



PREVENTIVE HEALTHCARE PROTOCOLS

WINTER 2018

TABLE OF CONTENTS:

| | | |
|----|---|----|
| 01 | The healthcare needs of cats | 04 |
| 02 | Travel to the veterinary clinic: Not so cat friendly! | 05 |
| 03 | Questions to ask: The medical history | 06 |
| 04 | The nutritional assessment | 08 |
| 05 | The comprehensive physical examination | 11 |
| 06 | Vaccinations | 12 |
| 07 | Parasite control | 15 |
| 08 | Retrovirus testing | 18 |
| 09 | Surgical sterilization: Earlier is better | 20 |
| 10 | Dentistry | 22 |
| 11 | Role of pet insurance in provision of health care | 25 |
| 12 | Coat care | 26 |
| 13 | Nail care | 27 |
| 14 | Preventive care and disease screening | 32 |
| 15 | Pain assessment and management | 34 |
| 16 | Home care, compliance and follow-up | 38 |
| 17 | Identification and licensing | 40 |
| 18 | Zoonotic diseases | 41 |

INTRODUCTION

Many feline family members are not receiving adequate preventive healthcare.

According to the **Canadian Federation of Humane Societies** statistics for 2012, 37% of households in Canada have one or more cats, and there are 10.2 million owned cats in this country. The owned cat population is growing at a rate of 3.6% annually, which is faster than that of households across the country.

There is a serious disconnect, however, in that many feline family members are not receiving adequate preventive healthcare. In part this is due to owners not being aware of their cats' needs. Additionally, for many owners, the stresses of travelling to the veterinary hospital and those associated with the veterinary visit itself act as deterrents from seeking preventive healthcare. As a consequence, there is a need for the veterinary profession in Canada to focus on providing these services for more cats as well as educating cat owners about the benefits of preventive healthcare in increasing longevity and quality of life. An unspoken part of the problem is that many veterinary care providers feel that compared with dogs, cats are unpredictable, and they feel uncomfortable handling them. As well, feline medical problems are perceived as more difficult to diagnose and treat than those in dogs.

All members of the veterinary team, and all of the other community animal advocates (e.g., animal welfare groups, municipal animal services, public health officials, and the pet industry including retail services), must deliver a consistent message regarding the benefits of preventive healthcare.

The **Cat Healthy Preventive Healthcare Protocols** are based on published evidence wherever possible, as well as the consensus of six Canadian board-certified feline practitioners. We have tried to create a concise, practical, user-friendly, realistic, and accessible resource that will be used on a daily basis in practice.

It is our hope that these protocols will enable and support veterinary teams in providing their feline patients with much-needed preventive healthcare in a way that will encourage cat owners to better understand the need for, and provide the same level of care for, their feline family members that their canine counterparts receive.

How to implement these protocols

1. **Designate a project leader.** Select someone who understands cats, has an interest in feline medicine, and is willing to coach other members of the veterinary team. The leader should suggest changes to procedures and staff behaviours as well as to facilities and equipment that will help incorporate the protocols into your practice.
2. **Use action planning.** Include veterinary healthcare team meetings to assess progress and make adjustments to the original plan.
3. **Encourage success with training sessions.** Learning about and understanding the protocols can take the form of role-playing or question and answer sessions and should be as interactive as possible. Team members should understand the importance of these recommendations for the quality of life and longevity of the practice's feline patients.
4. **Pick two or three changes to focus on first.** Incremental progress will be more successful than trying to implement all of the recommendations at once.
5. **Hold periodic meetings.** Discuss the best approaches for implementing these protocols, review the progress that has been made, and find solutions to problems.

This document contains general protocols on a wide variety of topics. As always, it is up to the practitioner to tailor preventive care plans to the individual patient.

Resources

Better care for cats represents one of the most significant missed opportunities for the profession. The purpose of the Bayer Veterinary Care Usage Study is to improve veterinary care of pets by determining why visits are declining, and to help veterinarians reverse the trend.

Bayer Veterinary Care Usage Study: Feline Findings:
Cathealthy.ca/BayerStudy

THE HEALTHCARE NEEDS OF CATS

More than many other species, cats need regular preventive healthcare because they are masters of disguise, hiding illness and their signs of sickness are subtle. There is a general misconception that cats are independent and self-sufficient, when, in fact, they are self-reliant. In addition, because many are kept as indoor pets, it is falsely believed that they are free from risk of disease. The solitary nature of cats and the fact that they evolved at risk of being predated upon leads them to be naturally self-defensive, making them challenging for veterinary healthcare teams and clients to work with.

It is essential that the veterinary team deliver a unified message that cats need regular preventive healthcare, as well as routine monitoring of existing disease conditions. It is also important to provide support for clients who we are depending upon to implement our recommendations.

All members of the veterinary healthcare team should recognize and communicate to clients that the following are reasons to seek veterinary care*:

1. Changes in, or Inappropriate, elimination behaviour
2. Changes in social interactions
3. Changes in activity
4. Changes in sleeping habits
5. Changes in food and water consumption
6. Changes in weight - unexplained loss or gain
7. Changes in grooming
8. Changes in behaviour
9. Changes in vocalization
10. Changes in chewing and bad breath

*Adapted from Have We Seen Your Cat Lately and the Subtle Signs of Sickness (as listed under Resources).

RESOURCES

How to tell if your cat is ill:

<https://www.youtube.com/watch?v=wsYg5GeaSHU&list=PLZAPyjXcW3-Et3rPKvWhNV1dkUnONVbr6&index=14>

One of These Cats is Sick:

- Tips on transporting cats to the clinic
- Misconceptions on cat health

Have We Seen Your Cat Lately:

Cathealthy.ca/haveweseen

- Subtle signs of sickness
- Visiting your veterinarian: tips for a stress-free trip
- The importance of wellness exams
- Common feline illnesses

CATalyst Council:

Cathealthy.ca/catalystcouncil

- Cat friendly practice tools
- Client resources, including how-to videos



TRAVEL TO THE VETERINARY CLINIC - NOT SO CAT FRIENDLY!

A critical factor that prevents cats from receiving healthcare is the stress and difficulties people have catching, crating, and travelling with their cats to the veterinary hospital. The first step in healthcare is to educate people about how to make the trip to the clinic more pleasant. The point of first contact is the client's phone call to the clinic. At this time, the veterinary healthcare team member should ask the client several key questions prior to the veterinary appointment including:

1. Do you have a cat carrier?

- All cats should come to the clinic in a carrier. If you don't have a carrier, we can loan you one (see callout box below)
- Each cat should come in their own carrier. Carriers provide secure containment
- Sturdy rigid carriers that open from the top and the front are best because they can easily be taken apart. This allows the cat to remain in the bottom of the carrier during most of the examination, which may be a more familiar and reassuring place than exposed on the table
- Be sure to secure the carrier in the car on the floor of the back seat. The front seat is not safe because an airbag can injure a cat even in a carrier, a free standing carrier can become a flying missile or a seatbelt can crack through the carrier should an accident or sudden stop take place
- When carrying the carrier, keep it stable and horizontal for the comfort of the cat
- Cover the carrier (e.g., with a towel) to reduce frightening visual stimulation
- For more tips, see the AAFP/ISFM Feline-Friendly Handling Guidelines (see Resources)

2. Do you have difficulty getting your cat into the carrier? Do you feel anxious about the visit?

The carrier can be a comforting place for the cat instead of a stressful place. Here are some ways to accomplish this:

- Leave the carrier in an area of the home where the cat frequently spends time
- Feed the cat in or near the carrier

- Place familiar bedding or some clothing inside the carrier as well as treats, catnip, and toys
- Use synthetic facial pheromones (e.g., Feliway™) in the carrier 10-15 minutes prior to travelling
- Travel with kittens on a routine basis for short (5-15 minutes) non-veterinary trips
- Some cats are prone to motion sickness. This unpleasant experience can be reduced by withholding food (but not water) for a few hours before the trip. If this is not effective, therapy for motion sickness with a drug such as maropitant or dimenhydrinate can be prescribed by the veterinarian
- Cats that have had previous negative experiences may benefit from having a veterinarian prescribe medication such as gabapentin or trazodone to reduce anxiety before the visit

RESOURCES

Loaner Cat Carriers

It is very useful to make loaner carriers available. These may be new carriers or carriers donated by clients that are in good condition. They can be disinfected and labeled with the clinic's name and contact information. A soft, clean towel can be put inside for comfort and traction.

For more tips:

Train your cat videos at: <https://www.yourcat.co.uk/cat-advice/train-your-cat-series/>

- Cat carrier training, parts 1 and 2

Visiting the vet (video): tips for a stress free trip http://www.haveweseenyourcatlately.com/Visiting_Your_Vet.html

AAFP/ISFM Feline-Friendly Handling Guidelines: [Cathealthy.ca/catvetshandling](http://cathealthy.ca/catvetshandling)

Cats and Carriers: Friends not Foes (video): http://catalystcouncil.org/resources/health_welfare/cat_carrier_video/

Using Feliway to decrease stress from travel and other situations: English: http://www.feliway.com/ca_en

Look for these products at your local pet supply store:

- Petmate Navigator cat carrier
- ThunderShirt for cats

QUESTIONS TO ASK: THE MEDICAL HISTORY

Open-ended questions (those starting with words such as ‘who’, ‘how’, ‘what’, ‘when’, ‘where’, ‘why’ and where the answer requires a description) are often better than close-ended questions (yes/no answers) for extracting information. If a close-ended question is used to start the conversation, follow it up with an open-ended question. For example, questions such as “Are there any changes in Fluffy’s defecation?” or “Is there anything unusual about Fluffy’s feces?” fail to parse out that Fluffy has chronically had soft/hard stool or that the cat defecates outdoors. An answer of: “No” needs to be followed up with “Please describe Fluffy’s feces.” Specific open-ended questions to ask include:

1. What are your concerns today?

Always start by determining the client’s concerns and goals for the visit. The initial reason for booking the appointment may not be the only important issue on the client’s mind.

2. How much time does your cat spend outside? How much contact does your cat have with other animals?

An important part of risk assessment is determining the cat’s lifestyle. Clients may consider their cat as an indoor pet with a low risk of disease, but with questioning, it may become apparent that the cat travels with the client, goes to a boarding facility, meets other cats in the building, goes on a balcony, etc. This question helps determine which vaccines are warranted. The cat’s origin (e.g., was it adopted after a natural disaster in another region?) and travel history are important parts of the medical history for developing a differential list for illnesses caused by infectious diseases.

Additionally, if the cat lives strictly indoors, questions should be asked to identify areas for possible improvement in meeting environmental needs (see *Optimizing an Indoor Lifestyle for Cats* in Resources).

3. Who lives with you and your cat? Are there any other pets in the home?

Knowing whether children or immunocompromised people live in, or visit, the home will help assess risk of zoonotic disease. Changes in the composition of the household (e.g., a new baby, a student leaving for college, etc.) can cause stress and even clinical signs of illness.

4. Does your cat ever urinate or defecate in your home outside the litter box?

This is a critically important question that leads to further discussion should the answer be ‘yes.’ All too often, inappropriate elimination is not brought to veterinary attention until it has gone past the point where a client is willing to tolerate it. Early identification allows for appropriate diagnostics and environmental modifications that can avoid frustration, a damaged human-animal bond, and possible relinquishment to a shelter or euthanasia.

5. Have you noticed any changes in your cat’s behaviour or temperament? Do you have any questions or concerns about your cat’s behaviour?

This question should be asked in addition to the previous question. Behaviour problems and problem behaviours are often overlooked in feline medicine and can become a reason for euthanasia which is the main reason for relinquishment to shelters in Canada. People often do not realize that veterinarians can provide behaviour counseling or that many behaviour problems have a medical basis. For example, in senior cats, many changes are wrongly attributed to old age when the causes may be due to disease, pain, or social distress. For more information, see the AAFP Feline Behavior Guidelines and ‘Diagnosing and Solving House-Soiling Behavior in Cats’ (see Resources).

6. Where are the food, water, and litter box(es) located? How many are there?

Determining the number and location of key resources (e.g., food bowls, water bowls, litter boxes, toys, perches, sleeping and resting places) is important for the cat’s quality of life and well-being as well as for assessment of behaviour problems. The required number and location of these key resources are determined by the number of cats in the home, as well as the presence of other pets and perceived threats. Asking the client to draw a floor plan showing the location of key resources can be very helpful. For more information, see the AAFP/ISFM Environmental Needs Guidelines and the ‘Welcome to Cat Parenthood/New Owner Checklist’ (see Resources).

QUESTIONS TO ASK: THE MEDICAL HISTORY

7. What foods does your cat eat? How much do you feed and how often? What kind of treats do you give your cat?

See the section on Nutritional Assessment.

8. Do you have pet insurance for your cat?

Several companies provide different levels of insurance plans for cats. These plans can be very helpful in an emergency or health crisis. Knowing that a proportion of the costs of care are covered by insurance can make diagnostic and treatment planning more feasible for the client.

9. What form of identification does your cat carry?

All cats should have both permanent (e.g., microchip, tattoo) and visual (e.g., tag on a break-away collar) forms of identification. Microchips and tattoos are only useful if the client's contact information is registered and kept up to date. The veterinary team can remind clients of the need to keep contact information current in relevant databases at each preventive care visit. An ideal time to place a microchip or tattoo is during anesthesia for surgical sterilization or other common procedures such as dentistry, however, microchips can be placed without sedation or general anesthesia. The microchip should be scanned annually to verify placement and function. This is also a good time to ensure that the client's contact information is up to date in the microchip database.

10. How would you describe your cat's feces?

As mentioned in the introduction to this section, the stool quality, consistency, quantity, colour, and frequency should be determined for every cat (even if they are not presented for gastrointestinal problems) and recorded in the medical record. Tools such as a fecal score chart are very useful. Several fecal score charts are available from pet food companies; each clinic should select one system that will be used by the healthcare team for consistency. Cats with abnormal fecal scores should have a diagnostic investigation. For example, chronically soft stools may indicate an underlying disease while chronically small, hard stools may be due to dehydration.

RESOURCES

Fecal Scoring Chart (Nestle Purina) - page 11 in Quick Reference Guide:

Diagnosis and Management of Gastrointestinal Disease: https://www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwjl8dWV2drZAhUD-Q6OKHftcBKgQFggpMAA&url=https%3A%2F%2Fwww.purina.it%2Fveterinari%2Fsystem%2Ffiles_force%2F1_Diagnosing_Gastrointestinal_disease.pdf%3Fdownload%3D1&usg=AOvVaw3ThCQO20xa9MKlmyectVy-

Fecal Scoring System (Waltham):

https://www.waltham.com/dyn/_assets/_pdfs/resources/FaecesQuality2.pdf

Optimizing an Indoor Lifestyle for Cats (Dr. Margie Scherk) in Veterinary Focus, Vol 26(2), 2016:

Available through International Veterinary Information Service (free registration):

http://www.ivis.org/journals/vetfocus/26_2/en/toc.asp

AAFP Practice Guidelines (available free):

<http://www.catvets.com/guidelines/practice-guidelines>

- Diagnosing and Solving House-Soiling Behavior in Cats
- Environmental Needs
- Feline Behavior

THE NUTRITIONAL ASSESSMENT

A nutritional assessment should be performed for every cat at every visit. Key information to gather includes the type of food, the brand, the amount fed, the frequency of feeding, and the amount actually eaten, as well as type and amounts of any supplements or treats provided. This information is helpful in determining how appropriate the nutritional plan is for this cat's life stage, health conditions, body, weight and muscle condition. Having reception staff prepare the client in advance by asking them to bring this information with them, (e.g., taking photos of the products fed, the bowl size), can save time and provide a more accurate assessment. Similarly, designating a staff member can make a follow-up phone call after the visit to collect any missing details.

At every appointment, review and repeat the nutritional assessment and make a recommendation that includes a specific diet, the amount to be fed (by volume or weight), as well as frequency of feeding. Table 1 provides information on recommended daily caloric intake for cats. Record this information in the medical record and communicate it to the client both verbally as well as in written form.



Table 1: Resting Energy Requirements (RER) for Ideal Body Weight

For body condition score 2.5/5 to 3.5/5 or 5/9

| Body weight (lbs) | Body weight (kg) | Kcal/day |
|-------------------|------------------|----------|
| 1 | 0.45 | 39 |
| 2 | 0.91 | 65 |
| 3 | 1.36 | 88 |
| 4 | 1.82 | 110 |
| 5 | 2.27 | 130 |
| 6 | 2.73 | 149 |
| 7 | 3.18 | 167 |
| 8 | 3.64 | 184 |
| 9 | 4.09 | 201 |
| 10 | 4.55 | 218 |
| 15 | 6.82 | 295 |
| 20 | 9.09 | 366 |
| 25 | 11.36 | 433 |

Maintenance DER (Kcal/day):

Normal, neutered adult = 1.2 x RER

Intact adult = 1.4 x RER

Obese prone adult = 1.0 x RER

For weight loss in adults = 0.8 x RER

Growing kittens = 2.5 x RER

RER = Resting Energy Requirement: the energy required for a normal individual at rest in a thermoneutral environment based on body weight.

DER = Daily Energy Requirement: the average daily energy expenditure of an animal dependent on life stage and activity (work, lactation, gestation, growth).

THE NUTRITIONAL ASSESSMENT

Healthy Body Weight and Obesity Prevention

- Preventive healthcare includes monitoring weight, body condition, and muscle condition. Controlling energy intake is important for the prevention of obesity and maintenance of ideal body weight. Individual cats may have energy requirements 50% or more above or below the average requirement. The true daily energy requirement for an individual cat is the calories needed to maintain an ideal body condition (BCS 2.5-3.5 on the 5-point scale or 5 on the 9-point scale) and stable weight
- Body condition can be determined by several methods. Three common methods include using the 5-point or 9-point body condition score charts and body fat index (see Resources). For cats determined to be above ideal weight, assessment of body fat using the body fat index chart or morphometric measurements can help to estimate the cat's ideal body weight. With this information the food dose can be calculated for that individual. The ideal body weight for all cats, not just those that are overweight, should be recorded in the cat's medical record for future reference
- It is also helpful to note not just whether weight is stable, has increased, or has decreased, but also the percentage weight change as this helps to detect insidious changes, thereby potentially preventing future obesity or facilitating early detection of disease
- In some chronic disease states (e.g., neoplasia, congestive heart failure, chronic kidney disease), optimal weight may be higher than "ideal weight"

Food Choices, Nutritional Information, and Weight Gain

- Today's pet foods are more palatable than in the past and the caloric content of cat foods varies widely. Feeding unlimited amounts of highly palatable, energy dense foods encourages excessive caloric intake. A cat should like what it eats, but not necessarily love it
- Feeding multiple small meals each day is recommended as it may allow for better control of caloric intake as well as allowing the cat to express normal feeding behaviour
- Daily food allotments should be measured carefully; weighing dry diets on a kitchen scale is more accurate than measuring by volume
- Canned food offers several benefits, including increased water intake and often lower caloric density by volume
- Excessive use of treats or substitution of food (and treats) for other types of interaction between the client and cat encourages excess energy intake. Snacks should be limited to <10% of the total daily caloric intake
- Surgical sterilization predisposes cats to weight gain for several reasons. Neutered male and female cats have resting metabolic rates 20 to 25% below those of intact cats of similar age. When a cat is discharged after surgical sterilization, new feeding recommendations should be calculated and explained to the client:
 - Feed lower calorie foods (if not a growing kitten) or restrict regular foods to 75% of the previous amount. Changes should be made over a period of 1-2 weeks to improve success
 - Schedule an evaluation of body weight and BCS 4 to 5 months after surgery to ensure maintenance of ideal body weight and condition



THE NUTRITIONAL ASSESSMENT

- Nutritional information should be available from the food manufacturer; producers of premium foods provide full nutritional information to veterinary staff. If the manufacturer's recommended feeding amounts are used, excess caloric intake may result because recommendations are based on ranges and average caloric requirements
- Muscle condition should also be evaluated (see the WSAVA muscle condition score chart in Resources). A muscle-wasted patient may be suffering from a catabolic disease (e.g., neoplasia, a protein-losing nephropathy or enteropathy), be unable to absorb dietary protein efficiently (e.g., intestinal disease), or may need a diet with more protein. Even an obese individual may be muscle wasted, making weight and BCS alone inadequate for assessing body condition

Feeding Management

The domestic cat is anatomically and physiologically adapted to eating as many as 10-20 small meals (a reflection of their natural hunting behaviour) throughout the day and night. Feeding twice daily or having a bowl that is never empty are not "natural" ways for cats to eat. Having opportunities to express hunting behaviour is a basic need for cats. Allowing cats to 'hunt' for their food, or using a feeding device, are mentally stimulating activities. Examples of feeding devices are found under Resources.

Under stressful situations, many cats will refuse a novel food. Under other circumstances, the same cat may be adventuresome and choose a new diet over a familiar food. A new diet is more likely to be accepted if it is offered at home rather than in the clinic setting. Changing diets can be challenging; tips on transitioning to new diets can be found in the brochure from Hill's Pet Nutrition, A Simple Guide to Feeding Your Cat (see Resources).

After changing diets, a recheck appointment is needed (similar to rechecking after any other medical recommendation) to assess how this particular individual is responding to the recommended diet. In essence, when a new diet is recommended, you are performing a nutritional study of involving one cat!



RESOURCES

Hill's Pet Nutrition - A Simple Guide to Feeding Your Cat:
Cathealthy.ca/Hillsbrochure

Hill's Healthy Weight Protocol - Body fat index and morphometric measurements:

- Savvy Cat Owner's Guide: Nutrition on the Internet: https://www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwiWmpW7zaPaAhXBylQKHXLDaAQFggpMAA&url=http%3A%2F%2Fwww.wsava.org%2FWSAVA%2Fmedia%2FArpita-and-Emma-editorial%2FThe-Savvy-Cat-Owner-s-Guide-to-Nutrition-on-the-Internet.pdf&usq=AOvVaw3K_oNxjCoGOAwBwb3UqeM
- Global Nutrition Guidelines: <http://www.wsava.org/guidelines/global-nutrition-guidelines>

World Small Animal Veterinary Association:
Cathealthy.ca/Hillsweightprotocol

World Small Animal Veterinary Association - Global Nutrition Toolkit:

<http://www.wsava.org/guidelines/global-nutrition-guidelines>

- Body condition score chart for cats
- Muscle condition score chart for cats
- Calorie needs for cats
- Short diet history form
- Nutritional assessment checklist

Pet Nutrition Alliance:

- Nutritional Calculator for Cats: http://www.petnutritionalliance.org/cat.php?lg=en_US
- Tools and Resources: <http://petnutritionalliance.org/>

AAHA Nutritional Assessment Guidelines for Dogs and Cats: https://www.aha.org/professional/resources/feline_life_stage.aspx

Look for these food puzzles or toys at your local pet supply store:

- NoBowl Feeding System
- Multivet Slim Cat Toy Ball and Food Dispenser
- Cat Activity Fun Board (Trixie Pet Products)
- Go! Cat! Go! Play-N-Treat Balls
- FUNkitty Egg-Cersizer Interactive Toy and Food Dispenser
- Aikiou Stimulo Cat Interactive Feeder
- Catit Design Senses Treat and Food Maze

THE COMPREHENSIVE PHYSICAL EXAMINATION

A thorough physical examination is critically important both for preventive care and for the diagnosis of illness. For sick cats, the examination findings along with the medical history should provide the basis for a list of problems and differential diagnoses, which may then be refined through diagnostic testing.

At a minimum, every cat should be examined at least once yearly. After 8 years of age, twice yearly examinations are recommended as changes may occur more quickly and age-associated disease is more common.

Key points for the feline physical examination include:

- Observe the cat's behaviour and temperament before and during handling as well as the cat's interactions with the client
- If the cat will safely move around the exam room, be sure to note problems such as stiffness, reluctance to jump onto or down from chairs or tables, hesitation in movement, lameness, etc.
- Use the cat's name and refer to its sex correctly. Handle the cat in a respectful and appropriate manner to minimize stress and anxiety for both the cat and the client
- In addition to weighing the cat at every visit (even if the visit is for a non-medical reason such as nail trimming), always determine the body condition score and the muscle condition score. Calculate and record the percentage of weight change. Note whether the cat is at ideal body weight and if not, plan to address the problem with the client
- A complete physical examination should be performed and recorded in the medical record using a systematic checklist. During the examination, positioning the cat facing away from you may be less threatening for the patient
- Be sure to score pain - you can use a simple scale of 0-10, with 0 being no pain and 10 being the most severe pain
- Always assess the cat's hydration status using skin elasticity (bearing in mind it may be inaccurate in the very young and the very old), mucous membrane moisture, and knowledge of stool consistency
- Be sure to include thyroid palpation and an oral examination (including looking under the tongue) for every cat. Blood pressure should be assessed in any cat over 6 years and any ill patient. (see Preventive Care and Disease Screening)
- If possible, any diagnostic or medical procedures should be completed before the cat is safely back in its carrier so that the stress of unnecessary repeat visits is minimized as much as possible

RESOURCES

AAFP/ISFM Feline-Friendly Handling Guidelines:
Cathealthy.ca/catvetshandling



Photo courtesy of Bayer

VACCINATIONS

Vaccinations are no longer considered to be the cornerstone for the yearly examination. Patient recalls should be based on the need for a comprehensive physical examination and consultation rather than for vaccination alone. The wording of recall messages is important; here is a suggested format:

It's time for Fluffy's comprehensive physical examination and consultation regarding nutrition and behaviour. Cats are good at hiding health problems. This appointment is an opportunity to find things that might otherwise go undetected—and become more difficult and costly to treat later on. During the appointment, we'll review Fluffy's vaccination needs and we'll recommend flea and internal parasite control based on her individual needs. In addition, blood and urine tests might be recommended for health monitoring and early disease detection.

Vaccination decisions should be based on risk assessment and tailored to the individual patient. As is always the case in using disease management guidelines, practitioners should adapt the recommendations to best suit the needs of their own patients. In assessing the risk, information about the cat, the environment, and infectious agents to which the cat will be realistically exposed and the potential for zoonosis must be considered:

- **Patient factors:** Most infectious diseases are more prevalent in kittens, particularly those under 6 months of age. Kittens therefore, represent a principal target population for vaccination

- **Maternally derived antibodies (MDA):** MDA provide important early protection against disease for kittens. However, MDA may also interfere with the response to vaccination. The level of MDA varies among individuals, so that the age at which a kitten may be able to fully respond to vaccination will also vary. In some cases, this may be 16 weeks of age or older

- **Aging cats:** Immunosenescence occurs as cats age, blunting previously established immunity. As a result, even though a cat may have been properly vaccinated at an earlier age, vaccination should not be allowed to lapse in this age group

- **The environment:** Risk of exposure to infectious diseases is affected by population density and the opportunity for exposure to infectious agents from other cats. Cats in multiple-cat households, cats admitted to boarding facilities, and cats with access to the outdoors are likely to have a higher risk of infection than are cats in households with 1 or 2 indoor cats. However, 'indoor cats' are not without risk of exposure to infectious disease during their lifetime and also require protection

- **Location:** Infectious diseases vary in geographic distribution, resulting in substantially different risks of exposure for cats living in different areas. Determining a cat's risk for infectious disease also includes plans for future travel away from home

- **The infectious agent:** Variables associated with the infectious agent itself, such as virulence, strain variation, challenge dose, and environmental stability, will influence the outcome of infection; these may be difficult to assess. See the AAFP disease information fact sheets for helpful information (see Resources)

- **Government regulations:** Rabies is considered to be endemic in most of Canada and legislation mandating rabies immunizations for all cats (indoor and outdoor) is present in many municipalities. Veterinarians should be aware of, and abide by, local and provincial regulations and by-laws

RESOURCES

World Small Animal Veterinary Association Vaccination Guidelines: [Cathealthy.ca/WSAVAvaccination](https://www.cathealthy.ca/WSAVAvaccination)

European Advisory Board on Cat Diseases: Recommendations on the Prevention and Management of Feline Infectious Diseases: [Cathealthy.ca/ABCDvets](https://www.cathealthy.ca/ABCDvets)

AAFP Feline Vaccination Advisory Panel Report: <https://www.catvets.com/guidelines/practice-guidelines>

- [Feline Vaccination Guidelines](#)
- [Disease Information Fact Sheets](#)

VACCINATIONS

Several organizations have reviewed and updated vaccination guidelines for cats with all recommending **to vaccinate** more cats but to vaccinate individual cats less often than in the

past (see Resources). Based on these published guidelines for the indoor/outdoor cat, this panel recommends the following vaccinations for the owned cat:

| VACCINE | FIRST INOCULATIONS: KITTENS | FIRST INOCULATIONS: ADULT CATS AND KITTENS OVER 16 WEEKS OF AGE | SUBSEQUENT INOCULATIONS | COMMENTS |
|--|---|---|---|---|
| Panleukopenia, herpes virus-1, calicivirus | Administer the first dose as early as 4-6 weeks followed by revaccination every 3-4 weeks until at least 16 weeks of age (when risk of maternally derived antibody interference is minimal) | Administer the first dose followed by revaccination 3-4 weeks later | Administer a booster 1 year after completing the initial series followed by revaccination every 3 years unless a high disease risk requires more frequent vaccination intervals | Killed virus and modified live virus vaccine products are available in Canada. All vaccines must be administered according to the manufacturer directions. |
| Rabies | Administer a single dose at not less than 12 weeks of age | Administer a single dose | Administer a booster 1 year after the initial vaccination and then once yearly or every 3 years according to the manufacturer's guidelines | <p>Recommended for:</p> <ol style="list-style-type: none"> 1) All cats with outdoor access (even casual outdoor access such as balconies or outside enclosures) and indoor cats in regions where there is a risk of exposure to rabies via bats. 2) All cats if required by local, municipal, or provincial by-laws. 3) Cats travelling to other countries. Choice of product (killed versus recombinant) may depend on the requirements of country of import. |
| Feline leukemia virus (FeLV) | Administer the first dose as early as 8 weeks of age followed by revaccination 3-4 weeks later | Administer the first dose followed by revaccination 3-4 weeks later | <p>Administer a booster 1 year after completing the initial series followed by revaccination:</p> <ul style="list-style-type: none"> • Annually in high-risk cats • Every 2 years in low-risk cats <p>Revaccination is not needed in cats that are at no risk (indoor-only single cat or indoor multiple-cat household with known negative FeLV status of all cats)</p> | <p>Cats should be tested for FeLV and feline immunodeficiency virus prior to vaccination.</p> <p>All kittens should be vaccinated (even if they are intended to be housed indoors) as this is the most susceptible age group for FeLV infection and, despite a client's best intentions, housing status and exposure to other cats can change.</p> <p>Low-risk cats would include those that go into boarding facilities where cats are housed individually, cats with limited outdoor access (i.e., outside enclosures) where risk of contact with another cat is minimal or in cases where the aforementioned cat is housed indoors but housemates go outside.</p> <p>High-risk cats would include those that are free roaming and/or are seen at the clinic for abscesses (as evidence of cat fights).</p> |

VACCINATIONS

The following vaccines are not considered necessary for use in most cats:

Feline Infectious Peritonitis: At this time, there is insufficient evidence that the vaccine induces clinically relevant protection and use of the vaccine is not recommended.

Feline Immunodeficiency Virus (FIV): The FIV vaccine is no longer available in North America as of 2015, but there are 2 important points for those cats previously vaccinated with this product. First, it may not provide complete protection against all field strains due to the highly mutable nature of the virus, leading to a false sense of security. In addition, some cats may test FIV antibody-positive for 4 years or longer after the last vaccination. The conventional testing methods for FIV are based on antibody detection. Commercially available test kits use a variety of antibody targets. Some tests may be able to distinguish antibodies induced by vaccination from those induced by natural infection, but other tests are unable to make this distinction. Additional PCR testing in antibody-positive animals may be required to distinguish between these two populations, involving additional costs, time, and anxiety.

Feline Injection Site Sarcomas

Feline injection site sarcoma (FISS) is a rare but devastating neoplasm that has been associated with vaccinations as well as, in rare cases, other injected products (e.g., lufenuron, long-acting medications, microchip). Current theories suggest that the etiology is complex and multi-factorial, involving the nature of the inflammatory response in certain individuals that may be genetically predisposed to tumour development. These tumours can occur months to years after vaccination, making determination of cause and effect very difficult. One study suggested that cats with sarcomas in the rear leg were significantly less likely to have received recombinant rabies vaccines than inactivated vaccines. We therefore recommend avoiding inactivated vaccines when possible and when appropriate. However, it's important to note that no vaccines are free from risk.

Although we may never be able to fully prevent FISS, based on the available evidence, we recommend the following to reduce risk:

- Use extended revaccination intervals for adult cats where appropriate

- Vaccine selection should be based on disease risk assessment

- Practitioners must be mindful of choosing a site where surgical intervention might be more effective in the event FISS does occur. Vaccinations should not be administered in the interscapular area. Using a consistent location for each vaccine type and recording it in the medical record is essential both for surgical planning and for identification of causality. The following sites are recommended for vaccine administration:
 - FVRCP vaccines at or below the right elbow
 - FeLV vaccines at or below the left stifle
 - Rabies vaccines at or below the right stifle

Administration of vaccines should be as close to (at or below) the joint. When given higher on the limb, surgical removal of a sarcoma becomes more complex and invasive.

REFERENCES available on request



Rabies vaccination
Photo courtesy of Dr. Liz O'Brien



FVRCP vaccination
Photo courtesy of Dr. Liz O'Brien

PARASITE CONTROL

Effective control and prevention of both external and internal parasites is essential to promote the health of the cat, promote public safety, and to preserve the bond between pets and people. While prevention and treatment of parasites in the family dog is important, the health of the family cat should not be overlooked in this regard. [Evaluating Risk](#) A customized parasite control program should be created for every cat, regardless of indoor or outdoor status. Recognizing that geographic, seasonal, and lifestyle factors affect the risk of infection with parasites, a clinic prevention program should be adapted to suit the needs of individual patients within the geographic region. In some regions of Canada, the risk of parasite infection may be seasonally driven, but in dense environments such as apartment buildings and multi-pet households, year-round spread of parasites needs to be considered. It is an incorrect assumption that an indoor cat is not at risk for parasitic infection. Indoor cats are at risk of parasites transmitted on clothing, furniture, footwear, and potted plants. Additionally, the transmission of parasites from outdoor pets to the indoor cat should be considered. Indoor and outdoor cats that hunt and consume rodents are at risk of tapeworm as well as roundworm infection.

A clinic's parasite prevention wellness protocol should be based on: The age of the cat

- The life cycle and prepatent period for the parasite in question

- The environmental and geographic prevalence of the parasite(s)

- The individual cat's relative risk of exposure

- The household number and types of pets

- The mechanism of action of the chosen product, with special focus on the duration of action and targeted parasite life stages

In addition, client factors that may increase an individual's susceptibility should be evaluated (see Zoonotic Diseases).

External Parasites

Fleas

Depending on the individual's lifestyle and geographic region, a cat may be at risk for flea infestation. High-risk scenarios include access to the outdoors, living with other pets that go outdoors, or living in pet-dense environments such as apartment buildings. In these cases, the use of a year-round, monthly veterinary flea control product is strongly recommended.

Veterinarians play an important role in educating clients about the flea life cycle in cats and dogs and the appropriate use of recommended products. Risks associated with using retail topical products, including powders, sprays, spot-ons, and flea collars, must be discussed due to the high incidence of [pyrethrin/permethrin toxicosis](#). A minimum 3-month treatment period is recommended for managing existing flea infestations due to the nature of the flea life cycle.

Diagnosis of fleas in cats can be challenging. The fastidious grooming of cats often results in not finding flea dirt or fleas despite combing to look for evidence of infection. Thus, when fleas and/or flea allergy dermatitis are suspected, treatment should be initiated regardless of whether fleas or flea dirt are seen. An appropriate, licensed topical product should be used according to the manufacturer's recommendations.

Ticks

In Canada, tick distribution varies with geographic area and tick species. Although cats are less susceptible to tick-borne diseases than dogs, veterinarians should discuss the risk to cats as well. Clients should be informed about the need for regular examination to detect ticks, and how to remove ticks. Additionally, because many retail and veterinary prescribed tick products used for dogs contain ingredients that are toxic and potentially life threatening for cats, it is critical to educate the client about the risks involved with using these canine products on cats.

PARASITE CONTROL

Lice and Mites

Kittens and newly adopted cats should be evaluated for infection with ear mites (*Otodectes cyanotis*). Patients presenting with pruritus, scaling, excoriation, and hair loss should also be evaluated for feline lice (*Felicola subrostratus*), mites (*Cheyletiella spp*, *Notoedres cati* and others), and demodicosis (*Demodex cati* or *D. gatoi*). Appropriate diagnostic tests include skin scrapings, flea combings, hair trichograms, acetate tape preparations, and fecal examinations. Appropriate therapy should be based on the availability of approved products, available published data, and the specific diagnosis. In-contact cats and dogs should be evaluated for contagion risk and treated appropriately.

Internal Parasites

Laboratory Testing for Internal Parasites

Fecal testing is recommended as a part of every preventive healthcare examination for the purpose of monitoring compliance with monthly preventive medication as well as for the diagnosis of some internal parasites not treated by broad-spectrum preventatives. In kittens, testing can be coordinated with vaccine administration so that 2 to 4 tests are run during the first year of life.

Fecal centrifugation flotation techniques with either zinc sulfate or modified Sheather's sugar solution (rather than fecal flotation by sedimentation) are considered the most reliable in-house screening tests for most intestinal parasites (especially nematodes). The ideal sample size is 1 gram (a cube measuring 1/2 inch on each side) of fresh formed feces (or 2 grams if feces are soft). However, the sensitivity of these tests may be low, and external laboratories should be consulted for further guidance and techniques that may produce improved recovery rates.

Fecal wet mount techniques are also useful, especially for detecting organisms such as *Giardia* and *Trichostrongylus axei*. A small (about the size of a rice grain), freshly passed or collected fecal sample is required.

Nematode Infections

Roundworm infections (*Toxocara cati*, *Toxascaris leonina*) are common in cats and kittens. Infection can occur by ingestion of contaminated food and water or infected paratenic hosts. Transmammary infection does occur, but transplacental infection has not been reported. The reported prepatent period for *T. cati* is 8 weeks but may be as short as 3 weeks depending on the mode of infection (e.g., ingestion of an egg or paratenic host, or transmammary infection). Similarly, the reported prepatent period for *T. leonina* varies but is generally accepted to be 7 to 10 weeks.

Recommended Internal Feline Parasite Prevention Protocols by Lifestage:

Kittens less than 6 months of age

- Kittens are a vulnerable age group for internal parasites
- All kittens should receive an anthelmintic at 2, 4, 6 and 8 weeks of age, to ensure prompt removal of *Toxocara spp* acquired from the queen, followed by monthly treatments until 6 months of age
- Alternatively, when kittens are first brought home, they should receive an anthelmintic that is adulticidal for a minimum of 3 treatments spaced 2 weeks apart. Initial deworming frequency is reduced if a product with adulticidal and larvicidal activity is used
- Following this initial deworming, kittens should be treated with a broad-spectrum parasiticide monthly until 6 months of age
- Nursing queens should be treated at the same time as their kittens to prevent patent infections
- All kittens should receive at least 1 deworming treatment that includes a product effective against tapeworms

Cats over 6 months of age

- At 6 months of age, start a year-round or seasonal protocol administering a broad-spectrum parasiticide based on the cat's risk for external and internal parasites
- Heartworm prevention should be recommended for cats in endemic areas, and for cats that travel to endemic areas
- Due to the high false negative rate for detecting parasites via routine in-house fecal examinations, deworming 2-4 times per year is recommended by various expert groups (see Resources), if the cat is not receiving regular, monthly treatment

PARASITE CONTROL

Hookworm infections (*Ancylostoma spp*) are uncommon in cats. Infection occurs via ingestion of contaminated food or water, consumption of a paratenic host, or transdermal larval migration. Transmammary infection has not been reported in cats. The prepatent period ranges from 19 to 28 days.

Toxascaris leonina and *A. braziliense* (rare in Canada) can also infect dogs, which is an important consideration in multi-pet households.

Whipworm infections (*Trichuris felis*) rarely occur in cats in North America. *Eucoleus (Capillaria) aerophila* should be considered when eggs with bipolar plugs are identified by fecal examination.

Prevalence data for different Canadian geographical areas can be found in the Canadian Guidelines for the Treatment of Parasites in Dogs and Cats (see Resources).

Cestode Infections

While tapeworm infection is often diagnosed by finding tapeworm segments in the cat's perineal area, on feces, or on bedding, this evidence is not always available. Therefore, the possibility of tapeworm infection must be based on the patient's individual risk factors. At each preventive healthcare visit, the cat should be assessed for fleas and the client questioned about the cat's hunting habits. Not all products have broad-spectrum activity against all tapeworm species, so it is important to identify which species is implicated. For example, fenbendazole will not eliminate tapeworm infection (*Dipylidium caninum*) secondary to flea ingestion.

Only affected individuals (not in-contact animals) need to be treated because cestodes require an intermediate host for transmission. Note should be made if exposure to common intermediate hosts (e.g., fleas in the household or access to rodents) exists as this increases the possibility of infection in other pets in the household. Repeated treatments for tapeworm infection should not be necessary in cases where the source of infection has been successfully eliminated. When repeat exposure occurs, such as in cats consuming rodents, a regular deworming plan for *Taenia taeniaeformis* is recommended. Similarly, if fleas are not successfully controlled, repeated therapy will be needed for *D. caninum*. All kittens should receive at least 1 deworming with a product effective against tapeworms during their initial deworming series. Adult cats should receive periodic treatment based on risk factors.

Intestinal Protozoal Infections

Heartworm Disease in Cats

The cat is a partially adapted host for the heartworm parasite *Dirofilaria immitis* and is considered to be more resistant to infection with adult heartworm than the dog. Current research data indicate that 3 to 10 adult worms will develop in approximately 75% of cats experimentally infected with 100 3rd stage larvae (L3). This is in comparison to 60 adult worms in 100% of experimentally infected dogs.

However, cats can develop significant pulmonary disease in response to immature heartworms; adult worms are not required for pathologic changes and clinical signs. Wherever the heartworm host mosquito species are found, the risk of mosquito bite is the same for dogs and cats. While some mosquito species do demonstrate a preference for dogs, the most common mosquito species in urban centres, *Culex spp*, feeds on both cats and dogs without preference. Additionally, cats do not need to go outside to be exposed to infested mosquito hosts.

As a partially adapted host, where zero to minimal adult heartworms develop, diagnosis of heartworm infection in the cat is difficult. Infected cats may exhibit only transient clinical signs (e.g., vomiting or coughing) or die of infection without a diagnosis. It is therefore recommended that cats living in (or travelling to) endemic areas should receive appropriate monthly preventives against heartworm beginning within 1 month of first mosquito exposure and continuing until 1 month after the last exposure to mosquitoes. Due to the low risk of adult worm development, testing before administration of prophylaxis is not required.

Testing cats for exposure (antibody) to heartworm or infection with adult (antigen) heartworm should be considered in endemic areas and where patients are exhibiting signs suggestive of feline heartworm infection, although interpretation of results is often difficult, and infection may be missed.

RESOURCES

Canadian Guidelines for the Treatment of Parasites in Dogs and Cats: <https://www.catvets.com/guidelines/practice-guidelines>

Worms & Germs Blog: Promoting Safe Pet Ownership: Cathealthy.ca/wormsandgerms

The Companion Animal Parasite Council: Cathealthy.ca/CAPCvet

Current Feline Guidelines for the Prevention, Diagnosis and Management of Heartworm Infection in Cats: heartwormsociety.org/pdf/2014-AHS-Feline-Guidelines.pdf

European Scientific Counsel on Companion Animal Parasites: https://www.esccap.org/uploads/docs/kbinj8j0_0687_ESCCAP_General_Recommendations_update_v4.pdf

National Center for Infectious Diseases: Healthy Pets Healthy People: Cathealthy.ca/healthypets

How to perform fecal centrifugation and why this technique is best: <https://www.cpcvet.org/articles/why-fecal-centrifugation-is-better/>

RETROVIRUS TESTING

Feline leukemia virus (FeLV) and Feline Immunodeficiency Virus (FIV) are among the most common infectious diseases of cats, although prevalence in the general cat population varies by geographic location and risk factors. Comprehensive data on the seroprevalence of retrovirus infections and risk factors for cats in Canada were published in 2009. The national seroprevalence is 3.4% for FeLV and 4.3% for FIV, with some geographic variation. While these viruses are present in all parts of Canada, the highest prevalence for FeLV is in Nova Scotia, Quebec, and Manitoba. The highest prevalence for FIV is in Newfoundland, Quebec, and Saskatchewan.

In general, the retrovirus status of all cats should be known. Guidelines for retrovirus testing of cats in Canada have been published (see figures 1-3 and Resources). Point-of-care testing kits available to veterinarians have good sensitivity and specificity for both viruses. These kits comprise enzyme linked immunoassay (ELISA) tests that detect the presence of FIV antibodies and FeLV antigen.

Who should be tested for FeLV and FIV?

Cats that should be tested for FeLV and FIV include:

- a) At-risk cats: All sick cats, cats with bite wounds or oral disease, cats with known exposure to a retrovirus-infected cat, cats living in multi-cat environments where the status of every cat is not known. Sick cats should be tested regardless of a previous negative FeLV or FIV test result.
- b) Newly acquired cats and kittens.
- c) Cats about to be vaccinated against FeLV or FIV.
- d) Cats at ongoing risk of infection (e.g., cats with access to outdoors) should be tested annually for FeLV and FIV with patient-side or referral laboratory tests. Cats vaccinated against FIV will require special consideration (see below).
- e) Cats in shelters are often not tested before adoption although this may be routine in some shelter and rescue groups. If the cat has been tested, the results should be provided to the client. If cats are not tested prior to adoption, the client should be made aware that testing is required as soon as possible.

RESOURCES

Levy J, Crawford C, Hartmann K, et al. 2008 American Association of Feline Practitioners' Feline Retrovirus Management Guidelines. *J Feline Med Surg* 2008;10:300-316.

Available free at: Cathealthy.ca/catvetsretrovirus

Little S, Sears W, Lachtara J, et al. Seroprevalence of feline leukemia virus and feline immunodeficiency virus infection among cats in Canada. *Can Vet J* 2009;50:644-648.

Available free at: Cathealthy.ca/seroprevalence

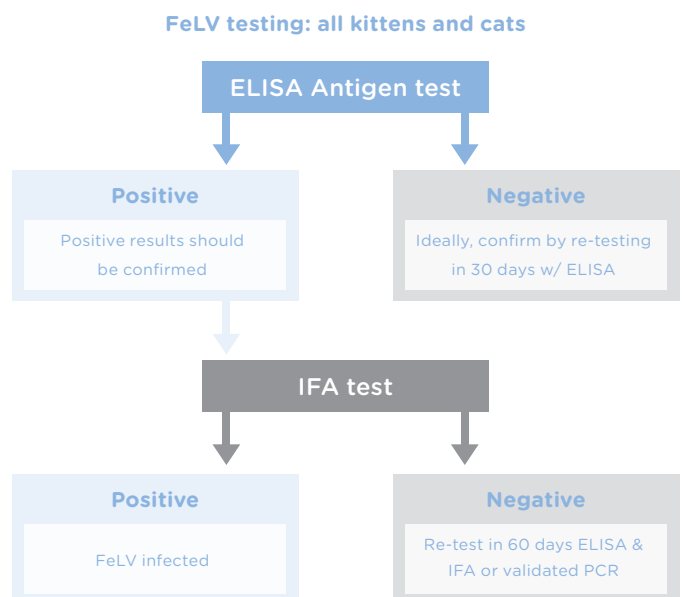
Little S, Bienzle D, Carioto L, et al. Feline leukemia virus and feline immunodeficiency virus in Canada: recommendations for testing and management. *Can Vet J* 2011;52:849-855.

Available free at: Cathealthy.ca/felineleukemia

Westman, ME, Malik, R, Hall, E, Sheehy, PA and Norris, MJ. Determining the Feline Immunodeficiency Virus (FIV) status of FIV-vaccinated cats using point-of-care antibody kits. *Comparative Immunology, Microbiology and Infectious Diseases* 2015;42:43-52.

Available free at: <http://www.sciencedirect.com/science/article/pii/S0147957115000569>

Figure 1: Algorithm for FeLV testing of all kittens and cats (Vaccination against FeLV does not interfere with testing)



RETROVIRUS TESTING

Figure 2: Algorithm for FIV testing of kittens under 6 months old (that have not received FIV vaccinations)

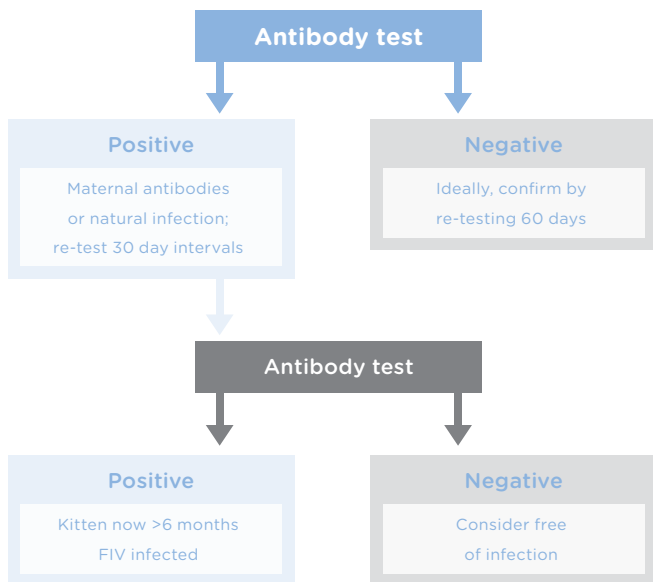


Figure 3: Algorithm for FIV testing of cats over 6 months old

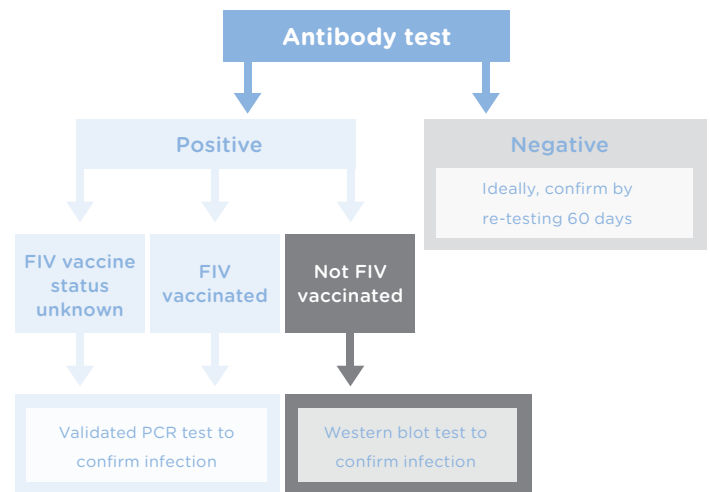


Photo courtesy of IDEXX



Photo courtesy of Bayer



Photo courtesy of Hills



Photo courtesy of Petsecure

Recommendations for Follow-up Testing

A single negative FIV and/or FeLV test does not rule out infection for life. There are multiple situations in which the testing status may change. These include:

- **Recent exposure.** It can take months for a patient to develop detectable FIV antibodies following exposure. Retesting should be conducted at least 60 days following the first negative test and/or most recent potential exposure. Feline leukemia virus testing should be repeated at least 30 days after the first negative test.
- **False negative or false positive test results.** Improperly handled samples or improperly run tests can lead to false results in point-of-care testing.
- **New exposure.** Cats that are at continued risk of exposure cannot be presumed negative for life based on one ELISA test. Regular testing is recommended.

Concerns with FIV Vaccinations and Testing Results

As of 2015, the FIV vaccination is no longer available in Canada or the United States. The vaccine continues to be available in Australia and New Zealand. Cats vaccinated against FIV may be antibody-positive on serology testing due to immunity raised by vaccination for some years following the last vaccination. Knowledge of the cat's vaccination history is beneficial, but where the vaccination status is unknown, certain point-of-care tests and referral laboratory PCR tests may assist in determining whether a cat is truly infected or previously vaccinated.

SURGICAL STERILIZATION: EARLIER IS BETTER

Although a traditional age for surgical sterilization is 5-7 months, more than 90% of shelters that responded to the Canadian Federation of Humane Societies shelter statistics survey spay or neuter the animals in their care before adoption in order to help solve the cat overpopulation crisis in Canada. Early-age spay/neuter at or before 5 months of age and pediatric spay/neuter performed between 6 and 16 weeks of age have significant benefits and are endorsed by the Canadian Veterinary Medical Association. Long-term studies have confirmed that pediatric sterilization is not associated with increased risk of disease, narrowed urethral diameter, or significant behaviour problems, and have also documented some benefits, which include:

- Effective population control

- Improved compliance through pre-adoption or pre-sale surgery

- Easier surgeries (e.g., less bleeding, improved visualization of organs, shorter surgery times) and shorter recovery times than for older cats

- Small incisions that result in less inflammation and pain during healing

- Lower post-operative complication rates than for older cats

- Avoidance of stress and costs of spaying females in estrus, while pregnant, or with pyometra

- Decreased behaviour problems (e.g., roaming, urine spraying, fighting)

- Reduction in the risk of mammary adenocarcinoma (91% reduction when females are spayed before 6 months of age)

Anesthesia and Surgery Considerations

Pediatric patients have unique perioperative, anesthetic and surgical requirements. Anesthetic agents available today are safe in kittens as young as 6 weeks of age. Various drug protocols are available in the literature for anesthesia and analgesia for pediatric patients. Cats under 2 kg have a higher risk of anesthetic complications due to factors such as hypothermia, hypoglycemia, inaccurate weights, and inaccurate drug doses. The highest risk period is during the first 3 hours of recovery. Reducing stress and anxiety is important for pediatric sterilization and is best accomplished by housing a litter of kittens together pre- and post-operatively and providing a cage with comfortable and warm bedding and a hiding place for individual kittens. Hypothermia can be prevented by reducing contact with cold surfaces, limiting body cavity exposure, providing carefully protected contact with circulating warm water or heated containers (e.g., carefully monitored water bottles, rice bags, or warming discs) peri-operatively, and minimizing the volume of pre-surgical disinfectant. Short surgical times and reversal of anesthetic agents at the completion of surgery minimize hypothermia as well. In addition, particular attention to hemostasis is required for all pediatric surgeries.

Hypoglycemia can be avoided or minimized by restricting pre-operative fasting to 2 to 4 hours, avoiding pre-operative excitement, and feeding the kitten immediately upon anesthetic recovery.

The patient should be closely monitored during anesthesia with particular attention to breathing rate and cardiac output.



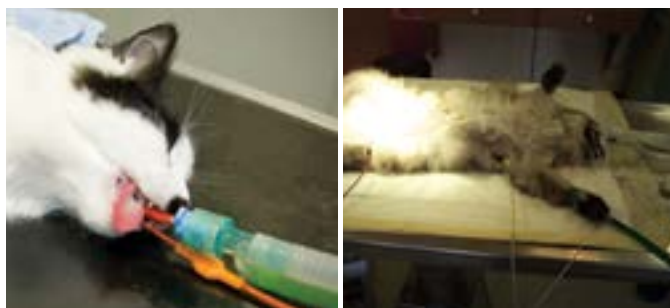
SURGICAL STERILIZATION: EARLIER IS BETTER

As anesthesia and surgery do not affect the response to vaccination, kittens can be vaccinated at the same time as an elective surgery, if required; preferably once the patient is in recovery. Suggested ages for surgical sterilization in various situations include:

Kitten from private home: Often re-homed at about 8 weeks old, should receive primary vaccination series before surgery, schedule surgery following last vaccination at about 16 weeks of age.

Kitten from rescue organization: Often re-homed at about 8 weeks old, schedule surgery following last vaccination at about 16 weeks of age; some organizations ensure that surgery is performed before re-homing. Encouraging rescue organizations and shelters to use the Cat Healthy Adoption Checklist will educate the client on additional vaccinations, parasite treatment, and disease screening tests required in the first year of life and beyond.

Feral kittens: If caught before 7 weeks old, they may be re-homed and treated as for rescue kittens; if part of a trap/neuter/return program, surgical sterilization and vaccination may occur as early as 6-7 weeks of age; identification such as ear-tipping is recommended for cats returned back to the colony.



RESOURCES

Feline Update

From the Feline Centre (Langford Veterinary Services, University of Bristol, UK) and Zoetis:

[Cathealthy.ca/felinecentre](https://cathealthy.ca/felinecentre)

- Instructional video on early neutering from Cats Protection charity
- Link to an iTunes app to calculate drug doses for a popular anesthetic protocol
- Principles of early neutering

The Cat Group

Policy statement on timing of neutering:

[Cathealthy.ca/thecatgroup](https://cathealthy.ca/thecatgroup)

Canadian Veterinary Medical Association

Position Statement on Neutering of Dogs and Cats:

[Cathealthy.ca/CVMA](https://cathealthy.ca/CVMA)

“The CVMA suggests that in most cases, male and female cats be neutered prior to 5 months of age.”

Humane Alliance

Pediatric spay/neuter instructional video:

[Cathealthy.ca/humanealliance](https://cathealthy.ca/humanealliance)

PetSmart Charities

<https://www.petsmartcharities.org/>

Cathealthy.ca Adoption Checklist:

www.cathealthy.ca/wp-content/uploads/2018/03/Cat-Healthy-New-Owner-Checklist.pdf

DENTISTRY

Similar to humans and dogs, the retention of food particles on the teeth will lead to the development of plaque, tartar, gingivitis, and periodontal disease in cats. Without regular care at home and in the veterinary clinic, dental disease will develop. In addition to tartar and gingivitis, cats may experience other dental conditions including tooth resorption and chronic gingivostomatitis.

Oral Healthcare at Home

Oral healthcare should be discussed at every preventive healthcare visit. A discussion of home care options should include the daily brushing or wiping of a cat's teeth. Recommended products such as therapeutic diets and treats should be verified by the Veterinary Oral Health Council (VOHC) for claims for control of plaque and tartar. Working with their veterinarian, clients should be encouraged to develop a routine home care protocol that comprises daily brushing as well as the use of one or more VOHC verified products. However, daily home care should not be started in an unhealthy mouth as it will delay appropriate treatment and cause pain. Home care options are best employed in young cats with a healthy mouth, or after dental assessment and treatment in an older cat. The use of dental treats or diets should be incorporated into the patient's nutritional program to avoid excessive caloric intake.

Home Care Packages

- **Tooth brush:** a variety of types should be provided, as each cat will vary in acceptance of different tooth brush types

- **Gauze:** 2 inch gauze squares wrapped around a finger may be a more acceptable approach for wiping plaque from a cat's teeth on a daily basis

- **Veterinary toothpaste samples:** while the act of physically removing dental plaque is key in the prevention of disease, toothpaste may aid in the removal, and may also be used to encourage the cat to chew on the tooth brush

- Dental information pamphlet

- Small sample of VOHC-approved dental kibble

Oral Healthcare in Clinic

Clients need to be aware that just like brushing one's own teeth, preventive dental care will help retard dental disease but cannot completely prevent it from occurring. Routine assessment under anesthesia including a full oral health assessment and full mouth dental radiographs are a key component to identifying hidden disease. Clients should understand that these procedures also help identify tooth resorption, which can be hidden under the gum line.

A thorough examination of the oral cavity should be an essential component of every physical examination. In most cats, a thorough examination of the oral cavity and dental crowns is achievable when the patient is awake. However, some cats may be reluctant to allow oral examination. This reluctance may stem directly from the presence of oral pain, arthritis pain, or a general reluctance to be handled. Clients should be made aware that analgesics, sedation, or anesthesia may be required for a basic examination to be completed. Hand scaling of teeth in an awake or conscious cat is not recommended and is not a substitute for a comprehensive oral health assessment and treatment plan (COHAT) under general anesthesia. Hand scaling may cause trauma to the cat or the veterinarian, does not address dental care needs, and may mislead the client into thinking nothing further is required.

During an oral health examination, the following should be documented in the medical record:

- The presence/absence of specific teeth

- The presence and identification of fractured teeth

- The degree of tartar and gingivitis

- The presence of mobile teeth

- The presence of visible tooth resorption lesions

- Areas of inflammation, swelling, or masses

- Oral odours and if possible, their source

DENTISTRY

The client should be aware that oral examination on the awake patient does not provide information about:

- Tooth root disease

- Subgingival disease including pockets

- Some mobile teeth

- Resorptive lesions concealed by oral and gingival structures

- Masses, inflammation, or other lesions concealed by oral and gingival structures

All examination findings should be properly recorded in the medical record. A treatment plan and estimate of costs should be made and discussed in detail with the client.

It is the veterinarian's responsibility to relieve the patient's immediate pain. Analgesics should be prescribed the day that painful dental disease is diagnosed. Concern with the patient's status will be further impressed upon the client if the clinician encourages the client to pursue pre-anesthetic testing on the day of diagnosis, as well as scheduling the surgical procedure before leaving the veterinary clinic.

Complete Oral Health Assessment and Treatment

Once under anesthesia, the patient should undergo detailed oral evaluation. Detailed oral evaluation includes assessment of each tooth for visible and palpable disease, as well as assessment of each tooth by dental radiography. The failure to perform dental radiographs will result in a failure to identify sub-gingival disease that can be of significant importance. As such, all feline dentistry should include full mouth radiography. All findings should be recorded on a standardized dental chart using standard nomenclature. Teeth requiring surgical extraction or other therapy should be recorded. All teeth with identified pathologic disease should undergo appropriate treatment or the patient should be referred for specialist care. Following care of the diseased teeth, or in the absence of diseased teeth, professional cleaning should ensue. This should include scaling and polishing by a licensed veterinarian or veterinary technician.

Pain Management in Dental Surgery

Oral lesions present in the feline mouth are painful. This pain persists even under general anesthesia. The patient should be provided with a balanced anesthesia and multimodal analgesia plan in order to reduce or eliminate existing pain and to reduce surgical and post-surgical pain. This approach should include pain management prescribed on the day of diagnosis. During the COHAT, a constant rate infusion of pain management drugs may benefit the anesthesia status for patients requiring extractions as well as improve recovery. The patient should receive local dental nerve blocks prior to surgical procedures. Immediately post-operatively and for 1-2 weeks following the surgical procedure, the patient should

receive multimodal analgesia including (where appropriate) non-steroidal anti-inflammatory drugs, narcotics, and other pain management drugs such as gabapentin.

Post-operatively, follow-up communication by telephone with the client is critical in the immediate days following surgery to ensure appropriate recovery, compliance with medication, and sufficient consumption of food. A recheck appointment should be scheduled 2 weeks following surgery. Depending on the nature of the dental pathology identified, an appropriate home dental care plan should be recommended to the client. Home dental care plans should never be started while the mouth is painful and unhealthy. It is best to wait until disease has been treated and the mouth has healed.

The Use of Antibiotics in Dental Disease

The domestic cat has well over 200 species of bacteria living in its mouth. The presence of tartar and gingivitis, while being a function of the presence of these bacteria, is not an indication for the use of antibiotics. Except in cases where abscesses exist, the provision of analgesics and urgent pursuit of dental surgical care constitutes the appropriate route of treatment. The removal of diseased teeth and the removal of plaque and tartar reduce any perceived need for antibiotics. The use of antibiotics may disturb the normal oral or gastrointestinal flora and are likely of no long-term benefit to the patient, particularly if the primary issues are not addressed. Where extraction of diseased teeth is sufficient to eliminate infection risks, the use of antibiotics should be considered excessive and should not be pursued.

Resistance to Dental Care

Clients may be reluctant to pursue dental care for a variety of reasons. These may include:

- A fear of anesthesia, especially in elderly cats. Veterinarians must acknowledge and address client concerns regarding anesthesia but should not recommend less-than-optimal dental care

- An inability or unwillingness to pay the costs associated with a COHAT. A well-established veterinary-client-patient relationship (VPCR) can be beneficial in the understanding and acceptance of related costs. Individual clinics may elect to offer payment plans or third-party financing in order to expedite the necessary surgical care

- An inability to recognize that the cat's dental disease is causing their cat any discomfort. A well-established VPCR will ensure the trust necessary to overcome this objection. In addition, the immediate use of analgesic medication in advance of dental surgery will improve the client's understanding and acceptance of the patient's oral pain

DENTISTRY

SPECIFIC DENTAL CONDITIONS

Tooth Resorption

Feline tooth resorption (TR) has been given many names in the last 2 decades including feline odontoclastic resorptive lesions, feline resorptive disease, and neck or cervical lesions. Regardless of the terminology, the cause of this condition remains unclear. Classification of tooth resorption is currently divided into 5 types of tooth pathology or 3 types of radiographic changes. These classifications are set by the American Veterinary Dental College.

The Types of Resorption Based on Radiographic Appearance

Type 1 TR: focal or multifocal radiolucency, with the remainder of the tooth having normal radiopacity and a normal periodontal ligament space.

Type 2 TR: narrowing or disappearance of the periodontal ligament space in some areas, as well as a decreased radiopacity of part of the tooth.

Type 3 TR: features of both Type 1 and Type 2 are present in the same tooth. The periodontal ligament will have normal areas and areas of loss or narrowing. The tooth will have multifocal radiolucent areas as well as decreased radiopacity in other areas.

Regardless of the lesion type, the condition is progressive and painful. Extraction of affected teeth is the only rational treatment approach. Dental radiography of all teeth is essential. Affected crowns may have diseased tooth roots, which is critical information when planning surgical extraction. Radiography will also allow the identification of developing TR at the root level that may not be apparent in the crown. These teeth also require extraction. Crown amputation is recommended only in specific situations.

Cats that have been diagnosed with TR are known to be at increased risk of developing further lesions in the future. Monitoring at regular intervals should include an annual COHAT with dental radiography. This will allow for early identification and extraction of affected teeth.

There is no universally agreed upon method for prevention of TR. Good dental hygiene continues to be of importance for control of other dental conditions, although the role in prevention of TR is not yet clear.

Feline Chronic Gingivostomatitis

The presence of oral inflammation that is inconsistent with the degree of plaque and tartar may be indicative of feline chronic gingivostomatitis (FCGS). The inflammation present in FCGS will often extend beyond the gingiva to nearby oral tissues including the back of the mouth, throat, and under the tongue. Feline chronic gingivostomatitis occurs as a result of an abnormal local immune system response. The origin of this response is unknown. Gingival biopsy helps differentiate FCGS from other oral diseases, especially neoplasia, in certain cases. The condition may be temporarily responsive to medications including certain antibiotics or corticosteroids. Dental scaling may alleviate the condition for short periods. Therefore, full mouth extraction of all teeth and roots is considered the appropriate treatment in severe cases, although the response rate may not be 100% for all patients. Delay in pursuit of full mouth extraction may reduce the success rate of this procedure, as the inflammatory response continues to worsen. During surgical extraction for FCGS, full mouth radiographs prior to extraction and following extraction are necessary, to identify root abnormalities prior to extraction and identify and retrieve root remnants following extraction. Crown amputation is recommended only in specific situations. Patients with FCGS should be tested for feline immune deficiency virus and feline leukemia virus.

RESOURCES

http://www.toothvet.ca/PDFfiles/home_care.pdf

http://www.toothvet.ca/PDFfiles/tr_cats.pdf

http://www.toothvet.ca/PDFfiles/fcgs_1p.pdf

http://www.vohc.org/accepted_products.htm

<https://www.avdc.org/Nomenclature/Nomen-Teeth.html>



ROLE OF PET INSURANCE IN PROVISION OF HEALTH CARE

Pet Insurance can be very helpful in an emergency or health crisis, but less than 2% of Canadian cat clients have purchased it. Kittens and young cats are generally healthy, but pet health insurance may still be necessary in the event of accidental injuries or unforeseen incidents such as poisoning, viral infection, intestinal obstruction from foreign body ingestion or obstructive or non-obstructive fluid.

Cats often live to be 15 to 20 years of age. As a cat matures, it is more likely to develop chronic medical conditions. The prevalence of diabetes mellitus, hyperthyroidism, arthritis, and chronic kidney disease all increase in senior cats. While the initial diagnosis of these problems may be costly, ongoing therapy and management of these treatable problems can continue to tax a family's budget without the assistance of health insurance. These challenges can be an ongoing source of frustration for the veterinary team and the client and may result in compromises being made in health care. Pet health insurance plans allow clients the ability to make health decisions based on what is truly best for their beloved cat.

Several insurance companies now offer a free trial period and many shelters are including a trial period of pet health insurance when cats are adopted. While choice is beneficial and market competition helps to keep costs down, the variety of insurance programs and plans available from different companies is often confusing and overwhelming for clients and veterinary team members.

The following is a list of considerations that veterinary team members can provide to clients in order to evaluate pet health insurance options. A reputable company should:

1. Require an ongoing veterinarian/client/patient relationship.
2. Communicate to the consumer if preventive healthcare coverage is available as well as coverage for illness and injury.
3. Allow clients the freedom to choose their own veterinarian, including specialists and emergency/critical care facilities.
4. Never attempt to influence or interfere with the established fee structure of the veterinary practice.
5. Be clear about policy limits, pricing structure, and optional coverage that might be available to the policy holder as well as what time limits exist for adding to or changing the policy.
6. Be transparent about how the terms and conditions of the plan will impact coverage and reimbursement, including the financial obligations of the policy holder such as co-insurance, deductibles, and exclusions.
7. Communicate clearly about the fee reimbursement process, how reimbursement is determined, and how quickly reimbursements are provided to the policy holder.
8. Have licensed insurance agents available to advise the client about coverage options, and provide help in deciding which type and level of coverage may be of most benefit in reducing the financial burden of the pet's health care.
9. Be offered only where the policies are approved by provincial regulatory bodies and meet the ethical standards of the pet health insurance industry.
10. Have a licensed veterinarian available to assist in underwriting and claims adjudication.

COAT CARE

Grooming and Coat Care

Maintaining coat and skin health through regular, extensive grooming is a healthy part of a cat's normal daily activities. Cats spend up to 25% of their waking time grooming. Poor coat health may be a result of reduced grooming, soiling (with external substances, urine, or feces), as well as infectious or other diseases. Both long-haired and short-haired cats may be affected.

Poor coat condition warrants investigation as it may reflect health problems including dental disease, any disease causing pain (e.g., arthritis), any disease causing malaise, dehydration, inadequate nutrition, and obesity. A full history and a complete physical examination including obtaining an appropriate minimum database (complete blood count, serum chemistry profile, complete urinalysis [and total T4 for older cats]) is critical.

In addition to identifying and treating the underlying cause of disease, use of pain medication should be considered for patients with potentially painful conditions (see Pain Assessment and Management).

Soiling of the coat due to external substances may require special veterinary attention, particularly if the soiling agents include substances that are toxic or not water-soluble. Soiling from urine or feces warrants investigation as the cat may be experiencing a medical problem (e.g., constipation, diarrhea, polyuria, stranguria, etc.). Cats with mobility issues, including cats that have difficulty walking or are unable to stand, may be incapable of using a litter box. As a result, fecal matter or urine may soil the coat.

External parasites such as fleas, mites, and lice can be diagnosed at the time of physical examination or following cytologic examination of the hair coat (see Parasite Control). Fleas are often difficult to find in cats due to their meticulous grooming behaviour. A lack of fleas and flea dirt does not rule out flea infestation. Empirical therapy is indicated where the index of suspicion is high.

Regular Coat Care

Routine brushing is beneficial for removing loose, shedding hair, as well as potentially providing bonding activity between the client and pet. Some cats take to brushing readily and enjoy it, while others will not. A cat that suddenly resents combing or brushing may be ill or may have a painful area on the body. The veterinarian should be able to make individualized recommendations about appropriate combs and brushes. Most combs reach the skin better than brushes and do not produce static electricity.

Shaving is warranted in cats that are prone to chronic matting or experiencing medical problems contributing to poor coat conditions. Veterinary clinics should consider offering health-related basic grooming services, or at minimum be able to make recommendations for a reputable cat groomer. Full body shaves and 'lion clips' are relatively easy to perform, although the patient may require pain medication and/or sedation. Cats should never be physically restrained for grooming. (see Pain Assessment and Management).

Chronic vomiting of hairballs is an indication for diagnostic testing for gastrointestinal or abdominal disease. Cats are normally able to digest and process ingested hair. Other causes for vomiting of hairballs include increased hair loss, pain, and stress that result in increased grooming.

References available on request

RESOURCES

[Cat Healthy Parasite Control:](#)
[See section 7 of this document](#)

[Cat Healthy Pain Assessment and Management:](#)
[See section 15 of this document](#)

[Hairball Algorithm \(Clinicians Brief\)](#)

NAIL CARE

Scratching Behaviour and Nail Care in Cats

Scratching is a natural behaviour in cats that serves two main purposes. The first is to renew the claw by dislodging the old nail growth and exposing a new, sharper claw. The second purpose is for marking. Cats rub against surfaces and scratch areas in their environment to convey chemical and visual messages. The paw pads can be used to mark surfaces with pheromones without exposing the claws. When the claws are exposed, scratch marks will also visually advise other animals of the cat's presence or its claim to specific territory. Scratching also appears to be a pleasurable activity for cats.

Cat Healthy does not support elective and non-therapeutic Partial Digital Amputation (PDA), commonly known as declawing or onychectomy, of domestic cats. In light of the potential for immediate post-operative issues as well as new emerging evidence regarding long-term health problems, it is important for the veterinary team, and particularly veterinarians, to discuss and recommend alternatives to declawing with clients. It is also important for the veterinarian to help clients understand what is involved in the actual surgical procedure of declawing, explaining that the procedure involves amputation of the last bone (P3) of each digit. The veterinarian should review the surgical risks, as well as the short and long term potential for negative consequences.



Surgical Concerns and Risks

- Damage to collateral tissue including paw pads, P2, nerves, and blood vessels

- Insufficient pain prevention and management

- Hemorrhage

- Tissue burns (from laser techniques)

- Intraoperative tourniquet that results in reduced blood supply to the limb and nerve damage

Short-term Post-operative Concerns and Risks

- Hemorrhage

- Infection of surgical site

- Wound dehiscence

- Remnants of P3 left in-situ

- Reactions to suture or tissue adhesive used to close surgical sites

- Remnants of tissue adhesive causing subcutaneous swelling or discomfort

- Reduced blood supply with post-operative bandaging

- Post-operative pain as a result of the surgery in general and/or associated with any of the above complications

NAIL CARE

Long-term Post-surgical Concerns

- Arthritis

- Osteomyelitis

- P3 remnants causing pain

- P3 remnant regrowth

- Tissue adhesive remnants causing pain and inflammation

- Tendon contracture

- Chronic phantom pain/amputee pain

- Altered gait

- Post-operative CHRONIC pain as a result of any of the above complications

Every practitioner believes that they offer the best surgical method and analgesic protocol. Nevertheless, post-operative complications are common and under-recognized. Residual pain can result in chronic, neuropathic pain that may be difficult to treat.

Controlling Surgical Pain

Regardless of the surgical method employed (laser, scalpel, guillotine nail clippers, etc.), onychectomy is a painful procedure. If performed, the procedure should include proper technique and effective pre-, intra- and post-operative analgesia. It is important to note that laser declaw does not prevent surgical pain. In two studies examining post-operative declaw pain in cats declawed by scalpel or laser, neither study concluded any long-term (greater than 2-5 days) reduction in post-operative pain when the procedure was performed by laser and laser declaw patients were never observed to be pain-free (Holmberg et al, 2006, Robinson et al, 2007, Wilson & Pascoe, 2016). Multimodal pain control should be used and is well tolerated in the cat. For example, the analgesia protocol could incorporate local nerve blocks, non-steroidal anti-inflammatory drugs, narcotics, and gabapentin. Pain management must be provided in advance of the surgery and for as long as the patient requires post-operatively in order to reduce the chance of neuropathic pain developing. Pain control guidelines (see Resources) are available to practitioners to assist in establishing appropriate analgesic protocols.

Tendonectomy

In past years, the practice of tendonectomy had been recommended as an alternative to declawing. This procedure involves surgical severing and/or removal of a short length of the deep digital flexor tendon for each digit. This prevents the cat from being able to expose the claws and will prevent all scratching activities. However, the procedure leaves the cat without the ability to shed the cap of growing, healthy claws, leading to painful thick nails that are difficult to trim and that are predisposed to growing into the paw pads. Therefore, tendonectomy is NOT recommended.

Supporting Normal Scratching Behaviour: Living in Harmony with Clawed Cats

To curtail the destructive aspect of scratching, a veterinary team member should demonstrate nail trimming at every opportunity, including the appropriate equipment. Some clinics elect to offer reduced cost or free nail trims for patients in order to improve nail care. The client should be shown basic nail anatomy (i.e., where the quick is), how to gently expose the nail for trimming, and how to use nail clippers. The frequency of nail trimming will depend on the age of the cat and how much of the nail is removed. Most cats' nails need to be trimmed every 4-6 weeks. Vinyl nail caps (e.g., Soft Paws®) may be an attractive option for some clients.

Veterinary team members should discuss scratching behaviour and offer advice on how to modify the environment. Providing suitable stable scratching surfaces allows natural expression of this behaviour. Scratching surface preferences will vary from cat to cat so that having a variety of options available is always ideal. In general, cats prefer tall, solid structures that are covered in materials such as carpet, sisal, or natural tree bark. We recommend structures such as a cat tree that allows climbing and perching. Placing the cat tree in front of a window allows the cat to monitor outdoor wildlife activities. Other scratching surfaces include wall-mounted vertical units. Some cats, including senior and arthritic cats, may prefer horizontal surfaces. These may include flat carpet, sisal, or cardboard surfaces. These should be placed in areas where the family spends time as well as in a more private area for the cat. If scratching surfaces are only located in remote locations away from family, it is likely that they won't be used. In all cases, encouraging play around and on the scratching surfaces will increase their use. Placement of catnip (fresh, dried, or catnip spray) may also make them more desirable.

NAIL CARE

Scratching Inappropriate Surfaces

Discouraging the cat from scratching inappropriate surfaces can be challenging. Punishment is not recommended, as this may result in, or exacerbate, anxiety, leading to escalation of the behaviour. The placement of two-sided sticky tape, tinfoil, plastic, or furniture covers may reduce scratching on these surfaces. Discussing where the cat is scratching furniture may help reveal what the threat is that is making the cat feel the need to reinforce territorial markings. Similarly, it may also indicate the optimal locations for cat scratching posts and other acceptable surfaces.

Sometimes, inappropriate scratching may escalate. With a goal to addressing the underlying problem, the veterinarian should discuss the potential causes with the client. Causes include:

- Social tension with other cats in household

- Outdoor cats marking around the perimeter of the house

- New cat or other pet in household

- Anxiety stemming from reduced availability of resources (litter boxes, food, water, beds, places to perch, toys, etc.)

- Anxieties from changes in the household schedule, inhabitants, furniture, etc.

- Illness

Immunocompromised Individuals Living with Cats

In some cases, declawing is requested in order to protect an immunocompromised person from scratching and related disease. The United States Center for Disease Control (CDC) does not recommend onychectomy as a means of disease control even in these instances. The CDC recommends an indoor lifestyle for cats living with immunocompromised individuals and regular flea prevention as a means of reducing the risk of exposure to *Bartonella spp* (Cat Scratch Disease). It discourages immunocompromised individuals from playing directly with young cats. This recommendation should be extended to any type of play involving one's hands or feet with any age of cat as it might lead to biting or scratching. Clients should always avoid aggressive play with any cat, as it can increase the incidence of play aggression and the risk of injury to humans living with the cat. Similar recommendation could be made for individuals on anticoagulant drug therapy. Regular veterinary care, including nail trimming, parasite prevention, and appropriate dental care will reduce the infectious disease risks to immunocompromised individuals living with cats.

References available on request

RESOURCES

CVMA Position Statement on Onychectomy:
<https://www.canadianveterinarians.net/documents/partial-digital-amputation-onychectomy-or-declawing-of-the-domestic-felid-position-statement>

AVMA Position Statement on Onychectomy:
<https://www.avma.org/KB/Policies/Pages/Declawing-of-Domestic-Cats.aspx>

Mills KE, von Keyserlingk MA, Niel L. A review of medically unnecessary surgeries in dogs and cats. J Am Vet Med Assoc 2016; 248(2):162-171.

AAHA/AAFP 2015 Pain Management Guidelines:
https://www.aaha.org/public_documents/professional_guidelines/2015_aaha_aafp_pain_management_guidelines_for_dogs_and_cats.pdf

Cat Healthy Pain Management:
http://www.cathealthy.ca/wp-content/uploads/2014/07/CatHealthyProtocols_141.pdf

Centers for Disease Control Bartonella information:
<http://www.cdc.gov/bartonella/veterinarians/>

How-to videos on trimming nails:
Proclaw Veterinarians of Canada:
www.proclawvets.ca/learn/trimming-your-cats-claws/

Partners in Animal Health: Cathealthy.ca/partnersAH

International Cat Care: Cathealthy.ca/advicecentre

Soft Paws®: Cathealthy.ca/softpaws

NAIL CARE

Resource: Client-Veterinary Team Declawing Talking Points

Thank you for calling (clinic name)! This is (your name).
How may I help you? 😊

How much does it cost to have my cat declawed?

May I ask you a few things about your kitty? I'm sorry:
I missed your name. 😊

(Janice)

And what's your cat's name?

(Tigger)

I apologize, I can't remember. Have we seen *(Tigger)*
before, *(Janice?)*

Yes/No

Could you please tell me why you want to have *(Tigger)*
declawed?

(Reason)

I see. Do you know what declawing entails?

Removing the nails, isn't it?

Well, yes but it actually involves amputating each finger/toe
at the first knuckle.

or Yes/All of my cats are declawed.

Did you realize that it is amputation of the last part of every
finger/toe? Cat nails are different than ours: they are actually
part of the bone.

That's horrible! But all of my other cats are declawed!

*(guilt and concern) If I don't get (Tigger) declawed, it won't
be fair to the others/he'll be able to hurt them!*

I don't think you have to worry about that, *(Janice)*. Cats
usually don't fight with their claws and the others will protect
themselves by running away or with their teeth.

It isn't amputation! That's not true!

Yah, I was upset to learn this, too! Declawing (onychectomy)
is removal of each "finger/toe" at the last knuckle. By
definition, this is amputation as amputation is the removal
of a part of the body from the rest of the body. In humans,
amputations are done only for medical reasons to save a
person's life or for torture.

Declawing is classified as a medically unnecessary procedure.

☹️ It can involve a painful recovery for the animal once the
pain meds have worn off and sometimes the pain meds
aren't enough to fully relieve the pain. You know how painful
it is when you slam a door on your finger/toe. Imagine the
source of that pain never stopping! Maybe you've heard of
phantom pain?

I can't trim (Tigger's) nails! He won't let me!

I understand, *(Janice)*. It can be a bit tricky in some cats, but
once I learned to reward my cat for every nail I trimmed, he
mellowed out about it. In fact, now he doesn't mind at all...
and I only need to give him one treat per paw! I also learned
how to hold him so he is comfortable and doesn't feel he
needs to struggle. I'd love to show you how! (There is no cost
and I'd love to show you how!)

*I thought that cats are always declawed when they are
spayed/neutered!*

I understand. Clinics that offer declawing often perform that
surgery at the same time as spaying and neutering but the
procedures do not go together. 😊

*But what about my furniture? I have expensive leather
furniture (some other reason re: furniture).*

We/I would be very happy to spend time with you to teach
you how to prevent furniture damage! Our clinic offers
scratching consultations (at no charge because we feel so
strongly about making sure that cats get to keep their claws/
or cost). I used to think that trimming my cat's nails would
be difficult. In fact, because I give him/her treats, he/she
actually doesn't mind this at all. You know, by rewarding
their cooperation. There are several kinds of scratching post/
devices/surfaces, so I'm sure we'll find one that Tigger likes
and you can live with. 😊 Also, have you heard about nail
caps/Soft Paws? They are really easy to apply. We'll show
you how. In fact, we are very happy to put them on Tigger for
you. 😊 I think you'll like them.

Scratching is a normal behaviour for cats. They scratch to
shed old nail sheaths, to mark their territory (so enemies
stay away) and because it feels good! I'm sure you've seen
how blissful they look when they stretch and scratch! 😊

Sometimes when cats spray to mark their territory in the
house, we get them to stop spraying by improving their
scratching options! Neat, eh? And yah, sometimes when
cats can't scratch, they'll spray instead. :-/ And once a cat
is declawed, they need to stay inside.

My landlord says I have to have my cat declawed.

Ah...what a shame that your landlord is telling you this. Have
you checked with City Hall/the municipality? Landlords
certainly have the right to protect their property, but they
actually aren't allowed to insist on what you do or don't do
to your cat.

I can't find a place that takes cats unless they are declawed.

Well, any place that is open to allowing animals, cannot
discriminate based on the presence of nails or not. If you
check with City Hall, I think you'll find that while landlords
certainly have to right to protect their property, they
actually aren't allowed to insist on what you do or don't
do to your cat.

NAIL CARE

My cats stay inside, so they don't have threats! Besides, keeping them indoors is more responsible!

You are right that indoor cats can't be hit by cars or get into fights with other animals, but we still have to meet their behavioural needs so that they can do the things that make a cat, a cat. And sometimes, when cats don't get to do all of the things that a cat is designed to do, they feel distressed and will act in ways we don't like. It's really sad: behaviour problems are the number one reason that cats are taken to a shelter. They are also more likely to be euthanized, released, or abandoned.

I have a baby/grandmother/live with immunocompromised person and I don't want them to get scratched!

That's understandable! I wouldn't want my child or parent/grandparent, etc. to be scratched either. Sometimes people believe that cats spread dangerous things via scratches. It is true that Cat Scratch Disease is spread via scratches, but the organism that causes this disease is found in flea dirt, so treating for and preventing fleas, we eliminate that risk. Trimming nails every 4-6 weeks really helps as well. 😊 You know, I probably have been scratched more often than people that don't work in a veterinary clinic, and I have never gotten cat scratch disease!

The Center for Disease Control (CDC) and...

Do NOT recommend declawing as a way to protect immunocompromised people (babies, elderly, cancer patients, or other reasons) because cats are more likely to defend themselves by biting, and THAT is much more dangerous. 😊

The Humane Society of the United States is against declawing except for the rare case when it is necessary for medical purposes, such as the removal of cancerous nail bed tumours.

But my other vet told me that it doesn't hurt the cat!

(Example: great analgesic protocol, does more declaws than others, uses a technique/laser that is way better.)

It's great that he/she paid attention to pain relief/good surgical technique. Unfortunately, by amputating the fingers/toes, nerves are cut, tissue is irreversibly damaged and the mechanics of walking are changed. After amputation, it is common for people to suffer from phantom pain. While many cats cope well and hide their pain, some don't jump as high, stop using the litter box, move less or even bite as a way to protect/defend themselves...it's really sad. Some cats can have other complications like contraction of their tendons (like "trigger finger" in humans), remnants of bone causing pain or remnants of tissue adhesive used during surgery. No matter how well pain is apparently managed, we can never prevent these things from happening to some of our declawed cats.

It really sounds like you love (Tigger)! What other questions do you have?

We are all really proud that we/our doctors don't declaw. 😊

I'll take him to another clinic to have him declawed!

Do you want to lose me as a client/customer?

Of course I/we don't want to lose you as a client, (Janice) and I respect your right to make your own decision. But our doctors/we believe that cats need their nails and can't sleep at night if we perform a procedure that we don't believe is in a cat's best interest. After thinking about this, please let us know where you would like us to send (Tigger's) medical record so there is a smooth transition in his care. 😊

Who gives you the right to judge me?

I'm sorry that you hear it this way. I'm certainly not judging you. However, we don't believe that this would be good for (Tigger). Can you agree that we both have the right to have different philosophies? 😊

I'll have to take him to the shelter/get rid of him/put him down if you don't declaw him.

You sound like you are really upset. I know you love (Tigger) and don't like him (scratching the furniture/are worried about him scratching the baby/whatever the concern was) but I would really like to have the chance to see how we can make this work for both of you. Would you like to come in for a complimentary scratching consultation to see if there's another way?

How can you justify not declawing when you promote spaying and castration? That is taking away an animal's right to reproduce, the most basic right of all!

Declawing is deemed to be a "medically unnecessary procedure". Elective neutering of animals not only reduces the risk for them developing future health problems (i.e., pyometra, mammary gland neoplasia, and reproductive tract-related neoplasia), by preventing unplanned breeding, it prevents unwanted animals from being born. Hundreds of thousands of cats are euthanized every year in shelters. There is a difference. While spaying and neutering prevent health problems, declawing actually causes many unpredictable, potentially life-long health problems.

PREVENTIVE CARE AND DISEASE SCREENING

Preventive care and disease screening programs provide several benefits to the cat, the client, and the veterinary clinic by:

- Helping the veterinary clinic establish and achieve compliance with a standard of care
- Providing financial incentives for the client to make optimal healthcare more manageable
- Improving cat health
- Improving client relationships and growing the bond between the veterinary healthcare team and the client

When the whole veterinary healthcare team is involved in promoting preventive care programs, they are well accepted by clients. Below are examples of bundled prepaid preventive care programs:

First year of life program:

By averaging the cost of surgical sterilization for males and females, the program cost can be the same for both sexes. The program could include:

- All comprehensive physical examinations and consultations during the first year of life
- All required vaccinations
- Feline leukemia virus and feline immunodeficiency virus testing
- Surgical sterilization
- Permanent identification (microchip +/- tattoo)
- Broad spectrum deworming +/- fecal examinations

Mature and Senior Cat Program:

This program can be recommended annually for all cats from the age of 8 years onward and every 6 months for cats over 14 years of age (or once abnormalities have been detected to assist in the management of these problems). The program could include:

- Comprehensive physical examination and consultation
- Blood pressure measurement
- Serum chemistry panel, complete blood count, total T4
- Urinalysis (+/- urine culture +/- urine protein-creatinine ratio when indicated)
- Survey chest and abdominal radiographs

These models could be adapted for other preventive care and disease monitoring programs (e.g., dental care, management of diseases such as obesity, hyperthyroidism, diabetes mellitus, chronic kidney disease, etc.).

RESOURCES

AAHA-AVMA Feline Preventive Healthcare Guidelines:
<https://www.avma.org/KB/Policies/Pages/AAHA-AVMA-Feline-Preventive-Healthcare-Guidelines.aspx>

AAFP-AAHA Feline Life Stage Guidelines:
<http://www.catvets.com/guidelines/practice-guidelines/life-stage-guidelines>

AAFP Senior Care Guidelines:
<http://www.catvets.com/guidelines/practice-guidelines/senior-care-guidelines>

http://www.cathealthy.ca/pdf/annual_cat_exam.pdf

PREVENTIVE CARE AND DISEASE SCREENING

Table 1: Suggestions for age-matched preventive care and disease screening

| AGE | EXAMINATION & CONSULTATION (INCL. BEHAVIOUR, NUTRITION) | FELV AND FIV TESTS | BLOOD TESTS | URINALYSIS | BLOOD PRESSURE |
|----------------|--|-----------------------|----------------|------------|-------------------|
| Birth to 6 mo | 2 or more | At least | +/- | +/- | +/- |
| 6+ mo to 2 yrs | 1 | +/- | +/- | +/- | +/- |
| 2+ to 6 yrs | 1 | +/- | +/- | +/- | +/- |
| 6+ to 10 yrs | 1-2 | +/- | 1 | 1 | 1 |
| 10+ to 14 yrs | 2 | +/- | 1-2 | 1-2 | 1-2 |
| 14+ yrs | 2 | +/- | 2 | 2 | 2 |

+/-: usually not needed at this age unless cat is ill or has been in an accident

1: recommended once a year

1-2: recommended 1-2/year

2: recommended twice a year

PAIN ASSESSMENT AND MANAGEMENT

Due to their evolution as a solitary, self-dependent species, cats are masters at hiding illness and geniuses at concealing pain. Signs of pain in cats are often extremely subtle, especially in comparison to dogs. As a result, clients are often incorrect in their expectations of what they will observe if their cat is in pain. While we can safely predict that many medical procedures and all surgeries performed on cats cause pain, we are much less effective at predicting the pain that cats might be experiencing from arthritis, dental disease, urogenital disease, skin disease, and a host of other sources of pain. The clinician caring for cats must be able to identify historical evidence of pain through careful questioning, as well as to identify pain during outpatient visits through careful observation. It is important to note that many cats being labeled as ‘fractious’ or ‘bad-actors’ are often acting in a defensive mode towards clinic staff because they are in fact in pain. Looking at these patients from the perspective of pain management, we can be highly successful in reducing uncooperative behaviour in our feline patients.

Identifying Pain: Outpatient Assessment

Pain assessment should be part of every consultation and physical examination, regardless of the reason for the visit. Cats in all age groups should be assessed for evidence of pain.

Obtaining a clinical history with an aim to identifying pain in our feline patients can be challenging. The clinical signs of chronic pain may be even harder to discern, as the patient has learned to cope with the pain, often developing alternative strategies for pursuit of daily activities. Most clients expect specific and obvious signs of pain. They may expect painful cats to vocalize, limp, or otherwise show pronounced signs of their pain. They may attribute changes in behaviour related to pain as merely being due to aging. Some of the subtle behaviour changes associated with pain reflect the ten subtle signs of sickness in cats (see The Healthcare Needs of Cats).

When discussing pain with clients, even the suggestion that their cat might be in pain can be upsetting because it might make the client feel that they have been missing the signs in their cat for short or even long periods of time. It is helpful to start with a series of questions that are included as part of the history regardless of the reason for the visit (*see inset: Questions to ask clients about potential signs of pain*).

QUESTIONS THAT ASSESS MOBILITY CAN BE A USEFUL TOOL:

- Is your cat less willing to jump up or down than previously?

- Is your cat unable to jump as high as previously?

- Does your cat need to use a chair or other object to reach the same height as previously?

- Does your cat show hesitation when trying to jump up or down from objects?

- Does your cat play with other animals or toys less than previously?

- Does your cat have difficulty getting into or out of the litter box?

- Have there been changes in your cat’s litter box use (e.g., elimination near the litter box)?

- Does your cat show signs of being stiff when he/she walks or runs?

- Does your cat have stiffness after waking up that improves with movement?

- Does your cat have difficulty going up and/or down the stairs?

- Is your cat lame when walking or running?

PAIN ASSESSMENT AND MANAGEMENT

Common comments used in rationalizing changes related to pain:

- 'He is getting old'

- 'Not jumping up as he used to', 'misses jumps'

- 'Sleeps a lot, but that is normal for his age'

- 'Not using the litter box because he is mad at us/me'

- 'Just doesn't like to sit on that perch anymore'

Out-patient Observation and Handling

Observation of the patient during the initial consultation can be very beneficial to the clinician in identifying signs of pain. While taking the history, allowing the patient to roam freely about the consultation room will give the clinician time to observe gait, posture, body condition, and overall mental status of the patient. Changes in any of these may indicate pain. Careful handling of patients during their visit is critical. An assumption that every patient is in pain will reduce the risk of hurting a patient or generating a defensive, potentially aggressive response.

Carriers that open from the top allow gentle lifting of the cat out in cases where the cat will not voluntarily exit the carrier. Cats should not be dumped or pulled from their carriers. An attention to feline friendly handling techniques is essential. If a client has specifically noted a part of their cat's body that is painful, particular care should be taken when assessing that body part. During the physical examination, the patient should be assessed for pain. The patient may be reluctant to be handled, have painful dental disease, dehydration, cachexia, or obvious wounds indicating pain. *More subtle signs of pain during palpation may include wincing, grimacing, pinning ears backward, shifting of body weight, flicking of the tail, and attempts to escape.* If a patient has a confirmed history of pain, obvious physical change indicating pain, or if the clinician has an index of suspicion that the patient may be in pain, pain medication should be administered prior to proceeding with the physical examination.



Identifying Pain: In-patient Assessment

Hospitalized patients should be monitored, assessed, and treated for pain regularly throughout their hospital stay. Initial pain assessments should be based on the observations made of the patient during their out-patient visit. Development of a clinical pain index, whether formal or informal, will standardize pain scoring within the practice. Assignment of specific individuals to conduct these assessments should be based on appropriate training, experience, and skill level.

Validated pain scoring systems for cats have been more difficult to develop than for the dog. One acute pain scale and one chronic pain assessment tool are undergoing development and validation and are recommended for the general practitioner:

Acute post-surgical pain:

Global Pain Council Guidelines:

<http://www.wsava.org/Guidelines/Global-Pain-Council-Guidelines>

Chronic musculoskeletal pain:

Feline Musculoskeletal Pain Index (North Carolina State University): <https://cvm.ncsu.edu/research/labs/clinical-sciences/comparative-pain-research/clinical-metrology-instruments/>

Pain Prevention, Treatment, and Management

The most effective analgesic protocols are multi-modal in nature. Combining drugs and therapies that influence different parts of the pain pathway results in improved efficacy and reduced risk of adverse effects.

Various analgesic drugs and protocols are available for cats. For management of acute and peri-operative pain, opioids form the cornerstone of treatment. Combining opioids with other treatments, such as non-steroidal anti-inflammatory drugs (NSAIDs), constant rate infusions and regional anesthesia, improves analgesic efficacy.

The World Small Animal Veterinary Association Global Pain Council has a list of suggested pain management protocols for different situations:

<http://www.wsava.org/guidelines/global-pain-council-guidelines>

PAIN ASSESSMENT AND MANAGEMENT

Other pain management modalities may be incorporated, including:

- Potential disease modifying agents (e.g., glucosamine/chondroitin, polysulfated glycosaminoglycans)

- Environmental modification

- Therapeutic diets

- Rehabilitative therapy

While some objective signs of pain can be determined by questioning clients and by repeatedly observing hospitalized cats, the most reliable assessment of the presence of pain is a return to normal behaviour in response to analgesic therapy.

Frequent assessment for pain is critical, not so much to determine if analgesia should be used, but rather whether additional modalities should be incorporated, if dose adjustments are needed, and to determine an appropriate duration of treatment.

Identifying and Treating Pain: Musculoskeletal Disease

A common reason for chronic pain in cats is musculoskeletal disease, degenerative joint disease (DJD) or arthritis. Based on radiographic evaluation in a number of studies, there is strong evidence to indicate that even young adult cats can have DJD. Therefore, DJD must be considered as a potential source of pain, even in young patients. Appropriate feline friendly handling techniques and application of analgesics to reduce pain-related stress should always be foremost in the clinician's mind. For chronic degenerative musculoskeletal disease, multi-modal analgesia and other modalities should be considered.

Analgesics which might be employed alone or in combination include:

- Gabapentin

- Guidelines for the long-term use of NSAIDs in cats have been published (see Resources)

- Short-term narcotics for severe pain

Alternative modalities which may be used as an adjunct for DJD therapy include:

- Chondroitin/glucosamine

- Polysulfated glycosaminoglycans

- Omega fatty acid supplements

- Therapeutic diets for joint disease

- Environmental management: Ensuring the patient's environment is comfortable and that resources are easy to access will benefit both patient and client

In many cases, a response to therapy may be the most successful means of convincing clients that the cat is suffering from DJD pain. Ongoing evaluation via communication with the client, regular recheck examinations, and assessment of response to therapy will improve quality of life and reduce morbidity in patients suffering from DJD.

ADDITIONAL RESOURCES

2015 AAFP/AAHA Pain Management Guidelines for Dogs & Cats:
[Cathealthy.ca/catvetspainmanagement](http://cathealthy.ca/catvetspainmanagement)

2010 AAFP/ISFM Long Term Use of NSAIDs in Cats guidelines:
<http://www.catvets.com/guidelines/practice-guidelines/nsaids-in-cats>

References available on request

PAIN ASSESSMENT AND MANAGEMENT

For hospitalized cats, signs of fear and anxiety may be similar to signs of pain. For example, body temperature and blood pressure are difficult to use as assessments of pain. Some observations that can assist in the recognition of pain include:

- Tachycardia that persists after initial examination may suggest pain rather than fear or anxiety

- Tachypnea is frequently an indicator of pain; this is most easily evaluated by looking at the cranial abdomen, just caudal to the last rib

- Sitting in the back of the hospital cage rather than being interactive and interested may be a sign of pain or of fear

- Localized and repeatable discomfort on palpation of a body part may be more associated with pain than fear

- Changes in the patient's behaviour; a normally compliant patient becomes defensive or vice versa



QUESTIONS TO ASK OWNERS ABOUT POTENTIAL SIGNS OF PAIN:

- Have you noticed changes in your cat's sitting or sleeping position (e.g., lying flat out, difficulty settling down, resting in a hunched position)?

- Has there been a change in your cat's sleeping or resting places (or hiding in unusual places)?

- Has there been a change in your cat's energy level (i.e., more lethargic or more restless)?

- Has there been a change in your cat's personality or attitude (e.g., changes in interactions, irritability, wanting more attention or less attention)?

- Have there been changes in your cat's hair coat (e.g., matted hair, poor grooming)?

- Have you noticed a change in your cat's facial expression (e.g., staring, fixed gaze, dilated pupils, "squinting" eyes)?

- Have there been any changes in your cat's appetite or water consumption?

- Does your cat lick or bite at a body part?

- Is your cat more or less vocal than in the past? Are there changes in the type of vocalization?

- Have there been changes in your cat's litter box use (including inappropriate elimination)?

HOME CARE, COMPLIANCE, AND FOLLOW-UP

When treatments are required at home, the instructions should be explained carefully and clearly to the client. To have compliance, we must engage the client in perceiving the value of carrying out our recommendations. Additionally, the client must understand how, and be able, to perform the prescribed task. Both verbal as well as visual (written, emailed) homecare or discharge instructions should be given. When previously unfamiliar treatments are prescribed (e.g., subcutaneous injections, administering a pill, trimming nails), the most effective form of educating and ensuring success includes three steps (See-Do-Teach):

1. Describe and/or have the client read a how-to brochure) and show the client how to perform the technique,
2. Have the client do it, and
3. Have the client teach someone else how to do it.

There are many excellent websites and videos to reinforce the lesson, some of which are listed in the Resources. The AAFP/ISFM Feline-Friendly Nursing Care Guidelines includes a client brochure (Nursing Care for Cats, Practical Tips for Pet Owners) at: Cathealthy.ca/catvetsnursingcare.

Should several treatments be recommended (e.g., oral antibiotics, subcutaneous fluids, a therapeutic diet, nutraceutical supplements), better compliance is likely if treatments are prioritized. In general, nutritional, hydration, and analgesic needs should be provided for every patient.

The effects of a visit to the veterinary clinic or a period of hospitalization may be felt when the cat returns home. This should be taken into consideration as we help the client plan reintroduction to the home environment, as there are often other pets and people for the cat to deal with. Depending on the reason for the veterinary visit, there will be some degree of disruption to the patient's serenity. If the cat was hospitalized due to illness or was anesthetized, the ability to cope with inquisitive or hostile housemates could be difficult. Advise the client to allow the cat to acclimate to the home environment in a separate room for a period of time. This will also allow odours acquired in the hospital to dissipate.

Success is best achieved by taking a team approach – involving the client, the veterinarian, and the rest of the healthcare team. We must ensure that the client understands why we are telling them to administer and persist with treatments, and we must show ongoing and caring involvement. It is a good investment of time to call the day following a visit or discharge and, in the case of illness or ongoing treatment (e.g., a new diabetic), to follow up with additional phone calls every 2-4 days as suits the patient's and client's needs. Contacting the owner for progress reports will improve compliance, patient outcome, and client satisfaction.

Videos on syringe feeding, brushing teeth, giving insulin, administering subcutaneous fluids, etc., are also available. Cat caregivers like to show off their skills and help others.

RESOURCES

Having a library of good websites and video links or making your own clinic "how-to" videos is extremely helpful. Videos made by clients may have the advantage of being more convincing than those made by healthcare professionals, but content should be reviewed before recommending them to clients. Examples of useful videos to have on hand include how to:

- Measure blood glucose: Cathealthy.ca/bloodglucose
- Use an inhaler for asthma medications: <https://www.tmimd.com/aerokat-feline-aerosol-chamber-51>
- Esophagostomy tube feeding: Cathealthy.ca/esophagostomy (Courtesy of Dr. Susan Little)
- Change a KittyKollar® (video) and Living with an E-tube (handout): Cathealthy.ca/kittykollar

HOME CARE, COMPLIANCE, AND FOLLOW-UP

Cornell University College of Veterinary Medicine has a series of videos on a number of procedures and diseases at Cathealthy.ca/partnersah. They include:

- Brushing your cat's teeth

- Giving your cat a pill or capsule

- Giving your cat liquid medication

- Taking your cat's temperature

- Trimming your cat's nails

- Caring for your diabetic cat (includes a video on how to give an insulin injection)

- Gastrointestinal diseases in cats

- Cat owner's guide to kidney disease (includes a video on subcutaneous fluid therapy)

- Managing destructive scratching behaviour in cats

- A pet owner's guide to cancer

RESOURCES

Similarly, having a selection of web resources that you have reviewed and feel comfortable with will guide your clients to appropriate reading materials when they want to learn more about their companion's medical condition. Here are some suggestions:

International Cat Care - Extensive library of handouts on medical conditions as well as general cat care, including several videos.

Cathealthy.ca/advicecentre

Feline Diabetes: Cathealthy.ca/felinediabetes, and one with a more humorous approach: Cathealthy.ca/sugarcats



IDENTIFICATION AND LICENSING



Photo courtesy of Boehringer Ingelheim

Cats Get Out, Identification Gets Them Home

Canadian shelters take in approximately twice as many cats each year as dogs and the majority of these cats are unidentified. In 2014, less than 5% of cats were returned to their families. Visual and permanent identification greatly increase the likelihood that a lost cat will be reunited with its client.

- The Canadian Veterinary Medical Association supports the permanent identification of animals and recommends a microchip using International Standards Organization microchip technology
- Microchip implantation is minimally invasive and is well tolerated without the need for sedation. It can be done during any appointment or at the time of routine surgical or dental procedures. Subcutaneous implantation on the dorsal midline just cranial to the scapula is the standard implantation site
- The use of collars and name tags in addition to a microchip is extremely valuable but underused. Contrary to popular belief most cats can reliably wear break-away collars safely and comfortably
- The benefits of combining permanent identification (e.g., microchip) with visible identification (e.g., break-away collar and tag) should be discussed at all preventive healthcare examinations for all cats, even those that live strictly indoors
- At each veterinary visit, the cat should be scanned to make sure the microchip is functional and has not migrated. The microchip number should be recorded in the medical record. At the same time, the veterinary team should confirm that the client has kept the contact information current and complete with the microchip registry. A list of the 1-800 numbers for the various microchip registries should be readily accessible to share with clients
- When vaccinated for rabies, a rabies tag for the cat's collar should be provided along with the vaccination certificate
- Encourage clients to include up-to-date photographs and other identification information in the microchip registry

RESOURCES

Boehringer Ingelheim
Get Me Home Program:
[Cathealthy.ca/getmehome](https://cathealthy.ca/getmehome)

Canadian Federation of Humane Societies Animal Shelter Statistics:
https://www.cfhs.ca/animal_shelter_statistics_report

List of toll free numbers for microchip companies (see chart on right)

AAHA Pet Microchip
Universal Look Up:
petmicrochiplookup.org

| MICROCHIP COMPANY | BEGINNING NUMBERS | PHONE NUMBER |
|------------------------------|-------------------|----------------|
| Petidco-formerly Avid | 0 or 1 and OAO | 1-800-338-1397 |
| Eidap Animal Registry | 96800000 | 1-888-346-8899 |
| Petlynx | | 1-866-738-5969 |
| Canada Chip | | 1-800-396-1896 |
| M4S (Microchips 4 Solutions) | OAO | 1-877-738-4384 |
| 24PetWatch | 0A1 or 98200910 | 1-866-597-2424 |
| Trovan | 0006 | 1-800-463-6738 |

ZOONOTIC DISEASES

A zoonotic disease is one that is naturally transmitted between humans and animals. At least 150 diseases are known to be zoonotic, varying in severity from being a nuisance to having a fatal outcome. Diseases such as rabies are transmitted by animals showing obvious signs of illness, whereas other diseases such as toxoplasmosis or Cat Scratch Disease (bartonellosis) can be transmitted by cats that appear healthy. Fortunately, a few simple precautions are needed to reduce the risk of transmission of zoonotic disease.

This section highlights the most important zoonotic diseases that people living in Canada can acquire from cats. The information given here is an overview only, and readers with an interest in a particular disease are encouraged to obtain additional information from their physician, their cat's veterinarian, local public health officials, or the references listed at the end of this document.

Transmission of Zoonoses

There are several routes by which people can become infected with a zoonotic agent:

- Many zoonotic diseases are transmitted by oral ingestion of infective material, usually feces or water, soil, or food contaminated by feces. Some zoonotic agents that are found in feces are immediately infective (e.g., *Campylobacter*, *Giardia*, *Cryptosporidium*, *Salmonella*), whereas other agents require a period of time outside the cat to become infective (e.g., *Toxoplasma*, *Toxocara*). The most effective way of preventing ingestion of *fecally* transmitted infectious agents is to routinely practice good hygiene, including hand washing and wearing gloves when handling feces or materials contaminated with feces
- Several zoonotic diseases, including ringworm and *Cheyletiella* infection, are transmitted by direct skin contact when grooming, petting, or sleeping with an infected animal. As hands are the usual site of contact, routine hand washing is the single best way to prevent infection by this route
- Some zoonotic diseases (e.g., rabies, Cat Scratch Disease) are acquired through bites or scratches from an animal carrying the organism so avoidance of interactions or circumstances that may lead to a bite or scratch is important to prevent transmission

- A few zoonoses (e.g., plague) can be transmitted when a person breathes air that is contaminated with a virus, bacteria, or fungus that has been shed by an infected animal. This is believed to be an uncommon route of disease transmission from cats to people in Canada

How Great is the Risk?

The American Association of Feline Practitioners Feline Zoonoses Guidelines conclude that humans are unlikely to acquire infectious diseases from healthy adult, parasite-free cats. Many zoonotic agents, including *Cryptosporidium* and *Salmonella*, are more likely to be transmitted between people than to be acquired from an animal companion. People who are at increased risk of developing serious illness when exposed to zoonotic organisms should take extra precautions to minimize their risk of infection. Examples of people who may be at increased risk include:

- Very young children or very elderly people
- Those who are immunocompromised; for example, people infected with human immunodeficiency virus, people undergoing cancer chemotherapy or radiation treatment, and people taking immunosuppressive medications such as prednisone or cyclosporine
- Those with a serious systemic disease such as diabetes mellitus or chronic kidney disease
- Pregnant women

According to the Centers for Disease Control Guidelines for Prevention and Treatment of Opportunistic Infections in HIV-Infected Adults and Adolescents (see Resources), immunocompromised individuals obtaining a new pet should adopt only flea-free cats over 6 months of age with no history of diarrhea or illness. If diarrhea occurs, veterinary care should be sought, and a fecal sample from the affected pet should be examined for *Cryptosporidium*, *Salmonella*, *Giardia*, and *Campylobacter*. Effective, regular flea prevention and control will reduce or eliminate the risk of bartonellosis in both indoor and indoor/outdoor cats.

ZOONOTIC DISEASES

General Guidelines for Preventing Transmission of Zoonotic Diseases

- All cats should be regularly examined by a veterinarian, who can provide appropriate vaccinations and control measures for external and internal parasites

- Indoor cats and those with only supervised outdoor access have a lower risk of acquiring some zoonotic diseases than free-ranging cats because they have limited access to other cats and wildlife

- Feed cats only cooked or commercially prepared foods. Discourage predation of mice, birds, and other wildlife by restricting outdoor access or through the use of bells, bird-safe cat collars (see Resources), and other methods to reduce hunting success

- Remove fecal material from litter boxes daily and clean boxes regularly. Wear gloves when handling cat feces or litter and wash hands immediately

- Persons at increased risk of zoonotic diseases should wash their hands after gardening, food preparation, handling cats, and before eating. If soap and water are not immediately available, alcohol-based gels or hand wipes can be used as a temporary measure. Contact with animal excrement should be avoided

- Avoid handling animals that are known to be carrying zoonotic agents (e.g., a cat with ringworm). Cats with diarrhea or other obvious signs of illness should receive veterinary attention and should not be handled by immunocompromised people, the elderly, or very young children. If it is necessary to handle a cat that is known or suspected to be carrying a potentially zoonotic disease, wear gloves and wash hands immediately afterwards

- People whose work or lifestyle puts them at risk of exposure to rabies should be vaccinated against this disease

TOXOPLASMOSIS is of special concern to pregnant women, because women who are infected with *Toxoplasma gondii* for the first time during pregnancy can transmit the infection to the fetus. Depending upon the age of the fetus when the mother is exposed, infection may result in abortion or still birth, or cause brain or ophthalmic disease in the fetus. Although it is likely that exposure to tissue cysts from handling or eating undercooked meat is the most common route whereby pregnant women are exposed to this disease, it is also possible to acquire toxoplasmosis from contact with sporulated oocysts in materials contaminated with cat feces such as soil, water, or cat litter. Contact with cat feces less than 24 hours old is very unlikely to transmit toxoplasmosis

as it takes 24 hours or more for the organism to become infective after shedding. For this reason, litter boxes should be scooped at least twice daily. However, pregnant women and immunocompromised people are encouraged to avoid all contact with cat feces and to wear gloves when handling material (including soil) that may be contaminated with cat feces. For women who have been previously exposed to toxoplasmosis, protective immunity likely will have developed prior to pregnancy.

Toxoplasma oocysts are not found on a cat's hair coat, and there appears to be little or no risk of infection from handling or petting a cat. Since cats acquire toxoplasmosis by eating prey (such as mice) or undercooked meat, cats eating only commercial cat foods are very unlikely to be infected with *Toxoplasma*.

BARTONELLOSIS (Cat Scratch Disease) is believed to be the most common direct zoonosis that can be transmitted from cats to people. Cats become infected with *Bartonella* primarily through fleas carrying the organism, and the disease appears to be more prevalent in areas with a warm and moist climate and therefore high levels of flea infestation. As the name implies, Cat Scratch Disease is transmitted by scratches from cats with flea dirt on their nails. People become infected when the organism in the flea dirt is inoculated into their skin through a scratch. As play behaviour may involve scratching, kittens may provide a greater risk. In immunocompetent people, *Bartonella* infection is usually mild and self-limiting although symptoms may last for months in some patients. In immunocompromised people, bartonellosis may be a life-threatening infection.

Serologic testing of cats for *Bartonella* infection is not useful, nor is antibiotic treatment of healthy cats. Adult cats with no history of flea infestation are considered unlikely to transmit bartonellosis. Therefore, the main way to prevent transmission of *Bartonella* infection is through prevention of flea infestations.

RESOURCES

<http://www.catvets.com/guidelines/practice-guidelines/zoonoses-guidelines>

<http://www.abcdcatsvets.org>

<https://www.cdc.gov/healthypets>

https://aidsinfo.nih.gov/contentfiles/lvguidelines/adult_oi.pdf

<http://www.birdsbesafe.com>

ZOONOTIC DISEASES

Table 1

Disease agents that can be acquired from freshly passed cat feces

| AGENT | SIGNS OF DISEASE IN CATS | SIGNS OF DISEASE IN PEOPLE | MODE OF TRANSMISSION FROM CATS TO PEOPLE | PREVENTION |
|--|--|---|---|---|
| <i>Campylobacter jejuni</i> | Subclinical, or mild gastroenteritis | Subclinical or gastroenteritis, myalgia, Guillain-Barre syndrome, arthralgia | Oral-fecal (ingestion of fecal material or contaminated food) | <p>Cats: Avoid predation or feeding raw meat</p> <p>People: Wash hands, avoid contact with animal feces</p> |
| <i>Salmonella</i> species | Subclinical, or gastroenteritis (“songbird fever”), occasionally abortion or neonatal death. Symptomatic carriers may shed <i>Salmonella</i> | Subclinical, or gastroenteritis and fever | Ingestion of fecal material or contaminated food | <p>Cats: Avoid predation or feeding raw poultry</p> <p>People: Wash hands, avoid contact with animal feces and turtles</p> |
| <i>Cryptosporidium felis</i> | Subclinical or small bowel diarrhea; some cats may show weight loss and anorexia | Gastroenteritis (especially children); may be fatal in people with compromised immune systems | Ingestion of fecal material or contaminated food or water | <p>Cats: Perform periodic fecal examinations, avoid predation and access to contaminated food or water supplies</p> <p>People: Wash hands, avoid handling affected animals, boil or filter contaminated surface water</p> |
| <i>Giardia</i> (Risk from contact with infected cats is very low as people are typically infected with different types of <i>Giardia</i> than cats) | Subclinical or diarrhea | Flatulence, nausea, and diarrhea | Oral-fecal (ingestion of cysts from feces, or drinking water or food contaminated with excrement) | <p>Cats: Perform periodic fecal examinations or testing</p> <p>People: Wash hands, avoid drinking contaminated water</p> |

ZOOONOTIC DISEASES

TABLE 2

Disease agents acquired from fecal contamination of the environment
(agents that require time outside the cat to become infectious)

| AGENT | SIGNS OF DISEASE IN CATS | SIGNS OF DISEASE IN PEOPLE | MODE OF TRANSMISSION FROM CATS TO PEOPLE | PREVENTION |
|---|---|--|--|--|
| Roundworms (<i>Toxocara cati</i>) | Usually kittens, often subclinical; may result in failure to thrive, fever, mild gastroenteritis | Visceral larva migrans (eosinophilia, abdominal pain, nausea, fever, cough, anorexia, hepatomegaly) and ocular larva migrans (severe intraocular inflammation) | Ingestion of larvated eggs in soil or water contaminated with cat feces. Eggs passed in feces require at least 1 week to become infective | Cats: Perform fecal testing regularly, administer anthelmintics and/or preventive medication, prevent predation People: Wash hands after handling cats or cleaning litter boxes, avoid exposure to soil or water contaminated with cat feces |
| Toxoplasmosis (<i>Toxoplasma gondii</i>) | Usually subclinical. Occasionally fever, neurologic, respiratory, ophthalmic, or liver disease. Congenital infections in kittens may be fatal | Usually subclinical or flu-like disease (fever, malaise); may be fatal or cause neurologic or ophthalmic disease in immune deficient persons; if infection occurs during pregnancy, may cause abortion, stillbirth, or ophthalmic or neurologic disease in fetus | Ingestion of sporulated oocysts in soil or water (oocysts become infectious 1-5 days after being passed in cat feces), or ingestion of tissue cysts in infected undercooked meat | Cats: Prevent hunting. Feed commercial diet or cooked food only People: Avoid contact with cat feces, dispose of soiled cat litter daily, use gloves and wash hands after contact with cat feces, contaminated litter, or soil; avoid ingestion or handling of undercooked meat |

ZOONOTIC DISEASES

TABLE 3

Other zoonotic agents

| AGENT | SIGNS OF DISEASE IN CATS | SIGNS OF DISEASE IN PEOPLE | MODE OF TRANSMISSION FROM CATS TO PEOPLE | PREVENTION |
|--|--|---|--|--|
| Rabies (<i>Lyssavirus</i>) | Progressive and fatal neurologic disease; variable changes in behaviour including restlessness and aggression, ascending paralysis, vocalization | Progressive and fatal neurologic disease; between 2000 and 2016, 4 cases of human rabies have been reported in Canada, in 2016, an outbreak of rabies in raccoons appeared in southwestern Ontario | Animal bites or wounds contaminated with saliva from an animal with rabies | Cats: Vaccinate. Avoid contact with wildlife (raccoons, bats, skunks) People: Protect high risk people through pre-exposure vaccination, post-exposure prophylaxis after contact with rabid animal, avoid contact with wildlife including bats and raccoons |
| Bartonellosis (<i>Bartonella</i> species) | Usually subclinical; may develop fever, lethargy, and enlarged lymph nodes; possibly associated with uveitis, neurologic disease | Cat Scratch Disease: enlarged lymph nodes, malaise, fever, myalgia, fatigue, headache; occasionally conjunctivitis, arthralgia; in people with immunosuppression, may cause severe disease (bacillary peliosis, bacillary angiomatosis) | Scratches (particularly from kittens) from cats with fleas, or contact with fleas | Cats: Provide regular flea control; minimize exposure to fleas; declawing does not reduce risk of disease transmission People: Avoid scratches particularly from kittens; promptly treat scratches from cats by washing thoroughly with soap and water |
| Ringworm (<i>Microsporum canis</i> and others) | Subclinical, or skin disease (patchy hair breakage and loss, crusts, scale) | Superficial skin disease: initially red and circular lesions, mildly pruritic; later becoming dry and scaly. Nails and scalp may also be infected; young, elderly and immunocompromised people are at greatest risk | Direct contact with spores on fur or skin of affected cats or spores shed in the environment | Isolate and treat affected cats, wash hands after handling cats, wash bedding used by affected cats, avoid skin contact and wear gloves when handling cats with known or suspect infection (particularly kittens from group housing) |

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To My Esteemed Veterinary Colleagues,

As founding partner of Cat Healthy and one of the six feline specialists in Canada, I recommend that every person with a cat in their home use the Cat Healthy App, and I hope you'll recommend it to your feline clients.

About the App:

A place to store important feline information: veterinary contact, microchip number, pet insurance, medications and health records.

A place to acquire personalized health information based on the life stage and activity of the cat.

A fun, informative tool that allows you to share the behaviours and lifestyles of your cat.

It will help your cats live longer, healthier and happier lives, and help cat families understand the needs of their cat and provide the healthcare their family feline needs and deserves. It's free for all and available for IOS and Android.

Yours in feline care,



Liz O'Brien - Founding Partner



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