



College of Veterinary Medicine Policies and Procedures

Subject: Infection Control
Recommendations for Small
Animals

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Director, and AHC Infection Control Committee
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INFECTION CONTROL RECOMMENDATIONS FOR SMALL ANIMALS

The Animal Health Center should establish two types of restricted animal access:

- 1) **Isolation:** Animals suspected of having the following diseases or clinical signs should be placed in isolation:
 - a. acute distemper
 - b. parvo
 - c. infectious hepatitis
 - d. leptospirosis
 - e. Bordetellosis (kennel cough)
 - f. feline upper respiratory tract infections
 - g. equine influenza
 - h. Salmonellosis
 - i. E coli gastroenteritis
 - j. strangles

Note: This list is not all inclusive and only serves as a list of example diseases. Clinicians should use their judgment and err on the side of precaution, if needed.

- 2) **Restricted access** for any animal with a multi-drug resistant infection (MDRI). These include:
 - a. any organism susceptible to two or less antimicrobial families
 - b. gram-negative infections resistant to 3rd-generation cephalosporins (extended-spectrum beta-lactamase (ESBL) producers) and fluoroquinolones
 - c. Methicillin-resistant Staph. Aureus (MRSA)

Clinical microbiology will:

1. Report suspected MDRI to the head technician in the service.
2. The veterinarians listed on the submission will be notified by email.
3. Flag the record to indicate the organism is a MDRI.

The following protocols should be followed for animals with MDRI:

1. The cage should be identified with a green card indicating it has a MDRI. Small animals should be identified with a green temporary identification collar.

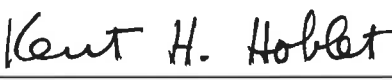
2. The technician shall add a warning to the medical record of the animal using the “other” designation on red patient warning page. This warning may be removed if two negative cultures confirm that the infection no longer exists, and the clinician believes the infection to be resolved.
3. The animal should be held in the same cage or stall during its entire stay in the AHC. This cage/stall should be as far removed from other patients as logistically feasible.
4. Personnel should wear appropriate personal protective equipment, such as disposable gloves and a gown, when handling MDRI animals. They should wash their hands and decontaminate* any instruments used (e.g., stethoscopes, bandage scissors, thermometers, etc.) after contact.
5. When the animal is taken to another location such as radiology or surgery, that service must be notified that the animal has an MDRI and the area subsequently decontaminated* appropriately.
6. When a small animal is transported to another area via gurney, the transport device should be promptly decontaminated* and then cage-washed.
7. These animals should typically be handled last when treating a series of animals.
8. When the animal is discharged or dies, the cage and its wheels should be decontaminated* on site and then taken to the cage washer.

*Use CDC “Intermediate level disinfectant” – see Appendix A (this does NOT include chlorhexadine (Nolvasan®)).

Cleaning and decontamination practices

1. Students, clinicians and technicians should frequently wash their hands between patients. Signs serve as a reminder.
2. Once weekly technicians should disinfect clipper blades, leashes, muzzles or other appropriate items.
3. All animal cages will be cleaned out and disinfected with the cage washer system. Verification that the appropriate temperature was reached will be confirmed. Random RODAC sampling will occur as set forth in the Infection Control Manual.
4. Containers holding antiseptics (e.g., 4X4 gauze soaked in chlorhexadine or povidone iodine scrub, “cold packs”) have been known to allow for the growth of an organism resistant to that disinfectant. Once per student rotation the containers should be emptied, cleaned, either autoclaved or washed in sodium hypochlorite (Clorox), and dried prior to restocking. Logistically, the service may wish to have two to three sets of such containers that allow for rotation.
5. Janitorial services will frequently change their mop water and their vacuum cleaner bags. Use of floor cleaning equipment that does NOT recirculate dirty water is used where accessible.

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Appendix A

CDC - December 19, 2003 / 52(RR17);66

Methods for Sterilizing and Disinfecting Patient-Care Items and Environmental Surfaces

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5217a4.htm>

Process	Result	Method	Examples	Health-care application	
				Type of patient-care item	Environmental surfaces
Sterilization	Destroys all microorganisms, including bacterial spores.	Heat-automated	Steam, dry heat, unsaturated chemical vapor	Heat-tolerant critical and semicritical	Not applicable
		High temperature	Ethylene oxide gas, plasma sterilization	Heat-sensitive critical and semicritical	
		Low temperature	Chemical sterilants. Glutaraldehyde, glutaraldehydes with phenol, hydrogen peroxide, hydrogen peroxide with peracetic acid, peracetic acid	Heat-sensitive critical and semicritical	
High-level disinfection	Destroys all microorganisms, but not necessarily high numbers of bacterial spores.	Liquid immersion†	Washer-disinfectant	Heat-sensitive semicritical	Not applicable
		Liquid immersion†	Chemical sterilants high-level disinfectants. Glutaraldehyde, glutaraldehyde with phenol, hydrogen peroxide, hydrogen peroxide with peracetic acid, ortho-phthalaldehyde	Noncritical with visible blood	Clinical contact surfaces; blood spills on housekeeping surfaces
Intermediate-level disinfection	Destroys vegetative bacteria and the majority of fungi and viruses. Inactivates <i>Mycobacterium bovis</i> .§ Not necessarily capable of killing bacterial spores.	Liquid contact	U.S. Environmental Protection Agency (EPA)-registered hospital disinfectant with label claim of tuberculocidal activity (e.g., chlorine-containing products, quaternary ammonium compounds with alcohol, phenolics, iodophors, EPA-registered chlorine-based product†)	Noncritical without visible blood	Clinical contact surfaces; housekeeping surfaces
		Liquid contact	EPA-registered hospital disinfectant with no label claim regarding tuberculocidal activity.** The Occupational Safety and Health Administration also requires label claims of human immunodeficiency virus (HIV) and hepatitis B virus (HBV) potency for clinical contact surfaces (e.g., quaternary ammonium compounds, some phenolics, some iodophors)	Noncritical without visible blood	Clinical contact surfaces; housekeeping surfaces

* EPA and the Food and Drug Administration (FDA) regulate chemical germicides used in health-care settings. FDA regulates chemical sterilants used on critical and semicritical medical devices, and the EPA regulates gaseous sterilants and liquid chemical disinfectants used on noncritical surfaces. FDA also regulates medical devices, including sterilizers. More information is available at 1) <http://www.epa.gov/opad001/chemreg/index.htm>, 2) <http://www.fda.gov/oc/ohi/index.html>, and 3) <http://www.fda.gov/cdrh/ode/germlab.html>.

† Contact time is the single critical variable distinguishing the sterilization process from high-level disinfection with FDA-cleared liquid chemical sterilants. FDA defines a high-level disinfectant as a sterilant used under the same contact conditions as sterilization except for a shorter immersion time (C-7).

§ The tuberculocidal claim is used as a benchmark to measure germicidal potency. Tuberculosis (TB) is transmitted via the airborne route rather than by environmental surfaces and, accordingly, use of such products on environmental surfaces plays no role in preventing the spread of TB. Because mycobacteria have among the highest intrinsic levels of resistance among vegetative bacteria, viruses, and fungi, any germicide with a tuberculocidal claim on the label (i.e., an intermediate-level disinfectant) is considered capable of inactivating a broad spectrum of pathogens, including much less resistant organisms, including bloodborne pathogens (e.g., HBV, hepatitis C virus [HCV], and HIV). It is this broad-spectrum capability, rather than the product's specific potency against mycobacteria, that is the basis for protocols and regulations dictating use of tuberculocidal chemicals for surface disinfection.

† Chlorine-based products that are EPA-registered as intermediate-level disinfectants are available commercially. In the absence of an EPA-registered chlorine-based product, a fresh solution of sodium hypochlorite (e.g., household bleach) is an inexpensive and effective intermediate-level germicide. Concentrations ranging from 500 ppm to 800 ppm of chlorine (1:100 dilution of 5.25% bleach and tap water, or approximately ¼ cup of 5.25% bleach to 1 gallon of water) are effective on environmental surfaces that have been cleaned of visible contamination. Appropriate personal protective equipment (e.g., gloves and goggles) should be worn when preparing hypochlorite solutions (C-2, C-3). Caution should be exercised, because chlorine solutions are corrosive to metals, especially aluminum.

** Germicides labeled as "hospital disinfectant" without a tuberculocidal claim pass potency tests for activity against three representative microorganisms: *Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *Salmonella choleraesuis*.

Appendix B

Common disinfectants used in veterinary medicine

From "P.S. Morley / *Vet Clin Food Anim* 18 (2002) 133-155"

Class	Disinfectant	Application in veterinary medicine	Activity in organic material	Comments
		Disinfectant for Foot and Mouth Disease Virus	Poor	Non-toxic and non-irritating at typical dilutions.
	Lactic acid	Carcass decontamination	Poor	Non-toxic and non-irritating at typical dilutions. Immediate bactericidal effect and delayed bacteriostatic effect results in extended shelf-life of meat and decreased risk of food-borne pathogen transmission.
Alcohols	Ethanol, methanol, isopropanol	Surface disinfectant, topical antiseptic, hand sanitizing lotions.	Very poor	High concentrations for effective use in most situations as a germicide. Commercially available hand sanitizing lotions have been shown to greatly reduce bacterial counts on skin. Also effective against many viruses. Highly flammable. Irritating to injured skin, but low toxicity.
Aldehydes	Formaldehyde	Surface disinfectant, fumigant	High	Highly irritating and toxic, both through contact and fumes. Exposure to formaldehyde vapor has associated carcinogen risk. Contact sensitization can develop rapidly. Active against nonenveloped viruses, and glutaraldehyde is an effective sporocide with sufficient contact. Non corrosive on metals, rubber, plastics, lenses, and cements. Glutaraldehyde is most active at alkaline pH.
	Glutaraldehyde	Surface disinfection and sterilization	High	
Alkalis	Sodium hydroxide (lye, soda lye)	Environmental disinfection, surface disinfectant	High	Highly caustic. Strong concentrations can be used for prion disinfection.
	Calcium hydroxide (slaked lime)	Environmental disinfection	Moderate	Sometimes used as a whitewash that kills or inhibits growth of non-spore-forming bacteria.
	Sodium carbonate	cleansing agent	Moderate	Used extensively in Foot and Mouth Disease outbreaks.
Biguanides	Chlorhexidine	Surface disinfectant, topical antiseptic	Very poor	Very low toxicity potential. Typical dilutions are non-irritating even when contacting mucosa. Inactivated by anionic detergents. Bacteriocidal activity on skin is more rapid than many other compounds, including iodophors. Residual effect on skin diminishes regrowth.
Chlorine releasing agents	Sodium hypochlorite (Bleach)	Surface disinfectant	Very poor	Bacteriocidal activity is reduced with increasing pH, lower temperatures, and in the presence of ammonia and nitrogen compounds which can be important when urine is present. Not affected by water hardness. Considered to have relatively low toxic potential with standard dilutions. Chlorine gas can be produced when mixed with other chemicals. Strong oxidizing (bleaching) activity that can damage fabric and is corrosive on metals, silver, and aluminum (not stainless steel). Strong solutions can deactivate prion material. Chlorine dioxide is irritating and toxic.
	Calcium hypochlorite	Surface disinfectant	Very poor	
	Chlorine dioxide	Fumigant, gas sterilization	Moderate	

Class	Disinfectant	Application in veterinary medicine	Activity in organic material	Comments
	Iodophors	Surface disinfectant, topical antiseptic Surface disinfectant, topical antiseptic	Very poor	Absorption of iodine and associated toxicity is greatest with tinctures and solutions, and reduced with iodophores. People can become sensitized to skin contact. Generally less active than chlorine releasing agents. Bacteriocidal activity is slowed at lower temperatures and alkaline pH, but affected less by organic material than chlorine releasing agents. Dilution of iodophors increases free iodine concentration and antimicrobial activity. Metal surfaces can be oxidized. Staining of tissues and plastics also occurs.
Peroxygens	Peroxymonosulfate	Surface disinfectant, fumigant	High	Low toxic potential and non-irritating. No harmful decomposition products.
	Hydrogen peroxide	Surface disinfectant, topical antiseptic, gas sterilization	Low	Peroxymonosulfate is labeled for use against Foot and Mouth Disease Virus, and can be used in the presence of animals. Peracetic acid (PAA) may be a weak carcinogen. Hydrogen peroxide (HP) has brief germicidal activity when applied to tissues. Poor lipid solubility. Less active at low temperatures. Excellent against spores.
	Peracetic acid	Surface disinfectant fumigant	High	PAA is germicidal at much lower concentrations than HP. Corrosive to plain steel, iron, copper, brass, bronze, and vinyl, and rubber.
Phenols	Various phenols (2-phenylphenol, benzylphenol, 4-chloro-3,5-dimethylphenol, etc.)	Surface disinfectant	High	Irritation is variable among compounds, but these compounds are in general highly irritating and should not be used on surfaces that contact skin or mucosa. Environmental safety is also variable. Not affected by hardness of water. Extended residual activity after drying. Active against non-enveloped viruses. Some residual activity after drying.
Quaternary ammonium compounds	Various ammonium salts (mono-alkyltrimethyl ammonium salts, etc.)	Surface disinfectant	Moderate	Irritation and toxicity is variable among products, but these compounds are generally non irritating and have low toxicity at typical dilutions. Inactivated by anionic detergents. Some residual activity after drying. Good hard water tolerance, more effective at alkaline pH.

1. Data from Block SS, editor. Disinfection, sterilization, and preservation, 5th edition. Philadelphia: Lippincott Williams and Wilkins; 2001; and Linton AH, Hugo WB, Russell AD, editors. Disinfection in veterinary and farm animal practice. Oxford: Blackwell Scientific Publications; 1987