



Infection Prevention and Control Best Practices

For Small Animal Veterinary Clinics

Dear veterinary staff member,

We are conducting a brief online survey to understand your current infection control practices and your motivation for seeking out these guidelines. Participation in the survey is strictly voluntary. You may exit the survey at any time, and you may skip any questions you wish. All responses are anonymous

This survey should only take approximately 2-3 minutes to complete. We would greatly appreciate your feedback.

Click this link to start the survey:

https://uoguelph.eu.qualtrics.com/jfe/form/SV_6DbIPOk3dZnLbQ9

Routine Practices

Hand Hygiene

Hand hygiene is the responsibility of all individuals involved in health care. It is one of the easiest and most effective ways to prevent infections in the healthcare setting. Effective hand hygiene kills or removes microorganisms on the skin while maintaining hand health and skin integrity (i.e. prevents chapping and cracking of skin). Sterilization of the hands is not the goal of routine hand hygiene – the objective is to reduce the number of microorganisms on the hands, particularly the number of microorganisms that are part of the transient microflora of the skin, as these include the majority of opportunistic pathogens on the hands. These transient microbes may be picked up by contact with a patient, another person, contaminated equipment, or the environment. There are two main methods of removing/killing microorganisms on hands: washing with soap and running water or using an alcohol-based hand sanitizer.

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When to perform hand hygiene

- Before and after contact with a patient
 - Especially before performing invasive procedures
- Before and after contact with items in the patient's immediate environment
- Before any aseptic or invasive procedure
- Before putting on and especially after taking off gloves
- After any contact with or any activity involving the body fluids of a patient
- Before eating food or having any hand-to-mouth contact
- After personal body functions, such as using the toilet or blowing one's nose

Factors that influence the effectiveness of hand hygiene

- **Condition of the skin:** Intact skin is easier to clean than skin that is chapped, cracked, cut, abraded or otherwise inflamed. Appropriate use of moisturizers as needed should be encouraged to maintain good skin condition (see [skin care section](#)).
- **Finger nails:** Natural nails more than 3-4 mm long are difficult to clean, can pierce gloves and harbour more microorganisms than short nails. Artificial nails or nail extenders should not be worn by anyone involved directly in patient care, as they have been implicated in the transfer of microorganisms in human medicine. Chipped nail polish may also increase the number of microbes found on fingernails ([Boyce 2002](#)).
- **Jewelry:** Jewelry can be very hard to clean, and physically protects bacteria and viruses from the antiseptic action of alcohol-based hand sanitizers and the mechanical cleaning action of soap and running water. Rings, in particular, increase the number of microorganisms present on hands and increase the risk of tears in gloves. Hand and arm jewelry (e.g. rings, bracelets) should be avoided as much as possible even for routine patient care, but at a minimum should be removed before aseptic procedures to facilitate effective hand hygiene.

Hand washing with soap and water

Most transient bacteria present on the hands are removed during the mechanical action of washing, rinsing and drying hands. Hand washing with soap and running water must be performed when hands are visibly soiled. If running water is not available, use moistened towelettes to remove all visible dirt and debris, followed by an alcohol-based hand sanitizer.

Bar soaps are not acceptable in veterinary practice settings because of the potential for indirect transmission of pathogens from one person to another due to contamination of the bar itself. Instead, liquid or foam soap should be used with the following recommendations:

- Use a disposable pump dispenser for soap.
- Do not refill soap containers without first cleaning and disinfecting them, since there is a risk of contamination of the bottle itself which increases over time and with use. Cleaning should include scrubbing with a detergent to break up biofilms that may have formed. Use of non-refillable bottles is recommended (PHO 2014).
- **Use antibacterial soaps in critical care areas** such as ICU, and in other areas where invasive procedures are performed. Non-antibacterial soaps are adequate for areas such as washrooms and kitchen areas.

Hand washing technique (see [Boyce 2002](#) and [Longtin 2011](#) for additional information and instructional video):

1. Remove all hand and arm jewelry.
2. Wet hands with warm (not hot) water. Hot water is hard on the skin, and will lead to dryness and additional skin damage.
3. Apply liquid or foam soap to one palm.
4. Vigorously lather all surfaces of both hands for a **minimum of 15 seconds**. This is the minimum amount of time required for mechanical removal of transient bacteria. Pay particular attention to finger tips, between fingers, backs of the hands and base of the thumbs. These are the most commonly missed areas. A simple way many people time their hand-washing is by singing “Happy Birthday” twice.
5. Using a rubbing motion, thoroughly rinse soap from hands under warm running water. Residual soap on the skin can lead to dryness and cracking of skin.
6. Dry hands thoroughly by blotting gently with a paper towel. Rubbing vigorously with paper towels can damage the skin.
7. Turn off taps using the paper towel to protect the hands and avoid recontamination of the hands.

NOTE: If air hand dryers are used, hands-free taps are necessary, as turning taps off without using paper towel as described will result in recontamination of hands after washing.

Alcohol-based hand sanitizers

Alcohol-based hand sanitizers/rubs are, with some exceptions, the preferred method for decontaminating hands that are not visibly soiled. They have superior ability to kill microorganisms on the skin than even hand washing with antibacterial soap, can quickly be applied, are less likely to cause skin damage, and can be made readily available at almost any point of care. Use of non-alcohol-based waterless hand sanitizers in healthcare settings is not recommended.

Alcohol-based hand sanitizers should contain 70-90% alcohol. Use of products containing emollients helps to reduce skin damage which can otherwise occur with frequent use of hand sanitizers. They may be more useful as alternatives to traditional surgical scrubbing techniques (see [Chapter: Surgery](#)).

Alcohol-based hand sanitizers are not effective against certain pathogens, including bacterial spores (e.g. clostridial spores) and some protozoa (e.g. *Cryptosporidium* spp.). Alcohol is also not as effective against non-enveloped viruses (e.g. canine parvovirus, feline panleukopenia virus, feline calicivirus) as it is against most other microbes. Nonetheless, alcohol-based hand sanitizers may be useful even if alcohol-resistant pathogens are present. The improved hand hygiene compliance seen with alcohol-based hand sanitizers and their efficacy against other pathogens are important aspects of infection control. However, if hands are potentially contaminated by an alcohol-resistant organism, hand washing with soap and running water should be performed if possible. Although antimicrobial soaps are similarly ineffective against these pathogens directly, the physical process and mechanical action of hand washing can decrease the number of these organisms on the hands.

Hand sanitizer technique:

1. Remove all hand and arm jewelry.
2. Ensure hands are visibly clean (if soiled, follow hand washing steps).
3. Apply between 1 to 2 full pumps or a 2-3 cm diameter pool of the product onto one palm.

4. Spread the product over all surfaces of hands, concentrating on finger tips, between fingers, back of the hands, and base of the thumbs. These are the most commonly missed areas.
5. Rub hands until product is **dry**. This will take a **minimum of 15 to 20 seconds** if sufficient product is used.
 - Hands must be fully dry before touching the patient or patient's environment/equipment for the sanitizer to be effective, and to eliminate the rare risk of flammability in the presence of an oxygen-enriched environment, as may occur in the presence of gas anesthetic machines.

Intact skin is the first line of defense against bacteria.

Skin care

Careful attention to skin care is an essential part of a hand hygiene program. Intact skin is the first line of defense against bacteria. Products used for hygiene should be “hand-friendly” — for example, alcohol-based hand sanitizers containing emollients can help reduce the drying effect of the alcohol. If skin integrity is an issue, the individual should consult his or her physician. Skin lotions can help maintain the health and integrity of the skin, but it is important to use a skin lotion that does not interfere with glove integrity or antiseptic efficacy. Petroleum or oil-based lotion formulations can weaken latex gloves and increase permeability, therefore these types of products should only be used at the end of the work day ([Kohn 2003](#)). If lotions are used during the work day, select a water-based product. Consideration should be given to product selection to ensure there are no negative interactions between gloves or antiseptic agents and lotions.

Compliance

Compliance with hand hygiene protocols is the most challenging component of ensuring efficacy. Numerous studies have investigated hand hygiene compliance in human hospitals ([Boyce & Pittet 2002](#); [Larson 2007](#)) and, in general, compliance is poor (<50%) among healthcare workers. In one study, video observation of hand hygiene among veterinary staff was shown to be only 14% in terms of frequency, and duration was considered inadequate in the vast majority of attempts ([Anderson 2014](#)).

Major barriers to compliance in many situations include skin irritation (irritant contact dermatitis), lack of accessible hand hygiene stations, time constraints (i.e. too busy), lack of perceived importance relative to other duties, and forgetting to perform hand hygiene activities ([Anderson & Weese 2016](#)).

Improving compliance

- Providing **better access** to hand hygiene stations and supplies minimizes the time required to comply with protocols, and acts as a visual reminder to perform hand hygiene. Because renovating facilities to improve the location of sinks for hand washing is often not feasible, improving access typically involves introducing or changing the location and/or number of alcohol-based hand sanitizer dispensers, e.g. placing one by the door inside each exam room.
 - Be aware of potential local fire code regulations regarding installation of wall dispensers near electrical outlets or in carpeted areas.
- **Monitoring and feedback systems** can also have a significant impact on compliance. Feedback may be from fellow staff, patient owners, researchers or infection control personnel. Making people aware of how often they neglect to perform hand hygiene, and/or giving them positive feedback when their compliance improves (the “stick and carrot” approach), seems to provide additional incentive to further improve compliance. Just as hand hygiene compliance among physicians is often lower than among nurses ([Pittet 2001](#), [Pittet 1999](#)), the same may be true of veterinarians and technicians/nurses in some cases ([Smith 2013](#)). Empowering technicians to remind veterinarians to perform hand hygiene and observe other infection control protocols may help to improve overall compliance.
- **Convince staff** of the importance and utility of hand hygiene in curbing the spread of infectious agents. Staff generally recognize the importance of hand hygiene and the appropriate times to perform it, yet compliance remains low. It may be beneficial to highlight that hand hygiene is also a critical means of preventing potential indirect transmission of non-zoonotic pathogens in addition to those that are zoonotic, from animal-to-animal, thus protecting veterinary patients.

- Make hand hygiene a **team effort**. In order to be effective, infection control measures such as hand hygiene need to be practiced by every member of the clinic team, from veterinarians and technicians to kennel staff and volunteers. Several studies have suggested that involvement and support of upper-level management and administration are necessary for effective implementation of hand hygiene protocols in human health care facilities (Whitby 2007) and it is likely that the same is true in veterinary clinics.

It is reassuring to the client to see clinic personnel performing hand hygiene, particularly within the exam room, and it increases client awareness of the importance of hand hygiene. Practices may wish to reinforce this further by providing alcohol-based hand sanitizers in the waiting room as well.

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