

# Cleaning and Disinfection of Patient Care Items, in Relation to Small Animals



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## KEYWORDS

• Cleaning • Disinfection • Equipment • Sterilization

## KEY POINTS

- Many items pose a potential risk for pathogen transmission because they have contact with high-risk patients or high-risk patient sites or are used on multiple patients.
- The incidence of infection associated with patient care items in veterinary medicine is unknown and likely low, but the consequences can be devastating.
- Different approaches to cleaning, disinfection, and sterilization are required for different items; this may range from basic cleaning to sterilization, and the required level of processing and specific practices must be determined for all items.
- Reprocessing of items that are marketed for single use is often justifiable and routinely done in veterinary clinics, but care must be taken to ensure proper cleaning, disinfection, or sterilization and that processing does not compromise function of the item.

## INTRODUCTION

Myriad items come into contact with patients on a regular basis, ranging from commonly used items like stethoscopes to specialized diagnostic and surgical tools. Any item that comes into contact with a patient, person or the environment carries with it some risk of pathogen contamination and transmission, yet the risk of contamination, risk of transmission, and clinical implications vary greatly. For example, *Staphylococcus pseudintermedius* on the bell of a stethoscope pose limited risk, whereas the same bacterium on a surgical implant would pose tremendous risk. Because of the potential risk associated with such a wide range of patient care items, protocols must be established to reduce the risk of hospital-associated infection (HAI) from contaminated items.

There has been intensive study of the role of medical and surgical items in HAIs in human medicine and measures to reduce the risk. Despite this evidence and the

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presence of comprehensive infection control measures, a wide range of HAIs continues to be associated with contaminated items (Table 1). Often, investigations implicate failure to adhere to established practices or compromised item surfaces as leading causes, demonstrating the importance of protocol compliance on this (like virtually every) aspect of infection control.

The incidence of HAIs from contaminated patient care items in veterinary medicine is unknown. Whether this is because of limited risk, lack of investigation, or lack of reporting is unclear, and all probably play some role. However, although reports are limited, contaminated patient care items can result in hospital-associated infections and also likely pose some risk for zoonotic pathogen transmission.

### ***Principles of Cleaning, Disinfection, and Sterilization***

While “cleaning and disinfection” is often referred to as a single entity, they are separate steps, each with different objectives. Further, disinfection can be subdivided into different categories, depending on the degree of microbial elimination that is required (Table 2). Regardless of the level of disinfection that is chosen, it is important to remember that disinfection is not designed to eliminate all microbes; sterilization is a separate approach, designed to eliminate all microbes, required for certain items.

The level of processing that is needed should be determined for every patient item as a guide to identify the appropriate level of cleaning, disinfection, or sterilization that is required. A classification developed by Earle H. Spaulding almost 50 years ago<sup>1</sup> still forms the foundation of this approach. Spaulding’s classification system is a straightforward approach to identification of the risk associated with an item and its management (Table 3). Although useful and still the basis of risk assessments today, this classification is not absolute, as some contradictions are apparent even in human medicine. For example, forks and spoons come into contact with mucosal surfaces and technically would be classified as semicritical devices, yet they are not routinely disinfected in hospital kitchens. Thus, these classifications should be used as general guidance, and the level of desired and achievable disinfection or sterilization should be

**Table 1**

**Examples of reported human hospital-associated outbreaks linked to contaminated patient care items**

<b>Item</b>	<b>Pathogen</b>	<b>Comment</b>
Multidose vials	<i>Serratia marcescens</i>	Heparin saline flush
Multidose vial	<i>S marcescens</i>	Bevacizumab injection
Endoscope	<i>Pseudomonas aeruginosa</i>	
Cystoscope	<i>P aeruginosa</i>	Multiple breaches of processing guidelines
Arthroscope	<i>P aeruginosa</i>	Contamination during processing
Endoscopes	<i>Mycobacterium chelonae</i>	Contamination from automated bronchoscope washer
Endoscope	<i>Klebsiella pneumonia</i>	Inadequate cleaning and drying before storage
Thermometers	<i>Enterobacter cloacae</i>	Inadequate disinfection between patients
Thermometers	<i>Salmonella</i> Emselbuettel	Inadequate disinfection between patients
Endoscopic biopsy forceps	<i>P aeruginosa</i>	Defective instruments that compromised cleaning and disinfection

Data from Refs. 16,18,23–30

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