TOP 5 ZOONOTIC DISEASE CONCERNS IN HOSPITAL VISITATION DOGS

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A variety of animals may be encountered in human healthcare facilities, including service animals, patients’ pets, therapy animals for animal-assisted therapeutic activities, and visitation animals. The latter category, typically pets of volunteers brought to facilities to interact with patients, is the most common and the focus of this discussion.
Animal visitation programs, also referred to as pet therapy or animal-assisted activities, can have various positive impacts on patients; however, any human–animal contact poses some degree of risk for transmission of zoonotic pathogens. Health-care facilities contain large numbers of individuals with increased susceptibility to disease, heightening zoonotic disease concerns.

Most animals used for animal visitation programs are dogs, a relatively low-risk species for which there is a good understanding of pathogen carriage rates and risk factors and an ability to test temperament. Therefore, this article focuses on zoonotic concerns pertaining specifically to dogs.

A variety of bacteria, viruses, and fungi pose some degree of zoonotic risk, but the primary concerns typically involve opportunistic bacterial pathogens.

The incidence of dog-associated disease in health-care facilities is unknown, possibly because it is rare. However, it is likely that infections occur, at least sporadically, and are undiagnosed. This is particularly true for pathogens that are common in hospitalized individuals (eg, multidrug-resistant bacteria), as identification of an infection might not trigger much investigation or consideration of potential animal sources. A collection of basic infection control and visitation practices can presumably reduce the risks that may be encountered.

Following are the author’s top 5 zoonotic disease concerns in hospital visitation dogs. Because evidence is empirical, this list is based on conjecture rather than data.

1. Methicillin-Resistant Staphylococcus aureus
(MRSA) is a leading cause of hospital-associated infection in humans. This multidrug pathogen can colonize the nose, throat, skin, and GI tract of dogs and humans in the absence of disease. MRSA colonization has been identified in a small percentage of dogs and typically involves the same strains that infect humans. These cases presumably occurred predominantly from human–dog transmission, but colonized dogs could be sources for subsequent infection of humans.

Hospital visitation dogs have been shown to be at elevated risk for MRSA colonization, presumably from contact with colonized patients. Transient contamination of the haircoat can also occur during patient contact.

Screening of visitation dogs for MRSA carriage is not recommended (see Pathogen Screening). MRSA prevention should be focused on practicing good hand hygiene before and after animal contact. Because antibiotic exposure increases the risk for MRSA colonization in dogs, short-term exclusion of dogs that are receiving or have recently received antibiotics is recommended.

Dogs that participate in hospital visitation pro-
grams are more likely to encounter MRSA than are nonparticipating dogs; thus, culture and susceptibility testing of wound infections and other bacterial infections is warranted. Dogs with any wound infections should be excluded from visitation because of the potential involvement of pathogens such as MRSA, as well as the risk for exposure to other pathogens that could complicate the wound infection.

2 *Clostridium difficile*

*C. difficile* is an important cause of morbidity and mortality in hospitalized humans. This fecal–oral pathogen can also be found in the GI tract of healthy dogs and humans.12-15 Zoonotic transmission from dogs has not been clearly established, but the same strains have been found in dogs and humans.16-18 Hospital visitation dogs are at significantly elevated risk for *C. difficile* shedding,10 likely acquired through ingestion of *C. difficile* spores from the hospital environment and patient hands. Risk reduction involves limiting exposure of dogs (eg, not visiting patients who are under enhanced precautions for *C. difficile* infection, encouraging patients to practice good hand hygiene before contact with a dog, limiting contact with patients’ living spaces) and reducing dog–human transmission (eg, through good fecal handling, preventing fecal accidents, and practicing good hand hygiene). As with MRSA, short-term exclusion of dogs that are receiving or have recently received antibiotics is recommended.1 Screening of animals for *C. difficile* shedding is not recommended (see Pathogen Screening).

3 **Extended-Spectrum β-Lactamase–Producing Enterobacteriaceae**

A variety of multidrug-resistant gram-negative bacteria are important causes of infection in healthcare facilities, with some strains being near pan-resistant (ie, resistant to all available antimicrobials). Extended-spectrum β-lactamase (ESBL)–producing bacteria are widely distributed in healthy dogs, and strains that cause disease in humans are often identified in dogs,19,20 which suggests the potential for both human–dog and dog–human transmission in healthcare facilities. Other resistant gram-negative bacteria that may be encountered include carbapenemase-producing Enterobacteriaceae, which may be extensively drug resistant. Colonization or infection of dogs with carbapenemase-producing Enterobacteriaceae is rare but possible,21,22 and because these pathogens are increasingly found in human healthcare facilities, the potential for exposure and colonization in the GI tract is increased.

Because ESBL-producing bacteria are fecal–oral pathogens, preventive measures are similar to those described for *C. difficile*, and screening of visitation animals is not recommended (see Pathogen Screening). Exclusion of dogs actively or recently (ie, within the past month) treated with antimicrobials is recommended,1 as antimicrobial exposure is a risk factor for ESBL acquisition23,24 and, presumably, acquisition of other resistant gram-negative enteric pathogens.

4 **Salmonella spp**

Salmonellosis can be life-threatening in compromised dogs and humans. Although the prevalence of *Salmonella* spp shedding tends to be low in healthy adult dogs, higher rates can be found in some subpopulations, particularly dogs fed raw meat-based diets or treats.25-27 Risk reduction involves prohibition of raw meat and/or raw animal-based treats to visitation dogs and exclusion of dogs with active or recent (ie, within the past week) diarrhea.1 Good fecal handling practices and attention to hand hygiene can help further reduce the risk. Routine testing for *Salmonella* spp is not recommended (see Pathogen Screening); however, culture or PCR testing of diarrheic therapy dogs may be useful in identifying animals that require a longer exclusion period after resolution of diarrhea.
Exposure to Pathogens from Bites &Scratches

Although often overlooked in discussion of zoonotic diseases, bites and scratches may be the most common and potentially serious hazards associated with visitation dogs. The incidence of bites and scratches in healthcare facilities has not been reported, but they have been observed. Bites are of particularly high risk because of the myriad opportunistic pathogens found in a dog’s mouth, such as Pasteurella spp and Capnocytophaga canimorsus. Bites can also inoculate pathogens (eg, MRSA) that might be residing on a human’s skin. Scratches from dogs pose a lower risk for infection as compared with bites but can cause pain, and any disruption of the protective skin barrier may increase the risk for infection in high-risk individuals.

References


MRSA = methicillin-resistant Staphylococcus aureus

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