

# Hospital-Associated Infections in Small Animal Practice

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## KEYWORDS

• Nosocomial • Infection • Hospital • Veterinary • Control • Hospital-associated

## KEY POINTS

- Hospital-associated infections (HAIs) occur in veterinary medicine, and their frequency is likely to increase.
- Urinary tract infections, pneumonia, bloodstream infections, surgical site infections, and infectious diarrhea are the HAIs most frequently identified in veterinary medicine.
- All staff members should be educated on the risks and signs associated with HAIs so that cases can be detected early and managed appropriately.
- A hospital infection-control program, consisting of an infectious disease control officer, a written protocol, and staff training, is critical to reducing HAIs and promoting patient, staff, and client health.

## INTRODUCTION: NATURE OF THE PROBLEM

Hospital-associated infections (HAIs), sometimes referred to as nosocomial infections, are infections acquired by patients during hospitalization and are an inherent risk in human and veterinary medicine. In human hospitals, HAIs are a well-recognized contributor to illness and death, with an estimated 5% of patients developing an HAI and tens of thousands dying each year from HAIs.<sup>1</sup> It is estimated that, in the United States, human HAIs account for \$28 to \$45 billion in direct costs annually, not including the substantial indirect costs (eg, community care costs, lost wages, and productivity by the patient and caregivers).<sup>2</sup>

Veterinary data for this field are limited. In some aspects, risks may be lower because of the generally lower proportion of veterinary patients that have long hospital stays, are profoundly immunocompromised, and undergo highly invasive procedures

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compared with people. However, this may be countered with greater patient hygiene challenges, greater difficulty with patient compliance (eg, licking wounds), and a lesser “culture” of infection control. Although current data are limited for the veterinary field, similar (or even higher) HAI rates have been reported compared with human studies, such as HAIs in 16% of intensive care unit patients in one study.<sup>3</sup> During a 5-year period, 82% of veterinary teaching hospitals in North America and Europe reported at least one HAI outbreak and 45% reported multiple outbreaks. Many of these outbreaks required restricted patient admissions (58%) or closure of the hospital or section (32%).<sup>4</sup> Therefore, although HAIs are poorly quantified in veterinary medicine, they are undeniably a concern.

There are many potential adverse events from HAIs in veterinary patients. Animals suffering from HAIs may have an increased hospital stay (with accompanying increased cost to the client or clinic). These patients may also suffer permanent health consequences, or HAIs may result in death of the pet. Multidrug-resistant organisms (MDROs) are often involved in HAIs, complicating treatment and resulting in poor patient outcomes and extensive outbreaks. Furthermore, some veterinary hospital-associated (HA) pathogens (eg, methicillin-resistant *Staphylococcus aureus* [MRSA], *Salmonella*) can be transmitted to staff or pet owners, resulting in human illness. Additionally, as veterinary medicine advances, there may be parallel *increases* in HAI risk through the use of more invasive procedures, more use of invasive devices (eg, urinary catheters, intravenous catheters), more immunosuppressant therapies, and a greater intensity of critical care management. Patients that might not have survived their underlying disease in the past may now be alive, but highly susceptible to infection.

Perhaps most important to this topic is the assumption in human medicine that 10% to 70% of all HAIs are preventable through the use of practical infection-control measures.<sup>5</sup> Large economic benefits are estimated to occur with the implementation of infection-control interventions (\$6-\$32 billion cost savings in the United States alone).<sup>2</sup> The proportion of HAIs that are preventable in veterinary medicine is unknown, but is likely to be similar, and even a 10% reduction in infections could constitute a major impact on patient health, owner cost, and owner and clinician satisfaction. The routine use of simple infection prevention practices can likely dramatically reduce HAIs.

## APPROACH/GOALS

Infection control is the term best suited to the goal in small animal veterinary medicine of preventing (or, more practically speaking, limiting) the introduction and/or spread of pathogens with a group of patients and caregivers. Central to this goal is the establishment and refinement of an infection-control program at each animal hospital. Every hospital's infection-control program will be different, reflecting the unique pathogen risks, facility and personnel characteristics, animal populations served, and level of risk tolerance of the practice. However, at a minimum, each practice's program should include the following:

- An infectious disease control officer (otherwise known as an infection-control practitioner);
- A written infection-control protocol (plan);
- Regular training of staff about hospital infection-control protocols (and documentation of this training and assessment of comprehension);
- Monitoring of both disease rates and infection-control protocol compliance.

Together, the components of the program should address the HAI risks for patients and staff and recommended or required protocols to reduce these risks. The end

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