Guidelines for animal-assisted interventions in health care facilities

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Many hospitals and long-term care facilities in North America currently permit animals to visit with their patients; however, the development of relevant infection control and prevention policies has lagged, due in large part to the lack of scientific evidence regarding risks of patient infection associated with animal interaction. This report provides standard guidelines for animal-assisted interventions in health care facilities, taking into account the available evidence. (Am J Infect Control 2008;■:■■■-■■■.)

The popularity of animal-assisted interventions (AAIs) in human health care has grown to the point where many hospitals and long-term care facilities in North America currently permit animals to visit with patients and residents. But while the use of AAIs and the evidence supporting their many benefits for patients/residents has grown,[1-5] the development of applicable infection control policies has lagged. Consequently, current practices for animal health screening and infection prevention and control are highly variable both within and between health care facilities (HCFs). Patients' and others' pets are not held to the same standards as animals belonging to formal AAI programs, even though any of these animals interact with patients and health care staff. Although general guidelines for animal visitors have been published by several expert groups,[6-9] a collaborative document that captures the interests of most stakeholders while providing specific recommendations to minimize both injuries and the transmission of infectious organisms to and from animals is needed.

To address this demand, a Working Group of stakeholders in AAI assembled in Toronto, Ontario on January 9, 2007, with the aim of finalizing a draft set of guidelines that had been prepared by the project leaders (JSW and SL) and circulated for preliminary comments before the meeting. The participants included 29 individuals with expertise in AAI, infection control, public health, and veterinary medicine from Canada and the United States. Led by a professional facilitator, the Working Group reviewed all identified evidence regarding the risks of AAI,[10-25] then systematically debated each point in the draft document for its validity, considering both the evidence and expert opinion. Issues requiring further discussion were delegated to expert subcommittees for resolution. Subcommittee recommendations were subsequently circulated to all Working Group members for their approval.

The final recommendations were annotated according to 2 different classifications. The quality of evidence supporting each recommendation was ranked following the system used by the Centers for Disease Control and Prevention in other infection control guidelines (Table 1). In addition, the degree of consensus achieved by the Working Group, as defined in Table 2, was noted.

This report represents the final product of that meeting. Its purpose is to provide explicit and, whenever possible, evidence-based guidelines to mitigate risks associated with AAI. The intended audience is human

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Table 1. Rating categories for recommendations[7]

Category	Description
IA	Strongly recommended for implementation and strongly supported by well-designed experimental, clinical, or epidemiologic studies
IB	Strongly recommended for implementation and supported by certain experimental, clinical, or epidemiologic studies and a strong theoretic rationale
IC	Required by provincial/territorial, state, or federal regulation, or representing an established association standard
II	Suggested for implementation and supported by limited clinical or epidemiologic studies, or by a theoretic rationale
Unresolved issue	No recommendation is offered. No scientific consensus or insufficient evidence exists regarding efficacy.

Table 2. Level of consensus agreement among members of the Working Group

Rating	Explanation
Consensus	More than 80% agreement among Working Group members
Nonconsensus	Less than 80% agreement among Working Group members

health care workers (including those that provide AAIs themselves), although the responsibilities for carrying out many of the recommendations will rest with animal handlers, as well as external organizations that provide AAI services. Explicit guidelines for veterinarians, including rationales behind the recommendations relevant to animal selection and screening, will be published separately. Special circumstances related to resident animals (that also are used in AAI programs), service animals, laboratory animals, or animals that are brought into human HCFs for veterinary diagnostics and treatment, are not addressed here for the sake of brevity. The guidelines herein are based on available evidence and may require updating in the future as other issues come to light.

Rather than recommending a rigorous screening protocol to identify animal carriage of specific pathogens, the guidelines place a major emphasis on all individuals (patients and staff) practicing hand hygiene before and after handling animals, as well as on other infection prevention and control strategies to minimize the spread of pathogens from or to animals. The need for facilities to delegate a single individual—an animal visit liaison—to be aware of all animals entering the premises is also identified. Similarly, a method to facilitate contact tracing in the event of potentially zoonotic patient infections (or handler/animal contact with contagious patients) is suggested.

Because animals may interact with various populations that may be at risk of infection or injury, certain restrictions on animal species, age, origin, behavior, diet, and health status are recommended for animals in formal AAI programs, whether these programs are run by the HCF itself or by an external agency. For visits by patients' pets, the emphasis is placed on animals meeting certain basic health and diet requirements, and also on limiting human contact during the visit to the relevant patient only (ie, no other patients or staff). Animal visitors falling outside of these 2 categories (eg, those brought in by well-meaning community members with no training in AAI) should be denied entry.

GUIDELINES FOR ANIMALS VISITING HEALTH CARE FACILITIES

I. Hand hygiene practices
   1. Require that all patients, visitors *and* health care workers practice hand hygiene both before and after each animal contact.[6,26] (IB, Consensus)
   2. Require that animal handlers carry an alcohol-based hand rub product with them, and that they offer the product to anyone who wishes to touch the animal. Ideally, this product should be supplied by the HCF. (II, Consensus)
   3. Require that animal handlers practice personal hand hygiene in accordance with the HCF's policy for volunteers and employees.[26] (II, Consensus)

II. Facility management of programs for animal visitation
   1. Recommend that the HCF develop an animal visitation program or policies for patient-owned animals and for AAIs. (II, Consensus)
   2. Recommend that the HCF designate an animal visit liaison (AVL) to provide support and facilitation to animal handlers visiting the facility. The AVL's duties should include keeping appraised of all animals entering the facility. (II, Consensus)

III. Determining suitability of animals by species, age, and origin
   1. Patients' animals
      a. Restrict suitable animal species to domestic companion animals that are household pets. (IB, Consensus)
      b. No age restriction is recommended, provided that the animal is under the control of a handler

other than the patient at all times. (II, Consensus)
c. Do not allow patient-owned animals to visit other patients, visitors, staff, or animals. (II, Consensus)

2. AAI animals
a. Restrict suitable animal species to domestic companion animals that are household pets. (IB, Consensus) Exclude those species identified as being of higher risk of causing human infection or injury, including:
- Reptiles and amphibians (eg, lizards, turtles, frogs, salamanders)[25,27-30] (IB, Consensus)
- Nonhuman primates[31,32] (IB, Consensus)
- Hamsters, gerbils, mice, and rats[33,34] (IB, Consensus)
- Hedgehogs, prairie dogs, or any other recently domesticated animal species[35-37] (IB, Consensus)
- Other animals that have not been litter-trained or for which no other measures can be taken to prevent exposure of patients/residents to animal excrement[38] (II, Consensus)

b. Deny the entry of any animal directly from an animal shelter, pound, or similar facility.[39-44] (IB, Consensus)
c. Require that an animal be in a permanent home for at least 6 months to be considered for visiting patients.[45] (II, Consensus)
d. Require that all AAI animals be adults, with cats being at least 1 year of age and dogs at least 1 year but ideally 2 years of age (the age of social maturity).[46] (IB, Consensus)
e. Admit an animal only if it is a member of a formal AAI program (whether run by the HCF or an external entity) *and* is present exclusively for the purposes of AAI. (II, Consensus)

IV. Determining suitability of animals for AAI programs by temperament
1. Verify that the AAI program, whether run by the HCF or an external entity, requires a temperament evaluation for all participating animals.
2. Require that every animal pass a temperament evaluation specifically designed to evaluate the behavior of AAI animals under conditions that they might encounter when in HCFs. Such an evaluation process should assess, among other factors:
a. Reactions toward strangers
b. Reactions to loud and/or novel stimuli
c. Reactions to angry voices and potentially threatening gestures
d. Reactions to being crowded
e. Reactions to being patted in a vigorous or clumsy manner
f. Reactions to a restraining hug
g. Reactions to other animals
h. Ability to obey handler's commands.[47] (IC, Consensus)
3. Require all evaluators to successfully complete a course or certification process in evaluating temperament and to have experience in assessing animal behavior and level of training. (IC, Consensus)
a. Require all evaluators to have experience with animal visiting programs or, at the very least, appreciate the types of challenges that animals may encounter in the health care environment (eg, startling noises, crowding, rough handling).[47] (IC, Consensus)
b. If several animals need to be evaluated for behaviors other than reactions to other animals, require that the temperament evaluator assess each animal separately, rather than assessing several animals simultaneously. (II, Consensus)
4. Require that animal-handler teams be observed by an AAI program representative at least once in a health care setting before being granted final approval to visit. (II, Consensus)
5. Recommend that each animal be reevaluated at least every 3 years (Unresolved issue, Consensus). No recommendation is made regarding whether the reevaluation should consist of a formal temperament evaluation in a controlled setting or a spot check by AAI program representatives or AVLs during a routine visit; however, if the latter option is chosen, then annual reevaluation is suggested.
6. Require that a handler suspend visits and have his or her animal formally reevaluated whenever he or she notices or is apprised (either directly or through the AVL) that the animal has demonstrated any of the following:
a. A negative behavioral change (as described in IV.2.a to h) since the time it was last temperament-tested (II, Consensus)
b. Aggressive behavior outside the health care setting (II, Consensus)
c. Fearful behavior during visitations (II, Consensus)
d. Loss of sight or hearing and, consequently, an overt inclination to startle and react in an adverse manner (II, Consensus)
7. Require that any animal be formally reevaluated before returning to AAIs after an absence of 6 months or longer. (II, Consensus)
8. Requiring that cats be declawed to prevent scratches is not recommended. (II, Consensus)

V. Health screening of animals
1. Basic requirements for all animals

a. Require that dogs and cats be vaccinated against rabies as dictated by local laws. (IC, Consensus)
   (1) Exemption of rabies vaccine-sensitive animals may be granted on a case-by-case basis and only in areas where the risk of exposure to rabies is considered very low. (II, Consensus)
   (2) Serologic testing for rabies antibody concentration should not be used as a substitute for vaccination. (II, Consensus)
b. For the protection of both the animal and people, prevent the animal from entering the HCF starting from the onset of and until at least 1 week beyond the resolution of:
   (1) Episodes of vomiting or diarrhea
   (2) Urinary or fecal incontinence
   (3) Episodes of sneezing or coughing of unknown or suspected infectious origin
   (4) Treatment with nontopical antimicrobials or with any immunosuppressive doses of medications
   (5) Open wounds
   (6) Ear infections
   (7) Skin infections or ''hot spots'' (ie, acute moist dermatitis)
   (8) Orthopedic or other conditions that, in the opinion of the animal's veterinarian, could result in pain or distress to the animal during handling and/or when maneuvering within the facility
   (9) Demonstrating signs of heat (estrus). (II, Consensus)

2. Scheduled health screening of AAI animals
   a. Require that every animal receive a health evaluation by a licensed veterinarian at least once (optimally, twice) per year. (II, Consensus)
      (1) Defer to the animal's veterinarian regarding an appropriate flea, tick, and enteric parasite control program, which should be designed to take into account the risks of the animal acquiring these parasites specific to its geographic location and living conditions. (IB, Consensus)
      (2) Temporarily withdraw any animal with fleas, ticks, or mange (mite infestation) and treat as directed by the animal's veterinarian until the infestation has cleared, as determined by the veterinarian. (IB, Consensus)
   b. Routine screening for specific, potentially zoonotic microorganisms, including group A streptococci, *Clostridium difficile*, vancomycin-resistant enterococci, and methicillin-resistant *Staphylococcus aureus* (MRSA), is not recommended.[19,21,22] (IB, Consensus)
      (1) Special testing may be indicated in situations where the animal has physically interacted with a known human carrier, either in the hospital or in the community, or when epidemiologic evidence suggests that the animal might be involved in transmission. Testing should be performed by the animal's veterinarian, in conjunction with appropriate infection control and veterinary infectious disease/internal medicine personnel, if required. (II, Consensus)
      (2) Special testing may be indicated if the AAI animal is epidemiologically linked to an outbreak of infectious disease known to have zoonotic transmission potential. Suspension of visitation pending results is recommended in these situations. (II, Consensus)

VI. Dietary guidelines for all animals
   1. Exclude any animal that has been fed any raw or dehydrated (but otherwise raw) foods, chews, or treats of animal origin within the past 90 days.[48-50] (IA, Consensus)

VII. Training and management of animal handlers
   1. Handlers of patients' animals
      a. Ensure that the animal's handler has been informed of the HCF's policy for animal visits and has signed an agreement to comply with this policy. (II, Consensus)
      b. Request that documentation of current rabies immunization be provided to the approving authority for patient-owned animal visits. (IC, Consensus)
      c. Ensure that the visitor and the animal are escorted to their destination, as arranged by the AVL. (II, Consensus)
      d. Ensure that every unleashed animal is carried in a clean carrier and not released until reaching the patient. (II, Consensus)
      e. Ensure that a dog is leashed if not in a carrier and taken to the patient by the route least likely to expose other patients to the animal. (II, Consensus)
      f. Advise the handler of a patient-owned animal that he or she should expect others (patients, health care workers, or visitors) to notice the animal and want to interact with it. Instruct the handler to deny such requests and to avoid such interactions. (II, Consensus)
   2. Handlers of AAI animals only
      a. Require that every handler participate in a formal training program and an evaluation of that training, which includes modules on:
         (1) Zoonoses
         (2) Infection control practices (including proper cleanup and disposal of animal excrement)

(3) Identifying appropriate contacts in the event of an accident or injury
(4) Visual inspection for ectoparasites
(5) Reading an animal's body language to identify signs of physical discomfort, stress, fear, or aggression
(6) Patient confidentiality. (II, Consensus)

b. Require that each handler comply with the HCF's policy for influenza vaccination and any additional human health screening requirements in place for volunteers and employees. (II, Consensus)
c. Require that a handler use particular care in directing the visit to prevent patients from touching the animal in inappropriate body sites (eg, mouth, nose, perianal region) or handling the animal in a manner that might increase the likelihood of frightening or harming the animal or the animal harming the patient accidentally. (II, Consensus)
d. Restrict visiting sessions to a maximum of 1 hour, to reduce the risk of adverse events associated with animal fatigue. (II, Consensus)
(1) Observe the animal for signs of fatigue, stress, thirst, overheating, or urges to urinate or defecate. (II, Consensus)
(2) If taking a short break (or taking the animal outside to relieve itself) will not ease the animal's signs of discomfort, then terminate the session for that day. (II, Consensus)
(3) Require that the handler comply with facility-defined restrictions for patient visitation and to be familiar with facility-specific signage regarding restricted areas or rooms. (II, Consensus)

3. Require that all animal handlers:
a. Self-screen for symptoms of communicable disease and refrain from visiting while ill.[51] Such symptoms include, but are not limited to:
(1) New or worsening coughing or sneezing
(2) Nasal discharge
(3) Fever (temperature $> 38^{\circ}C$)
(4) Diarrhea and/or vomiting
(5) Conjunctivitis
(6) Rash. (IC, Consensus)
b. Limit visits to 1 animal per handler. (II, Consensus)
c. Keep control of the animal at all times while on the premises. (II, Consensus)
(1) Keep a dog leashed at all times unless transported within the facility by a carrier (as may be the case with smaller breeds). (II, Consensus)
(2) Transport an off-leash animal in a clean carrier between rooms. (II, Consensus)
(3) Refrain from using cell phones or participating in other activities that may divert the handler's attention away from the animal. (II, Consensus)
d. Approach patients from the side that is free of any invasive devices, such as intravenous catheters, and prevent the animal from contacting any insertion sites. (II, Consensus)
e. Prevent the animal from licking or bumping against medical devices. (II, Consensus)
f. Before entering an elevator with an animal, ask the other passengers for permission, and do not enter if any passenger asks that the animal not enter or if a passenger appears to be apprehensive around the animal. (II, Consensus)
(1) For a patient's animal, prevent non–family members from handling the animal. (II, Consensus)
(2) For an AAI animal, require that everyone who wishes to touch the animal practice hand hygiene before and after contact. (II, Consensus)
g. Do not visit with a patients while he or she is eating or drinking, and do not permit a patient to eat or drink while interacting with the animal. (II, Consensus)
h. Wear gloves to clean up any animal excreta (urine, vomitus, or feces), and dispose of the material according to the HCF's biowaste management policy. Report the incident to health care staff so that the area can be properly disinfected. (II, Consensus)
i. In the case of a urinary or fecal accident, immediately terminate the visit and take appropriate measures to prevent recurrence during future visits. (II, Consensus)
(1) If submissive urination was involved, this will require suspending the animal's visiting privileges, having the handler address the underlying cause, and then formally reevaluating the animal's suitability before visiting privileges are restored. (II, Consensus)
(2) In other situations, requiring that the handler be reeducated in attending to the animal's comfort may suffice. (II, Consensus)
(3) If repeated incidents of this nature occur, permanently withdraw the animal's visiting privileges. (II, Consensus)
(4) In the case of vomiting or diarrhea, terminate the visit immediately and withdraw the animal from visitation for a minimum of 1 week, as discussed in V.1.b.(1). (II, Consensus)
j. Restrict the animal from patient lavatories. (II, Consensus)

k. Report any scratches, bites, or any other inappropriate animal behavior to health care staff immediately so that wounds can be cleaned and treated promptly.[6] Later, report the incident to the AVL and to public health or animal control authorities, as required by local laws. (II, Consensus)
(1) The visit should be immediately terminated after any bite or scratch. (II, Consensus)
(2) In the case of bites, intentional scratches, or other serious, inappropriate behavior, permanently withdraw the animal's visiting privileges. (II, Consensus)
(3) In the case of accidental scratches, consider the circumstances that contributed to the injury and take appropriate measures to prevent similar injuries from occurring in the future. If measures cannot be undertaken to reduce the risk of recurrence, then visitation privileges should be withdrawn. (II, Consensus)
(4) If it is determined that the handler's behavior was instrumental in the incident, then the handler's visitation privileges should be terminated until the AAI program manager has addressed the situation. (II, Consensus)
l. Report any inappropriate patient behavior (eg, inappropriate handling, refusal to follow instructions) to the AVL. (II, Consensus)

VIII. Preparing animals for visits
1. Require that every handler do the following:
a. Brush or comb the animal's hair coat before a visit to remove as much loose hair, dander, and other debris as possible. (II, Consensus)
b. Keep the animal's nails short and free of sharp edges. (II, Consensus)
c. If the animal is malodorous or visibly soiled, bathe it with a mild, unscented (if possible), hypoallergenic shampoo and allow the animal's coat to dry before leaving for the HCF. (II, Consensus)
d. Visually inspect the animal for fleas and ticks. (II, Consensus)
e. Clean the animal carrier before visits. (II, Consensus)
f. Maintain animal leashes, harnesses, and collars visibly clean and odor-free. (II, Consensus)
g. Use only leashes that are nonretractable and 1.3 to 2 m (4 to 6 feet) or less in length. (II, Consensus)
h. Do not permit the use of choke chains or prong collars, which may trap and injure patients' fingers. (II, Consensus)
i. Identify an animal belonging to an AAI program with a clean scarf, collar, harness or leash, tag or other special identifier readily recognizable by staff. (II, Consensus)
j. Provide a dog with an opportunity to urinate and defecate immediately before entering the HCF. (II, Consensus)
(1) Dispose of any feces according to the policy of the HCF and practice hand hygiene immediately afterward. (II, Consensus)

IX. Managing appropriate contact between animals and people during visits
1. All animals
a. Obtain oral or, ideally, written consent from the patient or his or her agent for the visit. (II, Consensus)
b. Require the handler to obtain oral permission from other individuals in the room (or their agents) before entering for visitation. (II, Consensus)
c. Ensure that people who have been identified (or have identified themselves) beforehand as being allergic to animals, or resistant to or uncomfortable in the presence of animals, are pointed out to the handler, along with instructions to avoid these individuals. (II, Consensus)
d. Do not allow an animal to visit in rooms shared by people with known or suspected fears of animals or allergies to animal saliva, dander, or urine.[6] (IC, Consensus)
e. Restrict all visiting animals from entering the following areas at all times:
(1) Food preparation areas or carts
(2) Medication preparation and storage areas or carts
(3) Operating rooms
(4) Neonatal nurseries
(5) Areas of patient treatment where the nature of the treatment (eg, resulting in pain for the patient) may cause the animal distress. This may be a particular concern for a patient's own animal.
(6) Other areas identified specifically by the HCF.[8] (II, Consensus)
f. Restrict all animals from entering dialysis or burn units, except under special circumstances and with the agreement of the patients' physician(s), the AVL, and the infection control staff. (II, Consensus)
g. Require the handler to prevent the animal from coming into contact with sites of invasive devices, open or bandaged wounds, surgical incisions or other breaches in the skin, or medical equipment.[52,53] (IB, Consensus)
h. If the patient or agent requests that an animal be placed on the bed, require that the handler:
(1) Check for visible soiling of bed linens first. (II, Consensus)

(2) Place a disposable, impermeable barrier between the animal and the bed; throw the barrier away after each patient. (II, Consensus)
(3) If a disposable barrier is not available, a pillowcase, towel, or extra bed sheet can be used. Place such an item in the laundry immediately after use and never use it for multiple patients. (IB, Consensus)

2. AAI animals
   a. Allow the animal to visit only with patients, visitors, and staff who clearly express an interest, or with patients on whose behalf an agent has expressed an interest. (II, Consensus)
   b. Ensure that all potentially immunocompromised patients are assessed by their primary health care providers to determine whether visiting with an animal would be appropriate, and that this information is conveyed to the AVL, who will indicate to the handlers which patients are ineligible for visitation. (II, Consensus)
   c. Restrict AAI animals from visiting patients who are in critical care or in isolation. (II, Consensus)
   d. Instruct the handler to discourage patients and health care workers from shaking the animal's paw. (II, Consensus)
   e. Require the handler to prevent the animal from licking patients and health care staff.[22,52,53] (IB, Consensus)
   f. The feeding of treats to animals by health care workers or patients is generally not recommended; however, if the act is believed to have a significant therapeutic benefit for a particular patient, then require that the handler:
      (1) Ensure that the animal has been trained to take treats gently. (II, Consensus)
      (2) Provide the patient with appropriate treats to give, avoiding unsterilized bones, rawhides and pig ears, and other dehydrated and unsterilized foods or chews of animal origin. (II, Consensus)
      (3) Ensure that the patient practices hand hygiene before and after presenting the treat to the animal. (II, Consensus)
      (4) Instruct the patient to present the treat with a flattened palm. (Unresolved issue, Consensus)

3. Patient-owned animals
   a. Restrict a patient-owned animal from visiting the patient in a critical care or isolation unit except under special circumstances, with the agreement of the patient's physician, the AVL, and the infection control staff, and when arrangements can be made to control the visitation situation to minimize the risk of transmission of infectious organisms. (II, Consensus)

X. Contact tracing
   1. The facility should develop a system of contact tracing that at a minimum requires animal handlers to sign in when visiting and ideally provides a permanent record of areas and/or room numbers where the animal has interacted with patients. (II, Consensus)

XI. Determining appropriate visit locations
   1. Individual HCFs are in the best position to decide which locations are appropriate for animals interacting with patients, in consultation with the infection control practitioner. (II, Consensus)

XII. Environmental cleaning
   1. Practice routine cleaning of environmental surfaces after visits.[6] (II, Consensus)

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References

1. Barak Y, Savorai O, Mavashev S, Beni A. Animal-assisted therapy for elderly schizophrenic patients: a one-year controlled trial. Am J Geriatr Psychiatry 2001;9:439-42.
2. Sobo EJ, Eng B, Kassity-Krich N. Canine visitation (pet) therapy: pilot data on decreases in child pain perception. J Holist Nurs 2006;24:51-7.
3. Nelson JP. Being in tune with life: complementary therapy use and well-being in residential hospice residents. J Holist Nurs 2006;24:152-61.
4. Colombo G, Buono MD, Smania K, Raviola R, De Leo D. Pet therapy and institutionalized elderly: a study on 144 cognitively unimpaired subjects. Arch Gerontol Geriatr 2006;42:207-16.
5. McCabe BW, Baun MM, Speich D, Agrawal S. Resident dog in the Alzheimer's special care unit. West J Nurs Res 2002;24:684-96.
6. Sehulster L, Chinn RY. CDC, HICPAC. Guidelines for environmental infection control in health-care facilities: recommendations of the CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). MMWR Recomm Rep 2003;52:1-42.
7. American Veterinary Medical Association. Wellness guidelines for animals in animal-assisted activity, animal-assisted therapy and resident animal programs, 2007. Available from: http://www.avma.org/issues/policy/animal_assisted_activity.asp. Accessed January 8, 2007.
8. Yamauchi T, Olmsted RN. Animal-assisted therapy. In: APIC infection control and applied epidemiology: principles and practice. St Louis: Mosby; 1996. p. 97-1-5. [Q2]
9. Delta Society. Standards of practice for animal-assisted activities and animal-assisted therapy. Renton (WA): Delta Society; 2003.
10. The pathological cat [editorial] J Am Med Assoc 1906;47:209.
11. Chang HJ, Miller HL, Watkins N, Arduino MJ, Ashford DA, Midgley G, et al. An epidemic of *Malassezia pachydermatis* in an intensive care nursery associated with colonization of health care workers' pet dogs. N Engl J Med 1998;338:706-11.
12. Drusin LM, Ross BG, Rhodes KH, Krauss AN, Scott RA. Nosocomial ringworm in a neonatal intensive care unit: a nurse and her cat. Infect Control Hosp Epidemiol 2000;21:605-7.
13. Scott GM, Thomson R, Malone-Lee J, Ridgway GL. Cross-infection between animals and man: possible feline transmission of *Staphylococcus aureus* infection in humans? J Hosp Infect 1988;12:29-34.
14. Stryker-Gordon R, Beall N, Anderson RK. Fact & fiction: health risks associated with pets in nursing homes. J Delta Soc 1985;2:73-4.

15. Lerner-DurJava L. Pet visitation is an infection control issue? Am J Infect Control 1994;22:112.
16. Robb S, Miller R. Pilot study of pet-dog therapy for elderly people in long-term care. Pittsburgh (PA): VA Medical Center; 1982.
17. Pet therapy hazards [news report]. Anthrozoos 1987;1:258.
18. Lefebvre SL, Waltner-Toews D, Peregrine A, Reid-Smith R, Hodge L, Weese JS. Characteristics of programs involving canine visitation of hospitalized people in Ontario. Infect Control Hosp Epidemiol 2006;27:754-8.
19. Lefebvre SL, Waltner-Toews D, Peregrine AS, Reid-Smith R, Hodge L, Arroyo LG, et al. Prevalence of zoonotic agents in dogs visiting hospitalized people in Ontario: implications for infection control. J Hosp Infect 2006;62:458-66.
20. Lefebvre SL, Arroyo LG, Weese JS. Epidemic *Clostridium difficile* strain in hospital visitation dog [letter] Emerg Infect Dis 2006;12:1036-7.
21. Lefebvre SL, Arroyo LG, Rousseau J, Weese JS. *Clostridium difficile*: evidence for zoonotic potential [abstract]. Abstracts from the Second International *Clostridium difficile* Symposium; June 6–9, 2007. Maribor, Slovenia: Koda Press; 2007.
22. Lefebvre SL. MRSA risk with animal-assisted activity and therapy programs. Conference Notes of the 144th Annual AVMA Convention, Washington, DC, July 13–18, 2007. Schaumburg (IL): American Veterinary Medical Association; 2007.
23. Enoch DA, Karas JA, Slater JD, Emery MM, Kearns AM, Farrington M. MRSA carriage in a pet therapy dog. J Hosp Infect 2005;60:186-8.
24. Lefebvre SL, Weese JS. Characterizing opportunities for spreading pathogens through dog visiting programs in Ontario healthcare facilities [abstract]. Am J Infect Control 2007;35:e205-6.
25. Yamauchi T, Baeyens MM, McCoy J, Carter D. The microflora of animals used in hospital pet therapy [abstract]. Clin Res 1984;32:8804.
26. Boyce JM, Pittet DH, HICPAC, Society for Healthcare Epidemiology of America, Association for Professionals in Infection Control, Infectious Diseases Society of America, Hand Hygiene Task Force. Guideline for hand hygiene in health-care settings: recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. Infect Control Hosp Epidemiol 2002;23(12 Suppl):S3-S40.
27. Wells EV, Boulton M, Hall W, Bidol SA. Reptile-associated salmonellosis in preschool-aged children in Michigan, January 2001–June 2003. Clin Infect Dis 2004;39:687-91.
28. Centers for Disease Control and Prevention. Reptile-associated salmonellosis—selected states, 1998–2002. MMWR Morb Mortal Wkly Rep 2003;52:1206-9.
29. Stam F, Romkens TE, Hekker TA, Smulders YM. Turtle-associated human salmonellosis. Clin Infect Dis 2003;37:e167-9.
30. Sharma VK, Kaura YK, Singh IP. Frogs as carriers of *Salmonella* and *Edwardsiella*. Antonie Van Leeuwenhoek 1974;40:171-5.
31. Ostrowski SR, Leslie MJ, Parrott T, Abelt S, Piercy PE. B-virus from pet macaque monkeys: an emerging threat in the United States? Emerg Infect Dis 1998;4:117-21.
32. Dienstag JL, Davenport FM, McCollum RW, Hennessy AV, Klatskin G, Purcell RH. Nonhuman primate-associated viral hepatitis type A: serologic evidence of hepatitis A virus infection. JAMA 1976;236:462-4.
33. Swanson SJ, Snider C, Braden CR, Boxrud D, Wunschmann A, Rudroff JA, et al. Multidrug-resistant *Salmonella enterica* serotype *Typhimurium* associated with pet rodents. N Engl J Med 2007;356:21-8.
34. Centers for Disease Control and Prevention. Outbreak of multidrug-resistant *Salmonella typhimurium* associated with rodents purchased at retail pet stores—United States, December 2003–October 2004. MMWR Morb Mortal Wkly Rep 2005;54:429-33.
35. Woodward DL, Khakhria R, Johnson WM. Human salmonellosis associated with exotic pets. J Clin Microbiol 1997;35:2786-90.
36. Craig C, Styliadis S, Woodward D, Werker D. African pygmy hedgehog–associated *Salmonella tilene* in Canada. Can Commun Dis Rep 1997;23:129-31.
37. Guarner J, Johnson BJ, Paddock CD, Shieh WJ, Goldsmith CS, Reynolds MG, et al. Monkeypox transmission and pathogenesis in prairie dogs. Emerg Infect Dis 2004;10:426-31.
38. Centers for Disease Control and Prevention. Outbreaks of *Escherichia coli* O157:H7 associated with petting zoos—North Carolina, Florida, and Arizona, 2004 and 2005. MMWR Morb Mortal Wkly Rep 2005; 54:1277-80.
39. Clark CG. The hazards of pet therapy? Ontario Dis Surveill Rep 1986; 7:1-3.
40. Hill SL, Cheney JM, Taton-Allen GF, Reif JS, Bruns C, Lappin MR. Prevalence of enteric zoonotic organisms in cats. J Am Vet Med Assoc 2000;216:687-92.
41. Streitel RH, Dubey JP. Prevalence of *Sarcocystis* infection and other intestinal parasitisms in dogs from a humane shelter in Ohio. J Am Vet Med Assoc 1976;168:423-4.
42. Kazacos KR. Gastrointestinal helminths in dogs from a humane shelter in Indiana. J Am Vet Med Assoc 1978;173:995-7.
43. Blagburn BL, Lindsay DS, Vaughan JL, Rippey NS, Wright JC, Lynn RC, et al. Prevalence of canine parasites based on fecal flotation. Compend Cont Educ Pract Vet 1996;18:483-509.
44. Seah SK, Hucal G, Law C. Dogs and intestinal parasites: a public health problem. Can Med Assoc J 1975;112:1191-4.
45. Wright JC, Amoss RT. Prevalence of house soiling and aggression in kittens during the first year after adoption from a humane society. J Am Vet Med Assoc 2004;224:1790-5.
46. Overall KL. Clinical behavioral medicine for small animals. St. Louis: Mosby; 1997. p. 48-50, 283-4.
47. Tucker MT, editor. The Pet Partners team training course manual. 6th ed. Belleview (WA): Delta Society; 2005.
48. Weese JS, Rousseau J, Arroyo L. Bacteriological evaluation of commercial canine and feline raw diets. Can Vet J 2005;46:513-6.
49. Finley R, Ribble C, Aramini J, Vandermeer M, Popa M, Litman M, et al. The risk of salmonellae shedding by dogs fed *Salmonella*-contaminated commercial raw food diets. Can Vet J 2007;48:69-75.
50. Lefebvre SL, Waltner-Toews D, Weese JS. Should dogs that participate in animal-assisted activity and therapy programs be prohibited from consuming raw diets? [abstract]. Proceedings of the Joint Symposium of the Association of American Veterinary Medical Colleges/American Schools of Public Health, Atlanta, GA, April 22-24, 2007. Atlanta (GA): American Schools of Public Health; 2007.
51. Centers for Disease Control and Prevention. Infection control guidance for the prevention and control of influenza in acute-care facilities, 2007. Available from: http://www.cdc.gov/flu/professionals/infectioncontrol/pdf/flu-infectioncontrol-hcfacilities.pdf. Accessed April 26, 2007.
52. Octavio J, Rosenberg W, Conte JE Jr. Surgical-wound infection with *Pasteurella multocida* from pet dogs. N Engl J Med 2001;345:549.
53. Chikwe J, Bowditch M, Villar RN, Bedford AF. Sleeping with the enemy: *Pasteurella multocida* infection of a hip replacement. J R Soc Med 2000;93:478-9.