Clinical Small Animal Care

Promoting Patient Health through Preventative Nursing
Section 1

Clinical Fundamentals in Promoting Good Health
Nursing care of the veterinary patient involves astute knowledge of normal anatomy and physiology, a clear understanding of disease pathology, and practical critical thinking skills. However, a key nursing aspect often overlooked is basic nursing care of the patient and the patients’ environment. Influences such as noise, temperature, hygiene, and surface area cleaning protocols can influence the health of the patient. For example, a postoperative patient experiencing hypothermia is at risk for delayed healing, pain, surgical site infection, and a longer hospital stay, which means a possibility of developing a nosocomial infection. This section will cover basic nursing skills which have a profound affect on the patients’ ability to recover from illness.

**Nosocomial infections**

Nosocomial infections are those that occur within the hospital setting, often referred to as “hospital-acquired” infections. They are also known as “super infections” or “super bugs,” since nosocomial infections pose a great threat to the debilitated and immunocompromised veterinary patient. Microorganisms such as bacteria take Darwin’s “survival of the fittest” theory to the next level when it comes to multiple antibiotic resistances in a hospital setting. They not only survive, they thrive, and veterinary patients can fatally fall victim to these “super bugs.” Human medicine hospital rates for nosocomial infections tend to be higher in intensive or critical care settings; however, incidence is not limited to these areas. In addition, human nosocomial infections tend to be one of the leading causes of death in the intensive care unit (ICU) due to causing septic shock and subsequent multiple organ failure. Surprisingly, sources of nosocomial infections are the patient and the healthcare worker.

Pathogens such as *Escherichia coli*, *Pseudomonas* spp., *Acinetobacter* spp., *Serratia* spp., *Enterobacter* spp., and *Klebsiella* spp. are common culprits of nosocomial infections. More recently, methicillin-resistant *Staphylococcus aureus* (MRSA), methicillin-resistant *Staphylococcus intermedius* (MRSI), vancomycin-resistant *Staphylococcus*...
aureus (VRSA), and vancomycin-resistant Enterococci (VRE) have made way to veterinary practices. Sources for these infections include (but are not limited to) venous access sites, urinary catheter sites, and surgical sites or wounds. Maintenance and handling of access sites is an essential part of veterinary patient nursing when it comes to prevention of nosocomial infection and is discussed in the section “Proper Care of Tubes and Catheters.”

Preventing nosocomial infection is a simple task; however, compliance tends to be the challenge. The single most effective way to prevent a nosocomial infection is hand washing. Veterinary personnel who do not wash hands between patients virtually become fomites and transfer microorganisms from one patient to another. When these microorganisms are transferred to an ill or injured patient, the effects can be devastating due to the compromised immune system of the patient. Hand washing mechanically removes debris and transient microorganisms. A non-antimicrobial soap should be used, as resistance to an antimicrobial soap can build. Warm water should be used during a thorough wash and the hands dried completely, either with paper towels or a hot air dryer.

In addition to hand washing, the patients’ housing should be properly disinfected at least every 24 hours, more frequently as needed (soiling with urine, feces, vomit, blood, etc.). The patients’ bedding should also follow these guidelines, being changed or washed at least every 24 hours. Soiled bedding should be removed immediately and replaced with fresh, clean bedding. A visual surveillance of the patients’ immediate environment should be frequent, ensuring a clean housing area at all times.

A microbiological surveillance plan should be established for every practice. Disinfectants and detergents can be placed on a rotating schedule to prevent resistance from developing. In addition, samples for laboratory culture can be taken from surfaces such as exam tables, surgical tables, kennels, and kennel doors as well as containers holding products used on patients (cleansers, gauze, etc.) to monitor the hospital environment for potential pathogens (Fig. 1.1).

![Figure 1.1 Culture survey of nosocomial pathogens.](image-url)
Bedding and dish rotation

General standards for kennel cleaning include providing fresh bedding and complete disinfecting of the kennel at least once in a 24-hour period, more frequently if needed. Everything should be removed from the kennel prior to cleaning, including wastes. Kennels should be cleaned first from the top, then the sides, and finally the bottom. The kennel doors should be cleaned inside and out. Large runs should be power washed and a squeegee used to remove excess water. It is recommended to deep clean all kennels and cages once a week and rotate disinfectants to prevent nosocomial infections.

Bedding materials may range from mats, paper, sheets, towels, or blankets. Patients requiring long-term care or those with a decreased ability to ambulate should have thick bedding to prevent decubital ulcers. Although blankets and towels provide warmth and comfort to the patient, it is essential for the nursing staff to maintain cleanliness of these materials. They should be checked, both visually and by touch, to ensure the material has not been soiled. Soiled materials should be removed from the kennel, the kennel disinfected, and fresh bedding material placed. Providing comfortable, clean bedding to the patient may require more work; however, the benefits to the patient are dynamic (Fig. 1.2).

Cats and smaller dogs may feel more comfortable when given a bed to rest in. A towel can be rolled up and placed in a circular shape. Adding a small box to a kennel may also reduce stress for some cats as some prefer to remain hidden (Fig. 1.3).

Dishes should be rotated at least every 24 hours or more frequently if needed. Dried food material or contaminated water remaining in dishes may contribute to bacteria growth and illness. Once food remains at room temperature for 2 hours, it begins to grow bacteria in rapid numbers. Food left out may begin to have a strong odor or may change in consistency (sticky, slimy, etc.), indicating bacteria growth. It is best to discard food not consumed within 2 hours and store perishable diets in a refrigerator at 40°F. Bacteria may still grow in this temperature so all food should be inspected prior to feeding.

Figure 1.2 Padded bedding and absorbent pad used in a geriatric patient.
Noise and air quality

Ventilation, heating, and cooling are essential in maintaining patient husbandry in a clinical setting. Reducing noise is also imperative when it comes to patient comfort. Patients should be kept in a well-ventilated area. Many facilities have a smaller room with a door in which the vocal patients are kept. However, with this door being closed and several animals being excited and vocal, humidity and heat may result in unfavorable housing circumstances. Smaller patients usually need to be kept warm while larger, active, or brachycephalic patients may need to be kept in a cooler area. It is important to keep air circulating and unpleasant odors of either chemicals or excrement free from the patients’ housing quarters.

Loud noises may startle patients suffering from anxiety, contributing to unfavorable psychological effects. When possible, loudly vocal patients disrupting ill, injured, or anxious patients should be removed from the area. In some cases, the vocal patient is suffering from anxiety or pain; these patients should be assessed for level of comfort and therapeutics administered as deemed appropriate.

Circadian rhythm

The circadian rhythm is a 24-hour cycle in which animals undergo biochemical and physiological processes such as sleeping and eating. Other processes affected by the circadian cycle include (but are not limited to) hormone production, digestion, and thermoregulation.

These processes may be influenced by the environment. For instance, the hormone melatonin peaks when the retina detects a dimmed light or darkness and is nearly absent during daylight hours. Melatonin is one of the hormones responsible for regulating the sleep-wake cycle; however, it is also thought to play a positive role in the immune systems’ ability to fight infectious disease. Serotonin is the other main hormone...
regulating the sleep-wake cycle. Serotonin works opposite of melatonin, peaking during daylight hours and nearly absent during sleep. So while dim or dark light stimulates melatonin production and sleep, light stimulates serotonin production and the wake period of the circadian cycle. This becomes an important factor for patients receiving care in 24-hour facilities. When possible, lights should be dimmed during the overnight hours of hospitalization to keep this cycle regulated.

Infectious disease protocols

Patients suffering from infectious disease should be housed in a separate ward (isolation ward). Ideally, the isolation ward would be in a completely separate building; however, it is often located in a separate area of the practice with limited traffic. Having the isolation ward within the practice allows for personnel to observe and monitor these patients. Unfortunately, the result is a greater potential to spread disease throughout the practice and to ill or immunocompromised patients. Regardless, it is imperative to house infectious patients away from other patients to maintain disease control.

Isolation wards should include kennels, a sink, sanitation supplies, protective gowns, gloves, masks, shoe covers and caps for personnel to use, and an entire set of medical supplies, food dishes, and litter pans which remain in isolation. As a general rule, if something enters the isolation ward, it should not come out. This is not always possible, so it is imperative to thoroughly disinfect any supplies or instrumentation leaving the isolation ward. The fewer staff members entering and exiting the ward, the better chances that disease will not spread so long as proper procedures are followed. Traditionally, a separate bag for soiled laundry is kept and washed separately from other laundry. The disposable items such as shoe covers, gloves, and caps should be discarded prior to exiting the ward. Hands should be washed and a foot bath containing a disinfectant walked through while exiting. Once a patient leaves the isolation ward, it should undergo thorough sanitation. It is also recommended to have negative airflow into the isolation so when the entryways are opened, air moves into the ward, preventing airborne pathogens from escaping. As with any housing area, proper ventilation, humidity, and temperature control is essential (Fig. 1.4).

Figure 1.4  Microscopic view of mixed bacteria: cocci, bacilli, and spirochete.
Chapter references and further reading

A. Gordon (2009) You, the clinic, and methicillin-resistant staphylococcus. Veterinary Technician the Complete Journal for the Veterinary Hospital Staff 30(1): 24-33.