remove dirt caught in shoe treads.
4. Change foot baths at least daily or more often if visibly dirty.

Because the correct use of foot baths is fairly troublesome, use them only where really needed. It's better to have just a few well-maintained, strategically located foot baths (e.g., outside of areas where puppies or kittens have floor contact) than an abundance of foot baths that turn into mere obstacles. At a shelter where I used to work, we had what I now think of as "superstitious foot baths": a rather dirty towel in the bottom of a litter pan with just the faintest hint of bleach clinging to it. We would all step earnestly into the pan as we entered and left each ward. This likely had little more benefit than throwing salt over our shoulders on Friday the 13th to ward off bad luck. In a busy shelter, there are better ways to use your time. If you are keeping an area under quarantine for parvovirus or if other circumstances dictate a foolproof method of preventing germ-tracking on your feet, use shoe covers or a designated pair of boots worn only in that area.

Clothes Make the Man Contagious

Even if hands and feet are sterile, the expanse of clothing in between can be troublesome in both the animal health and human health arenas. In one study, potentially harmful germs were present on almost half of doctors' neckties. Animal care is a much more full-contact sport than human medicine: if that many germs can find their way onto a physician's tie, imagine how many horrifying germs can hitch a ride on your shirt after even a few hours of cleaning, carrying, and handling animals. This is worsened by the propensity of animals to shed hair onto our clothing that's already coated with whatever was on the tongue they just groomed them-

selves with or whatever lurked on the floor (or litter box) they were just lounging on. If you hold an animal up against your body, changing clothing afterwards may be just as important as changing gloves.

For "dirty" activities such as cleaning, treatment of sick animals, and euthanasia, staff can change clothing or wear protective garments. Donning a clean top before working with healthy animals or (even more important) new intakes is a simple way to limit disease transmission



Exchanging a dirty top for a clean one before working with healthy animals or new intakes is a simple way to limit disease transmission through clothing. This image shows a bacterial culture plate from a shelter health technician's scrub top after half a day of normal activity.

through clothing. Although it's impractical to indulge in a full change of outfit before handling every animal, it's helpful to have extra aprons or protective smocks freely available. It's a good idea to encourage staff and volunteers to change before moving from one subpopulation to another and after handling an animal who may be ill. I'm also an advocate of keeping carriers in cages if space permits; staff can transport cats around the shelter in the carriers rather than holding them up against their clothing. (The carrier provides a cozy hiding place for a shy cat, too.) Alternatively, employees can throw clean towels or the cat's own bedding over a shoulder or onto their laps to provide some protection when socializing with a cat.

Once they're contaminated, what do you do with all those smocks and towels and tops? Good news here: Most of the time, you need only throw them in a regu-

lar or commercial washing machine using hot water and bleach, and you can dry on the heat cycle. The recommended portion of bleach (half a cup for an average household washer) is usually sufficient. And contrary to popular belief, bleach and hot water do mix, as do bleach and laundry detergent. As long ago as 1938, high-temperature laundering with bleach was found to be an effective method of sanitizing hospital linens, and subsequently it was found that bleach used with water temperatures as low as 48 C (118 F) was sufficient. An additional measure of safety is provided by the heat of mechanical drying; for this reason, hanging laundry to dry is less ideal, especially if not in an area exposed to direct sunlight.

The laundry area itself can become heavily contaminated. If ringworm spores are scattered all over the room (and if the clean laundry is folded and put away by the same person loading dirty laundry into the washer), clean laundry may not stay that way for long. Consider using disposable gowns or throwing out clothing or bedding heavily contaminated by very durable pathogens such as ringworm or parvo—or at least bagging carefully prior to washing—and avoid mixing these in with other linens.

Avoid overloading the washing machine. If it's so tightly packed that clumps of hair or poop remain in the mix after laundering, the whole process may be rendered ineffective. If anything, washing machines should be slightly underloaded.

Like most areas of shelter health care, there's no one-size-fits-all solution, but I hope I've provided a few ideas for managing the disease-transmitters so inconveniently attached to our bodies: our hands, feet, and clothing. We spend so much time and energy cleaning runs and cages and surfaces; the last thing we'd want to do is undermine all that work by spreading disease in the simple act of caring for a shelter animal.

Now imagine that stray shelter pup, snoozing contentedly away on a fresh, clean blanket, secure in the knowledge that the kind hands that will care for him have been washed and thoroughly dried, for 10 seconds apiece, on at least two paper towels. AS