Title: Incisional Infections in Shelter Animals Following Spay-Neuter Surgery

Case Description: A shelter director requested review of shelter animal spay-neuter clinic procedures because of the occurrence of frequent post-surgical incisional infections. Records to support their incidence were lacking, however the director estimated that 10-15% of the 45-50 dogs and cats sterilized each week developed incisional infections within 1 week of surgery.

Examination of affected patients revealed local inflammation at the incision site with purulent drainage in female and male patients. Staff described infections developing several days post-operatively, responding promptly to appropriate antibiotic treatment and warm compresses. The use of appropriate sterile biomedical grade suture material was verified. Inspection of post-operative animal housing revealed clean, dry environments with appropriate bedding.

Observation of spay-neuter clinic procedures revealed the following serious deficiencies:

- The clinic consisted of a single undivided room with a central surgical area.
- Traffic flow was unrestricted and surgical patients as well as those being treated for infectious diseases were housed in cages around the room's perimeter.
- A technician performed pre-surgical examinations and directed clinic flow.
- Analgesia was inadequate for many patients.
• Medical records were incomplete, lacking exam findings, surgery reports, medications and dosages administered.
• Surgical procedures performed by the staff veterinarian frequently entailed traumatic tissue handling and inefficient techniques, resulting in prolonged surgical times.
• Following surgery, animals were moved to an adjacent room with no visual contact and left unattended until the following morning.

**Outcome:** The director was presented with an urgent list of deficiencies, recommendations, and copies of relevant veterinary practice regulations and spay-neuter practice guidelines (see references).

Recommendations included:
• Create designated spaces for surgical preparation, surgery operating room, and recovery of anesthetized animals
• Create an adequate isolation area to house animals with infectious disease
• Ensure that animals are examined pre-operatively by the veterinarian, who must also oversee clinic activities
• Maintain complete medical records for each animal
• Utilize balanced anesthetic protocols that provide adequate analgesia for all patients
• Ensure vigilant monitoring from induction through recovery
• Provide additional training in HQHVSN techniques for the veterinarian
• Develop a surveillance system for tracking the incidence of post-operative complications

The veterinarian visited a HQHVSN clinic to observe best practices and improve her surgical techniques. Despite this additional training and remediation of all noted deficiencies, incisional
infections continued to occur on a weekly basis at a rate of approximately 6% of all surgeries, as verified by the surveillance system. The veterinarian was subsequently terminated and surgeries were performed by relief veterinarians, with a corresponding reduction in post-operative infections to < 1%.

**Implications/applications:** Based on clinic observations and follow up, the post-surgical complications were likely due to the unsanitary surgical environment and poor surgical technique. Additional serious deficiencies in violation of standards of care and legal requirements were also noted. Addressing such deficiencies is necessary to protect animal health and prevent liability. Shelter veterinarians must efficiently and safely perform sterilization procedures, comply with relevant regulations and guidelines, and be empowered by organizational leadership to do so.

**References:**


Colorado Division of Professions and Occupations, State Board of Veterinary Medicine. 4 CCR 727-1 RULES AND REGULATIONS. Available at: http://www.sos.state.co.us/CCR/NumericalSubDocList.do?deptID=18&deptName=700%20Department%20of%20Regulatory%20Agencies&agencyID=129&agencyName=727%20Division%20of%20Professions%20and%20Occupations%20-%20Board%20of%20Veterinary%20Medicine&ccrDocID=2310&ccrDocName=4%20CCR%20727-1%20VETERINARY%20MEDICINE%20RULES%20AND%20REGULATIONS