

Deciphering the Cat: The Medical History and Physical Examination

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Dr. Jim Richards, the late director of the Cornell Feline Health Center, said, “Cats are masters at hiding illness.”²² As veterinarians and cat lovers, clinicians must become masters at understanding and uncovering the illnesses so effectively hidden by cats. The purpose of this chapter is to assist veterinarians in developing techniques to decipher the obscure and sometimes confusing messages delivered by their feline patients. Preparing a complete medical history and performing a feline-centric physical examination are two essential tools for resolving patient issues and informing clients of the best means to keep their feline companions healthy.

Above all, by working together as a unit, the veterinary health care team can deliver a consistent message: that cats benefit from routine examinations, and wellness health care, along with early disease intervention, increases the length and quality of the feline companion’s life.³¹ Emphasizing this message should be the goal of the veterinarian during all interactions with the client and patient.

ESTABLISHING RELATIONSHIP-CENTERED CARE

All clients expect the veterinarian to care about cats and to care about their cat in particular. By using the cat’s name and referring to its sex correctly and by eliciting and acknowledging the client’s comments, the veterinarian builds on the bond between the client and cat and provides a strong foundation for meeting the client’s

expectations. Use of respectful and appropriate handling techniques further enhances the veterinarian’s message while minimizing the stress and anxiety many cats exhibit during veterinary visits.

A model for demonstrating concern for the patient and enhancing the clinical interview through the use of distinctive, describable behaviors is well established in the field of human medicine. A similar concept in the veterinary field is called *relationship-centered care*.²⁸ Studies suggest that organizing these communication skills into a pattern of behaviors or habits is integral to the process and outcomes of medical care. The “Four Habits” model quickly establishes rapport and builds trust, facilitates the effective exchange of information, demonstrates caring and concern, and increases the likelihood of compliance and positive health outcomes for the patient (Box 3-1, Figure 3-1).⁷

THE MEDICAL HISTORY

Initial Information Phase

With today’s electronic media, the veterinarian can obtain relevant information for building an initial history before the kitten or cat visits the hospital. For example, many owners use e-mail and social networks to communicate their observations and concerns. Sending a history questionnaire to the client, either electronically or by regular mail, is an effective way to

BOX 3-1**Four Habits: Enhancing the Clinical Encounter****Habit #1: Invest in the Beginning**

- Create rapport quickly (use eye contact and appropriate terms of address, review record).
- Elicit client's concerns (use open-ended questions and continuers).
- Plan the visit (repeating concerns, checking understanding, stating what to expect).

Habit #2: Elicit the Client's Perspective

- What caused the problem from the client's perspective?
- What is the client's main worry?
- What are the client's expectations of the visit?
- What impact has the problem had for the patient and the client?

Habit #3: Demonstrate Empathy

- Be compassionate.
- Be open to the client's emotions.
- Be aware of nonverbal expressions of emotions.

Habit #4: Invest in the End

- Share results (deliver diagnostic information).
- Confirm understanding of shared information.
- Involve the client in decision making.
- Complete the visit (discuss treatment plan, check for adherence, provide support).

gather information for a new or extended patient medical evaluation before the scheduled visit. Furthermore, this questionnaire can be used when an owner cannot be present for the history taking and physical examination (e.g., when patients are dropped off). Having correct contact information and a method or time for follow-up ensures accurate communication at the beginning of the client–veterinarian relationship. The veterinary team can also establish an initial history when the appointment is scheduled or during client and patient check-in. Specific questionnaires can also be developed for different medical issues, such as behavior or mobility problems and cognitive dysfunction.^{19,23}

Histories must be consistent and comprehensive. Open-ended questions requiring a definitive response rather than a simple *yes* or *no* result in the best answers. The following are examples of open-ended questions: "What was the last day you noticed a normal appetite?", "When did you last notice a normal volume and



FIGURE 3-1 Relationship-centered care (e.g., taking time to discuss medication with the cat owner) aids in client compliance. (Image courtesy Dr. Debra Givin.)

consistency of stool?"; "What other changes have you noticed?" The client's initial responses can lead to more specific questions or prompts to continue (e.g., "Please describe what you have seen"; "What else?"; "Go on") to help define a specific problem (Box 3-2).³ By repeating key information provided by the client, veterinarians demonstrate that they are paying attention and care about the client's perspective. Additionally, a veterinarian who demonstrates the various behaviors and sounds cats make with certain conditions, such as when coughing or vomiting, can help owners better describe their cat's signs. By videotaping signs or behaviors and sharing the video with the veterinarian over the Internet, the client can communicate a complicated or an infrequently noted problem. This is also a useful way for the veterinarian to monitor the ongoing status of a case, especially when the cat becomes highly stressed during veterinary visits and is therefore difficult to examine. A good example is a series of videos posted online about "Cricket" (<http://www.youtube.com/user/NLMACNEILL>; accessed February 24, 2010). The patient had a slowly improving right tibial nerve and hock injury requiring a series of re-evaluations. Hospital visits were problematic, and video monitoring allowed effective and less stressful follow-up.

Adapting the communication style depending on the client's age group and individual preferences may be constructive. For example, some elderly clients require extra time and a sympathetic ear for their concerns. A more focused set of interview questions and additional attention to treatment compliance may be necessary to ensure understanding. On the other hand, some younger clients prefer to communicate using newer technologies and social media.

BOX 3-2**Sample Interview Questions**

General	How has your cat been doing since the last visit? When did your cat last appear normal? Are there any hair coat changes? Has your cat changed its grooming habits? Are the signs intermittent or continuous?
Behavior	What behavior changes have you recently noticed? How frequently does the problem occur? When does it occur? Have there been any recent changes to the environment? Are there any changes to sleep patterns? Any changes in interactions with family or other pets? Are there any changes to the level of activity? Any fearful behavior noted?
Gait/Mobility	Is there decreased responsiveness? Is there increased vocalization? Is there any reluctance to move or to be handled? Any weakness noted? Is there any evidence of lameness? Any swelling? Any painful areas noted?
Appetite	When did your cat last eat a normal meal? Is the appetite normal, increased, or decreased? What type of food is fed and how much? Any recent food changes? Is there any pain or difficulty while eating? Any reluctance to eat or food avoidance?
Vomiting or regurgitation	Is there any vomiting or regurgitation? Describe the appearance of the vomitus. How often has it happened? How soon after eating?
Water Intake	Has water intake changed? Increased or decreased? For how long?
Urinary	Has the amount of urine changed? Increased or decreased? Has the frequency of urination increased or decreased? For how long? Is there any straining to urinate? What color is the urine? Is there evidence of pain while trying to urinate? Any vocalizing while urinating?
Defecation	Has there been any urinating in odd places or outside the litter box? Have bowel movements changed in appearance (color, consistency, size, or volume)? Is there any straining to defecate? Any crying out with defecation? Is there any defecation outside the litter box?
Continuers	Describe any changes you have noticed. Anything else? Please go on. Please describe. Hmm?

Routine History

Signalment collection is part of the initial informational stage and includes age, breed, sex, and reproductive status. There are different wellness and disease concerns for kittens (up to 6 months of age) and junior (7 months to 2 years), adult (3 to 6 years), mature (7 to 10 years), senior (11 to 14 years), and geriatric cats (15 years and older) (see Chapter 8).³¹ Often, other factors, such as diet, behavior, and medication history, are more significant in light of the patient's age group. Including questions about where the cat was acquired (e.g., shelter, rescue group, found as a stray) or whether the cat previously lived in another geographic location helps define essential elements of the history.²⁷ Cats adopted from shelters are more likely to have been exposed to infectious disease agents (e.g., feline herpesvirus).²⁶ Veterinarians practicing in the Pacific Northwest are less likely to diagnose feline heartworm disease in a cat raised locally than in one that was recently relocated from the Gulf State region and is not on a heartworm preventive.¹⁶

An increasing number of kittens and cats adopted from shelters, as well as strays and owned cats, have been microchipped. Each new patient should be scanned, preferably with a universal microchip scanner, to confirm the presence of a microchip and document the radio-frequency identification (RFID) in the patient record. According to research, rescanning during annual examinations ensures that the microchip remains functional and has not migrated. Also, encouraging clients to keep their personal information current with their microchip registry helps reunite the client and cat in case of separation.¹⁴ Established in 2009, the American Animal Hospital Association (<http://www.petmicrochiplookup.org>; accessed February 21, 2010) and Chloe Standard (<http://www.checkthechip.com>; accessed February 21, 2010) microchip websites are available for rapid association of a microchip number with a client's personal information. If no microchip is present, further discussion of the benefits of microchipping or another form of visual identification is warranted.

A new kitten or patient visit is a great opportunity to discuss behavior. An unaddressed behavior problem can lead to a diminished cat–human bond and increase the cat's risk of being relinquished to a shelter or euthanized. An initial set of behavior-based questions can help clients and veterinarians explore this issue. Some undesirable behaviors (e.g., urinating outside the litter box) may be the result of an undiagnosed medical condition. Further, a discussion of general litter-box habits is appropriate. Reviewing behavior during the kitten visits also helps the client understand the interactions required during the early (3 to 8 weeks) and late (9 to 16 weeks) socialization periods. Proper bonding early in the kitten's life leads to fewer behavioral problems later in life (Figure 3-2).¹⁹

A complete vaccination history documenting the types and dates of vaccinations, especially those given when the client first acquired the kitten or cat, is a critical step in building a complete patient medical history. It is important to note and highlight any past adverse reactions to vaccinations and follow up with a discussion of the potential disease risks and benefits associated with an immunization program. Age, health status, and whether the cat is kept indoors or has regular outdoor access are primary risk determinants. Even cats that are kept inside should not be considered strictly indoor creatures because outdoor pathogens and parasites can be brought inside and cats may periodically escape outside. Because of this possibility, rabies immunization remains a core vaccine recommendation for cats even in communities where it is not legally required.²⁴ Clients should be asked whether preventive drugs for heartworm, fleas, and other external and internal parasites are used; if they are, the veterinarian should note the product, dosage, and application interval in the medical record.^{27,31}

A cat's retroviral status (feline leukemia virus and feline immunodeficiency virus) is also an essential part of a complete history. Retrovirus testing is performed at different times in a cat's life, and the dates and results should be documented in the medical record. Depending on the responses and history obtained thus far, the key retrovirus risk factors (e.g., male sex, age, outdoor access) can be explored with the client to determine the need for initial testing or retesting.¹²

Nutrition, especially diet type and source (including treats), and daily caloric intake are other important components of a cat's medical history. Because a dietary change can either create or resolve an acute or chronic medical condition, updating the patient's nutritional history is an accepted and recommended practice. Further, because some clients do not know the brand, flavor, type, and amount of food consumed by their pet, persistent questioning and follow-up may be required. This issue becomes especially important when there is a significant change in the cat's weight and body condition score (BCS) (Figure 3-3). A change in weight may also affect the prescribed dosage of a medication. For example, because prednisolone does not appear to distribute to adipose tissue, the dosage for obese cats is based on ideal or lean body weight instead of current body weight.⁴

Questions regarding water sources, water intake, and the amount and type of urine and feces produced by the patient can follow. Using veterinary software to track the nutritional history and maintain contact information is beneficial in the event of a pet-food recall. The significance of the 2007 melamine contamination of pet food demonstrates the value of dietary information management.⁵

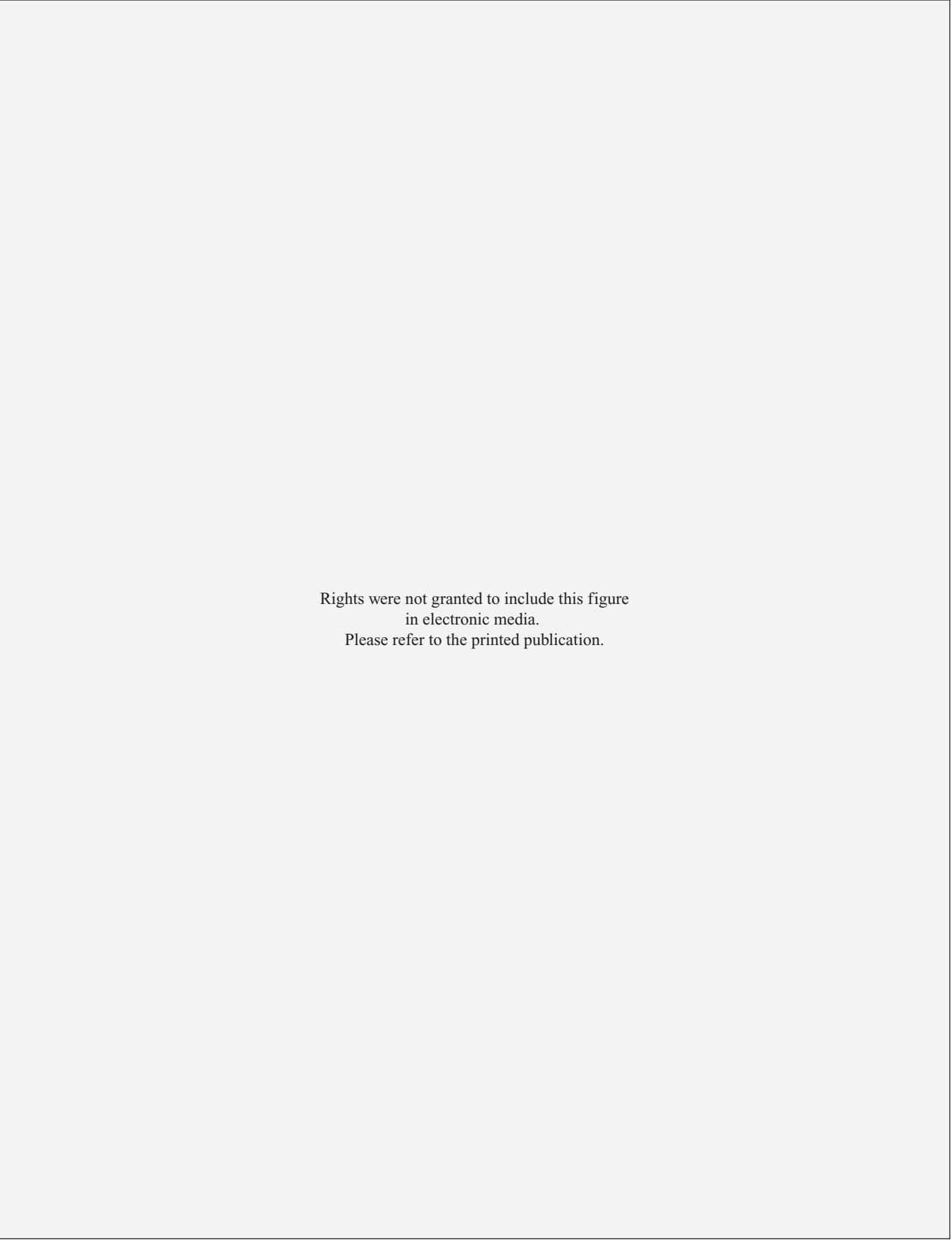
Prior and Existing Complaints

Additional history is required when the client seeks veterinary care for an existing complaint. Knowledge of current and past medications, as well as prior laboratory test results, may help clarify a medical problem or spur additional issue-oriented questions (e.g., "How did the cat respond to treatment?"; "Did anyone have difficulty giving the medication?"; "Were there any side effects, and if so, what were they?"). Three common general presenting signs are anorexia, lethargy, and a change in normal behavior (e.g., hiding). Clients regularly report one or more of these general signs when asked to describe their cat's problems. Specific questions should be asked about the dose and frequency of administration of prescribed medications because clients sometimes make changes without consulting the veterinarian. Moreover, clients may not report the use of nonprescription medications or supplements unless questioned directly.

Questions focusing on specific observations by the client before the onset of the problem and during the



FIGURE 3-2 Early bonding enhances the veterinary visit and the owner's lifelong relationship with the pet. (Image courtesy Dr. Debra Givin.)



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Please refer to the printed publication.

FIGURE 3-3 An example of a 9-point body condition scoring chart for the cat. (*Image used by permission from Nestle Purina Petcare.*)

initial phase help the conversation move from generalizations to a specific description. Responses also help the veterinarian establish a timeline for additional intervening signs. The following are examples of questions that might prompt such responses: "Was the onset acute or gradual?"; "Were the signs steady or intermittent?"; "Has the problem occurred previously, and if so, what was the response?" Evaluating the client's answers helps the veterinarian determine the diagnosis, develop a list of possible causes, and decide on subsequent diagnostic planning. However, diagnosis can be fluid; new or different medical problems may emerge after the initial diagnosis. If so, the veterinarian may need to ask the client additional questions, further observe the patient, and re-evaluate the original diagnosis.^{23,27}

An effective medical history summarizes the known health situation and the needs and potential problems of the patient (Box 3-3). The next step, a comprehensive physical examination, helps assemble the pieces of the puzzle.

THE PHYSICAL EXAMINATION

Initial Steps

History preparation is an opportune time for the patient to adjust to its surroundings. This gives the patient a

chance to relax, thus enabling a more productive and less stress-inducing examination. Often, if given time and opportunity, cats voluntarily leave the carrier to explore (Figure 3-4). Although most patients will relax on the examination table, it is not unusual for others to find a comfortable perch elsewhere in the room. Performing the examination where the patient is most comfortable (e.g., on the floor, on a chair or bench) may be an effective tactic for the veterinarian. Further, providing familiar objects such as toys, towels, or a fleece bed can help make the cat more comfortable. Offering treats may calm the cat and entice it to leave the carrier. Spraying a towel or nearby surfaces with a synthetic feline pheromone (e.g., Feliway) or placing pheromone diffusers in the examination room may also help reduce stress.²⁵

Conversely, some cats respond with more heightened senses if allowed to roam the room or hide under chairs or other furniture. Learning to recognize body postures associated with fear is fundamental for veterinarians and clients.²⁵ In these situations it is better to keep the cat in the carrier and minimize wait time and anxiety. The veterinarian should carefully observe the cat's behavior and demeanor while it is in the carrier or walking around the room. Detecting changes in gait, evidence of pain, types of respiratory patterns, or areas of asymmetry at this time can lead to additional questions for the client and specific issues to address in the

BOX 3-3

Medical History Components

Signalment	Age, breed, sex, and reproductive status
Locality	Disease prevalence in current and prior geographic locations
Acquisition	Private home, shelter, stray, pet store, or breeder
Environment	Primarily indoor, outdoor or both; other household pets; city, urban, or rural; possible toxin exposure; layout of home and yard
Vaccinations	History and any adverse reactions
Parasite Control	History and treatment, current and prior
Diet	Canned food, dry food, or both; brand and quantity; raw food; hunting prey; treats and supplements
Microchip	RFID number, registry information, periodic rescanning
Retroviral Testing	Dates, results, and risk evaluation
Prior Medical History	Illnesses, medications, adverse reactions, laboratory tests and results
Existing Complaints	Last known normal state Acute or gradual onset Progression (continuous or intermittent) Duration of problem Primary problem and prevailing secondary signs Present signs (attitude, appetite, activity, weight changes, water intake, behavioral changes, urination, defecation, and gait/mobility)

Modified with permission from Sherding RG: The medical history, physical examination, and physical restraint. In Sherding RG, editor: The cat: diseases and clinical management, ed 2, Philadelphia, 1994, Saunders, p 7.



FIGURE 3-4 The cat should be allowed time to exit the carrier on its own before the examination when possible. (Image courtesy Dr. Debra Givin.)

physical examination. Some cats may be so ill during the initial observation that an assessment must be done quickly and the patient moved to a treatment area or enclosure. It is important to minimize stress and promptly stabilize ill patients before attempting a more detailed examination.⁶

An effective physical examination technique follows a routine, consistent pattern but allows for some flexibility. Cats perceive the world through their senses, and their response to a new setting and unfamiliar smells in the examination room is not predictable. If the cat prefers to remain in the carrier and exhibits signs of anxiety, the carrier top should be removed and a thick towel used to cover the cat. This is often a convenient time to weigh the cat, either after removing it from the carrier or while the cat is still in the carrier (with the carrier's weight subtracted from the total). A tabletop scale designed for small animals or human infants is the best equipment for weighing cats (Figure 3-5). The veterinarian can proceed by adjusting the towel as needed (Figure 3-6) while the cat remains in the carrier or after gently lifting and removing the cat from the carrier. Tipping the carrier and dumping the cat onto the examination table or floor is not recommended.²⁵

As the examination continues, the veterinarian should move slowly and deliberately and speak quietly. The veterinarian should maintain physical contact with the cat by having examination tools close at hand. Losing physical contact may increase the cat's level of anxiety and lead to difficulty in completing the examination. The undeniable fact is that cats demand time and attention. A mindset of "less is more; more is less" and "slow is fast; fast is slow" pays dividends in both efficiency and effectiveness. The care, the time, and the examination should be tailored to the patient's needs.



FIGURE 3-5 Cats should be weighed on a tabletop scale during every veterinary visit. (Image courtesy Dr. Debra Givin.)



FIGURE 3-6 If needed, a towel can be used during the examination. (Image courtesy Dr. Vicki Thayer.)

Starting an examination at the tip of the nose and working toward the tip of the tail is a common and effective technique for some clinicians; others, especially during the initial examination, prefer to face the cat away to minimize eye contact, which some cats may find threatening. If the cat resists, the veterinarian can modify the routine to fit the patient and resume the examination in a less sensitive area, such as the head, over the hind-quarters, or the abdomen and lumbar area. It is helpful to be flexible yet thorough and adapt to the cat's comfort level.

For most patients, obtaining an accurate rectal temperature reading is possible by slowly inserting a well-lubricated, quick-reading digital thermometer (Figure 3-7) while distracting the patient with treats or gentle massage of the head. If appropriate, the veterinarian can check for fecal impaction and anal tone at this time.



FIGURE 3-7 Using a digital thermometer to take a rectal temperature. (Image courtesy Dr. Vicki Thayer.)



FIGURE 3-8 Gentle pressure in the intermandibular space elevates the tongue, allowing discovery of linear foreign bodies. (Image courtesy Dr. Susan Little.)

Forgoing temperature measurement during wellness examinations of less tolerant but healthy patients is acceptable. Using an ear thermometer for fractious cats is a reasonable alternative, although its accuracy, especially in ill cats, has been questioned.¹¹ It should be noted that a cat's body temperature can exceed 103° F (39.4° C) on warm days or as a result of travel stress.

According to current expert opinion, pain is considered the fourth vital sign after temperature, pulse, and respiration. Pain assessment is an essential part of every patient evaluation. Many conditions and procedures cause pain in cats, and veterinarians must remain aware of this potential and look for its signs. Because a change in behavior is the most common sign of pain, understanding a patient's normal behavior is important in identifying changes and making an appropriate choice to intervene. Several resources to aid in this process are available to the veterinary health care team.⁹

The Head

First, the nose is examined for any surface changes or lesions. Any lack of symmetry or the presence of discharge or an occasional foreign body, such as a blade of grass, can be more easily detected by shining a light on the nostrils. Ulcers on the nasal commissure may indicate an upper respiratory virus infection (e.g., feline calicivirus, feline herpesvirus).¹⁵ Type and color of any nasal discharge should be documented, along with whether it is unilateral or bilateral; these signs can indicate inflammation, infection, or neoplasia. Unusual sound or air movement can denote obstruction or upper airway disease. Stertorous noise (e.g., snoring or snorting) may indicate changes involving the pharynx, whereas stridor (i.e., wheezing) is localized to the laryngeal area.¹³

As with the nose, the lips and chin are evaluated for lesions or skin changes. Next, the teeth are assessed, with any losses noted, along with oropharyngeal inflammation, periodontal disease, tooth resorption (formerly called *feline odontoclastic resorptive lesions* or *neck lesions*), and tooth fractures. The cat's mouth should be held open to examine the roof, both fauces, and the back of the throat (Figure 3-8). Common complaints include mouth odor, difficulty chewing, or pawing at the mouth. Jaundice is often most readily appreciated on the hard palate. The veterinarian should review the entire mouth for lesions consistent with inflammation. Applying gentle pressure with a thumb in the intermandibular space and elevating the tongue allow discovery of linear foreign material or other abnormalities in the sublingual area (see Figure 3-8).²⁷ A nonhealing inflammatory lesion requires evaluation for potential underlying neoplasia. Squamous cell carcinoma is the most common oral cancer in cats and is often seen as a mass under the tongue.¹⁸ Further, color and appearance of the mucous membranes are indicators of anemia (pale), cyanosis (blue tint), and jaundice (yellow tint). A prolonged capillary refill time raises questions regarding the patient's tissue perfusion status.

Moving on to the eyes, the veterinarian should first appraise the status of or changes in the palpebral openings, pupils, eyelids, and nictitating membranes. The veterinarian should look for evidence of exophthalmus (may indicate retrobulbar lesions), retraction of the globe (may indicate weight loss or dehydration), excessive tearing, and blepharospasm. Next, the pupils are checked to confirm that they are equal in size and equally responsive to light. The patient's eyes should be examined for vascularization, cellular or fluid infiltrates, and ulceration in each cornea. The conjunctiva and sclera should be observed for signs of jaundice, anemia, and

inflammation. The iris is assessed for change in color, thinning or thickening, and hyperemia, and hyperpigmented lesions should be monitored for changes in size or appearance during subsequent examinations. Uveal lesions may be the result of trauma, infectious disease (e.g., feline infectious peritonitis, feline immunodeficiency virus infection), or neoplasia. Senile nuclear sclerosis may occur as the cat ages. Cataracts may be congenital in some breeds, most commonly Persians and British Shorthairs, or subsequent to other problems, such as trauma or anterior uveitis.¹ Finally, the retina is evaluated by direct or indirect ophthalmoscopy for hemorrhage (may indicate hypertension), detachment (may indicate tumor, hypertension, or trauma), neoplasia (e.g., lymphoma), and degenerative (e.g., retinal atrophy) or inflammatory changes (e.g., toxoplasmosis).^{27,32}

Proceeding to the ears, the surface of each pinna is examined for areas of alopecia or other skin lesions, including inflammation, ulceration, color changes, and crustiness. Each ear is checked for wounds or abscesses, especially if the cat engages in fighting, and aural hematomas. Evidence of jaundice or petechiae, if present, is typically observed in the medial lining of the pinnae. The ear canals are examined with an otoscope for changes and views of the tympanic membrane. The eardrum is normally flat and tense and the ear canal lining is generally smooth and devoid of wax or discharge. A cytologic examination of abnormal wax content or discharge can confirm preliminary diagnoses of ear mites (*Otodectes cyanotis*), *Demodex* sp., bacterial infections, or yeast overgrowth (*Malassezia* sp.).²⁹ Abnormal growths or polyps may be the result of chronic inflammation or evidence of neoplasia. Pain on opening the mouth may be a sign of underlying external or middle ear disease when oral disease is not present.

The Neck and Forelimbs

Examination of the neck and forelimbs begins with palpation of the submandibular lymph nodes, salivary glands, and larynx. The paratracheal region, from the caudal larynx to the thoracic inlet, is checked for an enlarged thyroid gland. The normal thyroid gland may not be palpable. Although the classic technique to examine the thyroid gland is with the cat sitting and the neck and head extended upward for palpation, other effective techniques have been described (Figure 3-9).²⁰ The veterinarian should continue exploring the surface of the neck for lesions, changes since prior examinations, and evidence of pain. Ventroflexion of the neck may be evidence of a thiamine or potassium deficiency, polymyopathy, or polyneuropathy.

Gently flexing and extending the muscles, bones, and joints of the front legs help in detecting any swelling, discomfort, or lack of mobility. This can be accomplished through simultaneous palpation of both limbs and



FIGURE 3-9 Thyroid gland palpation is an essential component of a senior cat examination. (Image courtesy Dr. Vicki Thayer.)

comparison of one limb with the other. The veterinarian should examine both front paws for the condition of the nails, nail beds, pads, and interdigital tissue while noting any unusual lesions or injury. Polydactyl and geriatric cats often have a nail that has grown into a digital pad. Nails that are split or torn completely from the nail bed can be evidence of trauma.

The Thorax and Trunk

Auscultation of the heart and lungs is a critical component of a complete thoracic examination. The veterinarian should position the cat so that it is facing forward and listen for rate, rhythm, and possible murmurs, using both the bell and diaphragm of the stethoscope (Figure 3-10). Auscultation is most effective in a quiet room. It may be necessary to ask the owner not to talk during thoracic auscultation. The presence of a cardiac murmur does not always signify underlying heart disease, nor does its absence preclude structural heart disease.²¹ Murmurs may result from other physical states, such as anemia or the patient's hydration status.

Both sides of the thorax are auscultated to evaluate the heart from base to apex as well as along the sternum. The maximum intensity of cardiac sounds is usually from the third to fifth intercostal spaces on the left side. Loud cardiac murmurs will create palpable vibrations on the chest wall, referred to as a *precordial thrill*, and are experienced as a "buzzing" sensation typically at the point of maximum intensity. Gallop rhythms and other arrhythmias, such as bradycardia, are associated with forms of feline cardiomyopathy. In hyperdynamic states such as hyperthyroidism, sinus tachycardia is frequently



FIGURE 3-10 Cardiac auscultation should be performed in a quiet examination room. (Image courtesy Dr. Vicki Thayer.)

a prominent sign. Palpating the femoral pulse while auscultating the heart may help the veterinarian detect a pulse deficit or weakness. Diminished or no femoral pulse, along with cold, pale, and weak extremities, may indicate an aortic thromboembolism. Jugular vein distention or jugular pulses may be the result of right-sided heart failure; these are observed by wetting or shaving the hair over the jugular groove.^{2,27}

Monitoring the respiratory rate and pattern, along with thoracic auscultation, can assist in detecting the presence of an underlying cardiac or respiratory disease. The normal respiratory rate is 20 to 40 breaths per minute. However, an increased respiratory rate can also be due to excitement, fever, pain, or fear. Dyspnea, or difficult or labored breathing, is primarily an observed state and usually causes anxiety for the cat. Pulmonary edema and pleural effusion may increase the respiratory rate with noticeable inspiratory and expiratory effort and no audible airway noise. Breath sounds are usually absent ventrally when pleural fluid is present. Careful percussion of the chest can identify areas of increased air or the presence of fluid or masses.

Prolonged expiration, an expiratory or abdominal push, or other increased respiratory efforts are indicators of lower airway disease caused by narrowing or obstruction of smaller airways. Lower airway disease (e.g., possible pulmonary edema or inflammatory airway disease) may produce harsh lung sounds such as inspiratory crackles and expiratory wheezes. Additional clinical signs of chronic respiratory disease may include a barrel-chested appearance and decreased chest compressibility. Patients with respiratory compromise may be unable to lie down comfortably and often sit hunched with the elbows abducted.¹⁰

As a final step in examining the thorax and trunk, the veterinarian should palpate the ribs, trunk, dorsum, ventrum, axillae, and mammary chains for lumps, abnormal lesions, and enlarged lymph nodes. Mammary neoplasia is not uncommon in female cats, and early detection is important for improving prognosis. Mammary masses should be considered neoplastic until proven otherwise.

Pectus excavatum or deformity of the xiphoid process of the sternum may be seen in younger cats. Focal lymph node enlargement signifies regional disease, usually subsequent to abscesses or skin disease, and diffuse lymphadenopathy may be the result of systemic disease, such as lymphoma.

The Abdomen

The veterinarian should visually evaluate the general size and appearance of the abdomen while palpating for fluid, fat, organ distention, or pain. Abdominal pain or discomfort during palpation may be due to an underlying pathology, although this type of reaction can also result from handling anxiety. Palpation is accomplished by moving front to back and from each side, using the tips of the fingers of one hand or both hands close together. Soft ballottement of the abdominal wall may indicate the presence of fluid or enable the veterinarian to detect other causes of abdominal distention. The liver is usually not palpable, but if hepatomegaly is present, the edge of the liver will be palpable past the costochondral arch. The veterinarian should note the shape of the palpable edge of the liver (e.g., sharp versus rounded edge or smooth versus irregular) because it may indicate abnormal changes. As with the liver, the stomach and pancreas are not usually palpable.

An enlarged spleen may denote hematopoietic or myeloproliferative disorders involving infiltration of the splenic tissue with abnormal type and numbers of lymphocytes and mast cells. In many cats it is possible to discern both kidneys, with the left kidney being more caudal than the right. Palpation helps in the detection of changes in size (larger or smaller) or shape (smooth versus irregular). A normal urinary bladder in the posterior abdomen has a thin wall and does not elicit pain on palpation. A larger, tense, and painful bladder may indicate a possible lower urinary tract obstruction.

The normal nonpregnant uterus is not palpable in cats. An enlarged uterus may be palpated as tubular structure(s) distinct from the intestinal tract and may be caused by pregnancy or uterine disease such as pyometra. A massively enlarged uterus may be due to late-stage pregnancy, pyometra, hydrometra, or mucometra and can occupy most of the abdominal space.

The small intestine is usually easily palpable, and the intestinal wall is typically symmetric throughout. A

change in wall thickness, asymmetry, distention of intestinal segments, or pain on palpation often indicates an underlying pathology. Mesenteric lymph node enlargement may be associated with these signs and may result from inflammation or neoplasia. The various sections of colon are also palpable, and a colon full of feces is typically a sign of constipation or, more significantly, obstruction. Because obesity may mask significant changes to abdominal organs, successful palpation of obese cats requires extra attention by experienced veterinarians; in some cases, it may be impossible to perform a thorough abdominal palpation.

The Hindquarters and Tail

The hind legs and paws are evaluated and compared in the same manner as the front legs and paws. The veterinarian should gently flex and extend the coxofemoral, stifle, and hock joints to test for impaired mobility or pain, noting any swelling or other abnormalities. A tendency toward medial patellar luxation in one or both stifles may be detected in some younger cats. Acute lameness in cats, especially overweight cats, may be due to an anterior cruciate ligament rupture and requires testing for anterior drawer motion and noting any pain in the stifle joint. The skin, pads, and nails of the hind paws are examined for similar problems as the front, although ingrown nails are less frequent.

Starting at the base of the tail and proceeding to the tip, the veterinarian palpates for possible wounds, pain, and swelling. Sacrococcygeal dislocations or fractures caused by trauma are most often discovered at the base. Next, the anal and perineal regions are assessed for appearance and cleanliness. Extra skin folds or the inability to clean the perineum often leads to hygienic issues and dermatitis in obese patients (Figure 3-11). Evidence of tapeworm infection, *Taenia taeniaeformis* or *Dipylidium caninum*, may be found in the hair surrounding the anus.

The anal glands are located at the 4 and 8 o'clock positions around the anus. Palpation of the anal glands may determine whether they need to be emptied, and anal gland abscesses are not uncommon in the cat. Cats can develop perineal hernias leading to fecal impaction. Rectal examination, when needed, may require patient sedation or general anesthesia in some cases. The vulva is normally free of discharge, even when a queen is in estrus.

The veterinarian should check unneutered male kittens and cats to confirm whether both testes are located in the scrotal sacs. If it is unknown whether a male cat has been neutered or is cryptorchid, the penis should be checked for spines. The presence of penile spines indicates a source of testosterone, typically a retained testicle.

Final General Assessment

Finally, the veterinarian examines, touches, and evaluates the skin and hair coat during the examination and discusses any issues with the client. Unusual odors may be the result of underlying problems, such as discharge from infected wounds and exposure to questionable agents (e.g., smoke, chemicals). Most cats prefer to be clean; a decreased desire to groom may reflect illness. Excessive saliva on the hair coat, especially the hair covering the lower extremities, may indicate significant oral disease.

Evidence of fleas or external parasites is found by combing sections of the hair coat at any time during the exam. The veterinarian should discuss noteworthy hair mats with the client and if needed, recommend removal (Figure 3-12). Matting of the hair coat can be uncomfortable for the cat and may reflect decreased grooming resulting from obesity, especially if the mats are evident on the caudal half of the body, in areas the cat can no longer reach. The veterinarian should monitor white cats and those with white or lightly pigmented areas on or around the pinnae, eyelids, and nasal philtrum for solar dermatitis or dysplastic changes.¹⁷ Skin bumps or growths should be measured with a ruler or caliper, and these characteristics documented in the record. Alopecia, wounds, and other skin abnormalities should also

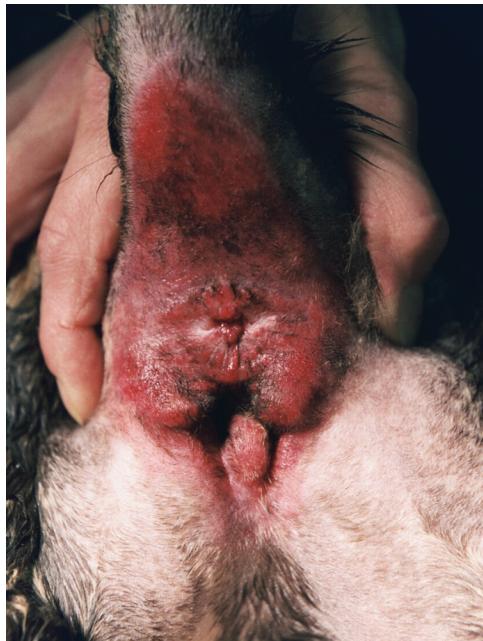


FIGURE 3-11 Perineal dermatitis is often seen in very obese patients. (Image courtesy Dr. Susan Little.)



FIGURE 3-12 Matting of the hair can indicate decreased grooming habits, often resulting from underlying medical conditions. (Image courtesy Dr. Susan Little.)



FIGURE 3-13 Leg index measurement (LIM) for the Feline Body Mass Index is the length (in cm) from the middle of the patella to the dorsal tip of the calcaneal process. (Image courtesy Dr. Susan Little.)

BOX 3-4

Formula for Calculation of the Feline Body Mass Index

$$\text{Percentage body fat} = \left(\frac{\left(\frac{\text{RCC}}{0.7062} \right) - \text{LIM}}{0.9156} \right) - \text{LIM}$$

Reprinted with permission from Waltham Focus, 10:32, 2000.
RCC, Rib cage circumference; LIM, leg index measurement.
All measurements in cm.

be noted. Alopecia over a joint may indicate pain, such as that associated with osteoarthritis. Alopecia on the ventral abdomen may indicate bladder pain. An area of fluctuant swelling with localized warmth often indicates an abscess, a common condition for cats.

During the final stages of the examination, the veterinarian scores general body condition by assigning a composite rating using either a 5-point or a 9-point scale (see [Figure 3-3](#)). Weight loss or weight gain is often best understood by the owner when it is expressed as a percentage of the cat's previous weight (e.g., the cat has gained 15% more than the previous weight recorded). Alternatively, the Feline Body Mass Index (FBMI) developed by the Waltham Center for Pet Nutrition provides an indicator of body fat content.⁸ This valuable measurement tool helps clinicians and researchers better define the relationship between body fat content and disease risk in cats. The formula to determine FBMI is shown in [Box 3-4](#). The equation uses rib cage circumference and



FIGURE 3-14 Measurement of rib cage circumference (RCC) (in cm) for the Feline Body Mass Index. (Image courtesy Dr. Susan Little.)

the leg index measurement (the length of the lower hindlimb from the middle of the patella to the dorsal tip of the calcaneal process) ([Figures 3-13 through 3-15](#)).

If the cat has lost weight, muscle loss or wasting is evaluated. Specifically, a loss of muscle mass over the back (e.g., prominent vertebral spinous processes) or legs (e.g., prominent scapulae) and a pendulous abdomen or a large inguinal fat pad may indicate a serious underlying medical condition. Barring emaciation or the effects of aging, gauging skin turgor by tenting the skin over the back and monitoring its return to a resting position provides a rough assessment of hydration and assists in evaluating the patient's health status. Mild skin tenting may not occur until a cat is at least 5% dehydrated.

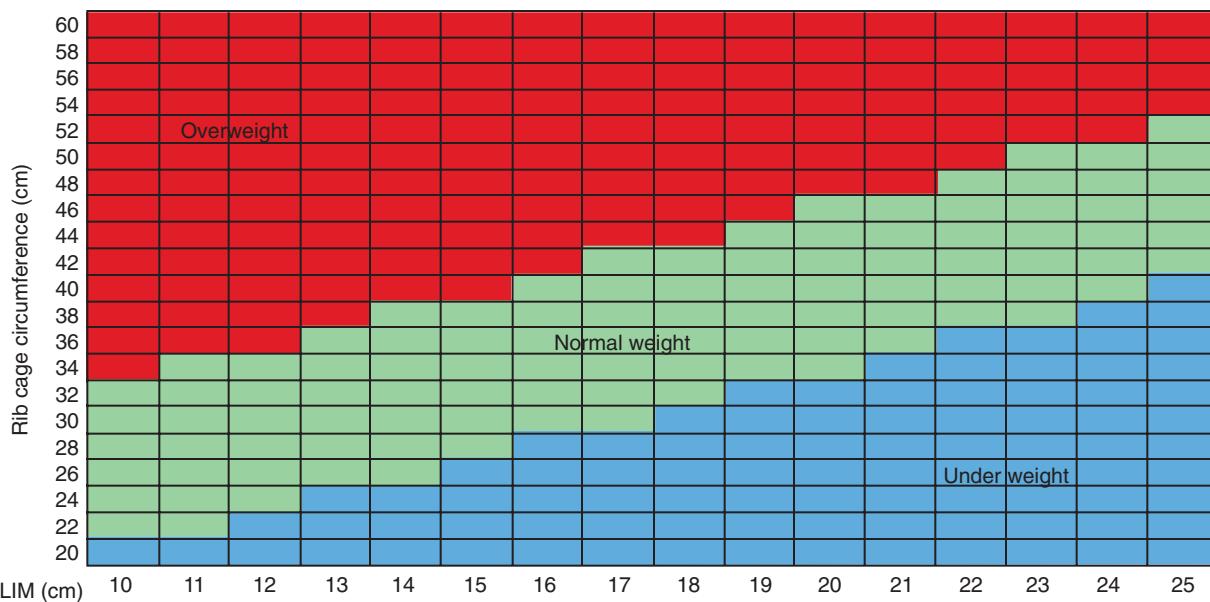


FIGURE 3-15 Use of the leg index measurement (LIM; in cm) and rib cage circumference (in cm) to determine Feline Body Mass Index. (Image courtesy WALTHAM Center for Pet Nutrition.)

Emotional Soap		
Medical variables		Emotional variables
How do you think this animal is doing?	S S	How do you think this owner is doing?
–physical appearance		–physical appearance
–body language and demeanor	Subjective	–body language and demeanor
–interactions with the owner		–interactions with the pet
What is the reason for the visit?		What might the owner need from you?
What does your intuition tell you about this patient?	What do you feel/notice/suspect?	What does your intuition tell you about this owner?
What does the owner tell you about this animal and the presenting problem?	O O	What does the owner tell you about his/her feelings and relationship with this pet?
What is the important medical history?	Objective	What is the important emotional history?
What did you find on physical exam?	What are the facts?	What do you find on the Family-Pet Relationship Information Form?
What past experiences and knowledge can you draw on for this case?	A A	What past experiences and knowledge can you draw on for this case?
What diagnosis can you rule in based on your collected information?	Assessment	What emotional needs and support-based services can you rule in as potentially applicable to this case?
	What can you conclude from an overall synthesis of the data?	
What options can you recommend and offer for treatment?	P P	What options/resources (supportive people, finances, time) are available to this owner?
What is the time frame for treatment?	Plan	What is the time frame for support?
What is the cost of treatment?	What treatment and support options are available to owners?	What is the cost of the recommended support services?
What is the treatment follow-up?		What is the support follow-up?

FIGURE 3-16 Emotional Subjective Objective Assessment Plan.

Moderate skin tenting occurs when a cat is 6% to 8% dehydrated, and skin tenting that stays in place for a few seconds or longer indicates at least 10% dehydration. The appearance of sunken eyes or dry, tacky mucous membranes can further confirm dehydration.

A neurologic assessment is best performed when the history and physical examination indicate that it is necessary. A short version of a cranial nerve exam can be achieved while evaluating the head and neck area.

The final steps in a comprehensive and effective physical examination involve reviewing findings with the client and outlining treatment recommendations. A concise written "report card" for the patient is an accepted method of helping the client understand treatment recommendations. In fact, sharing examination findings, explaining treatment options, and providing a possible prognosis within a SOAP (subjective, objective assessment plan) format increases owner compliance and satisfaction with the proposed regimen.⁶ If a sick cat is being assessed, an Emotional SOAP technique (<http://www.aah-abv.org>, see Autumn 2002 newsletter; accessed February 24, 2010) can be used concurrently with the typical SOAP format to meet the client's emotional needs (Figure 3-16).³⁰ In many cases, listing differentials and so-called "rule outs" in the aforementioned format may also help explain the need for further diagnostic measures such as laboratory tests as part of a minimum database.

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