Alternative Spay and Neuter Techniques
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What is alternative? According to Webster’s Dictionary it refers to something that is “different from the usual or conventional”. Depending on where you went to school, some of these techniques may not be “alternative” to you as they have (slowly) become more main stream. Many of these techniques are now included in some veterinary schools’ curricula.

So why worry about this? Spay/neuter surgeries have evolved considerably over the last 10-15 years. High volume spay/neuters in shelters and humane societies, low cost spay/neuter clinics, and mobile spay/neuter clinics have contributed to an evolution in the way that these surgeries are performed. It is important to keep up with the way that the profession is changing and realize that a different approach is not always wrong: And after all, you may be seeing some of these patients for follow up care and may even deal with (rare) complications post-surgery.

Canine neuter

- **Pre-scrotal approach** – is the traditional method taught in most veterinary schools. In this procedure the testicles are individually advanced cranially to the scrotum, the skin and facial layers are incised over the testicle, and the testicles are individually removed and double ligated. It is important to incise directly over the testicles to prevent inadvertently damaging the urethra. There are different methods for closure; in our practice we close in two layers – the deep facial layer and the skin. To the author’s knowledge, canines are the only species where this approach is utilized.

- **Scrotal approach** – this technique has been used in high volume spay/neuter surgery for a number of years and is now taught at several veterinary schools. In this procedure an individual testicle is stabilized and the incision is made directly over the scrotum. The testicles are then individually removed and double ligated or ligated with a single Miller’s knot. The facial/subcutaneous layer is then closed. The incision may be left “open” to allow drainage and healing by second intention or the incision may be closed with cyanoacrylate tissue adhesive. Proponents of the use of tissue adhesive argue that the use of this substance will provide an immediate barrier to surgical wound contamination and has hemostatic and bacteriostatic properties. A study published last year in Veterinary Medicine shows that the scrotal approach for canine neuters is faster than the traditional method and actually had a lower complication rate than the pre-scrotal approach.

- **Suture-less scrotal castration** – is used in pediatric and juvenile canines in numerous high quality – high volume spay/neuter facilities. For this procedure a single scrotal incision is made on ventral midline and both testicles are accessed through this incision. Opening of the vaginal tunic versus performing a closed castration is left to the discretion of the surgeon. The testicles are individually exteriorized and a hemostat is then directed parallel to the spermatic cord, pointed in a proximal direction. The hemostat is twisted to form a simple overhand knot in the spermatic cord; the cord is cut distal to the hemostat and the cut end slipped over the end of the hemostat to complete the knot. The scrotal skin incision is closed using cyanoacrylate surgical skin adhesive although some surgeons may elect to leave the incision open to allow drainage and healing by second intention. A recently competed, not yet published, study with Oregon State University’s College of Veterinary Medicine and the Oregon Humane Society demonstrated that this technique is a safe and efficient method for pediatric and juvenile canine castration. This study will be discussed along with preliminary results.

Feline spay

- **Double ligating the ovarian pedicle** – is the traditional method taught in most veterinary schools. There is absolutely more than one way to spay a cat (which is the point of this portion of the lecture) but this is the method that we teach fourth year Veterinary students at Oregon State University: A ventral midline celiotomy is performed and the uterus is located using a spay (or Snook) hook. After a hemostat is placed on the proper ligament, the suspensory ligament is torn using a hemostat or cut with a scalpel blade to allow the ovary to be well exteriorized. A window is then created within the broad ligament to facilitate isolation of the ovarian pedicle. A hemostat is placed across the vascular pedicle just proximal to the ovary. Two separate absorbable suture ligatures are then placed around the ovarian vascular pedicle prior to transection. After this procedure is performed on the other side, the uterine body is then exteriorized and double ligated; the use of a transfixing suture should be considered at the discretion of the surgeon. After the removal of the uterus and both ovaries the incision is closed. There is more than one way to close these incisions: At this time we are teaching our 4th year students to close the body wall in a single continuous pattern and the close the skin using an intradermal suture pattern. We also use cyanoacrylate surgical skin adhesive to aid in surgical would closure and to provide an immediate barrier to contamination of the surgical site.
Pedicle tie – is a procedure where the ovarian pedicle is “auto-ligated” in the same way that the spermatic cord is tied on itself in feline castrations. A ventral midline celiotomy is performed and the uterus is located using a spay (or Snook) hook. After a hemostat is placed on the proper ligament, the suspensory ligament is torn using a hemostat or cut with a scalpel blade to allow the ovary to be well exteriorized. A window is then created within the broad ligament to facilitate isolation of the ovarian pedicle. For the pedicle tie procedure a hemostat is then directed parallel to the ovarian vascular pedicle, pointed in a proximal direction. The hemostat is then twisted to form a simple overhand knot in the vascular pedicle; the pedicle is cut distal to the hemostat and the cut end slipped over the end of the hemostat to complete the knot. After this procedure is repeated on the opposite side, the uterine body is then exteriorized and ligated. Upon removal of the uterus and both ovaries the incision is closed. Again, there is more than one way to close these incisions: At this time we are closing the body wall in a simple continuous pattern and the closing the skin using an intradermal suture pattern. We also use cyanoacrylate surgical skin adhesive to aid in surgical wound closure and to provide an immediate barrier to contamination of the surgical site. A study with Oregon State University’s College of Veterinary Medicine and the Oregon Humane Society evaluating this technique was published in 2016 in the Journal of Feline Medicine and Surgery. In this paper, after evaluating more than 2,000 surgeries, the authors concluded that this method is safe and almost 30% faster than double ligating the ovarian pedicle.

Ovariectomy
Most veterinary schools in the U.S. and Canada still teach ovariohysterectomy (OHE) as the preferred procedure for sterilizing female dogs and cats. In many countries in Europe the ovariectomy (OVE) is the preferred technique. According to several published papers the short term and long term complications of ovariectomies and ovariohysterectomies are similar.

In one paper published in Veterinary Surgery in 2006 the authors’ evaluated the literature and found that there was no significant difference in long-term urogenital problems, including endometritis/pyometra, urinary incontinence, or neoplasia in dogs that underwent ovariectomy vs. ovariohysterectomy. The authors’ concluded that OHE is technically more complicated, time consuming, and is probably associated with greater morbidity vs. OVE. In this paper the authors’ also concluded that OHE is likely associated with a larger incision, more intraoperative trauma and would result in increased discomfort for the patient. Finally, they pointed out that uterine tumor formation is relatively rare (with 0.003% risk of malignancy) versus OHE specific complications (e.g. distal ureteral ligation). They concluded that there is no scientific reason that OHE should be preferred over OVE for castrating female dogs.

In a prospective clinical trial published in the Journal of the American Veterinary Medical Association in 2011 researchers evaluated 20 dogs that underwent OHE and 20 dogs that underwent OVE. They evaluated for blood loss, erythema, swelling, discharge, dehiscence, and postoperative pain. This paper reported no statistically significant difference in complication rates between dogs in the OHE group and dogs in the OVE group. Additionally, there was no significant difference in surgical time and no difference in pain scores between the two groups.

Conclusion
Spay/neuter surgeries have and will continue to evolve. It is, therefore, important that we conduct research to evaluate these new techniques to determine their safety and relevance. Also, newer graduates may be coming into practice with an enthusiasm for trying some of these newer techniques and may have been taught some of these methods in veterinary school. So again, it is important to keep up with the way that these procedures are changing and recognize that different is not always bad. In fact the research presented here demonstrates that different can be safe and efficient.

References and suggested reading


An animal hoarder is defined as someone who has accumulated a large number of animals that overwhelm his or her ability to provide a minimum of care, including adequate nutrition, sanitary conditions, and veterinary care.

The key point here is that it is not about the number of animals, it is about what happens to the animals. In fact, that is one of the challenges of trying to deal with animal hoarding through the legal system and/or municipal codes. The number of animals is not the problem; the problem is that it has overwhelmed the person’s ability to provide a minimum of care.

There are several key characteristics that have been described which can be helpful in identifying an animal hoarder:

- Obsessive attempts to accumulate or maintain a collection of animals in the face of progressively deteriorating conditions
- Failure to provide minimal standards of sanitation, space, nutrition, and veterinary care for the animals
- Inability to recognize the effects of this failure on the welfare of the animals, human members of the household, and the environment
- Denial or minimization of problems and living conditions for people and animals

Types of hoarders

There are several distinct types of hoarders that have been described by Patronek and others. There is often some overlap and a given hoarding situation may not fit entirely into one category. Rather, these are guidelines that are useful in how to approach a hoarder and whether or not this person is likely to be amenable to receiving help.

- **The Overwhelmed Caregiver**
  - The overwhelmed caregiver is someone who initially provided adequate care but has found that conditions have deteriorated over time. This person may understand that there is a problem (may try to minimize it) and will tend to have fewer issues dealing with authority and accepting intervention.

- **The Rescuer Hoarder**
  - The rescue hoarder is described as a person with a compulsion that is based on a strong need to rescue animals from possible death or euthanasia. They will actively acquire animals (in the face of deteriorating conditions) and believe that they are the only ones who can care for them. They will tend to avoid authority but may work within a network of animal “welfare” people.

- **The Exploiter Hoarder**
  - The exploiter hoarder is indifferent to the harm that their actions have caused animals in their care and acquire animals to satisfy their own needs. They will deny that there is a problem and reject authority figures or outside help. Skilled at presenting excuses and explanations they may come across as charming and articulate. They will lie, cheat and steal without remorse to achieve their goals. Puppy mills and people illegally selling animals for research sometimes fall into this category.

Interventions based on typology

It should be emphasized that the types of hoarders described above are theoretical, working definitions. However, these descriptions may give some insight into which type of intervention will work best in a given situation.

- **The Overwhelmed Caregiver**
  - Since this type of person likely understands that there is a problem there is a higher likelihood that she/he will accept intervention and assistance. They are generally more likely to surrender the animals, accept spay/neuter assistance, and respond to other offers of help. Counseling and other therapeutic interventions may be of assistance.

- **The Rescuer Hoarder**
  - The rescue hoarder is distrustful of authorities and therefore less likely to accept intervention and assistance. “Mission” driven, this type of person will avoid authorities and believes that she/he is the only one that can care for the animals. Counseling and other therapeutic interventions may be of assistance but prosecution and monitoring would likely be appropriate.

- **The Exploiter Hoarder**
At the other end of the spectrum the exploiter hoarder may have genuine sociopathic tendencies and is unlikely to accept intervention and/or assistance. Aggressive prosecution and monitoring may be the only way to inhibit this behavior.

**Dangers of hoarding**
Animal hoarding will adversely affect the animal victims as well as any people in the environment. The animals often suffer from malnourishment, overcrowding, and general neglect. Stress, starvation, and infectious diseases are commonly encountered and after rescue the animals may be beyond help due to medical and/or behavior problems. Health effects for people in the environment include poor sanitation, zoonotic diseases, self-neglect and child/elder neglect. The environment is often severely contaminated with urine and feces to the point of causing structural damage.

**Prevalence**
- **Reports**
  - There may be up to 7,000 reports each year in the U.S. Multiple reports on same person can occur which can make it difficult to know the true number of reports each year.
- **Cases**
  - Approximately 1500 new cases of animal hoarding are opened each year in the U.S. This translates to approximately 250,000 animal victims of hoarding each year.
- **Trends**
  - According to the Pet Abuse Database from 2000 to 2006 reporting increased 5 fold. The Animal Legal Defense fund reports that the number of cases doubled in the last few years. Certainly there is greater public awareness of hoarding, both object hoarding and animal hoarding, due to the media attention that this condition has generated. That may be more of a factor in the increase in reports and cases than an actual increase in the number of people engaging in this behavior.

**Demographics**
Although anyone can become involved in this the perpetrators of animal hoarding are often middle-aged to older females.

**Causes/Etiology**
At this time we do not know what causes someone to become an animal hoarder. There are numerous theories but no definitive answer. Some have speculated that childhood trauma and/or attachment disorder can result in an unhealthy devotion to animals. Some have proposed an addictions model and in some cases this theory will fit including a preoccupation with animals, denial of problem/excuses, and self- neglect. Other possible causes include Delusional Disorder, Dementia (documented in some cases), Borderline Personality Disorder, Obsessive-Compulsive Disorder, and Insistent Caregiving. While there is anecdotal evidence to support each of these models, more study is needed.

**Legal aspects**
For prosecuting these cases State animal cruelty laws are often utilized which center around the failure to provide proper care. This is a crime of omission or neglect and considered a misdemeanor in most states. Those that are found guilty may face fines, animal forfeiture, (rare) jail time, and bans on pet ownership. One of the biggest problems in dealing with animal hoarding in the long term is that psychological diagnosis, treatment, and counseling are often lacking. Perhaps even more importantly, monitored probation is often lacking. Thus, offenders are usually free to re-engage in this behavior. Some states, Illinois and Hawaii in particular, have passed specific laws against animal hoarding.

**Related laws**
- **Forfeiture and Bond Laws**
  - Forfeiture – animals are considered evidence and cannot be adopted until prosecution is complete.
  - This is very expensive. It also means that these animals will occupy valuable shelter space while the case is working through the legal system.
  - Bond law = legislation requiring animal owners to post a security or bond for the care of the seized animals. This is helpful not only for defraying the costs associated with providing care for the animals but can be used as a negotiation tool as well.
- **Community Ordinances**
  - May be useful in states that don’t have animal hoarding specific laws. These are community ordinances that outlaw animal hoarding and it should be noted that they are different than pet limitation ordinances.
Prosecution

- Phases of the case
  - Complaint
  - Investigation
  - Triage
  - Animal Removal and Transport
  - Custody/Temporary Sheltering
  - Placement/Adoption
  - Expert Witness/Trial

Treatment/Prevention

Unfortunately, the lack of a known cause or etiology makes treatment of animal hoarding difficult, if not impossible. At this time the recidivism rate is thought to be around one hundred percent. The legal system needs to make this a priority and allocate resources – in particular mandated treatment for animal hoarders and monitored probation. The old adage that an animal hoarder will likely pick up another animal on the way out of the courtroom appears to be accurate.

References


Anorexia is defined as the lack of or the loss of the appetite for food. The importance of anorexia, especially in felines, really cannot be overstated. It is often one of the first things that an owner will notice when a pet is ill and is a frequent reason for veterinary visits. It is also a major problem in cats in animal shelters.

Mechanisms
There are numerous reasons that a cat will stop eating. Thinking of the possible mechanisms can inform the clinicians’ diagnostic and therapeutic plans.

- Psychological – psychological reasons for anorexia include stress, fear, and pain. A recent study published in JAVMA demonstrated a strong relationship between stress, weight loss, and upper respiratory infections.
- Pathophysiology
  - Degenerative – conditions that result in the deterioration of cells and/or organs over time. These diseases may be congenital or acquired.
  - Anatomic – can include oropharyngeal diseases and foreign bodies.
  - Metabolic – encompasses a large array of disorders. These generally result from major organ dysfunction. Clinically, these are typically acquired disorders.
  - Neurologic – any condition that alters mentation may contribute to anorexia. It may be difficult to discern neurologic causes of altered mentation verses other causes of altered mentation (ie metabolic dz.), all of which can lead to anorexia.
  - Neoplastic – cancer cachexia, sterile inflammation, or space occupying mass are just a few of the ways that neoplasia can contribute to anorexia.
  - Infectious, Inflammatory – often considered together, any condition that can lead to fever will often lead to anorexia.
- Drugs – can lead to anorexia in numerous ways. Some drugs will adversely affect the stomach leading to nausea and/or delayed gastric emptying. Others can alter the smell or taste of food leading to anorexia.
- Influence of neurotransmitters
  - Serotonin – decreases appetite. Cyproheptadine is a medication that acts as a serotonin antagonist.
  - Gamma-aminobutyric acid (GABA) – stimulates the hunger center or inhibits the satiety center. Valium will lead to increased GABA activity and inhibit serotonin release.
- Influence of hormones
  - Insulin – acts to decrease appetite, which explains why diabetics will often have an increased appetite.
  - Cortisol – acts to increase appetite. Think of the patient with Cushing’s disease versus the patient with Addison’s disease and their response to food.
- Gastrointestinal factors
- Environmental and sensory factors – the texture, shape and smell of food can have a profound impact on appetite. Likewise, patients may exhibit preferences for foods with different flavors. Acquired behaviors, ie eating people food, can lead to anorexia when the preferred type of food is no longer offered or available.

Causes
This is another way of thinking about (roughly) the same thing. I find this schema to be more clinically friendly and relevant.

- Primary Anorexia – think of this as problems that involve the head.
  - Neurological dysfunction
  - Psychological disorders
  - Loss of smell
- Secondary Anorexia – think of this as problems that involve the body. This is a major cause of anorexia and these conditions may also be associated with nausea and vomiting.
  - Pain – inhibits the appetite center.
  - Abdominal organ disorders
  - Toxic agents – can act centrally or through organ destruction.
  - Endocrine – ie Addison’s disease.
  - Neoplasia
Infectious disease
- Miscellaneous – cardiac failure, ketosis, motion sickness, etc.

- Pseudoanorexia – these are problems with the mouth (sort of). Basically, anything that inhibits the ability to pick up, chew, or swallow food.
  - Disorders of the oral cavity
  - Hypoglossal paralysis
  - Mandibular paralysis
  - Maxillary or mandibular fractures or dislocations
  - Retrobulbar disease
  - Other

Effects
Prolonged and/or severe anorexia can have deleterious effects on almost all body systems. Protein-energy malnutrition, increased metabolic rate and protein catabolism, and alterations in fat metabolism are just a few of the changes that can take place. Additional problems include the potential for immune system compromise, hepatic dysfunction, and intestinal alterations. In felines, the consequences of prolonged anorexia, hepatic lipidosis in particular, can be worse than the inciting disease or event.

Clinical approach
The clinical approach to the anorexic patient begins, of course, with a detailed patient history. Duration of clinical signs and the presence or absence of other clinical signs can give important clues to the underlying etiology. Special attention should be paid to any changes in the environment – new diet, change in feeding location/routine, new people or pets in the house – as many of our feline patients are particularly sensitive to stress.

Likewise, the importance of a good physical exam cannot be overemphasized when dealing with an anorexic patient. Disorders of the mouth (pseudoanorexia) can often be ruled in or out on the basis of a physical exam. Some of the secondary causes of anorexia, ie abdominal masses, may be identified on physical exam. At the very least, the physical exam can give clues as to the most appropriate course in pursuing a diagnosis.

Primary anorexia is usually a diagnosis of exclusion: Pseudoanorexia is often diagnosed on physical exam. Diagnostic testing is therefore most useful for ruling in or out the secondary causes of anorexia. A complete blood count, chemistry panel, and urinalysis will allow the clinician to evaluate many organ systems. Liver disease, renal failure, and diabetes are just a few of the causes of anorexia that can be evaluated with bloodwork. Radiographs, ultrasonography, and even exploratory surgery are other diagnostic modalities that should be considered when appropriate.

Treatment
Treatment of anorexia should center around treating the cause, if it is known. Primary anorexia, particularly stress, may be solved utilizing some of the following treatments; these may also prove useful in patient support during the initial workup.

- Encourage eating – warming the food, small meals, treats, and baby food are often used to tempt cats to eat.
- Appetite stimulants
  - Cyproheptadine – is an antihistamine that has been shown to stimulate appetite in cats. Although it is metabolized by the liver and excreted by the kidneys it appears to be (clinically) fairly safe.
  - Mirtazapine – is an antidepressant in people that appears to be effective as an appetite stimulant in cats. It is also useful as an anti-nausea drug and an antiemetic. Impaired excretion in CRF cats.
  - Diazepam – a classic! Use with caution in patients with hepatic or renal disease. Typically administered IV for appetite stimulation – oral administration associated with rare cases of liver failure.
  - Midazolam HCL (Versed) – another benzodiazepine – can be given IM.
  - Propofol – yes, the anesthetic. Published report of efficacy as an appetite stimulant in dogs. Much anecdotal evidence of its’ usefulness as an appetite stimulant in cats.
  - Megestrol Acetate?, Steroids?
- Alternative therapies
  - Pheromones
  - Acupuncture
- Feeding
  - Enteral
    - Nasoesophageal or nasogastric tube
    - Pharyngostomy or esophagostomy tube
    - Gastrostomy tube
• Jejunostomy tube
  o Parenteral
    ▪ Total Parenteral Nutrition (TPN)
    ▪ Partial Parenteral Nutrition (PPN)

In our shelter, this would be a typical treatment progression that an average case may follow. It is important to note that this may change depending on the condition of the patient at presentation and/or the response to treatment. Dehydration will contribute to anorexia and, if detected, should be treated early and aggressively.

**Typical treatment progression**
- Treat URI and/or stress
- Encourage eating
- Appetite stimulants
  o Mirtazapine (or Cyproheptadine)
  o Diazepam or Propofol
- Monitor Weight
- Monitor Liver Enzymes and T. Bili.
- Feeding Tube

**Conclusion**
Anorexia has the potential to cause significant morbidity and mortality in felines, especially in shelters where time and financial resources may be in short supply. Understanding the potential reasons that cats may stop eating will inform the clinicians’ diagnostic and therapeutic plans and allow these patients to be treated in the most efficient manner possible.

**References and suggested reading**
Respiratory Infections in Dogs and Cats
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Canine infectious tracheobronchitis
- Acute, highly contagious respiratory infection
- Paroxysmal cough, variable expectoration, +/- nasal or ocular discharge

Why is this condition important?
Canine Infectious Respiratory Disease Complex (CIRDC) is considered among the most prevalent infectious respiratory diseases in dogs. Outbreaks of this disease are relatively common, especially in high density environments like animal shelters, pet shops, and boarding kennels. Most of the pathogens that we will discuss are spread via dog to dog contact or airborne secretions.

Pathogens
- Viruses
  - Canine Parainfluenza Virus (CPiV) – In these cases infections are typically restricted to the upper respiratory tract. Edema in the vocal folds will cause the “honking” cough commonly associated with CIRDC. Transmission occurs via aerosolized droplets; incubation typically lasts about 3-10 days and viral shedding can go for about 7 days post infection.
  - Canine Adenovirus 2 (CAV-2) – In these cases the virus replicates in nasal mucosa, pharynx, tonsillar crypts, trachea, and bronchi so it tends to be a disease of the lower airways. Peak infection will occur 3-6 days post exposure which often occurs via oronasal transmission. This agent is capable of producing a single-agent viral pneumonia.
  - Others:
    - Canine Respiratory Coronavirus
    - Canine Herpesvirus
    - Pneumovirus
    - Canine Distemper
    - Influenza A: H3N8
    - Influenza A: H3N2
- Bacteria
  - Bordetella bronchiseptica – Is a principal agent involved in CIRDC. It tends to be involved in more significant clinical disease and is a major player in multi-agent infections. Transmission is via direct contact, aerosolization of microparticles, and fomites (dishes, hands, etc.). Incubation for about one week is typical although the pathogen may not be cleared for up to 3 months.
  - Mycoplasma – Remember that Mycoplasma is group of tiny simple intracellular bacteria without cell walls. This will impact the types of antibiotics that will be effective against these organisms (no Beta-lactams!). They are considered to be a primary cause of secondary pneumonia in Canine Infectious Respiratory Disease.
  - Streptococcus equi var zooepidemicus – A nasty and, thankfully, rare bug that has been involved in only 3 confirmed outbreaks. Susceptible to numerous antibiotics.

Diagnosis
The diagnosis of Canine Infectious Respiratory Disease Complex is often based on a history of exposure combined with clinical signs. Bloodwork, in particular a CBC, may be useful: Chest radiographs are often helpful to confirm or rule out a secondary pneumonia although this modality is usually reserved for patients with more severe respiratory symptoms. In our shelter we will occasionally use bacterial cultures and/or viral PCR, especially in cases that have not responded to empirical treatment or have implications for our population as a whole.

Treatment
Our current protocol for treating kennel cough centers around the use of Doxycycline. The reason for this is two-fold: We use periodic cultures to monitor the types of pathogens that we encounter and find that we are often dealing with Mycoplasma – sensitive to Doxycycline. Also, we occasionally have pets that come back to the shelter after being treated by local practitioners for a pneumonia that is not resolving. Often these patients have been on Clavamox which will not be effective against Mycoplasma organisms. The majority of these patients have their condition resolve after Doxycycline is used.

Patients that are dehydrated or anorexic will often benefit from parenteral fluid therapy. This may involve subcutaneous fluids or IV fluids. Additionally, patients may benefit from the use of cough and/or nebulization.
Prevention
Vaccination of all dogs upon arrival at the shelter is the mainstay of prevention. Despite this, some dogs will invariably become ill while in the shelter or soon after adoption. Isolation/segregation of sick dogs is ideal although space constraints may limit the ability of some shelters to achieve this goal. Stress reduction, avoiding overcrowding, and adherence to disinfection protocols will decrease the level of these diseases within the population. Finally, proper ventilation will help reduce transmission of airborne infectious organisms. Currently, a minimum of 10 – 12 air exchanges per hour is recommended for proper ventilation.

Feline upper respiratory infections
• AKA “URI”

Why is this condition important?
Like Canine Infectious Respiratory Disease Complex (CIRDC), Feline URI is considered among the most prevalent infectious respiratory diseases in cats. Outbreaks of this disease are also relatively common, especially in high density environments like animal shelters, pet shops, and boarding kennels. URI rates can reach 30-90% in shelters and it is a common reason for euthanasia in shelter cats. Fortunately, we can do a lot to prevent this disease if we understand more about how it is spread and how it can be prevented.

Pathogens
• Viruses
  o Feline Herpesvirus 1 – Herpesvirus is the most important pathogen in “background” URI in shelters. A large percentage of patients with herpes will already have it on arrival to the shelter and it is reactivated by stress. Therefore, in a shelter setting herpes control often centers around decreasing stress.
  o Feline Calicivirus – Calicivirus is highly variable and mutates frequently so controlling calicivirus, especially during an outbreak, can be challenging. Ulceration, especially of the tongue, mouth, and nose are the most common clinical signs. Occasionally cats with Calicivirus will present with a shifting leg lameness secondary to polyarthritis. This is usually a transient problem that responds well to NSAID’s.
  o Influenza – Various strains of influenza virus, including H3N2, can be of concern in animal shelters. Late 2016/early 2017 saw an outbreak of H7N2 (“bird flu”) in New York.
  o Systemic Virulent Calicivirus – Preceded by typical FCV signs these patients will go on to develop edema and the extremities with alopecia and ulceration. It has also been associated with hepatocellular necrosis and the mortality rate can reach 50%. Adult cats are severely affected and it may impact vaccinated and unvaccinated cats. It is important to note that Calicivirus is common and that Systemic Virulent Calicivirus is relatively rare.
• Bacteria
  o Secondary Invaders – Classically, secondary bacterial infections will cause a change in the character of nasal or ocular discharges. This will result in more mucopurulent material which, when present, indicates that antibiotics may be appropriate.
  o Chlamyphila – Will often present as a unilateral conjunctivitis with minimal respiratory signs. It should be noted that cats can be carriers of C.felis.
  o Mycoplasma
  o Bordetella

URI prevention
Perhaps one of the most important things we can do to help prevent URI is to help control stress. Providing places to hide, cage covers, decreasing noise (especially from barking dogs) and avoiding moving cats from cage to cage can all help to minimize stress. Other steps that we can take to help prevent URI include sanitation/handling of cats, segregation of ill vs. healthy cats, and vaccination of all cats on arrival to the shelter.

URI diagnosis
The diagnosis of Feline Upper Respiratory Infection is almost always based on a history of exposure combined with clinical signs. Clinical signs of URI in cats include sneezing, nasal discharge, and ulcers/sores on the nose, lips or tongue. Fever, lethargy, and loss of appetite may also be present but can be signs of other disease conditions as well. Gingivitis and stomatitis may be seen in cats with Calicivirus as well as a shifting leg lameness secondary to polyarthritis. As with kennel cough in dogs we will occasionally use bacterial cultures and/or viral PCR, especially in cases that have not responded to empirical treatment or that have implications for our population as a whole. Culture and PCR may also be useful in cases with legal implications (ie hoarding cases) for the purposes of documentation.

URI treatment
A large portion of URI cases will be due to viral disease: Thus, treatment will be centered around supportive care. Ensuring that the patient is eating and remaining hydrated is critical. Patients that develop mucopurulent nasal or ocular discharge likely have a secondary bacterial infection: Antibiotics will be appropriate in these cases. At our shelter we perform periodic cultures to see what
pathogens we are dealing with and what antibiotics will be most successful in treating these infections. Currently, we are using Doxycycline for treating these patients.

Patients with ulcerations of the tongue or mouth, secondary to calicivirus, are particularly vulnerable. Monitoring these patients carefully for evidence of pain and/or anorexia is important. Pain medications may be needed to keep these patients comfortable and eating. We have had good success with using transmucosal buprenorphine for this purpose.

References
“Canine: Infectious Respiratory Disease Complex (a.k.a Kennel Cough)” Koret Shelter Medicine Information Sheets last edited July 2015.
The Spay/Neuter Debate:
Why, When, What If…
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Why talk about this
There has been a lot of research around the area of spay/neuter within the last 15-20 years and especially within the last 5 years. Some of this research has raised good points while other studies are fraught with potential bias and erroneous conclusions. Additionally, the lay press (and the internet!) will sometimes take parts of these studies and use them to further their own agendas. It is important that we, as Veterinarians, know what information is out there so that we can help our clients make sound decisions based on the best science available.

Why spay and neuter
Traditionally, spaying and neutering dogs and cats has been advocated for the greater benefit of society, specifically to help reduce pet overpopulation. Currently, it is estimated that about 10,000 animals, mostly dogs and cats, are euthanized in U.S. shelters every day; that’s about one animal every 11 seconds. Statistics on shelter populations can be difficult to track for a variety of reasons but it appears that great strides have been made within the last 40 years to reduce the number of animals euthanized in animal shelters. It has been estimated that in 1973 that about 13.5 million dogs and cats were euthanized in shelters (or about 20 percent of pets). By the early nineties that number had been reduced to 4-5 million dogs and cats euthanized in U.S. shelters (or about 5.3 percent of the pet population). It is likely that spaying and neutering has played a role in the reduction of shelter euthanasia. In fact, in some parts of the country animal shelters don’t have enough dogs available for adoption and are importing adoptable dogs from other areas.

“Early” spay/neuter or prepubertal gonadectomy has been around since the early 1990’s. The main reason to perform these procedures at a younger age is to allow humane organizations and animal shelters to adopt out animals after they have been spayed or neutered. Gonadectomized animals rarely reproduce: Incentives to encourage owners to have their pet spayed or neutered after adoption were marginally successful at best, allowing animals that were adopted while sexually intact to contribute to the pet overpopulation problem.

Potential benefits of spay/neuter
Overall, spayed and neutered pets are likely to have a longer life-span. This is due in part to changes in behavior from reductions in sex hormones and related activity (roaming, fighting, etc.). Spayed and neutered animals will also have a reduced risk of certain cancers and complications related to the retention of sexual organs (ie pyometra). Many of the benefits can be summarized as follows:

- Male Dogs
  - Decreased BPH, prostatitis, prostatic cysts, Brucellosis, TVT
  - Eliminates risk of testicular tumor
  - Decreased risk of perineal hernia, perianal adenoma, male-male aggression

- Male Cats
  - Decreased risk of roaming, fighting, urinating in house? Decreased urine odor

- Female Dogs
  - Reduced risk of Brucellosis and TVT: Eliminates risk of pyometra, ovarian neoplasia
  - Decreased risk of mammary neoplasia

- Female Cats
  - Eliminates risk of pyometra, ovarian neoplasia. Eliminates estrus behaviors
  - Decreased risk of mammary neoplasia (> 90 % are malignant!)

A recent study has led some to question the protective effects of spaying dogs with regard to mammary tumors. There are, however, some questionable aspects of the design of that particular study. Additionally, others have shown that the incidence of malignant mammary tumors is much higher in European countries (Italy, Denmark, etc.) where there are more sexually intact dogs. Until there is more convincing evidence to the contrary we should continue to have every confidence that spaying dogs will reduce the incidence of mammary cancer.

Potential risks of spay/neuter
Recent studies have looked at the risk of spaying and neutering dogs, beyond the normal concerns about anesthesia and surgery. It is fairly well accepted that spaying and neutering will have an effect on metabolism resulting in a tendency for these animals to gain weight. Obesity is a very real concern that can predispose these patients to diabetes and various orthopedic issues: With good client education obesity is a preventable disease. Some studies have found a correlation between spay/neuter status and other diseases. As
mentioned earlier some of the evidence is better...some is less than convincing. In order to be as concise as (reasonably) possible I’ll divide these potential risks into one of three categories – neoplasia, orthopedic concerns, and other.

**Neoplasia** – The vast majority, if not all, of the studies looking at a link between spay/neuter status and the development of cancer have been on purebred dogs. The fact that purebred dogs are predisposed to certain cancers is of no surprise to anyone in the veterinary field: Generalizing findings from studies in certain purebred dogs to all dogs is a fallacy. Additionally, finding a correlation between spay/neuter status and cancer does not prove a cause and effect relationship. One study looking at the long-term effects on spaying and neutering Golden Retrievers compared to Labrador Retrievers found little or no relationship between spay/neuter status and the increased incidence of cancer in the Labrador Retriever group - thus proving that the effects of confounding variables (like genetics) are more powerful than the effects of spay/neuter status in the development of cancer.

**Orthopedic diseases** – A major concern is that the removal of the influence of gonadal hormones will result in the delayed closure of growth plates resulting in changes in the skeletal structure that can lead to certain conditions or diseases. In contrast to the idea that spay/neuter causes cancer this is a more biologically plausible theory. Predominately, studies are looking at hip dysplasia and cranial cruciate ligament rupture in dogs.

- **Hip dysplasia** – As with neoplasia, the majority of studies looking at the impact of spaying and neutering dogs on the development of hip dysplasia involved pure bred dogs that were seen at referral institutions: So it is questionable that this information can be applied to all dogs. One very large study that looked at multiple breeds of dogs did find a correlation between spay/neuter status and the development of hip dysplasia. The authors noted that owners with spayed and neutered animals may be more likely to seek veterinary care for orthopedic injuries which could skew the data. Unfortunately, this study did not control for weight or body condition score which is likely more of a factor in the development of this condition. Certainly, more study is needed in this area

- **Cranial Cruciate Ligament rupture** – Several studies have looked at spay/neuter status as a risk factor for CCL rupture. The greater length of long bones and changes in the tibial plateau angle of spayed and neutered dogs, again, provides a biologically plausible theory for this risk. Larger dogs, older dogs, and obese dogs are at greater risk for this condition and studies that do not control for body condition score should be given less than full consideration. One study looking at the medical records from a first-opinion veterinary practice found that neutering (and spaying) was not associated with an increased risk of cranial cruciate ligament rupture. Again, more study is needed in this area.

**Other**

- **Urinary incontinence** – Acquired urinary incontinence post spay has been well documented although the reports show a prevalence that ranges from 5% to 20% of spayed female dogs. A recent report found that the prevalence was at the low end of this range. The majority of these patients will respond to medical management.

**What’s the bottom line?**

- **Male Cats** – this is a classic “no brainer”. The pros far outweigh the cons and we should neuter every male cat as soon as possible. There is no known medical reason not to neuter cats and to neuter them early.

- **Female Cats** – still, “just do it”! Again, the pros far outweigh the cons. And a recent study shows that spaying before the cats’ first heat (so do it early) will greatly reduce the risk of malignant mammary neoplasia.

- **Male Dogs** – for most small and medium sized dogs the pros of neutering far outweigh the cons. For responsible owners of large and giant breed dogs or breeds that are predisposed to orthopedic problems discussing the option of waiting until the dog is over 1 year of age may be prudent, if not overly cautious.

- **Female Dogs** – until there is further evidence to the contrary, the concern about mammary tumors is very real and most dogs should be spayed before their first heat. Certainly this is valid for small and medium sized dogs: After discussion of the pros and cons of waiting owners of large and giant breed dogs may elect to delay alter.

**Conclusion**
Currently, the pros far outweigh the cons when it comes to spaying and neutering the average pet. More study is needed in this area due to the large number of conflicting reports and inadequate data. It is important to keep in mind that millions of animals are still euthanized in shelters every year in this country: It would be irresponsible to undermine the efforts of humane organizations and shelters at reducing pet overpopulation when the information that we have regarding the potential negative consequences of spaying and neutering animals is far from conclusive.
References


Veterinarians have a unique role to perform and an ethical duty to recognize and report animal abuse. Increasingly, the lay public is aware of the connection between animal abuse and interpersonal violence. This increasing awareness is elevating the seriousness of animal related crimes in the minds of the public and law enforcement, resulting in more laws related to mandatory reporting of animal abuse on the part of Veterinarians. In fact, in 2016 the Federal Bureau of Investigation began tracking cases of animal abuse.

In this talk I will describe and define six types of animal cruelty and the laws that pertain to these areas. Additionally, I will cover how Veterinarians can help and what Veterinarians should know about reporting. Due to the fact that this Conference draws participants from throughout the Midwest and beyond, we will not be able to cover the specific laws of your state or municipality. Many of the examples given will be based in Oregon, my home state.

**Anticruelty laws**

- **Neglect** – Involves intentionally, knowingly, recklessly or with criminal negligence failing to provide minimum care for an animal in one’s custody or control. There are many reasons that people will neglect animals including ignorance, stress, apathy, poverty, and psychological barriers to normal behavior. It is important to note that in most cases of animal cruelty the perpetrator can be held accountable for their actions: Ignorance is not a defense and mental illness is generally not an acceptable excuse. If the person understands the charges against them and are mentally able to participate in their defense they can face prosecution despite a diagnosis of mental illness. We will discuss degrees of neglect and the types of cases seen in practice.
- **Hoarding** – An animal hoarder is defined as someone who has accumulated a large number of animals that overwhelm his or her ability to provide a minimum of care, including adequate nutrition, sanitary conditions, and veterinary care. The key point here is that it is not about the number of animals, it is about what happens to the animals. In fact, that is one of the challenges of trying to deal with animal hoarding through the legal system and/or municipal codes. The number of animals is not the problem; the problem is that it has overwhelmed the person’s ability to provide a minimum of care. There are several key characteristics that have been described which can be helpful in identifying an animal hoarder:
  - Obsessive attempts to accumulate or maintain a collection of animals in the face of progressively deteriorating conditions
  - Failure to provide minimal standards of sanitation, space, nutrition, and veterinary care for the animals
  - Inability to recognize the effects of this failure on the welfare of the animals, human members of the household, and the environment
  - Denial or minimization of problems and living conditions for people and animals
We will discuss the types of animal hoarders that have been identified and review a few cases that have been seen at the Oregon Humane Society.
- **Abuse** – Animal abuse is defined as intentionally, knowingly, or recklessly causing physical injury to an animal. There are degrees of abuse which increase with the severity of injury to the animal and result in increased penalties for the perpetrator. This is, roughly, how animal abuse is currently defined and prosecuted in Oregon:
  - **Animal Abuse in the First Degree:**
    - Intentionally, knowingly, or recklessly causing serious physical injury to an animal, or cruelly causing the death of an animal.
    - Animal abuse in the first degree is a misdemeanor in Oregon.
  - **Aggravated Animal Abuse in the First Degree:**
    - The perpetrator maliciously kills an animal
    - OR
    - Intentionally or knowingly tortures an animal
    - Mandatory veterinary reporting in Oregon
    - Aggravated animal abuse is a felony in Oregon
  - **Animal Abuse in the Second Degree:**
    - Intentionally, knowingly, or recklessly causing physical injury to an animal.
    - Animal abuse in the second degree is a misdemeanor in Oregon.
We will discuss animal abuse in some detail. It defies logic but people who abuse and neglect animals sometimes take them to the veterinarian! It is important that practitioners are aware of abuse and neglect — we won’t find it if we are not looking for it.

- **Abandonment** — Abandonment is defined as intentionally, knowingly, recklessly or with criminal negligence leaving a domestic animal at a location without providing for the animal’s continued care. It is specifically written into Oregon law that it is a crime to abandon an animal at or near an animal shelter, vet clinic, or other place of shelter.

- **Fighting** — Involvement in animal fighting, participation in animal fighting, and possessing animal fighting paraphernalia are all separate crimes. This enables prosecutors to elevate the seriousness and penalties for involvement in animal fighting. Most crimes involving animal fighting are Class C felonies in Oregon; Penalties for a Class C felony are up to five years of imprisonment and/or a maximum fine of $125,000. Interestingly, being a spectator at a cockfight is now a felony in Oregon. It is important to note that with animal fighting there is often other criminal activity taking place in the vicinity. Guns, drugs, money laundering, and even prostitution may be encountered in this environment. For law enforcement officials who are ambivalent about animal welfare issues this may provide an incentive to pursue these criminals.

- **Sexual Assault** — A person commits the crime of sexual assault of an animal if the person:
  - Touches or contacts, or causes an object or another person to touch or contact, the mouth, anus or sex organs of an animal or animal carcass for the purpose of arousing or gratifying the sexual desire of a person; or
  - Causes an animal or animal carcass to touch or contact the mouth, anus or sex organs of a person for the purpose of arousing or gratifying the sexual desire of a person

### How veterinarians can help

- **Recognize** — Recognizing that there is a problem is certainly the first step. Awareness of animal related crime involves looking for it with a healthy degree of suspicion. For example, is the pet emaciated, have overgrown nails and matted fur? These may be signs of neglect. Does the story that the owner is telling you fit with the injuries that you see? If not, this may be a case of abuse.

- **Prevent** — Prevention of the crime of neglect, for example, may involve client education. Grooming, proper feeding and watering, and dental care often seem obvious to people in our profession. Depending on the education level or mental status of your client these may or may not be so obvious. In some cases prevention is not possible or appropriate — you should go straight to reporting. Our Humane Investigations Officers actually spend more time educating people on the proper care of animals (and following up on these cases) than arresting people.

- **Address/Report** — Please see below for information about reporting.

- **Medical Expert Witness** — Noted animal forensics expert Dr. Melinda Merck once said that “Veterinarians are the Golden Retrievers of witnesses…we’re used to people liking us”. Unfortunately, a court of law can be a contentious environment due to our adversarial legal system and Veterinarians should be prepared for this. A medical expert is a vital part of a successful prosecution. Explaining evidence, interpreting data, and answering questions should be expected. In particular, the defense attorney may challenge the case on legal or scientific grounds. Defense attorneys will often have their own expert witness: Lack of an expert medical witness for the prosecution may result in an unsuccessful prosecution.

### What veterinarians should know about reporting

- **The Law** — What crimes are you mandated to report in your state? You might be surprised to learn that in some states, Veterinarians are mandatory reporters of child abuse. It is incumbent upon us as professionals to know, at the very least, what crimes must be reported.

- **What to Record** — The bottom line is that good medical records are necessary. Medical history, exam findings and any laboratory/radiographic findings. Keep in mind that your records will be a part of any legal proceedings that take place.

- **What to Report** — An account of the situation or incident is a vital first step. A detailed description of animal, physical exam findings, medical records and observations of the client are also necessary. If possible a detailed description of suspect, including (if known) their name, address, phone number, license plate number, and a physical description of the person or persons involved. Fortunately, a lot of this information will be obtained when the client makes an appointment or checks in.

- **Where to Report** — Where to report depends on your location. Local animal control officials, the local SPCA or Humane Society, or local law enforcement are all good resources. Looking into where to report ahead of time is advisable.

### Conclusion

Veterinarians have a professional obligation, an ethical obligation, and sometimes a legal obligation, to report animal abuse. We are often in the unique position to help animals in the early stages of abuse, preventing more serious harm in the future: This is especially
important in light of the link between animal abuse and domestic violence. Knowing what to report, where to report, and how to report animal abuse are important – and being prepared in advance is imperative because these can be dynamic, emotionally charged situations. Please take the time to find out where to report animal abuse in your area.

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